SECTION 00 01 00

TITLE PAGE

ARCHITECT

WALLACE ARCHITECTS, LLC

302 CAMPUSVIEW DRIVE, SUITE 208
COLUMBIA, MO 65201
(573) 256-7200

3999 HARBORWALK DRIVE, SUITE D
RIDGELAND, MS 39157
(601) 813-9154

SIGNATURE AREA

ARCHITECT: Wallace Architects, LLC
302 Campusview Drive, Suite 208, Columbia, MO 65201
By:_____ Title:_____ Date:_____

OWNER: River Bend Villas, LP
3556 S. Culpepper Circle, Suite 1**,** Springfield, MO 65804
By:_____ Title:_____ Date:_____

CONTRACTOR: Murdoch Contracting, LLC
3556 S. Culpepper Circle, Suite 1, Springfield, MO 65804
By:_____ Title:_____ Date:_____

STATE AGENCY REPRESENTATIVE: (OHFA**)**
100 N.W. 63rd Street Oklahoma City, OK 73116
By:_____ Title:_____ Date:_____

USDA RURAL DEVELOPMENT- NATIONAL OFFICE / MULTIFAMILY HOUSING: (USDA/RD**)**
1400 Independence Ave, Washington, DC 20250-0701
By:_____ Title:_____ Date:_____

Wallace Project No. 4780 OHFA # 24-01-06

10/31/2024

River Bend Villas
Chickasha, Oklahoma

ISSUE SET

SECTION 00 01 09

ADDENDA AS ISSUED

DOCUMENTS

1.01 WHEN APPLICABLE TO THIS CONTRACT, ATTACHED FOLLOWING THIS PAGE IS:

ADDENDA

ADDENDUM #:	**DATE:**	**DESCRIPTION:**

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CARLSON CONSULTING ENGINEERS, INC

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SECTION 00 01 33

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DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
FORM NO. RD 1924-25
PLAN CERTIFICATION

USDA
Form RD 1924-25
(Rev. 7-99)

U.S. DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT
FARM SERVICE AGENCY

Form Approved OMB
No. 0575-0042

PLAN CERTIFICATION

(Property Name/Applicants Name and Case Number)	
(Property Address)	(City)
(County)	(State)

BUILDING TYPE: ☐ Single Family ☐ Multi-Family

PLANS: ☐ Original ☐ Modifications

I, _____ being a _____
(type or print) *(licensed architect, engineer, or authorized building official, etc.)*

in the State of _____ , hereby certify that I have reviewed:

☐ the plans and specifications dated _____ prepared by _____
(name of firm or individual)
for the above property

☐ the thermal performance plans, specifications and calculations dated _____
prepared by _____ for the above property
(name of firm or individual)

☐ the seismic design (plans and specifications) dated _____ prepared by
_____ for the above property
(name of firm or individual)

☐ modifications listed below, that have been clearly indicated on the drawings and specifications
dated _____ prepared by _____ and certified by
(name of firm or individual)
_____ and related to the above property
(name of firm or individual)

MODIFICATIONS

According to the Paperwork Reduction Act 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Based upon this review, to the best of my/our knowledge, information, and belief, these documents comply with the:

_____ and

(name and edition of the applicable development standard)

_____

(name and edition of the applicable energy standards/requirements in accordance with RD Instruction 1924-A, Exhibit D)

designated as the applicable Rural Development or Farm Service Agency development standards for this project.

I understand the purpose of this certification is to induce United States Government to finance the construction of the above project and plan. I further understand that false certification constitutes a violation of 18 U.S.C. Section 1001 punishable by fine and/or imprisonment and, in addition, may result in debarment from participating in future government programs.

_____ _____

(Signature) (Date)

_____ _____

(Type or print name) (Professional Registration No.)

_____ _____

(Title) (Expiration Date if applicable)

(573) 256-7200

(Area Code + Telephone Number)

SECTION 00 51 17

EQUAL OPPORTUNITY AGREEMENT - FORM RD 400-1

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
FORM RD 400-1
EQUAL OPPORTUNITY AGREEMENT

Form RD 400-1
(Rev. 5-00)

UNITED STATES DEPARTMENT OF AGRICULTURE

FORM APPROVED
OMB No. 0575-0018

EQUAL OPPORTUNITY AGREEMENT

This agreement, dated _____ between

_____

(herein called "Recipient" whether one or more) and United States Department of Agriculture (USDA), pursuant to the rules and regulations of the Secretary of Labor (herein called the 'Secretary') issued under the authority of Executive Order 11246 as amended, witnesseth:

In consideration of financial assistance (whether by a loan, grant, loan guaranty, or other form of financial assistance) made or to be made by the USDA to Recipient, Recipient hereby agrees, if the cash cost of construction work performed by Recipient or a construction contract financed with such financial assistance exceeds $10,000 - unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965.

1. To incorporate or cause to be incorporated into any contract for construction work, or modification thereof, subject to the relevant rules, regulations, and orders of the Secretary or of any prior authority that remain in effect, which is paid for in whole or in part with the aid of such financial assistance, the following "Equal Opportunity Clause":

During the performance of this contract, the contractor agrees as follows:

(a) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited, to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the USDA setting forth the provisions of this nondiscrimination clause.

(b) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

(c) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the USDA, advising the said labor union or workers' representative of the contractor's commitments under this agreement and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The contractor will comply with all provisions of Executive Order 11246 of September 24,1965, and of all rules, regulations and relevant orders of the Secretary of Labor.

(e) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, rules, regulations, and orders, or pursuant thereto, and will permit access to his books, records, and accounts by the USDA Civil Rights Office, and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by Law.

(g) The contractor will include the provisions of paragraph 1 and paragraph (a) through (g) in every subcontract or purchase order, unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the USDA may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the USDA, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collections is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

2. To be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, that if the organization so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.
3. To notify all prospective contractors to file the required 'Compliance Statement', Form RD 400-6, with their bids.
4. Form AD-425, Instructions to Contractors, will accompany the notice of award of the contract. Bid conditions for all nonexempt federal and federally assisted construction contracts require inclusion of the appropriate "Hometown" or "Imposed" plan affirmative action and equal employment opportunity requirements. All bidders must comply with the bid conditions contained in the invitation to be considered responsible bidders and hence eligible for the award.
5. To assist and cooperate actively with USDA and the Secretary in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and rules, regulations, and relevant orders of the Secretary, that will furnish USDA and the Secretary such information such as , but not limited to, Form AD-560, Certification of Nonsegregated Facilities, to submit the Monthly Employment Utilization Report, Form CC-257, as they may require for the supervision of such compliance, and that it will otherwise assist USDA in the discharge of USDA's primary responsibility for securing compliance.
6. To refrain from entering into any contract or contract modification subject to such Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and Federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by USDA or the Secretary of Labor pursuant to Part II, Subpart D, of the Executive Order.
7. That if the recipient fails or refuses to comply with these undertakings, the USDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the organization under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such organization; and refer the case to the Department of Justice for appropriate legal proceedings.

Signed by the Recipient on the date first written above.

_____ Recipient

_____ Recipient

(CORPORATE SEAL)

_____ Name of Corporate Recipient

Attest:

_____ Secretary

By _____ President

SECTION 00 51 19

NOTICE TO CONTRACTORS - FORM RD 400-3

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
FORM RD 400-3
NOTICE TO CONTRACTORS

Form RD 400-3
(Rev. 2-98)

UNITED STATES DEPARTMENT OF AGRICULTURE

NOTICE TO CONTRACTORS AND APPLICANTS

Attached is a nondiscrimination poster. In accordance with the terms of your construction contract with _____;

(Name of Borrower or Recipient of Grant)

the poster is to be displayed in all employment offices, on bulletin boards, and in other conspicuous places available to employees and applicants for employment. The poster must be displayed in the same manner by your subcontractors who are subject to the equal opportunity provisions of your contract, and you are required to furnish them with such posters. Additional copies of the posters may be obtained from this office.

Any reference to Federal Government contract or contractors in the standard forms or posters is to be interpreted to include any contract for construction work financed in whole or in part with a United States Department of Agriculture (USDA) loan or grant.

"Subcontractors" as used herein means any subcontractor holding a subcontract which calls for supplies or services required for the performance of the prime contract except subcontracts which either (1) do not exceed $10,000 ($100,000 if for standard commercial supplies or raw materials) or (2) are below the second tier and do not call for construction work at the site of construction, including any temporary location or facility established by the subcontractor specifically to meet the demands of his subcontract.

A USDA official may conduct compliance reviews of contracts covered by Executive order 11246, as amended. You will be notified if such a review is scheduled.

_____ _____

Date *USDA official*

_____

Name of Contractor

_____

Address of Contractor

SECTION 00 51 21

COMPLIANCE STATEMENT - FORM RD 400-6

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
FORM RD 400-6
COMPLIANCE STATEMENT

USDA
Form RD 400-6
(Rev.12-09)

Form Approved
OMB No. 0575-0018

COMPLIANCE STATEMENT

This statement relates to a proposed contract with _____

_____,
(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor, I represent that:

1. I ☐ have, ☐ have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, I ☐ have, ☐ have not, filed all compliance reports that have been required to file in connection with the contract or subcontract.

If the proposed construction contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. I ☐ have, ☐ have not previously had contracts subject to the written affirmative action programs requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, ☐ I have, ☐ have not developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required of me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications for proposed subcontractors for specific time periods) I will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays the valid OMB control number. The valid OMB control number for this information collection is 0575-0018. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

DATE _____

_____

(Signature of Bidder or Prospective Contractor)

_____

Address (including Zip Code)

SECTION 00 51 31

NOTICE OF AWARD - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 5

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO.
RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 5
NOTICE OF AWARD

RD Instruction 1924-A
Guide 1, Attachment 5

NOTICE OF AWARD

TO:_____
_____
_____

PROJECT Description: _____
_____
_____

The OWNER has considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids dated _____, 20 ____, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required Contractor's Performance BOND, Payment BOND and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the Owner's acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this _____ day of _____, 20____.

_____
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by _____.
this the _____ day of _____, 20____.
By _____
Title _____

oOo
1/1

(2-16-83) PN 869

SECTION 00 52 01

STANDARD AGREEMENT BETWEEN OWNER AND CONTRACTOR - AIA DOCUMENT A101-2017

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. A101
STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR
--STIPULATED SUM--
2017 EDITION

RELATED REQUIREMENTS

2.01 SECTION 00 72 00 - GENERAL CONDITIONS OF THE CONTRACT - AIA A201-2017.

2.02 SECTION 00 72 03 - ATTACHMENT TO GENERAL CONDITIONS OF THE CONTRACT - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 10

SUPPLEMENTARY CONDITIONS

3.01 SECTION 00 52 06 - ATTACHMENT TO STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR - RD INSTRUCTION 1924-A GUIDE 1, ATTACHEMENT 6.

END OF SECTION

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor *where the basis of payment is a Stipulated Sum*

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)

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

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

Sample

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

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.
/

AIA Document A101 – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are registered trademarks of The American Institute of Architects. This document was produced at 15:51:43 ET on 06/19/2023 under Order No.2114431782 which expires on 05/16/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.
User Notes: (1299270756)

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EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 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.

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

§ 3.3 Substantial Completion

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

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

[ ] By the following date:

§ 3.3.2 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

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 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 ($), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

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

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

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ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 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.

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

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

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- **.1** That portion of the Contract Sum properly allocable to completed Work;
- **.2** That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- **.3** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- **.3** Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- **.4** For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- **.5** Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

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§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 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 Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 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:

§ 5.3 Interest

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.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

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§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[ ] 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 by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

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

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with 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 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.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 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 also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

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[ ] 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

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

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

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
(Printed name and title)	*(Printed name and title)*

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SECTION 00 52 06

ATTACHMENT TO STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR - RD INSTRUCTION 1924-A GUIDE 1, ATTACHEMENT 6

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO.
RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 6
ATTACHMENT TO STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

ATTACHMENT TO AIA DOCUMENT A101-2017, *Standard Form of Agreement Between Owner and Contractor*

The provisions of this Attachment shall delete, modify and supplement the provisions contained in the ''*Standard Form of Agreement Between Owner and Contractor*,'' AIA Document A101-2017 Edition. The provisions contained in this attachment shall supersede any conflicting provisions of the AIA Document.

ARTICLE 3, DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

Delete paragraph 3.1 and substitute the following:

> 3.1 The date of commencement shall be contained in the Notice to Proceed.

Add the following to paragraph 3.3.3:

> If the work is not substantially complete on or before this date, or within this period of time, or extension thereof granted by the Owner, damage will be sustained by the Owner and that it is and will be impracticable and extremely difficult to fix the actual damage which the Owner will sustain in the event of and by reason of such delays. The Contractor shall pay to the Owner liquidated damages in the sum of $ _____ for each calendar day of delay. Any sums that may be due the Owner as liquidated damages may be deducted from any monies due or to become due the Contractor under the Contract or may be collected from the Contractor's surety.

ARTICLE 5, PAYMENTS

Insert "ten" and "10" in the appropriate spaces in subparagraph 5.1.3:

Delete the following from clause 5.1.6.2:

> (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing)

Insert the following sentences in subparagraph 5.1.7.1:

The amount retained shall be 10% of the value of Work until 50% of the Work has been completed or a withholding of equal or greater value, such as, 5% for the full duration of the project. If 10% is held, at 50% completion, further partial payments shall be made in full to the Contractor and no additional amounts may be retained unless the Architect certifies that the Work is not proceeding satisfactorily, but amounts previously retained shall not be paid to the Contractor. At 50% completion or any time thereafter when the progress of the Work is not satisfactory, additional amounts may be retained, but in no event shall the total retainage be more than 10% of the value of Work completed.

ARTICLE 8, MISCELLANEOUS PROVISIONS

Add the following subparagraph to paragraph 8.6:

8.7.1 This Agreement shall not become effective until concurred in writing by the Agency. Such concurrence shall be evidences by the signature of a duly authorized representative of the Agency in the space provided at the end of this Attachment to the Agreement. The concurrence so evidenced by the Agency shall in no way commit the Agency to render financial assistance to the Owner and is without liability to the Agency for any payment thereunder, but in the event such assistance is provided, the concurrence shall signify the provisions of this Agreement are consistent with Agency requirements.

ARTICLE 9, ENUMERATION OF CONTRACT DOCUMENTS

The following Documents should be referenced, if applicable:

Subparagraph 9.1.3:

Attachment to the *Standard Form of Agreement Between Owner and Contractor* (this Attachment)
General Conditions of the Contract for Construction, AIA A201-2017
Attachment to the *General Conditions of the Contract for Construction* (RD Instruction 1942-A, Guide 27, Attachment 4)
Special Conditions

Subparagraph 9.1.7:

Invitation for Bids (Form RD 1924-5)
Instructions to Bidders, AIA A701-1997
Attachment to the *Instructions to Bidders* (RD Instruction 1924-A, Guide 27, Attachment 2)
Bid Form
Bid Bond
Compliance Statement (Form RD 400-6)
Payment Bond
Performance Bond
Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions (Form AD 1048)
Disclosure of Lobbying Activities (SF-LLL)
Certification for Contracts, Grants and Loans (RD Instruction 1940-Q, Exhibit A-1)

Delete the signature block on page 7 of this Agreement, and substitute the block on the following page:

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in duplicate on the respective dates indicated below:

OWNER:

ATTEST: _____ By _____

Type Name _____ Type Name _____

Title _____ Title _____

Date _____ Date _____

CONTRACTOR:

ATTEST: _____ By _____

Type Name _____ Type Name _____

Title _____ Title _____

Date _____ Date _____

AGENCY CONCURRENCE:

By _____

Type Name _____

Title _____

Date _____

The concurrence so evidenced by the Agency shall in no way commit the Agency to render financial assistance to the Owner and is without liability to the Agency for any payment hereunder, but in the event such assistance is provided, the concurrence shall signify the provisions of this Agreement are consistent with Agency requirements.

o0o

SECTION 00 52 07

CERTIFICATE OF OWNER'S ATTORNEY - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 7

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO.
RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 7
CERTIFICATE OF OWNER'S ATTORNEY

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____, the duly authorized and acting legal representative of _____ _____, do hereby certify as follows:

I have examined the attached Contract(s) and Performance and Payment Bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

_____

Date:_____

(NOTE: Delete phrase "Performance and Payment Bonds" when not applicable.)

oOo

(2-16-83) PN 869

SECTION 00 61 13

PERFORMANCE AND PAYMENT BOND - AIA DOCUMENT A312-2010

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. A312
PERFORMANCE AND PAYMENT BOND
2010 EDITION

AIA® Document A312® – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:
Amount: $ 0.00
Description:
(Name and location)
Sample

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL	**SURETY**
Company: *(Corporate Seal)*	Company: *(Corporate Seal)*
Signature: _____	Signature: _____
Name and Title:	Name and Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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User Notes: (862014838)

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

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§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:
Amount: $ 0.00
Description:
(Name and location)
Sample

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $
Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:	_____	Signature:	_____
Name and Title:		Name and Title:	
Address:		Address:	

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SECTION 00 61 19

DUAL OBLIGEE RIDER

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DUAL OBLIGEE RIDER

DUAL OBLIGEE RIDER

TO BE ATTACHED to and form part of Performance and Payment Bond No. _____, dated _____, issued by _____, a _____ Corporation, as Surety, on behalf of _____, as Principal, and in favor of _____, as Obligee.

Whereas, upon the written request of the Principal and Obligee, the attached bond(s) is (are) hereby amended to add United States Government acting through Rural Development as additional Obligees.

IT IS HEREBY understood and agreed that the above described bond(s) is (are) hereby amended to include the following paragraph:

> Notwithstanding anything contained herein to the contrary, there shall be no liability on the part of the Principal or Surety under this bond to the Obligees, or either of them, unless the Obligees, or either of them, shall make payments to the Principal or to the Surety in case it arranges for completion of the contract upon default of the Principal, strictly in accordance with the terms of said contract as to payments, and shall perform all the other obligations required to be performed under said contract at the time and in the manner therein set forth.
>
> The aggregate liability of the Surety hereunder to the Obligees or their assigns is limited to the penal sum stated in the bond, and Surety, upon making payment hereunder, shall be subrogated to, and shall be entitled to an assignment of, all rights of the Payee, either against the Principal or against any other part liable to the Payee in connection with the loss which is the subject of the payment.

IT IS FURTHER understood and agreed that nothing herein contained shall be held to change, alter or vary the terms of the above described bond(s) except as hereinbefore set forth.

Signed, sealed and dated this _____ day of _____, 2012.

ACCEPTED BY: (Obligees)

BY:_____

BY:_____

PRINCIPAL:

BY:_____

SURETY:

BY:_____

Attorney in fact

SECTION 00 64 11

NOTICE TO PROCEED - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 9

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO. RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 9
NOTICE TO PROCEED

NOTICE TO PROCEED

TO: _____ DATE:_____

_____ Project:_____

_____ _____

_____ _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 20___, on or before _____, 20___, and you are to complete the WORK within _____ consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 20___.

_____
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PRO-

CEED is hereby acknowledged by _____

_____,

This the _____, 20____

_____

By _____

Title _____

Employer Identification
Number _____

oOo

1/1

(2-16-83) PN 869

SECTION 00 72 00

GENERAL CONDITIONS OF THE CONTRACT - AIA DOCUMENT A201-2017

DOCUMENTS

1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT ARE ATTACHED FOLLOWING THIS PAGE.

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. A201
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
2017 EDITION

SUPPLEMENTARY CONDITIONS

2.01 SECTION 00 72 03 - ATTACHMENT TO GENERAL CONDITIONS OF THE CONTRACT - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 10.

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

River Bend Villas - 4780
Chickasha, OK

THE OWNER:
(Name, legal status and address)

River Bend Villas, LP
3556 S. Culpepper Circle, Suite 1
Springfield, MO 65804

THE ARCHITECT:
(Name, legal status and address)

Wallace Architects, LLC
302 Campusview Drive, Suite 208
Columbia, MO 65201

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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User Notes: (67191105e75040fb82e7e3df)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. 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. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 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 (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 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.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 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.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 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 only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 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.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 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 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.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, 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 the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, 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 if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 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.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 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 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.

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ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon 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 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon 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 only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

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§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. 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.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out 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 has been 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, except to the extent required by Section 6.1.3.

§ 2.5 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 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 9.5.1, 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 Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. 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 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 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.

§ 3.2.2 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 2.3.4, 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

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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.

§ 3.2.3 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.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 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.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 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.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 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 properly skilled in tasks assigned to them.

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§ 3.5 Warranty

§ 3.5.1 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 and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special 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 9.8.4.

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for 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.

§ 3.7.2 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.

§ 3.7.3 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.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct,

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but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 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 contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

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

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as

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constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 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.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 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 for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The

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Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 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.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 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 materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

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

§ 3.17 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.

§ 3.18 Indemnification

§ 3.18.1 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

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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 that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 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 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 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.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, 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 the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 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.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations 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.

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§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 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. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 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's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

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

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

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 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. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

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§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 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 persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. 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. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by 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 that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

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§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

§ 6.1.1 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.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 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 construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

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§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;

.2 The amount of the adjustment, if any, in the Contract Sum; and

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

.2 Unit prices stated in the Contract Documents or subsequently agreed upon;

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

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.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. 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. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

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

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

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§ 8.2 Progress and Completion

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

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) 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.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum 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, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 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 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 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

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whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, 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 suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. 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 encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation 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 that 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.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 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 9.4.2 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 9.4.1. If the Contractor and 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 3.3.2, 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;

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or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 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.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 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.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 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.

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§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 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.

§ 9.8.2 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.

§ 9.8.3 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. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that 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.

§ 9.8.5 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.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

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§ 9.10 Final Completion and Final Payment

§ 9.10.1 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. 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 listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance 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 the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 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.

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 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.

§ 10.2 Safety of Persons and Property

§ 10.2.1 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;

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.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.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 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 10.2.1.2 and 10.2.1.3. 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 anyone directly or indirectly employed by either of them, 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 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in 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.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed

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by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. 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 by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 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 10.3.1 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.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 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 reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 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 the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 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.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. 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 the Contract Documents, 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

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the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner 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 the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, 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.

§ 11.3 Waivers of Subrogation

§ 11.3.1 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 the 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 11.3.1 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.

§ 11.3.2 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 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to

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fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement 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 and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before 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.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, 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 9.9.1, or by terms of any 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. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 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.

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§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 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 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 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 the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

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

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approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in

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Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 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 or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.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.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written 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.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 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 Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

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§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 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, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and 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 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 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 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated 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.

§ 15.1.3.2 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 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 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

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.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 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those 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 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner

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may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings 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 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the 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 its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A 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 party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 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.

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

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party 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

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similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party 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 any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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There are no edits to the original text

Variable Information

PAGE 1

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(Title)

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(Dated)

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User Notes: (67191105e75040fb82e7e3df)

SECTION 00 72 03

ATTACHMENT TO GENERAL CONDITIONS OF THE CONTRACT - RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 10

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO.
RD INSTRUCTION 1924-A GUIDE 1, ATTACHMENT 10
ATTACHMENT TO GENERAL CONDITIONS OF THE CONTRACT

ATTACHMENT TO AIA DOCUMENT A201-2017*, General Conditions of the Contract for Construction*

The provisions of this attachment shall delete, modify and supplement the provisions contained in the "*General Conditions of the Contract for Construction*," AIA Document A201-2017 Edition. The provisions contained in this attachment will supersede any conflicting provisions of the AIA Document. The term "Agency," as used in this Attachment, shall mean the United States of America, acting through the United States Department of Agriculture.

ARTICLE 1, GENERAL PROVISIONS

Add the following subparagraph:

1.2.4 Concurrence of the Contract by the Agency is required before it is effective and the "Concurrence" statement shall be attached to and made a part of the Agreement.

ARTICLE 2, OWNER

Delete subparagraph 2.3.6 and substitute the following:

2.3.6 The Contractor will be furnished, free of charge, five (5) copies of the Drawings and Projects Manuals necessary for execution of the Work. Additional copies will be available from the Architect at the cost of reproduction.

ARTICLE 3, CONTRACTOR

Add the following to subparagraph 3.7.1:

The Owner shall secure and pay for the health and environmental impact fees due to water and sewer connections, and the zoning regulation fees and permits. The Contractor shall secure and pay for the building, mechanical, electrical, and plumbing permits and other governmental fees, licenses, and inspections necessary for proper execution of and completion of the Contract which are legally required when bids are received or negotiations concluded.

ARTICLE 4, ARCHITECT

Add the following to subparagraph 4.1.1:

The term "Architect" means the Architect or the Engineer, when the nature of the work is within the authority granted engineers by the State licensure law, or an authorized representative.

ARTICLE 5, SUBCONTRACTORS

Add the following to subparagraph 5.2.2:

The Contractor shall not contract with any party who is suspended or debarred by any Federal government agency from participating in Federally assisted construction projects or to whom the Owner or the Architect has made reasonable and timely objection.

ARTICLE 7, CHANGES IN THE WORK

Delete the words ", Construction Change Directive" from subparagraph 7.1.1.

Insert the words ", Agency " after the word "Owner," and delete the words "; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor" in subparagraph 7.1.2.

Delete the words "Construction Change Directive" from subparagraph 7.1.3.

Delete subparagraph 7.2.1 and substitute the following:

7.2.1 A Change Order is a written order to the Contractor utilizing Form RD 1924-7, "Contract Change Order," or AIA G-701 signed by the Owner, Architect, Contractor, and the Agency representative. It is issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. The Contractor's signing of a Change Order indicates complete agreement therein.

Add subparagraph 7.2.2:

7.2.2 Methods used in determining adjustments to the Contract Sum may include any of the following:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluating.

.2 Unit prices stated in the Contract Documents or subsequently agreed upon.

Delete paragraph 7.3 in its entirety.

ARTICLE 8, TIME

Add the following subparagraphs:

8.2.4 The Notice to Proceed shall be issued within twenty (20) calendar days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement of the Owner and Contractor, with the concurrence of the Agency. If the Notice to Proceed has not been issued within the twenty (20) calendar day period or within the period mutually agreed, the Contractor may terminate the Agreement without further liability on the part of either party.

8.3.4 As outlined in Article 3 of the Agreement, the Contractor agrees to pay liquidated damages to the Owner for each calendar day the Contractor shall be in default.

ARTICLE 9, PAYMENTS AND COMPLETION

Delete clause 9.3.1.1 and substitute the following:

9.3.1.1 Work performed and materials supplied under a Change Order may be included for payment only after the Change Order has been approved by all appropriate parties, including the Agency.

Delete Subparagraph 9.3.2 and substitute the following:

9.3.2 Unless otherwise provided in the Contract documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payment shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest.

Add the words ", using AIA Document 702, 'Application and Certificate for Payment' or Form RD 1924-18, 'Partial Payment Estimate'," after "Certificate for Payment" in subparagraph 9.4.1.

Add the following subparagraph:

9.6.9 No progress payments will be made that deplete the retainage, nor place in escrow any funds that are required for retainage, nor invest the retainage for the benefit of the Contractor. Retainage will not be adjusted until after construction is substantially complete.

Replace the word "seven" with the words "fifteen (15)" in the first sentence , third line of subparagraph 9.7.

Delete subparagraph 9.8.5, after the first sentence, and substitute the following:

9.8.5 When the Work has been substantially completed, except for Work which cannot be completed because of weather conditions, lack of materials or other reasons, which, in the judgment of the Owner, are valid reasons for non-completion, the Owner may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the Work still to be completed. Provide a copy of the Certificate to the Agency.

Delete subparagraphs 9.9.1 and add the following:

9.9.1 The Contractor agrees to the use and occupancy of a portion or unit of the Project before formal acceptance by the Owner under the following conditions:

.1 A “Certificate of Substantial Completion” shall be prepared and executed as provided in subparagraph 9.8.4, except that when, in the opinion of the Architect, the Contractor is chargeable with unwarranted delay in completing the Work or other

Contract requirements, the signature of the Contractor will not be required. The Certificate of Substantial Completion shall be accompanied by a written endorsement of the Contractor's insurance carrier and surety permitting occupancy by the Owner during the remaining period of the Project Work. Occupancy by the Owner shall also be authorized by public authorities having jurisdiction over the Work.

.2 Occupancy by the Owner shall not be construed by the Contractor as being an acceptance of that part of the Project to be occupied.

.3 The Contractor shall not be held responsible for any damage to the occupied part of the Project resulting from the Owner's occupancy.

.4 Occupancy by the Owner shall not be deemed to constitute a waiver of existing claims in behalf of the Owner or Contractor against each other.

.5 If the Project consists of more than one building, and one of the buildings is to be occupied, the Owner, prior to occupancy of that building, shall secure permanent property insurance on the building to be occupied and necessary permits which may be required for use and occupancy.

Add to subparagraph 9.9.3: Use and occupancy by the Owner prior to Project acceptance does not relieve the Contractor of responsibility to maintain all insurance and bonds required of the Contractor under the Contract until the Project is completed and accepted by the Owner.

ARTICLE 11, INSURANCE AND BONDS

Replace the words "the Contract Documents" with the words "subparagraph 11.1.1" in the first sentence of subparagraph 11.1.2.

Add the following subparagraph:

11.1.1. Insurance shall be:

.1 Written with a limit of liability of not less than $500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than $500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $200,000 aggregate for any such damage sustained by two or more persons in any one accident, or,

.2 Written with a combined bodily injury and damage liability of not less than $700,000 per occurrence; and with an aggregate of not less than $700,000 per occurrence.

Add the following sentence to the end of subparagraph 11.3.1

The policy shall name as the insured the Contractor and the Owner.

Add the following sentence to the end of subparagraph 11.3.1:

The provisions of this subparagraph shall apply to the Contractor if the Contractor purchases and maintains said insurance coverage.

Delete subparagraph 11.1.2 and substitute the following:

11.1.2 The Contractor shall furnish the Owner bonds covering faithful performance of the Contract and payment of obligations arising thereunder within ten (10) calendar days after receipt of the Notice of Award. The surety company executing the bonds must hold a certificate of authority as an acceptable surety on Federal bonds as listed in Treasury Circular 570, and be authorized to transact business in the

State where the Project is located. The bonds (using the forms included in the Bidding Documents) shall each be equal to the amount of the Contract Sum. The cost of these bonds shall be included in the Contract Sum

Add the following clauses:

11.1.3.1 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current power of attorney.

11.1.3.2 If at any time a surety on any such bond is declared bankrupt or loses its right to do business in the State in which the work is to be performed or is removed from the list of surety companies accepted on Federal Bonds, the Contractor shall within ten (10) calendar days after notice from the Owner to do so, substitute an acceptable bond in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums of such bond shall be paid by any Contractor. No further payment shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Owner.

Add the following paragraph:

11.6 LATENT DEFECTS PROTECTION

11.6.1
If the Contractor does not furnish payment and performance bonds, he or she shall agree to provide surety or guarantee acceptable to the Owner and the Agency against latent obligations and defects in connection with the construction.

.1 The Contractor shall furnish a properly executed corporate latent defects bond, a maintenance bond, an unconditional and irrevocable letter of credit, or a cash deposit into a supervised bank account. Whichever instrument is used shall be in the amount of 10 percent of the Contract Sum.

.2 The period of protection against latent obligations and defects shall be one year from the final acceptance of Work by the Owner and the Agency.

.3 Final payment to the Contractor shall not be issued until the provisions of clause 11.6.1.1 have been met.

ARTICLE 13, MISCELLANEOUS PROVISIONS

Add the following paragraphs:

13.6 FEDERAL INSPECTION

13.6.1 The authorized representatives and agents of the Federal
Government shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.

13.7 LANDS AND RIGHTS-OF WAY

13.7.1 Prior to the start of construction, the Owner shall obtain all lands and rights-of-way necessary for the execution and completion of work to be performed under this contract.

13.8 EQUAL OPPORTUNITY REQUIREMENTS

Non-discrimination in Employment by Federally Assisted Construction Contractors, by Executive Order 11246.

13.8.1 This section summarizes Executive Order 11246, which prohibits employment discrimination and requires employers holding non-exempt Federal contracts and subcontracts and federally-assisted construction contracts and subcontracts in excess of $10,000 to take affirmative action to ensure equal employment opportunity without regard to race, color, religion, sex, or national origin. The Executive Order requires, as a condition for the approval of any federally assisted construction contract, that the applicant incorporate nondiscrimination and affirmative action clauses into its non-exempt federally assisted construction contracts.

13.8.2 Executive Order 11246, is administered and enforced by the Office of Federal Contract Compliance Programs (OFCCP), an agency in the U.S. Department of Labor's Employment Standards Administration. OFCCP has issued regulations at 41 C.F.R. chapter 60 implementing the Executive Order. The regulations at 41 C.F.R. part 60-4 establish the procedures which the Agency, as an administering agency, must follow when making grants, contracts, loans, insurance or guarantees involving federally assisted construction which is not exempt from the requirements of Executive Order 11246. The regulations which apply to Federal or federally assisted construction contractors also are published at 41 C.F.R. part 60-4.

13.8.3 OFCCP has established numerical goals for minority and female utilization in construction work. The goals are expressed in percentage terms for the contractor's aggregate workforce in each trade. OFCCP has set goals for minority utilization based on the percentage of minorities in the civilian labor force in the relevant area. There is a single nationwide goal of 6.9 percent for utilization of women. The goals apply to all construction work in the covered geographic area, whether or not it is federal, federally assisted or non-federal. A notice advises bidders of the applicable goals for the area where the project is to be located.

13.8.4 Application. This section applies to all of a construction contractor's or subcontractor's employees who are engaged in on-site construction including those construction employees who work on a non-Federal or non-Federally assisted construction site.

13.8.4.1 Agency officials will notify the appropriate Regional Director of OFCCP that an Agency financed construction contract has been awarded, and that the equal opportunity clauses are included in the contract documents.

13.8.4.2 The Regional Director, OFCCP-DOL, will enforce the non-discrimination requirements of Executive Order 11246.

13.8.5 The prospective contractor or subcontractor must comply with the Immigration Reform and Control Act of 1986, by completing and retaining Form I-9, "Employment Eligibility Verification," for employees hired. This form is available from the Immigration and Naturalization Service, and Department of Justice.

13.8.6 The prospective contractor or subcontractor must submit Form RD 400-6, "Compliance Statement," to the applicant and an Agency official as part of the bid package, prior to any contract bid negotiations and comply with the Executive Order 11246 as stated in the contract documents.

13.9 STATUTES

13.9.1 The Contractor and each Subcontractor shall comply with the following statutes (and with regulations issued pursuant thereto, which are incorporated herein by reference):

13.9.1.1 Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 C.F.R. part 3). This Act provides that each Contractor shall be prohibited from inducing, by any means, any person in

connection with construction to give up any part of the compensation to which the person is otherwise entitled.

13.9.1.2 Clean Air Act (42 U.S.C. 7414), section 114, and Water Pollution Control Act (33 U.S.C. 1813), section 308. Under Executive Order 11738 and Environmental Protection Agency (EPA) regulations 40 C.F.R. part 15, all Contracts in excess of $100,000 are required to comply with these Acts. The Acts require the Contractor to:

.1 Notify the Owner of the receipt of any communication from EPA indicating that a facility to be utilized in the performance of the Contract is under consideration to be listed on the EPA list of Violating Facilities.

.2 Certify that any facility to be utilized in the performance of any nonexempt Contractor or Subcontractor is not listed on the EPA list of Violating Facilities as of the date of the Contract Award.

.3 Include or cause to be included the above criteria and requirements of paragraphs .1 and .2 in every nonexempt subcontract, and that the Contractor will take such action as the Government may direct as a means of enforcing such provisions.

13.9.1.3 Davis-Bacon Act(40 U.S.C. 276a) as supplemented in Department of Labor regulations (29 C.F.R. part 5). If applicable, the Contractor must comply with the minimum rates for wages for laborers and mechanics as determined by the Secretary of Labor in accordance with the provision of this Act.

13.9.1.4 Restrictions on Lobbying (Public Law 101-121, section 319) as supplemented in Department of Agriculture regulations (7 C.F.R. part 3018). This statute applies to the recipients of contracts or subcontracts that exceed $100,000 at any tier under a Federal loan that exceeds $150,000 or a Federal grant that exceeds $100,000. If applicable, the Contractor must complete a certification form on lobbying activities related to the specific Federal loan or grant that is a funding source for this contract. The certification and disclosure forms shall be provided by the Owner.

13.10 RECORDS

13.10.1 If the Contract is based on a negotiated Bid, the Owner, the Agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor which are pertinent to a specific Federal loan program for the purpose of making audit, examination, excerpts, and transcriptions. The Contractor shall maintain records for at least three years after the Owner makes final payment and all other pending matters are closed.

13.11 IDENTITY OF INTEREST

13.11.1 The Owner will complete and sign Form RD 3560-30, "Identity of Interest (IOI) Disclosure Certificate." If applicable, the Contractor or any Subcontractor, Material Supplier, or Equipment Lessor sharing an identity of interest will, prior to receipt of any payment, complete and sign Form RD 3560-31, "Identity of Interest (IOI) Qualification."

13.11.2 If and when an identity of interest exists, the Contractor, Subcontractor, Material Suppliers, or Equipment Lessor:

13.11.2.1 Will, prior to receipt of any payment, provide the Owner and the Agency a written assertion that it has an accounting system suitably designed to provide for a line-item basis comparison of the actual cost with the estimated cost.

13.11.2.2 Will, prior to receipt of any payment, provide the Owner and the Agency with a detailed breakdown of the estimated cost amount for evaluation, using Form RD 1924-13, "Estimate and Certificate of Actual Cost."

13.11.2.3 Will deduct any discounts or rebates from invoices provided to the Owner for payment. Any discounts or rebates received on invoices already paid by the Owner will be refunded to the Owner or subtracted from any payment retainage.

13.11.2.4 Will not be entitled to receive payment for general overhead, profit, or general requirements, respectively, in excess of the amounts represented on the estimate of cost breakdown in accordance with clause 13.11.2.2.

13.11.2.5 Will, prior to receipt of final payment, provide the Owner and the Agency with a detailed breakdown of the actual cost compared to the estimated cost, using Form RD 1924-13. When required, the actual cost will be audited by a Certified Public Accountant, or Licensed Public Accountant licensed on or before December 31, 1970, who will provide an opinion concerning whether the actual construction costs present fairly the costs of construction in conformity with eligible construction costs as prescribed in Rural Development regulations.

13.11.2.6 Will, prior to receipt of final payment, provide the Owner and the Agency with documentation on all Form RD 1924-13 actual cost line items that are a minimum of fifteen percent (15%) higher or lower than the estimated costs. The documentation will provide justification for the deviations.

13.11.3 If and when an identity of interest exists between the Owner and Contractor, the Contractor is entitled to receive a builder's fee (general overhead and profit) only when the highest subcontract Sum is no more than fifty percent (50%) of the Contract Sum, and the total of the highest three Subcontract Sums is no more than seventy-five percent (75%) of the Contract Sum. Any payments made to the Contractor for a builder's fee to which contractor is not entitled will be refunded to the Owner or subtracted from any payment retainage.

13.12 ENVIRONMENTAL REQUIREMENTS

13.12.1 Mitigation Measures – The contractor shall comply with applicable mitigation measures established in the environmental assessment for the project. These may be obtained from the Agency representative.

13.12.2 The Contractor, when constructing a Project involving trenching, excavating, or other earth moving activity, shall comply with the following environmental constraints:

13.12.2.1 Endangered Species, Historic Preservation, Human Remains and Cultural Items, Hazardous Materials, and Paleontology – Any excavation or other earth moving activity by the Contractor that provides evidence of the presence of endangered or threatened species or their critical habitat, uncovers a historical or archaeological artifact, human remains or cultural items, hazardous

materials, a fossil or other paleontological materials will require the Contractor to:

.1 Temporarily stop work;

.2 Provide immediate notice to the Architect and the Agency, and in the case of potentially hazardous materials, provide immediate notice to local first responders and take such measures as necessary to protect the public and workers;

.3 Take reasonable measures as necessary to protect the discovered materials or protected resource;

.4 Abide by such direction as provided by the Agency, or Agencies responsible for resource protection or hazardous materials management; and

.5 Resume work only upon notice from the Architect and the Agency.

13.13 DEBARMENT AND SUSPENSION

13.13.1 The Contractor shall comply with the requirements of 7 C.F.R. part 3017, which pertains to the debarment or suspension of a person from participating in a Federal program or activity.

ARTICLE 15 CLAIMS AND DISPUTES

Add the words "may be" after "on the parties but" in the last sentence of subparagraph 15.2.5.

Replace the word "shall" with the word "may" in the first sentence, first occurrence of subparagraph 15.3.2

Add the following subparagraph: 15.4.1.2 The arbitrators will select a hearing location as close to the Owner's locale as possible.

SECTION 00 73 23

CERTIFICATION FOR CONTRACTS GRANTS AND LOANS - RD INSTRUCTION 1940-Q EXHIBIT A-1

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO. 1940-Q EXHIBIT A-1
CERTIFICATION FOR CONTRACTS, GRANTS, AND LOANS

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____ _____

(name) (date)

_____

(title)

oOo

SECTION 00 75 21

APPLICATION AND CERTIFICATE FOR PAYMENT - AIA DOCUMENTS G702 AND G703-1992

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE ARE:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NOS. G702 AND G703
APPLICATION AND CERTIFICATE FOR PAYMENT
1992 EDITION

AIA® Document G702® – 1992

Application and Certificate for Payment

TO OWNER:

PROJECT: Sample

APPLICATION NO: 000
PERIOD TO:
CONTRACT FOR: General Construction
CONTRACT DATE:
PROJECT NOS: / /

Distribution to:
OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
FIELD: ☐
OTHER : ☐

FROM CONTRACTOR:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703®, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	$0.00
2. NET CHANGE BY CHANGE ORDERS	$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	$0.00
5. RETAINAGE:	
a. 0 % of Completed Work (Column D + E on G703)	$0.00
b. 0 % of Stored Material (Column F on G703)	$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703)	$0.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)	$0.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	$0.00
8. CURRENT PAYMENT DUE	$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED $0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

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User Notes: (3B9ADA5C)

AIA® Document G703® – 1992

Continuation Sheet

AIA Document G702®, Application and Certification for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 000
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G÷C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00
	GRAND TOTAL	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**0.00%**	**$0.00**	**$0.00**

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User Notes: (3B9ADAAF)

SECTION 00 75 31

CONTRACT CHANGE ORDER - AIA DOCUMENT G701-2017

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. G701
CONTRACT CHANGE ORDER
2017 EDITION

AIA® Document G701® – 2017

Change Order

PROJECT: *(Name and address)*
Sample

CONTRACT INFORMATION:
Contract For: General Construction
Date:

CHANGE ORDER INFORMATION:
Change Order Number: 000
Date:

OWNER: *(Name and address)*

ARCHITECT: *(Name and address)*

CONTRACTOR: *(Name and address)*

THE CONTRACT IS CHANGED AS FOLLOWS:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

The original Contract Sum was	$	0.00
The net change by previously authorized Change Orders	$	0.00
The Contract Sum prior to this Change Order was	$	0.00
The Contract Sum will be increased by this Change Order in the amount of	$	0.00
The new Contract Sum including this Change Order will be	$	0.00

The Contract Time will be increased by Zero (0) days.
The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

ARCHITECT *(Firm name)*	CONTRACTOR *(Firm name)*	OWNER *(Firm name)*
SIGNATURE	SIGNATURE	SIGNATURE
PRINTED NAME AND TITLE	PRINTED NAME AND TITLE	PRINTED NAME AND TITLE
DATE	DATE	DATE

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User Notes: (3B9ADA46)

SECTION 00 76 14

CONSENT OF SURETY TO FINAL PAYMENT - AIA DOCUMENT G707-1994

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. G707
CONSENT OF SURETY TO FINAL PAYMENT
1994 EDITION

AIA® Document G707™ – 1994

Consent Of Surety to Final Payment

PROJECT: *(Name and address)*
Sample

ARCHITECT'S PROJECT NUMBER:

CONTRACT FOR: General Construction

CONTRACT DATED:

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
SURETY: ☐
OTHER: ☐

TO OWNER: *(Name and address)*

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(*Insert name and address of Surety*)

, SURETY,

on bond of
(Insert name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)

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User Notes: (3B9ADA56)

SECTION 00 76 31

CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS - AIA DOCUMENT G706-1994

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. G706
CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS
1994 EDITION

AIA® Document G706® – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: *(Name and address)* Sample	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐ ARCHITECT: ☐
	CONTRACT FOR: General Construction	CONTRACTOR: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	SURETY: ☐ OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☐ Yes ☒ No

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

3. Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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SECTION 00 76 37

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS - AIA DOCUMENT G706A-1994

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

THE AMERICAN INSTITUTE OF ARCHITECTS
DOCUMENT NO. G706A
CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS
1994 EDITION

AIA® Document G706®A – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*
Sample

TO OWNER: *(Name and address)*

ARCHITECT'S PROJECT NUMBER:

CONTRACT FOR: General Construction

CONTRACT DATED:

OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
SURETY: ☐
OTHER: ☐

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY: _____
(Signature of authorized representative)

_____
(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

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User Notes: (3B9ADA5E)

SECTION 00 77 11

BUILDER'S WARRANTY - FORM RD 1924-19

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
DOCUMENT NO. RD 1924-19
BUILDER'S WARRANTY

USDA
Form RD 1924-19
(Rev. 1-00)

FORM APPROVED
OMB NO. 0575-0042

BUILDER'S WARRANTY

Names and Address of Purchasers or Owners

Property

For good and valuable consideration, the undersigned Warrantor hereby warrants to the Purchasers or Owners identified above and to the successors or transferees, all of whom are hereinafter referred to as Owners that:

The building, including appurtenances located on the property identified above, is constructed or improved in substantial conformity with the drawings and specifications which have been accepted in writing by the respective USDA Agency. This warranty applies to all workmanship, materials, and the installation of equipment (including, but not limited to, the heating system, water heater, ranges and refrigerator).

The Owners shall give written notice to the Warrantor promptly after the discovery of any defective condition. Such written notice must be given to the Warrantor during the period of warranty. The period of warranty shall be (a) in the case of new construction or rehabilitation, one year from the date of initial occupancy of the completed or rehabilitated building, or (b) in the case of improvements made to an existing building owned by the Owners prior to the improvements being made, one year from the date of the completion of the work.

It is agreed and understood that this warranty shall apply only to those defective conditions of which the Warrantor has been given written notice during the period of warranty.

Warrantor further agrees that warrantor will take any necessary actions to correct such defective conditions within_____days of receipt of written notice. If such action is not taken within _____ days, the Owners may, at their option, contract with another party for the correction of the defects. Warrantor agrees to pay any expenses incurred by the Owners to correct defects covered by this warranty.

This warranty shall be in addition to, and in no way reduce, all other rights and privileges which such Owners may have under any other law or instrument, and shall be binding on the Warrantor notwithstanding any provision to the contrary contained in the contract of purchase or any other instrument executed by the Owners.

This warranty is executed, in part, for the purpose of inducing the United States Department of Agriculture, (USDA) to make, insure, or guarantee a loan on the Property.

If this warranty is signed by anyone other than the Warrantor, the person signing for the Warrantor represents and certifies that the person is authorized to execute same by the Warrantor and by the person's signature the Warrantor is bound under the terms and conditions of this warranty

NOTES: A- The warrantor must complete all three copies except dates, meet with owner to agree on notification period, sign and give to the Owner with the final request for payment.

Owner must meet with Warrantor to agree on warranty notification period and to date and sign the warranty, owner must retain original, and forward one copy to contractor, and one to the respective USDA Agency with the final request for payment.

B. This warranty shall be required in all cases involving new construction or rehabilitation of buildings including those built under contract, those built for sale without the respective USDA Agency's required construction inspections and those under conditional commitment procedures.

WARNING

Section 100 I of Title 18, United States Code provides: "Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully ... makes any false, fictitious or fraudulent statements or representation, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $250,000 or imprisoned not more than five years, or both."

According to the Paperwork Reduction Act of I 995, an agency may not conductor sponsor and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

In addition to the preceding warranty, the following items are covered by a company warranty or guarantee as follows:

Item	Serial & Model No.	Name and Address of Company	No. Yrs. or Mos. of Warranty
Heating System			
Kitchen Range			
Water Heater			
Refrigerator			
Manufactured Home			
_____ Other			
_____ Other			

NOTICE TO OWNERS: ANY NOTICE OF DEFECTIVE WORKMANSHIP, MATERIALS OR NONCONFORMITY MUST BE DELIVERED TO THE WARRANTOR NO LATER THAN

_____

(Warrantor shall insert date one (1) year from initial occupancy, date of conveyance of title or date of completion, whichever is applicable.) All plastic pipe used in this job will carry a 5 -year warranty from the date shown by the Warrantor above.

We have furnished the above company warranties or guarantees to the Owners for their use. If this warranty covers a manufactured home, we certify that the manufactured home property substantially complies with the plans and specifications and the manufactured home sustained no hidden damage during transportation and, if manufactured in separate sections, that the sections were properly joined and scaled according to the manufacturer's specifications.

The Warrantor has signed this warranty this _____ day of

_____ , _____

_____ _____ (SEAL)

(Warrantor's Address) Warrantor (Signature & Title)

Receipt of this warranty is acknowledged this _____ day of_____ , _____

_____

_____

Owner(s)

SECTION 00 80 11

TEMPORARY CONSTRUCTION SIGN - USDA RD

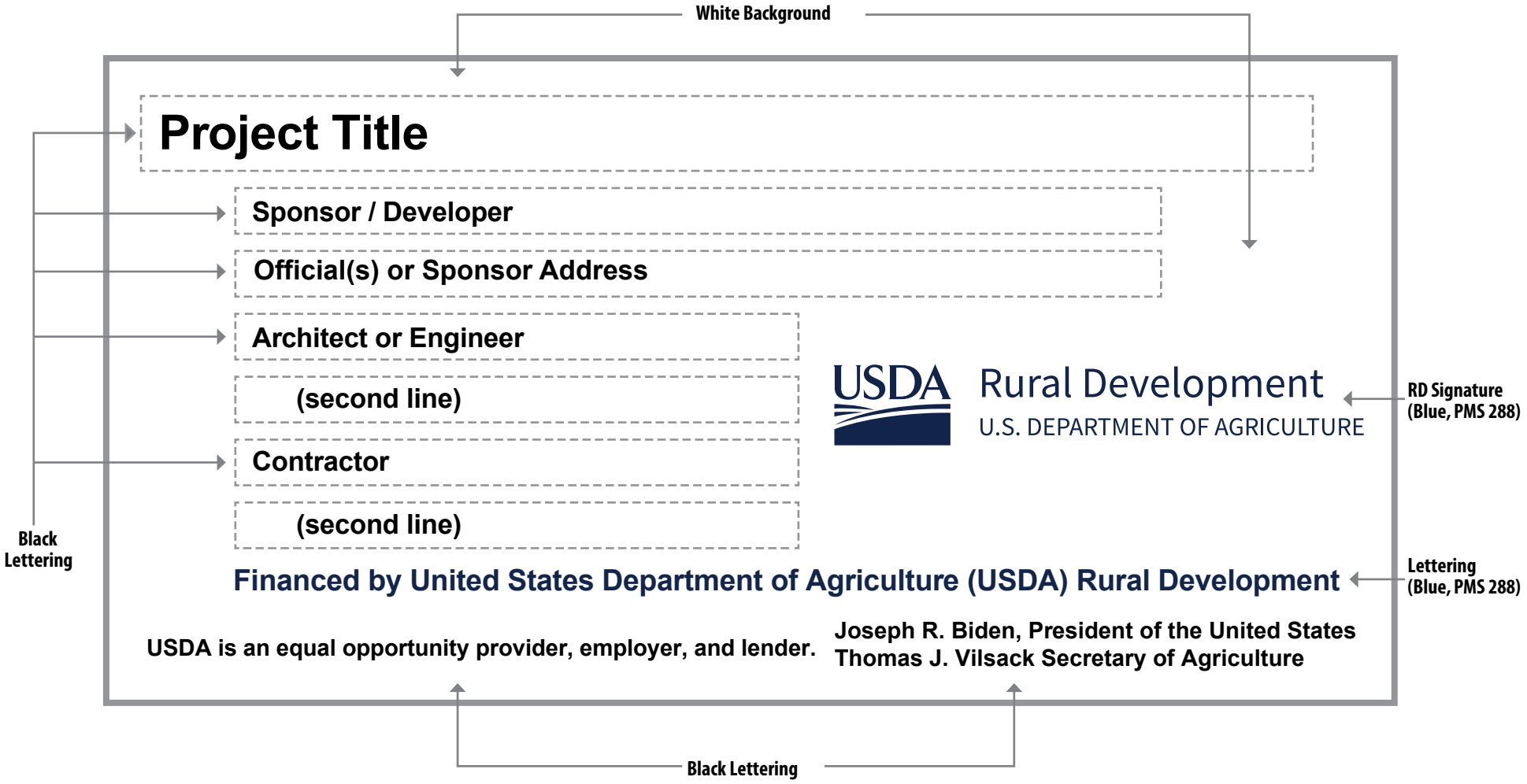
DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

U.S. DEPARTMENT OF AGRICULTURE - RURAL DEVELOPMENT
TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS

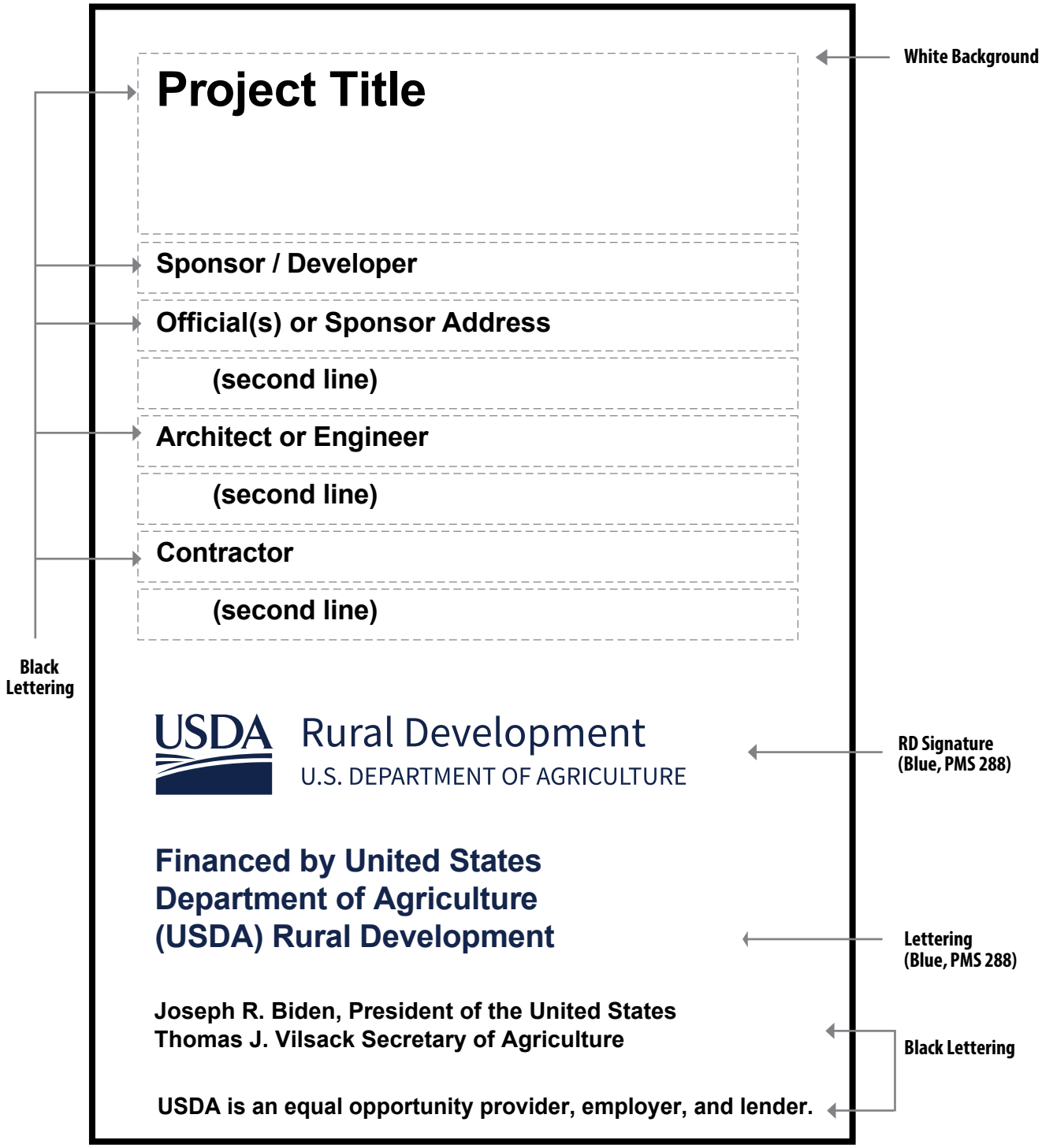
Recommended Fonts: Helvetica or Arial



SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4′ x 8′ x ¾″)
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS

Recommended Fonts: Helvetica or Arial



SIGN DIMENSIONS : 1200 mm x 1800 mm x 19 mm (approx. 4′ x 6′ x ¾″)
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 - GENERAL REQUIREMENTS - CONTRACT

1.01 SCOPE OF WORK

A. The work included under these Contract Documents consists of furnishing all items, materials, operations, or methods listed, indicated, or scheduled on the Drawings and/or in these Specifications, including all labor, materials, equipment, transportation, temporary facilities, services, and incidentals, necessary and required for the construction and completion of the project named on the title in accordance with the Contract Documents.

1.02 CONTRACT DOCUMENTS

A. Contract Specifications: The General Requirements shall apply to every division of these specifications. All specification instructions are directed to the Contractor and the inclusion of any work by mention, note, or itemizations, however brief, implies the Contractor shall provide same, unless specifically directed otherwise. Where a specific Contractor is named, said contractor shall be responsible for and provide work so designated. In specifying an item by manufacturer's name and/or catalog number, such items shall be provided complete with all the standard devices and accessories as indicated in the latest edition of the manufacturer's catalog or brochure published at date of invitation to submit proposals, unless specifically stated otherwise.

B. Contract Drawings: The Contract Drawings, or Plans, on which the Proposal and Contract are based, are listed on the cover sheet of the Plans.
   1. In accordance with AIA Document A201 "General Conditions Of The Contract For Construction", shop drawing submittals provided for review, form no part of the Contract Documents, being for the use of the Contractor, subcontractors, and/or suppliers and manufacturers only.

1.03 GENERAL CONDITIONS

A. AIA Document A201 "General Conditions Of The Contract For Construction", 2017 edition, hereafter referred to as the "AIA General Conditions", is hereby made a part of the Specifications. Contractor shall consult this document and become thoroughly familiar with its contents before submitting his proposal.
   1. Amendments to the AIA General Conditions: The AIA General Conditions are hereby supplemented and amended. Where any article is amended, deleted, or superseded hereby, unaltered provisions of such article shall remain in effect.
   2. Article 1 - Contract Documents: Supplement Article 1.1, Definitions, as follows:
      a. When a word, such as "approved", "proper", "satisfactory", "equal" and "as directed" is used, it implies such reference is to the Architect's specified review and directions.
      b. "Provide" means furnish and install.
   3. Article 3 - Contractor: Supplement Subparagraph 3.5.1, as follows:
      a. Contractor warrants to Owner and Architect that on receipt of notice from either of them, within the period of one (1) year following date of Substantial Completion, that for defects in materials and/or workmanship which have appeared in the work, the Contractor will promptly correct such defects to the state of condition originally required by the Contract Documents at Contractor's expense.
   4. Article 6 - Separate Contracts: Supplement Paragraph 6.2 Mutual Responsibility of Contractors, as follows:
      a. Contractor shall assume general coordination and direction of the Project. Each subcontractor shall cooperate with other subcontractors on the work and install his work in sequence to facilitate and not delay the installation of such other subcontractors. The Architect is not the coordinator, nor the expediter of the work of the various contracts.

1.04 SPECIAL PROVISIONS

A. Insurance:
   1. Contractor shall purchase and maintain insurances required by AIA General Conditions, Paragraph 11.1 in the following minimum amounts:
      a. Comprehensive General Liability $1,000,000.00 each person and $1,000,000.00 each occurrence.

b. Property Damage, $1,000,000.00 each occurrence, $1,000,000.00 aggregate.
c. Comprehensive Automobile Liability, $1,000,000.00 each person, $1,000,000.00 each occurrence, including Property Damage of $1,000,000.00 each occurrence.

2. Contractor shall require subcontractors to provide and maintain same insurance with same minimum limits.
3. Property Insurance (Builder's Risk) required under AIA General Conditions, Subparagraph 11.4.1, shall be purchased and maintained by the Contractor for the full insurable value of the entire work.

B. Wage Rate: Based on information received, prevailing wages do not apply to this job and, therefore, are not included.

C. Housing and Urban Development (HUD) Section 3 Requirements:
1. Based on information received, Section 3 Requirements do not apply to this job and, therefore, are not included.

D. Locations, Lines, and Levels:
1. The Owner shall furnish evidence of the locations of property lines, restrictions and a permanent benchmark. Contractor shall establish location of building on property and establish and maintain all other grades, line, levels and bench marks; check and compare all drawings, verifying grades, lines, levels and dimensions indicated thereon, and report all inconsistencies to the Architect and receive his instructions before commencing work.
2. The Contractor shall provide and maintain well-built batter boards at corners and establish and safeguard bench marks in at least two widely separated places and, as work progresses, establish bench marks at each building level and establish exact locations on partitions on rough floors as a guide to trades.

E. Building Permit:
1. The Contractor shall be responsible for obtaining and payment for a Building Permit.
2. The Contractor and/or his subcontractors shall be responsible for obtaining and paying for individual Plumbing, Electrical, Mechanical, and any other such permits and/or licenses as required by the local authorities.

F. Contractor shall be responsible for verifying measurements at the building before ordering material or doing work. No extra compensation will be allowed for difference between actual dimensions and measurements indicated on the drawings. Any differences found shall be submitted to the Architect and Owner for consideration before proceeding with the work.

G. The Environmental Site Assessment Report (Phase 1), which follows, is included for reference by the Contractor and other interested parties. Neither the Owner, nor the Architect, will assume any responsibility or liability for any information contained therein, or for assumptions made from said information.

H. Special Inspections: The Contractor, his subcontractors, and material suppliers shall comply with construction and fabrication provisions and allow all required inspections in accordance with the "Special Inspections" section of the prevailing Building Code(s).

I. Regulated Substances and Materials: No portion of the Construction Documents call for or require the use of the following regulated substances and Contractor shall not use products containing these regulated substances.:
1. Asbestos in any form.
2. Urea-formaldahyde foam insulation.
3. Any other chemical, material or substance the proposed or actual use of which is prohibited by local, State, or Federal regulation or law.

1.05 SPECIAL CONSTRUCTION REQUIREMENTS

A. The Contractor shall, by site visit prior to bid, determine the extent and nature of work involved in this project based on a visual inspection.

B. All reasonable attempts have been made to cover the scope of work involved. Should the Contractor discover during the course of construction, repairs, etc., that other conditions exist which might require extra work, he shall immediately call this to the attention of the Architect. Once the Architect, Owner, and Contractor are in agreement on the extent and nature of said extra work, the General Contractor shall within fourteen (14) calendar days provide an estimated cost for extra work. Once extra cost has been reviewed and accepted by Owner and Architect a Change Order shall be processed and signed by all parties. Extra cost work done by

the Contractor without following the aforementioned procedure or without providing the Owner with anticipated costs prior, will result in no payment for said work.

C. The Contractor shall at all times during the course of construction, and/or repair work protect all existing furnishings, finishes, construction, etc., which are to remain or have been delivered on site. Contractor shall be liable for losses for damage to items of that nature and shall repair to previous original condition or replace as situation dictates.

D. All fees for disposal are to be paid for by the Contractor. The site shall remain clean at all times from construction and demolition debris.

E. The Contractor shall fill and level with topsoil all areas of site rutted or cut up during the course of the Contract, then sod or seed as per the Contract Documents.

F. Existing sidewalks, street curbs, inlets, or other site improvements damaged during the course of the contract, but which previously were scheduled to remain, shall be replaced as necessary.

PART 2 - GENERAL REQUIREMENTS OF WORK

2.01 DRAWINGS

A. Do not scale Mechanical and Electrical Drawings for dimensions. Accurately lay-out such work from dimensions indicated on Contract Drawings. Consult Architect for interpretations concerning discrepancies or locations of equipment.

B. Consult all Drawings for miscellaneous items of each trade and provide same as indicated for a complete installation in accordance with manufacturer's product specifications.

2.02 SUBMITTALS

A. Submittals shall illustrate principal component parts, methods of assembly, mechanical and electrical connections, accessories and relationship to the building components. They shall consist of Product data, material data sheets, samples, and/or shop drawings required for the Architect's review that the correct products, assemblies, and quantities will be installed.

B. All Submittals shall be reviewed and approved – by stamp and/or signature - by the Contractor prior to submission to the Architect. Submittals received by the Architect and not first approved by the Contractor will be returned without review or processing.

C. Items generally requiring Submittals include, but are not limited to:
   1. Concrete Floor Fill.
   2. Masonry units, mortar materials, and accessories.
   3. Fabricated metal items, hangers, ledges, and shapes.
   4. Finish Carpentry; trim profiles.
   5. Thermal Protection.
   6. Weather Barriers
   7. Roofing Materials and accessories.
   8. Siding and Soffit Materials.
   9. Joint Protection.
   10. Wood Doors.
   11. Windows.
   12. Finish Hardware.
   13. Gypsum Board.
   14. Ceramic Tile and Accessories.
   15. Resilient Flooring and accessories.
   16. Paints, Stains, and Coatings.
   17. Signage.
   18. Toilet and Bathroom Accessories.
   19. Fire Protection Specialties.
   20. Postal Specialties.
   21. Closet and Storage Shelving.
   22. Residential Appliances.
   23. Playground Equipment
   24. Window Treatments.
   25. Residential Cabinets and Countertops.
   26. Plumbing Equipment, Fixtures, and accessories.
   27. HVAC Systems and accessories.

28. Electrical Systems, equipment, and fixtures.
29. Life Safety Systems.
30. Termite Control.
31. Site Furnishings.

2.03 SELECTION AND REVIEW OF MATERIALS

A. Where materials or equipment require the review of the Architect, secure such review before procurement.

B. Where colors and/or patterns are to be selected by Architect and/or the Owner, request such selection in ample time for procurement.

C. The aesthetic values of every material and installation, such as shape, proportion, texture, finish and color, will be an important consideration to the Owner and/or Architect, and decisions concerning same shall be final.

2.04 CONTRACTOR'S MEANS AND METHODS

A. The Architect shall not be responsible for, nor have control over, nor charge of construction means, procedures, methods, techniques, or for safety programs or precautions in conjunction with the project construction. The Contractor shall be solely responsible for these under the Construction Contract.

B. The Architect shall not be responsible for the Contractor's failure to carry out work in accordance with the Contract Documents. The Architect shall not have control over, nor in any way be responsible for, the Contractor's scheduling, or acts, or omissions of the Contractor, subcontractors, or their agents or employees, or of any other persons performing portions of the work.

C. The Contractor shall initiate, maintain, and supervise all safety precautions and programs in conjunction with the performance of the Contract, and shall be responsible for same.

D. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authorities dealing with safety of persons or property or their protection from damage, injury, or loss. The Contractor shall also give notices in accordance with the foregoing.

E. The Contractor shall construct and maintain temporary drainage and pump as necessary to keep site and excavations free from water, remove ice and snow as necessary for safety and proper execution of his work, provide cover and protection for his work from inclement weather and brace all construction to prevent damage from wind.

F. Keep covered all materials, cavities and holes subject to damage by falling materials or deposits of water, snow or ice.

G. Hot and Cold Weather protocols, where applicable or dictated by manufacturer's instructions, shall be adhered to.

H. Transport, handle, store, and erect materials in a manner to keep them free from damage.

I. Support no runways, ramps, or construction equipment on, or transport over, any surface or assembly subject to displacement, disfigurement, or other damage.

J. Protect work in place that requires job-finishing, until such finishing has been completed.

K. Protect work previously placed by suitable coverings during installation of subsequent work. Clean off any foreign materials accidentally deposited on finish surfaces and, where such would stain, corrode or otherwise disfigure, clean immediately with material that will not damage finished work.

L. Where finished floors in place are subject to ongoing construction damage, cover traffic areas with suitable protective coverings until project acceptance.

2.05 TEMPORARY EQUIPMENT

A. Contractor shall provide temporary hoists, ladders, scaffolding, shoring, bracing, runways, walks, ramps, and other equipment or construction, required for proper progress of his work and remove same at completion of work.

2.06 APPROPRIATE MATERIALS AND INSTALLATION

A. Prior to submitting proposal, Contractor, his subcontractors, and material suppliers shall review the Contract Documents and, should any material and/or its installation be indicated or specified

in a manner not approved by the material manufacturer, notify the Architect and receive his instructions. Failing to do so, Contractor shall provide other equivalent materials suitable for the installation as selected by the Architect, or if not discovered until after installation, Contractor shall replace materials with such other equivalent, suitable and selected materials, and in either event, at no added cost to Owner.

B. All materials shall be new unless otherwise specifically covered by the Contract Documents or approved by the Owner.

C. Materials or products specified by name of manufacturer, brand or trade name, and/or catalog reference in the Contract Documents, shall be deemed to establish standards of quality and style, and not to be proprietary in nature. Any article or material, which will adequately perform the duties imposed by the general design, will be considered equal, providing it is of equal substance and function.

D. If Contractor proposes construction methods other than those shown or specified, complete drawings and engineering notes shall accompany the request. Contractor shall follow the Submittal process as outlined, for review by the Architect, Architect's consultants, and/or Owner's consultants.

2.07 RECEIPT AND STORAGE OF MATERIALS

A. On receipt of materials check for in-transit damage promptly, should it be necessary to replace any damaged materials prior to installation.

B. Deliver materials and equipment to project site in manufacturer’s original packaging. Keep labels intact until final cleaning. Where items are to be job-assembled, label, tag, mark or otherwise properly identify each assembled component part until incorporated in the work.

C. Store materials in a manner to prevent deterioration, staining, soiling and intrusion of foreign materials. Provide waterproof, well-ventilated enclosures for materials subject to deterioration by dampness. Adequately protect those materials subject to damage by freezing and frost.

2.08 CLOSING-IN WORK

A. Contractor shall notify his subcontractors, Owner and all contractors and subcontractors under separate contract to the Owner, when he is ready for them to install their portions of the work and see that they comply within a reasonable period of time. Do not enclose nor cover any piping, wiring, ducts, equipment, or other items until proper tests and inspections have been made by Authorities having Jurisdiction, or observed by the Architect.

2.09 WARRANTIES

A. Prior to being eligible for final payment, Contractor shall deliver to Architect, all Manufacturer’s and special warranties specified in the Contract Documents for materials, equipment, and installations. These shall be compiled in a book and must include the name, address and phone number of the installation subcontractor, the name, address and phone number of the supplier and the printed warranty on at each model of each of the following items:
   1. Water Heaters.
   2. Heating and Air Conditioning systems.
   3. Appliances; including, but not limited to: range, range hood, refrigerator, microwave, and washers and dryers.
   4. Siding and Soffit materials.
   5. Gutters and Downspouts.
   6. Roofing system.

B. The Contractor shall provide a one (1) year warranty (Guarantee) from the date of Final Completion and acceptance by the Owner, during which time he shall make needed repairs and replacements of defective workmanship or materials, or correction of non-conforming work as outlined in paragraph 12.2.2 of the Contract General Conditions.

2.10 TEMPORARY FACILITIES

A. Field Office: Contractor shall erect and maintain in good condition during progress of work a weatherproof field office building (adequate size trailer also acceptable) for use of General Contractor and Architect’s Representative. Provide such building with heat, electric light, telephone and lockable door.

B. Toilet Facilities: Contractor shall provide temporary, exterior, completely closed latrine. Provide necessary supplies and keep clean at all times.

C. Electrical Service: Contractor shall arrange and pay for temporary metering electrical service to his Field Office and Project Site sufficient for his needs throughout the construction process. Use of electrical service in buildings is not permitted, unless previously agreed to by the Owner. Provide lights and electrical extensions to locations necessary for proper and safe operations and permit other contractors to use and remove the same at his own expense. The General Contractor shall pay for all temporary electrical service consumed from start of project though Final Closeout.

D. Water: Contractor may use water from existing hose bibbs or extend lines therefrom at their own expense. Contractor shall pay for and provide a temporary water meter at the connection and shall pay for all water consumed. Contractor is fully responsible for monitoring all water consumption to prevent “wasteful” use and to prevent connection/use from other connection locations.

E. Heat: Contractor shall provide auxiliary heat necessary to prevent damage from dampness and cold and to provide proper climate conditions as necessary to prohibit damage to installed materials. Contractor shall pay for all fuels (i.e., propane, LP, Natural gas, etc.) and/or electrical service consumed for heating until building is completed.

F. Telephone: Contractor shall provide temporary telephone for use by all trades and by Architect. Contractor shall pay for all local calls, but shall be reimbursed for long-distance calls by those making same.

PART 3 - PROJECT CLOSE OUT

3.01 GENERAL

A. Owner may place and install equipment during the progress of the building or occupy portions finished before the entire completion of the work. Such occupancy will not in any way evidence completion or acceptance of any part of the work.

B. Record Drawings: Maintain a complete set of blue/black-line prints of Contract Drawings, Specifications, and shop drawings for record mark-up purposes throughout the Contract Time. Mark-up drawings and specifications during course of the work to show changes and actual installation conditions, sufficient to form a complete record for Owner’s purposes. Give particular attention to work which will be concealed and difficult to measure and record at a later date, and work which may require servicing or replacement during life of project. Require entities marking prints to sign and date each mark-up. Bind prints into manageable sets, with durable paper covers, appropriately labeled.

C. Maintenance Manuals: Provide 3-ring vinyl-covered binders containing required maintenance manuals, properly identified and indexed. Include operating and maintenance instructions, expanded to cover emergencies, spare parts, warranties, inspection procedures, diagrams, safety, security, and similar appropriate data for each system or equipment item.

3.02 ENERGY AUDIT TESTING

A. Perform testing only as required by local authorities for compliance with the International Energy Conservation Code (IECC- current edition), or where included as part of Sustainable Construction design or certification.

3.03 INSPECTION - PREREQUISITES

A. Comply with the General Conditions and complete the following before requesting Architect’s inspection of the work, or designated portion thereof, for substantial completion.

B. Submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, and similar required documentation for specific units of work, enabling Owner’s un-restricted occupancy and use.

C. Submit record documentation, maintenance manuals, tools, spare parts, keys, and similar operational items.

D. Operator Instructions: Require each Installer of systems requiring continued operation/ maintenance by Owner’s maintenance personnel, to provide on-location instruction to Owner’s personnel, sufficient to ensure safe, secure, efficient, non-failing utilization and operation of systems.

E. Final Cleaning: At closeout time, clean or re-clean entire work to normal level for “first class” maintenance/cleaning of building projects of a similar nature. Remove non-permanent protection and labels, polish glass, clean exposed finishes, touch-up minor finish damage, clean or replace filters of mechanical systems, remove debris and broom-clean non-occupied spaces, sanitize plumbing/food service facilities, clean light fixtures and replace burned-out/dimmed lamps, sweep and wash paved areas, police yards and grounds, and perform similar cleanup operations needed to produce a “clean” condition as judged by Architect.

3.04 INSPECTION PROCEDURES

A. Upon receipt of Contractor’s request, Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled.

B. Following initial inspection, Architect will either prepare a Certificate of Substantial Completion, or advise Contractor of work which must be performed prior to issuance of said certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed initial inspection will form initial “punch-list” for final acceptance.

C. Re-inspection Procedure: Upon receipt of Contractor’s notice that work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect work. Upon completion of re-inspection, Architect will either recommend final acceptance and final payment, or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

END OF SECTION

SECTION 01 00 10

GEOTECHNICAL REPORT

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

GEOTECHNICAL REPORT
ECS Southwest, LLP
30 Pages Total
10/ 29/ 2024

ECS Southwest, LLP

Geotechnical Engineering Report

River Bend Villas Storm Shelter

100 E Country Club Road
Chickasha, Oklahoma

ECS Project Number 58:1973

October 29, 2024

ECS SOUTHWEST, LLP
"One Firm. One Mission."
Geotechnical • Construction Materials • Environmental • Facilities

October 29, 2024

Mr. Dean L. Carlson, P.E.
Carlson Consulting Engineers, Inc.
7068 Ledgestone Commons
Bartlett, TN 38133

ECS Project No. 58:1973

Reference: Geotechnical Engineering Report
River Bend Villas Storm Shelter
100 E Country Club Road
Chickasha, Oklahoma

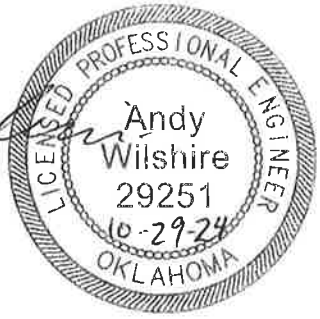
Dear Mr. Carlson:

ECS Southwest (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to Carlson Consulting Engineers, Inc. during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Southwest, LLP



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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram
- Generalized Subsurface Soil Profile A-A'
- Clay Plug Detail at Trench

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Subsurface Exploration Procedures: Standard Penetration Testing (SPT)
- Boring Logs B-01 to B-02

Appendix C – Laboratory Testing

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EXECUTIVE SUMMARY

This Executive Summary is intended as a very brief overview of the primary geotechnical conditions that are expected to affect design and construction. The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The planned structure is understood to consist of an approximately 450 square feet storm shelter building located within the River Bend Villas complex. Associated concrete sidewalks will also be constructed to the south of the proposed storm shelter. We have assumed the structure will be single-story, above grade, and consist of structural steel, masonry, and/or concrete construction. Anticipated maximum structural loads are assumed to be column and wall loading of 60 kips and 4 kips/foot, respectively. We have also assumed the structure will have a finished floor elevation within 2 feet of existing grades.

- The planned structure may be supported on a shallow foundation system consisting of spread footings with conventional slab on grade, provided the subgrade is improved and prepared as outlined in this report. Should improving the subgrade in order to use conventional spread footings and slab on grade be cost prohibitive, a reinforced slab with grade beams (monolithic slab/BRAB) or post-tensioned slab on grade may be used on the existing soils.

- The soils encountered at the site are moderately expansive. Therefore, subgrade improvements will be necessary to reduce the potential for vertical movements. Specific details on addressing these expansive clay soils are presented in the body of the report.

- It is recommended that ECS conduct a geotechnical review of the project plans (prior to issuance for construction) to check to see that ECS' geotechnical recommendations have been properly interpreted and implemented.

- To prevent misinterpretation of ECS recommendations, ECS should be retained to perform quality control testing and documentation during construction of the earthwork and foundations for the project.

1.0 INTRODUCTION

The purpose of this study was to provide geotechnical information for the design and construction of the foundations and floor slabs for the planned River Bend Villas Storm Shelters project located at 100 E Country Club Road in Chickasha, Oklahoma. The recommendations developed for this report are based on project information provided by the client.

Our services were provided in accordance with our Proposal No. 58:3788-GP, dated September 24, 2024, authorized by the client by providing the signed contract that same date, which includes our agreed to terms and conditions of service.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- A final copy of our soil test borings.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills.
- Recommended foundation types.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE

The project is located at 100 E Country Club Road, Chickasha, Oklahoma. The location is depicted in Figure 2.1.1 as shown below.

Figure 2.1.1. Site Location

ECS reviewed aerial photographs of the subject site dated 1995 to 2023. Since February 1995, the site has consisted of a grassed area located within the River Bend Villas apartment complex. At some time between February 1995 and August 2003, it appears a basketball court, playground and associated sidewalk were constructed in various locations surrounding the proposed storm shelter. Since that time, the site has remained relatively unchanged.

Currently the site includes a grassed area within the existing River Bend Villas apartment complex. The topography of the site appears relatively flat with boring elevations of approximately 1140 feet. The ground surface elevations noted in this report were obtained from Google Earth and have been rounded to the nearest foot.

2.2 Proposed Construction

The following information explains our understanding of the planned development including the proposed buildings and related infrastructure.

SUBJECT	DESIGN INFORMATION / ASSUMPTIONS
Building Footprints	450 square feet in plan view
# of Stories (assumed)	Single-story, above grade
Usage	Storm shelter
Framing (assumed)	Structural steel, masonry, and/or concrete frame
Column Loads (assumed)	60 kips (Full Dead and Live Load) maximum

SUBJECT	DESIGN INFORMATION / ASSUMPTIONS
Wall Loads (assumed)	4 kips per linear foot (klf) maximum
Lowest Finish Floor Elevation	Unknown, assumed no more than 2 feet below or above existing grades

If ECS' understanding of the project is not *correct, especially if the structural loads are different, please contact ECS so that we may review these changes and revise our recommendations, as appropriate.*

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedures. Our scope of work included drilling two (2) borings. The boring locations were selected by ECS and identified in the field by the drill crew using boring GPS coordinates generated by ECS using the client provided site plan. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A.

3.1 Subsurface Characterization

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For specific subsurface information refer to the boring logs in Appendix B.

Approximate Depth of Bottom of Strata Below Grade	Elevation[(1)] (ft)	Stratum	Material Description	Consistency / Density
6 inches	---	Cover	Topsoil	--
25[(2)] feet	Elevation 1115	I	(CL) LEAN CLAY, (SC) CLAYEY SAND, and (SW-SC) WELL-GRADED SAND WITH CLAY, various shades of brown, tan, red and gray	Stiff to Very Stiff / Loose to Dense

Notes:

(1) Elevations are approximate.
(2) Depth to deepest boring termination depth.

Please refer to the attached boring logs and laboratory data summary for this field exploration for a more detailed description of the subsurface conditions encountered in the borings as the stratification descriptions above are generalized for presentation purposes.

3.2 Groundwater Observations

Water levels were measured in our boring logs in Appendix B. Groundwater was observed in both borings at the time of our exploration at the approximate depths of 15 to 18 feet below existing grades, corresponding to El 1125 and EL 1122.

Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

3.3 Laboratory Testing

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples. Testing performed include moisture content, Atterberg Limits, percent passing the No. 200 sieve, and total soluble sulfate.

Samples were visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

4.0 DESIGN RECOMMENDATIONS

4.1 Potential Vertical Movements

The intent of recommendations contained in this report are provided in order to reduce the potential risk associated with the shrink/swell tendencies of the on-site expansive soil, should a conventional shallow footing foundation and slab on grade be used.

The majority of clay soils encountered in the borings have a moderate expansion potential. Based on our Atterberg limits laboratory test results and experience with similar soils, we estimate potential vertical soil movements (PVM) of the moderate expansive soils encountered in the borings of up to about 1 ½ inches, based on dry conditions. These potential movements reflect moisture changes in the soil that can occur over the life of the structure and after construction is complete. The actual movements could be greater if poor drainage, ponded water, and/or other unusual sources of moisture are allowed to saturate the solid beneath the structure after construction.

4.2 Subgrade Improvements

In order to reduce the risk associated with future movements due to expansion potential, we recommend the following general building pad subgrade improvements to reduce the PVM to approximately 1 inch. Please note, these recommendations are the minimum requirements to reduce potential movements due to expansion potential, should conventional spread footings and slab on grade be used. If a monolithic slab/BRAB slab or post-tensioned slab be used to support the structure, subgrade improvements are not required as those systems are design to withstand the potential vertical movements.

Options	Depth of Select Fill (feet)	Depth of Moisture Conditioning (feet)	Total Depth of Improved Zone (feet)	Estimated PVM (inch)
Option 1	1	---	1	1

Options	Depth of Select Fill (feet)	Depth of Moisture Conditioning (feet)	Total Depth of Improved Zone (feet)	Estimated PVM (inch)
Option 2	--	1.5	1.5	1

The subgrade improvements should extend at least 5 feet beyond the edge of the building pads and include any flatwork sensitive to movements such as sidewalks or pavements. Exterior perimeter footing/grade beam backfill should consist of moisture conditioned clay soil. Please refer to the "Material Specifications" section of this report for more details.

These design parameters assume that positive drainage will be provided away from the structures and with moderate irrigation of surrounding lawn and planter areas with no excessive wetting or drying of soils adjacent to the foundations. Greater potential movements could occur with extreme wetting or drying of the soils due to ponding of water, plumbing leaks or lack of irrigation. Recommendations for earthwork operations are found in the "Site Construction Recommendations" portion of this report

4.3 FOUNDATIONS

Provided the subgrades are improved and structural fills are prepared as recommended in this report, the proposed structure can be supported by conventional shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the following parameters:

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure(1)	2,000 psf	2,000 psf
Bearing Soil Material	Natural Soil or Compacted Fill	Natural Soil or Compacted Fill
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade) (2)	24 inches	24 inches
Estimated Total Settlement (3)	Less than 1- inch	Less than 1- inch
Estimated Differential Settlement (4)	Less than ¾ inches between columns	Less than ¾ inches per 30 linear feet

Notes:

(1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) For bearing considerations and frost penetration requirements.
(3) Based on our assumed structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
(4) Based on maximum loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

Monolithic Slab/BRAB: Should improving the subgrade in order to use conventional shallow foundations and slab on grade be cost prohibitive, foundations consisting of a reinforced slab with grade beams (monolithic slab/BRAB) under load bearing walls could also be used to support the proposed structures.

The reinforced slab may be designed using a soil modulus of subgrade reaction of 125 pci and the grade beams or spread footings may be designed for a net allowable soil bearing pressure of 2,000 psf bearing on newly placed and compacted select fill or natural soils that were encountered in the borings.

If a monolithic slab is used this system may be designed with conventional reinforcing. The slab should be designed in accordance with WRI/CRSI "Design Slab-On-Ground Foundations". The structure can be supported on a monolithic/waffle slab and grade beam foundation system designed in accordance with the following information:

Design Parameter	BRAB/WRI Slab
Allowable Bearing Pressure	2,000 psf
Design PI	25
Climatic Rating (Cw)	20
Soil-Climate Support Index (1-C)	0.2

Post-Tensioned Slab: In lieu of a BRAB/WRI slab, a post-tensioned slab on grade could also be used on the existing soils without subgrade improvement. The following design parameters are recommended for the Post-Tensioning Institute's slab-on-grade design method (3rd Edition) should that method be chosen:

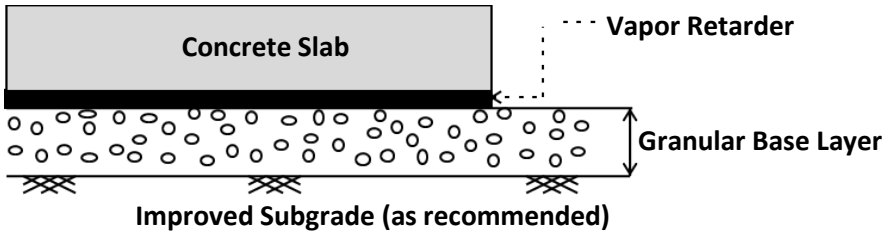
Center Lift		Edge Lift	
e_m (feet)	Y_m (inches)	e_m (feet)	Y_m (inches)
9.0	1.5	5.0	2.0

Potential Undercuts: Due to the presence of relatively loose soils, DCP testing of the bearing soils by ECS representatives should be incorporated during construction to verify their suitability for supporting shallow foundations. If loose or inadequate soils are observed at the footing bearing elevations, these soils should be undercut and removed. Any undercut should be backfilled with lean concrete ($f'_c \geq$ 1,000 psi at 28 days) up to the original design bottom of footing elevation; the original footing shall be constructed on top of the hardened lean concrete.

4.4 SLAB ON GRADE

A conventional slab on grade may be used provided it is supported on subgrades improved as presented in this report.

The following graphic depicts our soil-supported slab recommendations:



1. Concrete Slab Thickness: 4 inches minimum
2. Concrete Slab Strength: 3,000 psi minimum
3. Drainage Layer Thickness: 4 inches minimum
4. Drainage Layer Material: GRAVEL (GP, GW)
5. Subgrade compacted per the earthwork recommendations provided.

Subgrade Modulus: Provided subgrades are prepared as, discussed herein, the slab may be designed assuming a modulus of subgrade reaction, k1 of 125 pci (lbs/cu. inch).

Vapor Retarder: Before the placement of concrete, a vapor retarder may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor retarder is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor retarder.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

4.5 Building Perimeter Conditions

Soils placed along the exterior of the foundations should consist of fine-grained soils encountered on site, placed and compacted in accordance with the "Fill Placement" section of this report. The purpose of this clay backfill is to reduce the opportunity for surface or subsurface water infiltration beneath the structure. Additionally, where lateral penetrations (for utilities) into or below the structure occur, a clay plug (or suitable synthetic alternative) should be placed at the building line to reduce the opportunity for infiltrating water, regardless of the backfill material. A clay plug detail is included in Appendix A.

Positive drainage away from the structure should also be provided. Additionally, irrigation of lawn and landscaped areas should be moderate, with no excessive wetting or drying of soils around the perimeter of the structures allowed. Trees and bushes/shrubs planted near the perimeter of the structures can withdraw large amounts of water from the soils and should be planted at least their anticipated mature height away from the building.

Where flatwork is placed against or near the structure, a positive seal must be installed and adequately maintained to limit water intrusion. Down spouts and gutters should be used to collect and distribute water at least 10 feet away from the structure.

Routine maintenance of the building perimeter condition is necessary so that the recommendations contained in this report are followed and maintained. Greater potential vertical movements could occur with extreme wetting or drying of the soils due to poor drainage, ponding of water, plumbing leaks, lack of irrigation, and/or lack of routine maintenance, etc.

4.6 Seismic Design Considerations

Seismic Site Classification: The International Building Code (IBC) 2018 requires site classification for seismic design based on ASCE 7-16 and the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity (v_s) method and the Standard Penetration Resistance (N-value) method. The Standard Penetration Resistance (N-value) method was used in classifying this site.

SEISMIC SITE CLASSIFICATION			
Site Class	**Soil Profile Name**	**Shear Wave Velocity, Vs, (ft./s)**	**N value (bpf)**
A	Hard Rock	Vs > 5,000 fps	N/A
B	Rock	2,500 < Vs ≤ 5,000 fps	N/A
C	Very dense soil and soft rock	1,200 < Vs ≤ 2,500 fps	>50
D	Stiff Soil Profile	600 ≤ Vs ≤ 1,200 fps	15 to 60
E	Soft Soil Profile	Vs < 600 fps	<15

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "D" as shown in the preceding table.

Ground Motion Parameters: In addition to the seismic site classification, ECS has determined the design spectral response acceleration parameters following the IBC/ASCE 7-16 methodology. The Mapped Reponses were estimated from the U.S. Seismic Design Maps website https://seismicmaps.org/. The design responses for the short (0.2 sec, S_{DS}) and 1-second period (S_{D1}) are noted in bold at the far right end of the following table.

GROUND MOTION PARAMETERS [IBC 2015/2018 Method]								
Period (sec)	**Mapped Spectral Response Accelerations (g)**		**Values of Site Coefficient for Site Class**		**Maximum Spectral Response Acceleration Adjusted for Site Class (g)**		**Design Spectral Response Acceleration (g)**	
Reference	Figures 1613.3.1 (1) & (2)		Tables 1613.3.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40	
0.2	S_S	0.393	F_a	1.485	$S_{MS}=F_aS_s$	0.584	$S_{DS}=2/3\ S_{MS}$	0.389
1.0	S_1	0.096	F_v	2.4	$S_{M1}=F_vS_1$	0.231	$S_{D1}=2/3\ S_{M1}$	0.154

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, we can provide additional testing methods that may yield more favorable results.

4.7 Corrosion Potential

Total soluble sulfate was performed on one composite sample to provide an estimation of the materials' corrosion potential. The test results are presented in the following table:

Sample	Location / Depth	Sulfate (mg/Kg)
Composite 1	B-01 & B-02 0 to 5 ft.	<200

Sulfate test results indicate the soil sulfate exposure to concrete to be negligible. Type I Portland cement concrete may be used for this site. Cathodic protection or a polyethylene coating or wrap should be used to protect ferrous metal pipes and the manufacturer's corrosion specifications should be followed. These test results should be used to determine the corrosion potential of on-site soils when in contact with various underground materials to be used in construction.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 Subgrade Preparation

In a moist and undisturbed state, the upper portion of the majority of the natural soil at the site should provide good subgrade support for fill placement and construction operations; the existing fills should be addressed as recommended in this report. However, when wet or very dry, this soil will degrade quickly with disturbance from contractor operations. Therefore, good site drainage should be maintained during earthwork operations, which should help maintain the integrity of the soil.

The surface of the site should be kept properly graded in order to enhance drainage of the surface water away from the proposed structures during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern, where possible.

The soils at the site are moisture and disturbance sensitive, and contain fines which are considered moderately erodible. Therefore, the contractor should carefully plan his operation to limit exposure of the subgrade to weather and construction equipment traffic, and provide and maintain good site drainage during earthwork operations. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current jurisdictional requirements.

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of removing all existing structures, foundations, and utilities, and stripping all existing gravels/pavements, vegetation, topsoil, loose, poorly compacted or deleterious existing soils, existing fill (as defined in this report), and any soft or yielding materials from the 5-foot expanded building area, and any areas receiving new fill. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. ECS should be retained to verify that topsoil and yielding surficial materials have been removed prior to the placement of structural fill or construction of structures.

5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be extensively proofrolled with construction equipment having a minimum axle load of 10 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are yielding or "pumping" subgrade those areas should be repaired prior to the placement of any subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed yielding materials, and to assist in the evaluation of appropriate remedial actions to repair the subgrade.

5.2 Earthwork Operations

The following sections describe requirements for fill placement and earthwork testing.

5.2.1 Fill Placement

Prior to placement of any new fill or other construction material, subgrades should be scarified to a minimum depth of 8 inches, moisture conditioned to a workable moisture content at or above the optimum value and compacted to at least 95% of Maximum Dry Density as obtained by the Standard Proctor Method (ASTM D-698).

Fill material in the building pad areas should consist of select fill or meet the requirements of the chosen subgrade improvement option. Details regarding select fill and the subgrade improvement options are presented in the "Materials Specifications" section of this report. Fill material outside the building pad area, which includes pavement areas, should consist of materials similar to or less plastic than those encountered in our borings. Fill material should be moisture conditioned at or above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtained by the Standard Proctor Method (ASTM D-698).

Soil moisture levels should be preserved (by various methods that can include covering with plastic, watering, etc.) until new fill, pavements, or slabs are placed. Fill soils should be placed in maximum 8 inch loose lifts for mass grading operations and maximum 4 inches for trench type excavations where walk behind or "jumping jack" compaction equipment is used.

Upon completion of the filling operations, care should be taken to maintain the soil moisture content prior to construction of floor slabs and/or pavements. If the soil becomes desiccated, the affected material should be removed and replaced, or these materials should be scarified, moisture conditioned and recompacted.

5.2.2 Earthwork Testing

Field density and moisture tests should be performed by ECS on each lift as necessary to verify that adequate compaction is achieved. One test per 2,500 square feet per lift is recommended in the future building and pavement areas (two tests minimum per lift). Utility trench backfill should be

tested at a rate of one test per lift per each 150 linear feet of trench (two tests minimum per lift). Certain jurisdictional requirements may require testing in addition to that noted previously. Therefore, these recommendations should be reviewed and the more stringent specifications should be followed.

5.3 MATERIAL SPECIFICATIONS

The recommendations provided in the "Subgrade Improvements" portion of this report outline the subgrade improvement options required in order to achieve the desired PVM. This section is intended to outline the material requirements of those recommendations.

5.3.1 Select Fill

For the purposes of this report, select fill may consist of imported material that is free of debris and organic matter, has a Plasticity Index (PI) less than 15, greater than 50% passing the No. 200 sieve, and a maximum particle size of 2 inches. The PI and gradation of this material should be evaluated by ECS at the time of construction. This material should be placed and compacted at workable moisture contents at or above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698).

5.3.2 Moisture Conditioning

Within the planned pads and flatwork sensitive to movements, moisture conditioning should be performed as outlined in this report. Reworking of the existing clays, and new clayey fill, is performed to increase the moisture of the clays to a level that reduces their ability to absorb additional water that could result in post-construction heave in these soils.

The moisture conditioning should consist of undercutting, scarifying and/or reworking, as required to achieve the required subgrade improvement. During this process, the clay should receive adequate amounts of water to attain an even moisture content of at least +2% or higher above the optimum moisture content. During the addition of water, the soils should be adequately mixed, and re-mixed, to achieve an even distribution of the moisture throughout the soil mass. Once appropriately mixed, the material should be compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698).

Outside of the moisture conditioned zone and where clay is used to establish site grades, we recommend that this material be placed and compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698). These soils should be free of deleterious materials, and be reworked to achieve an even distribution of water in order to achieve a moisture content of ±2% of the material optimum moisture content.

Care should be taken to verify and preserve the specified moisture levels in the reworked clays prior to placement of non-expansive fill.

5.3.3 Lime Stabilized On Site Clay

In lieu of importing select fill, as defined above, the on-site clay soils may be lime stabilized. The advantage of lime stabilization over untreated material is that the nature of the stabilized soil is such that, once placed, it limits water infiltration into the subgrade and promotes surface drainage.

A preliminary lime application rate of 4% hydrated lime by dry weight of clay should be used for budgeting purposes. The lime stabilized clay should be comprehensively mixed and appropriately mellowed for at least 48 hours and tested for gradation and lime reactivity (pH) prior to final placement and compaction.

Once appropriately mixed and mellowed, this material may then be placed and compacted at workable moisture contents at least +3% above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtain using the Standard Proctor Method (ASTM D-698).

5.4 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

Slab Subgrade Verification: Prior to placement of a granular base/drainage layer, the subgrade should be improved/prepared in accordance with recommendations provided in this report as appropriate for the chosen system.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Utility cuts should not be left open for more than 24 hours or during times when precipitation is anticipated and should be properly backfilled. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

Utility Backfilling: Backfilling should be accomplished with properly compacted on-site soils, rather than granular materials. If granular materials are used, a utility trench cut-off at the building line is recommended to help prevent water from migrating through the utility trench backfill to beneath the proposed structure. If used, the granular bedding material (often AASHTO #57 stone) should be at least 4 inches thick, but not less than that specified by the civil engineer's project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for fill placement provided in this report.

Excavation Safety: All excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project. In fulfilling our obligations and responsibilities, as listed in the proposal, we performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

The description of the proposed project is based on information provided to ECS by the project design team. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required.

We recommend that ECS review the project's plans and specifications so that we may evaluate those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendations. We recommend that the Owner retain ECS throughout construction.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Drawings & Reports

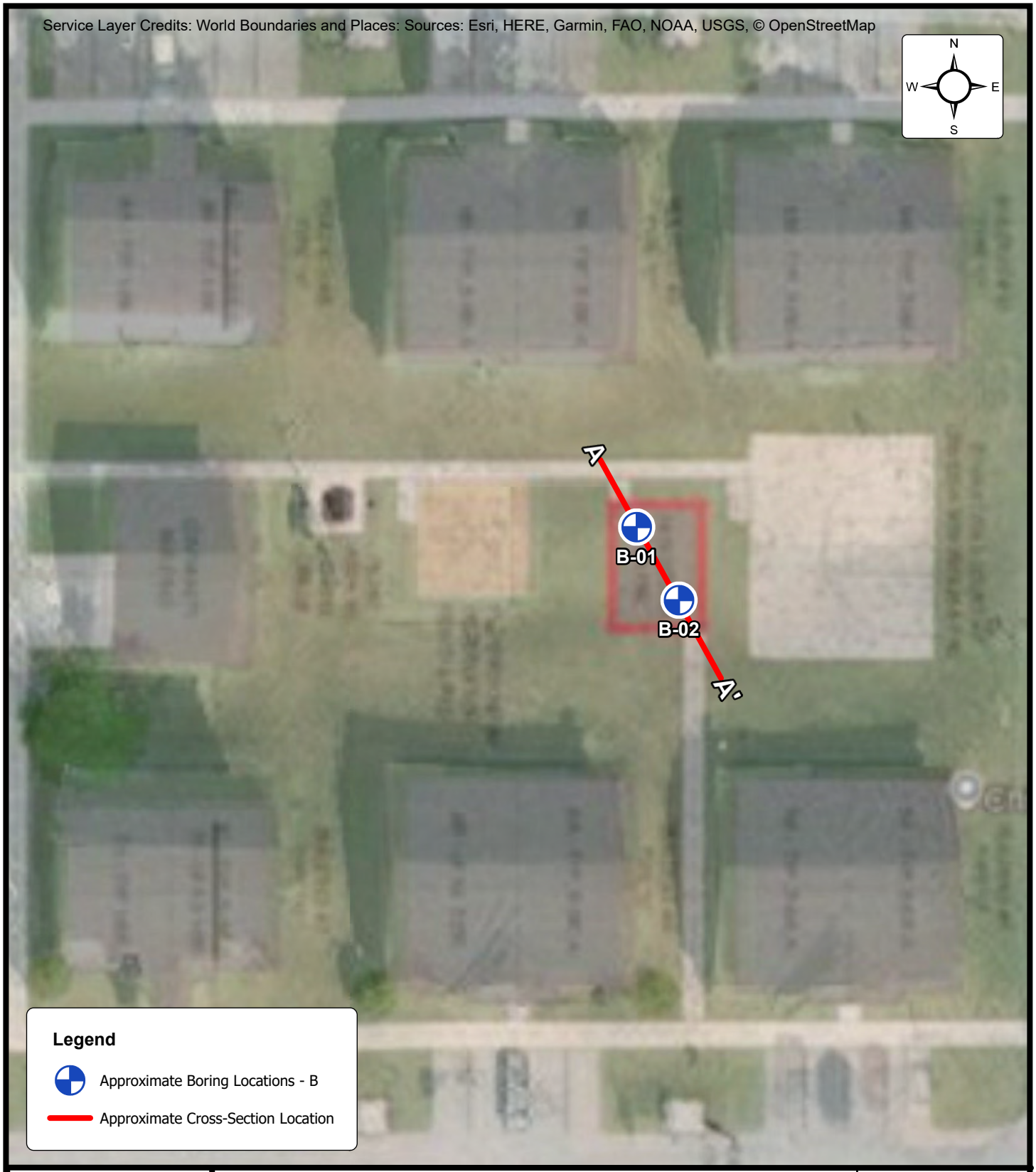
Site Location Diagram
Boring Location Diagram
Generalized Subsurface Soil Profile A-A’
Clay Plus Detail at Trench

SITE LOCATION DIAGRAM

River Bend Villas Storm Shelter

100 E Country Club Road, Chickasha, Oklahoma
Carlson Consulting Engineers, Inc.

ENGINEER	AW
SCALE	1" = 100'
PROJECT NO.	58:1973
SHEET	
DATE	10/22/2024

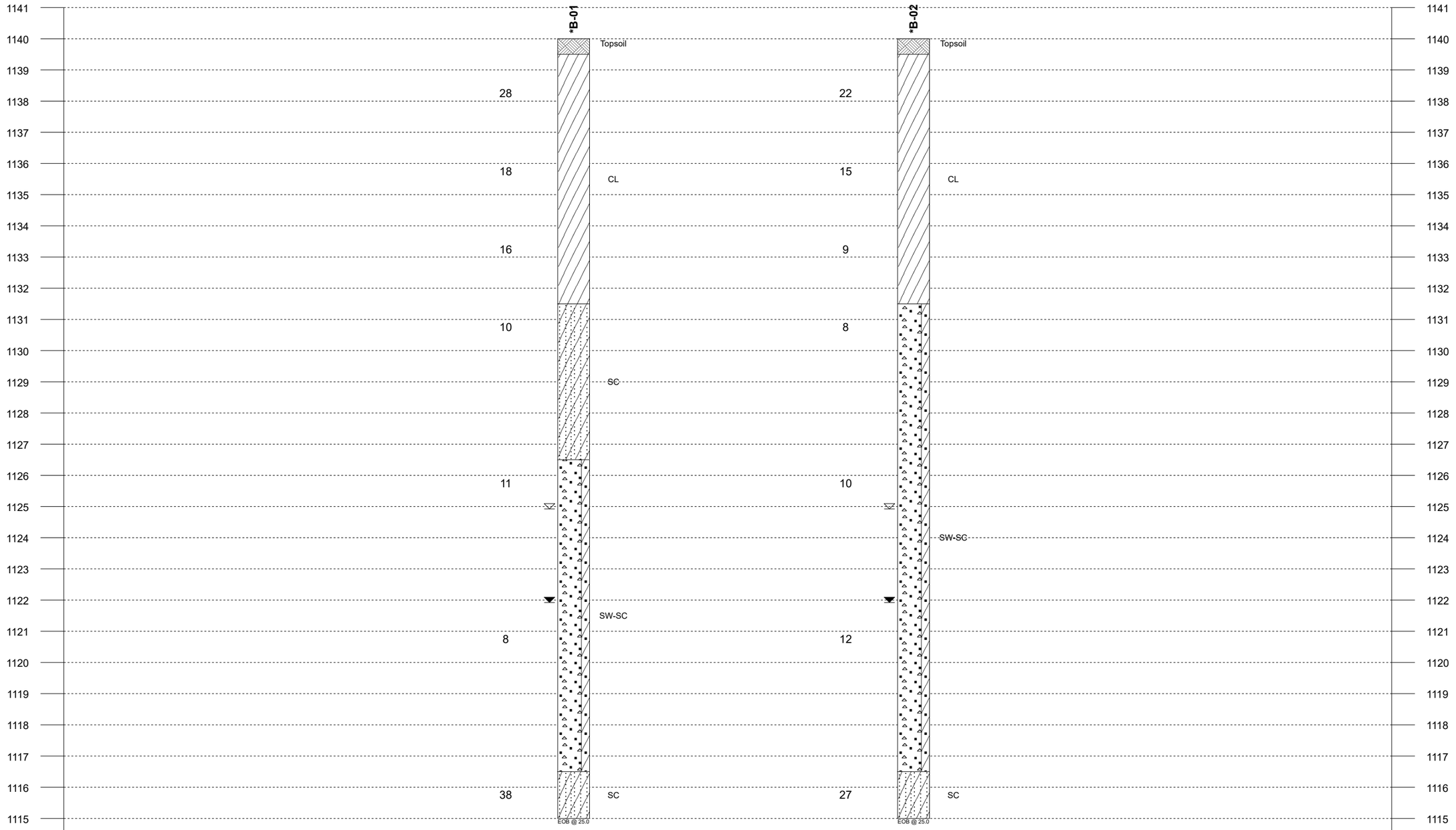


BORING LOCATION DIAGRAM
River Bend Villas Storm Shelter

100 E Country Club Road, Chickasha, Oklahoma

Carlson Consulting Engineers, Inc.

ENGINEER	AW
SCALE	1" = 30'
PROJECT NO.	58:1973
SHEET	
DATE	10/22/2024



Legend Key

- Topsoil
- Lean CLAY
- CLAYEY SAND
- Well Graded SAND with Clay

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit	
[FINES CONTENT %]	
BOTTOM OF CASING	
LOSS OF CIRCULATION	
CALIBRATED PENETROMETER	
WL (First Encountered)	Fill
WL (Completion)	Possible Fill
WL (Estimated Seasonal High Water)	Probable Fill
WL (Stabilized)	Rock

GENERALIZED SUBSURFACE SOIL PROFILE

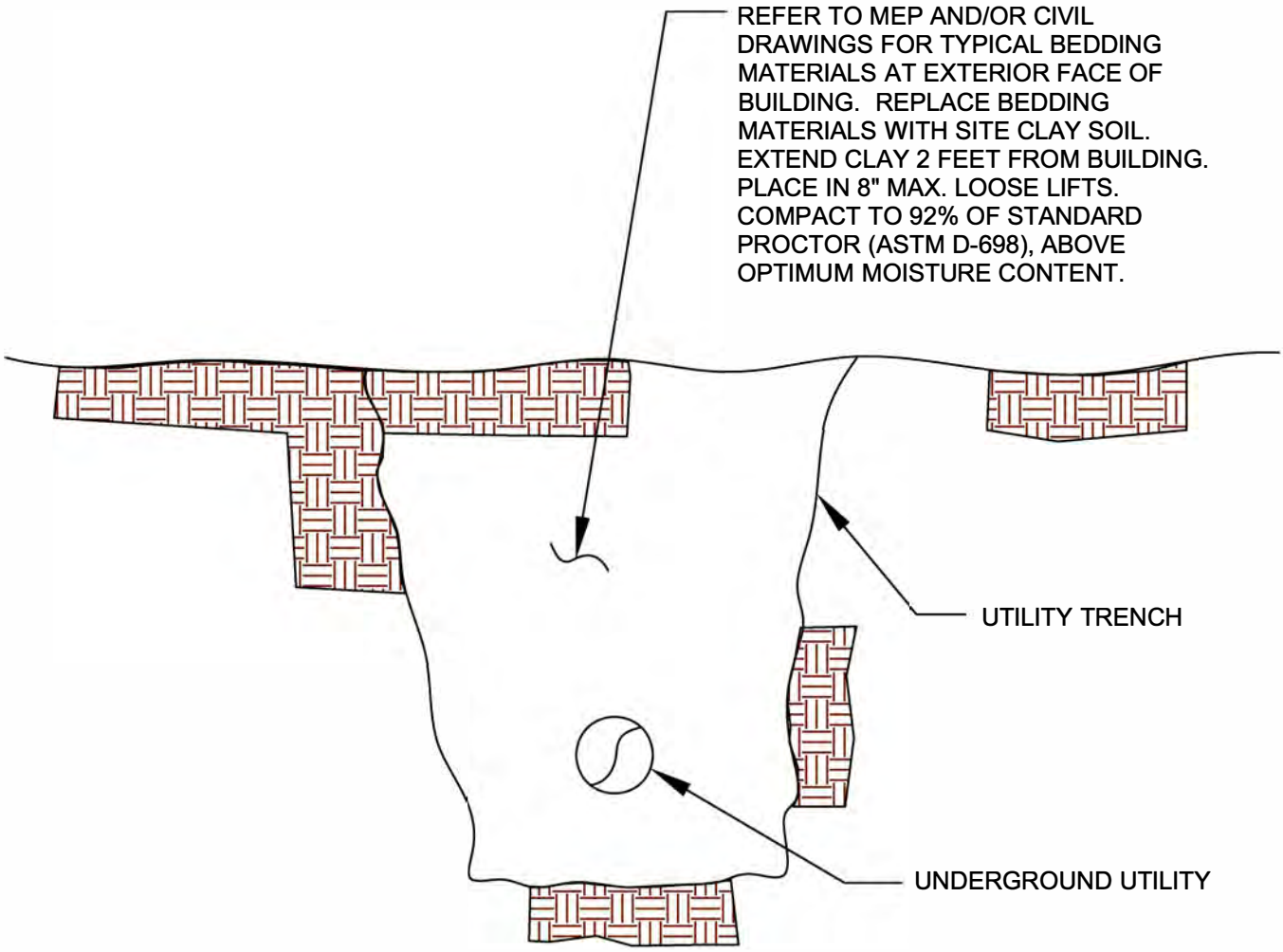
Section Line A-A'

River Bend Villas Storm Shelter

Carlson Consulting Engineers, Inc.

100 E Country Club Road, Chickasha, Oklahoma, 73018

Project No: 58:1973 Date: 10/22/2024



TYPICAL DETAIL DIAGRAM	ECS	**CLAY PLUG AT UTILITY TRENCH**	ENGINEER	SCALE NTS
			DRAFTSMAN CLL	PROJECT NO.
			REVISIONS	SHEET 1 OF 1
				DATE 11/7/08

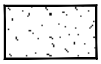
APPENDIX B – Field Operations

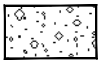
Reference Notes for Boring Logs
Subsurface Exploration Procedure: Standard Penetration Testing (SPT)
Boring Logs B-01 to B-02

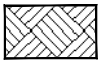
REFERENCE NOTES FOR BORING LOGS

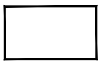
MATERIAL[1,2]

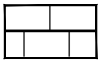
ASPHALT


CONCRETE


GRAVEL

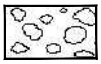

TOPSOIL

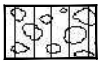

VOID


BRICK

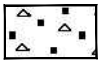
AGGREGATE BASE COURSE

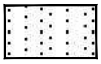
GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines

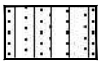

GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures

GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures

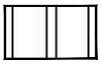

SW **WELL-GRADED SAND**
gravelly sand, little or no fines


SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SILTY SAND**
sand-silt mixtures

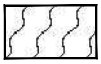
SC **CLAYEY SAND**
sand-clay mixtures

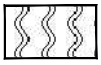
ML **SILT**
non-plastic to medium plasticity

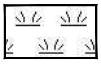

MH **ELASTIC SILT**
high plasticity

CL **LEAN CLAY**
low to medium plasticity

CH **FAT CLAY**
high plasticity


OL **ORGANIC SILT or CLAY**
non-plastic to low plasticity


OH **ORGANIC SILT or CLAY**
high plasticity


PT **PEAT**
highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

WATER LEVELS[6]

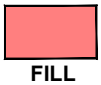
WL (First Encountered)

WL (Completion)

WL (Seasonal High Water)

WL (Stabilized)

FILL AND ROCK


FILL

POSSIBLE FILL

PROBABLE FILL

ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.

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SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet

- Obtain two-inch diameter soil sample

**Drilling Methods May Vary—* The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Carlson Consulting Engineers, Inc.	**58:1973**	**B-01**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
River Bend Villas Storm Shelter	**Drilling Services of Oklahoma**

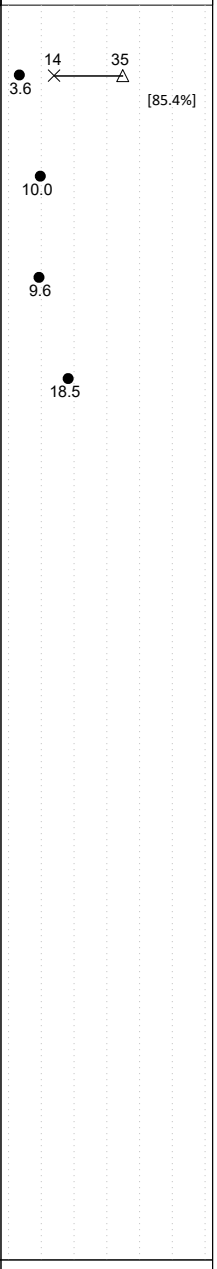
SITE LOCATION: **100 E Country Club Road, Chickasha, Oklahoma, 73018**

LOSS OF CIRCULATION

LATITUDE:	LONGITUDE:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
35.015921	**-97.932623**		**1140.0**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*
					Topsoil Thickness[6.00"]			
	S-1	SS	18	18	(CL) LEAN CLAY, reddish brown to medium brown, moist, very stiff			9-11-17 (28)
	S-2	SS	18	18				10-10-8 (18)
5	S-3	SS	18	18			1135	5-7-9 (16)
	S-4	SS	18	18	(SC) CLAYEY SAND, tan and red and gray, moist, loose			4-5-5 (10)
10							1130	
	S-5	SS	18	18	(SW-SC) WELL-GRADED SAND WITH CLAY, tan, moist, medium dense to loose	▽		3-5-6 (11)
15							1125	
	S-6	SS	18	18		▼		4-4-4 (8)
20							1120	
	S-7	SS	18	18	(SC) CLAYEY SAND, red, moist, dense			11-17-21 (38)
25					**END OF BORING AT 25.0 FT**		1115	
30							1110	

STANDARD PENETRATION BLOWS/FT (10 20 30 40 50 / 20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
MC SAMPLER BLOWS/FT (10 20 30 40 50)
TEXAS CONE PENETRATION BLOWS/FT



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**15.00**	BORING STARTED: **Oct 04 2024**		CAVE IN DEPTH:
▼ WL (Completion)	**18.00**	BORING COMPLETED: **Oct 04 2024**		HAMMER TYPE: **Auto**
▽ WL (Seasonal High Water)		EQUIPMENT: **CME 75**	LOGGED BY: **KEM1**	DRILLING METHOD: **Solid Stem Auger**
▽ WL (Stabilized)				

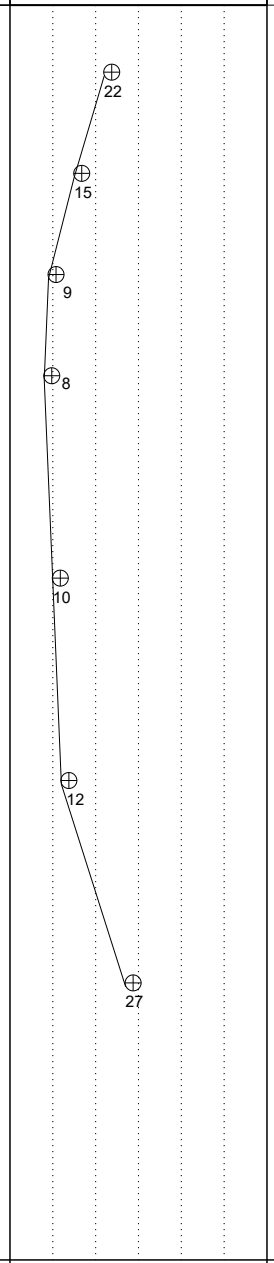
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Carlson Consulting Engineers, Inc.	**58:1973**	**B-02**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
River Bend Villas Storm Shelter	**Drilling Services of Oklahoma**		
SITE LOCATION: **100 E Country Club Road, Chickasha, Oklahoma, 73018**			LOSS OF CIRCULATION
LATITUDE: **35.015870**	LONGITUDE: **-97.932584**	STATION:	SURFACE ELEVATION: **1140.0**	BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6" (TCP/MC/SPT-N value)*
					Topsoil Thickness[6.00"]			
	S-1	SS	18	18	(CL) LEAN CLAY, reddish brown to medium brown, moist, very stiff to stiff			6-10-12 (22)
	S-2	SS	18	18				5-7-8 (15)
5							1135	
	S-3	SS	18	18				4-4-5 (9)
	S-4	SS	18	18	(SW-SC) WELL-GRADED SAND WITH CLAY, tan, moist, loose to medium dense			2-3-5 (8)
10							1130	
	S-5	SS	18	18		▽		4-4-6 (10)
15							1125	
	S-6	SS	18	18		▼		4-5-7 (12)
20							1120	
	S-7	SS	18	18	(SC) CLAYEY SAND, red, moist, medium dense			9-11-16 (27)
25					**END OF BORING AT 25.0 FT**		1115	
30							1110	

STANDARD PENETRATION BLOWS/FT: 10 20 30 40 50 | 20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
MC SAMPLER BLOWS/FT: 10 20 30 40 50
TEXAS CONE PENETRATION BLOWS/FT

LIQUID LIMIT △ 36
PLASTIC LIMIT × 16
CALIBRATED PENETROMETER TSF: 1 2 3 4 5
WATER CONTENT % ● 10.1 [85.5%]
[FINES CONTENT] %: 10 20 30 40 50
7.6



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered)	**15.00**	BORING STARTED: **Oct 04 2024**	CAVE IN DEPTH:	
▼ WL (Completion)	**18.00**	BORING COMPLETED: **Oct 04 2024**	HAMMER TYPE: **Auto**	
▽ WL (Seasonal High Water)		EQUIPMENT: **CME 75**	LOGGED BY: **KEM1**	DRILLING METHOD: **Solid Stem Auger**
▽ WL (Stabilized)				

GEOTECHNICAL BOREHOLE LOG

APPENDIX C – Laboratory Testing

Laboratory Testing Summary

Laboratory Testing Summary

Sample Source	Sample Number	Start Depth (feet)	End Depth (feet)	Sample Distance (feet)	MC[1] (%)	Soil Type[2]	Atterberg Limits[3]			Percent Passing No. 200 Sieve[4]	Moisture - Density (Corr.)[5]		CBR Value[6]	Organic Content (%)
							LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
B-01	S-1	1.0	2.5	1.5	3.6	CL	35	14	21	85.4				
B-01	S-2	3.5	5.0	1.5	10.0									
B-01	S-3	6.0	7.5	1.5	9.6									
B-01	S-4	8.5	10.0	1.5	18.5									
B-02	S-2	3.5	5.0	1.5	10.1	CL	36	16	20	85.5				
B-02	S-3	6.0	7.5	1.5	7.6									

Notes: 1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ration, OC: Organic Content (ASTM D 2974)

Project No.: 58:1973
Project Name: River Bend Villas Storm Shelter
PM: Kevin E Morphis
PE: Andy Wilshire
Printed On: October 22, 2024

ECS Southwest, LLP - Oklahoma City
7801 N Robinson Ave, Suite D-8,
Oklahoma City, OK 73116

Phone: 405-265-5501

SECTION 01 00 11

PHASE I ENVIRONMENTAL SITE ASSESSMENT

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

PHASE I ENVIRONMENTAL SITE ASSESSMENT
Envirophase Environmental Consulting
31 Summary pages provided
(386 Pages Total; Full Report available upon request)
09/ 04/ 2024

1.0 EXECUTIVE SUMMARY

EnviroPhase has conducted a Phase I Environmental Site Assessment (ESA) on the Chickasha Villa located at 100 East Country Club Road in Chickasha, Grady County, OK 73018 (hereinafter referred to as the "Subject Property") in accordance with ASTM E1527-21 and All Appropriate Inquiry (AAI) to ascertain whether evidence exists indicating the potential presence or absence of hazardous substances as that term is defined in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). EnviroPhase also searched for evidence of the presence or absence of petroleum products or materials. This Phase I ESA is designed to provide the Client with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the Subject Property. This assessment was conducted utilizing generally accepted ESA industry standards in accordance with ASTM E1527-21, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.*

1.1 CURRENT USE OF SUBJECT PROPERTY

The Subject Property is currently in use as Chickasha Villa, a multifamily residential community with (4) four eightplexes, (2) two fourplexes, (4) four duplexes, and (1) one office including a community laundry mat. The property includes parking spaces and total of (45) forty five units consisting of one, two, and three bedroom floor plans.

1.2 ADJOINING PROPERTY INFORMATION

Direction From Subject Property	Current Use
North	Unnamed Creek and single family residential neighborhood
South	East Country Club Road followed by residence and wooded land with a pond
East	Unnamed Creek and single family residential neighborhood
West	Restaurant and Auto Dealership

1.3 HISTORICAL USE OF SUBJECT PROPERTY AND SURROUNDING AREA

As early as 1948, the Subject Property appears as vacant land until the development of residence by 1963 to at least 1981. The present-day multifamily residential community was built in 1983.

The surrounding properties appear as vacant land as early as 1948. The north adjacent property remains vacant land until present day. The west adjacent corner property appears fully developed with a commercial building in 1963. Sometime between 1995 and 2006 the west corner adjacent property appears to have been demolished and a new commercial building appears and remains until present day. A second West adjacent property development appears in 1974 and the current commercial building appears in 1995 and remain until present day. The East and South adjacent property appears as vacant land until 1981 with development of single family residences and remain until present day.

1.4 SITE RECONNAISSANCE AND LIMITING CONDITIONS

Patty Trigueros conducted a physical site reconnaissance on July 11, 2024. The site reconnaissance consisted of a property walk-through and a visual inspection of the property area, as well as surrounding properties, to identify visual evidence of Recognized Environmental Conditions in connection to the Subject Property.

The following *Limiting Conditions* were encountered:

- Due to the residential nature of the property, a total of 10 units were observed.

1.5 GOVERNMENT RECORDS REVIEW

The Subject Property was not identified within any regulatory databases as a spill site or regulated facility.

1.6 SIGNIFICANT DATA GAPS

ASTM E1527-21 defines a significant data gap as a data gap that affects the ability of the environmental professional to identify a Recognized Environmental Condition. Based on our experience, the information that we gathered and evaluated did not present significant data gaps that affected our ability to identify Recognized Environmental Conditions (RECs) in connection with the Subject Property.

1.7 CONCLUSIONS

In the professional opinion of EnviroPhase, an appropriate level of inquiry has been made into the previous ownership and past and current uses of the Subject Property consistent with good commercial and customary practice to minimize liability.

This assessment has concluded the following:

Recognized Environmental Conditions (RECs) Identified:

- None

Controlled Recognized Environmental Conditions (CRECs) Identified:

- None

Historical Recognized Environmental Condition (HREC) Identified:

- None

De Minimis Conditions Identified:

- Minor Staining in Parking Lot

Vapor Encroachment Conditions (VECs):

- None

1.8 NON-SCOPE CONSIDERATIONS

The following non-scope considerations were evaluated as part of this assessment:

- Asbestos-Containing Building Materials
- Cultural and Historic Resources
- Ecological Resources
- Endangered Species
- Wetlands

Our assessment included a Phase I ESA. The following Non-Scope Considerations are beyond the scope of ASTM E1527-21 and were not evaluated during this assessment:

- Biological Agents
- Health and Safety
- Indoor Air Quality: unrelated to releases of hazardous substances or petroleum products into the environment
- Industrial Hygiene
- Lead-based Paint: unrelated to releases into the environment
- Lead In Drinking Water
- Mold or Microbial Growth Conditions
- PCB-containing Building Materials
- Naturally Occurring Radon
- Regulatory Compliance
- Emerging Contaminants: substances not classified as a CERCLA hazardous substance

1.9 RECOMMENDATIONS

No further investigations are recommended at this time.

This executive summary is an overview only and should not be relied upon as the sole source of the reported results without first reading the full contents of this report, including appended materials.

2.0 INTRODUCTION

2.1 PURPOSE

The purpose of the Phase I Environmental Site Assessment (ESA) was to evaluate the current and historical conditions of the Subject Property in an effort to identify Recognized Environmental Conditions in connection with the Subject Property.

A Recognized Environmental Condition (REC) is defined by ASTM as: (1) the presence of hazardous substances or petroleum products in, on, or at the Subject Property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the Subject Property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the Subject Property under conditions that pose a material threat of a future release to the environment.

A Controlled Recognized Environmental Condition (CREC) is defined by ASTM as: recognized environmental condition affecting the Subject Property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations).

A Historical Recognized Environmental Condition (HREC) is defined by ASTM as: a previous release of hazardous substances or petroleum products affecting the Subject Property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the Subject Property to any controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition is not a recognized environmental condition.

A De Minimis Condition is defined by ASTM as: a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. A condition determined to be a de minimis condition is not a recognized environmental condition nor a controlled recognized environmental condition.

The identification of Recognized Environmental Conditions in connection with the Subject Property may impose an environmental liability on owners or operators of the Subject Property, reduce the value of the Subject Property, or restrict the use or marketability of the Subject Property, and

therefore, further investigation may be warranted to evaluate the scope and extent of potential environmental liabilities.

Appendix A provides a break-down of the definition of a Recognized Environmental Condition (REC) along with a REC Logic Diagram with accompanied examples.

2.2 SCOPE OF SERVICES

The Phase I ESA conducted at the Subject Property was in general accordance with ASTM Standard E 1527-21 and included the following:

- A site reconnaissance and visual survey of properties proximate to the Subject Property,
- Review of records and interviews with regulatory officials and representatives regarding current and former operations at the Subject Property,
- A review of historical resources, such as: property records, topographic maps, fire insurance maps, city directories, and aerial photographs,
- Review of previous environmental site assessments, if made available,
- Review of State and Federal environmental database information, and
- Evaluation of information and preparation of the report provided herein.

Typically, a Phase I ESA does not include sampling or testing of air, soil, groundwater, surface water, or building materials. These activities would be carried out under separate cover, if necessary.

2.3 SIGNIFICANT ASSUMPTIONS

There is a possibility that even with the proper application of these methodologies there may exist on the Subject Property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. EnviroPhase believes that the information obtained from the record review and the interviews concerning the Subject Property is reliable. However, EnviroPhase cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The methodologies of this assessment are not intended to produce all-inclusive or comprehensive results, but rather to provide the client with information relating to the Subject Property.

2.4 LIMITATIONS AND EXCEPTIONS

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-21 and AAI. Specific limitations and exceptions to this ESA are more specifically set forth below:

The results of this Phase I ESA as reported herein are in no way intended to represent a guarantee that the Subject Property is free from the presence of past, present, or future contamination from hazardous substances; rather, it only represents that a reasonable inquiry has been conducted to ascertain the likelihood of such contamination under current applicable law.

All appropriate inquiries into previous ownership and uses of the Subject Property, consistent with good commercial and customary practices, were attempted to gather information which might be used to formulate the "innocent landowner" defense to CERCLA liability (42USC 9607(b) in conjunction with 9601 (35). All research conducted was based on information which was reasonably ascertainable, publicly available, and practically reviewable. These terms are defined in the current ASTM and AAI Standards.

EnviroPhase derived the data in this report primarily from visual inspections, examination of records in the public domain, and interviews with individuals knowledgeable with the Subject Property history. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration at the Subject Property, analysis of the data and revaluation of the findings, observations, conclusions, and recommendations expressed in this report.

In preparing this report, EnviroPhase has relied upon and presumed accurate, certain information (or the absence thereof) about the Subject Property and adjacent properties provided by governmental officials and agencies, the Client and others identified herein. The accuracy of the results of the regulatory agency database searches are constrained and limited by the level of care and professional skill exercised by the subcontractors retained by EnviroPhase to perform these tasks. Except as otherwise stated in this report, EnviroPhase has not attempted to verify the accuracy or completeness of such information.

Conclusions and recommendations are based solely upon Subject Property conditions in existence at the time of the investigation.

Because of the limitations stated above, the findings, observations, conclusions, and recommendations expressed by EnviroPhase in this report are limited to the information obtained and should not be considered an opinion concerning the compliance of any past or current owner or operator of the Subject Property with any federal, state, or local laws or regulations. No warranty or guarantee, whether expressed or implied, is made with respect to the data reported, findings or observations.

2.5 DEVIATIONS

No deviations from the recommended scope of ASTM Standard E1527-21 and AAI Standard were performed as part of this Phase I ESA with the exception of those noted in the "Scope of Services" section.

2.6 SPECIAL TERMS AND CONDITIONS

The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the client. No subsurface exploratory drilling or sampling was done under the scope of this work. Unless specifically stated otherwise in the report, no chemical analyses have been performed during the course of this ESA.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This is subject to the limitations of historical documentation, availability, and accuracy of pertinent records and the personal recollections of those persons contacted.

We have performed our services and prepared this Report in accordance with applicable, generally accepted engineering, environmental or appraisal consulting practices. We make no other warranties, either expressed or implied, as to the character and nature of such services and product.

2.7 RELIANCE

On behalf of River Bend Villas, Mandi Paswaters retained EnviroPhase to perform a Phase I Environmental Site Assessment of the Chickasha Villas located at 100 East Country Club Road, Chickasha, OK, 73018. In connection with the above referenced Subject Property, EnviroPhase was retained to perform work including this report for an environmental evaluation of the Subject Property. The work performed has been conducted in conformance with the scope and limitations of ASTM Practice E1527-21 and AAI Standard.

This report is for the exclusive use of River Bend Villas, its affiliates, successors, and assigns; and any party providing financing to the foregoing. Reliance on the information and conclusions presented in this report by any other parties is not authorized by EnviroPhase. Use of this report by any other party shall be at such party's sole risk.

EnviroPhase will not extend reliance or liability on the information provided in this Phase I ESA report beyond ASTM E1527's "shelf life" requirements of one year unless an updated assessment has been performed by EnviroPhase after 180 days per ASTM E1527-21 4.6 describing the continued viability of a Phase I ESA.

2.8 SIGNIFICANT DATA GAPS

A significant data gap is defined as a data gap that affects the ability of the environmental professional to identify a recognized environmental condition. A data gap is only significant if other information and/or professional experience raises reasonable concerns involving the effects of that data gap on the ability of the environmental professional to render an opinion regarding whether conditions exist that are indicative of recognized environmental conditions or controlled recognized environmental conditions. The historical resources reviewed presented the following data failures as defined by ASTM:

- The Subject Property's first developed use, or back to 1940 could not be determined. The earliest historical record providing discernible use is the 1948 aerial photograph
- Historical resources reviewed are separated by intervals greater than 5 years. The largest interval encountered is 14 years.

However, based on our experience, the information that we gathered and evaluated did not present significant data gaps that affected our ability to identify Recognized Environmental Conditions (RECs) in connection with the Subject Property.

2.9 ENVIRONMENTAL PROFESSIONAL DECLARATION

An Environmental Professional is defined by ASTM E1527-21 as: A person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases on, at, in, or to a property, sufficient to meet the objectives and performance factors in 40 C.F.R. 312.20 (e) and (f). I, Jennifer Wiberg, declare that to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 312.10 40 CFR 312 and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Jennifer Wiberg
Director, Environmental Services
EnviroPhase Environmental Consulting

Jennifer Wiberg
Director, Environmental Services

3.0 SUBJECT PROPERTY DESCRIPTION AND CURRENT USE

3.1 LOCATION AND LEGAL DESCRIPTION

The Subject Property is identified in this report as the Chickasha Villa located at 100 East Country Club Road in the City of Chickasha, Grady County, OK. According to the Grady Central Appraisal District/County Assessor, the property consists of one (1) parcel of land totaling approximately 4.99 acres. A copy of the appraisal district property information report is appended.

According to appraisal records the abbreviated legal description for the Subject Property is as follows:

ID Number	0000-03-06N-07W-3-028-00
Address	100 E Country Club Rd
Legal Description	03-06-07-10300 BG 500' E OF SW/C SW/4 SW/4 TH N 587.6' E 259' N 72.4' E 99' S 660' W 358' TO POB.
State Code	C1
Acreage	4.99
Owner	CHICKASHA VILLA, LIMITED PARTNERSHIP
Owner Address	Not listed

3.2 ACTIVITY/USE LIMITATIONS

In the course of this investigation, EnviroPhase did not identify an Activity or Use Limitation (AUL) associated with the Subject Property, nor was EnviroPhase provided with AUL or title information dating back to 1980.

3.3 CURRENT USE OF THE SUBJECT PROPERTY

The Subject Property is currently in use as Chickasha Villa, a multifamily residential community with (4) four eightplexes, (2) two fourplexes, (4) four duplexes, and (1) one office including a community laundry mat. A total of (45) forty five units include one, two, and three bedroom floor plans at Subject Property.

3.4 SUBJECT PROPERTY AND VICINITY CHARACTERISTICS

The Subject Property is located within a primarily commercial corridor along 4th Street, with a single family residential area located to the north, south, and east. No uses of concern were identified on the Subject Property or adjoining properties. Usage of the immediately surrounding properties is summarized in Section 5.1.7.

3.5 SUBJECT PROPERTY DESCRIPTION

The Subject Property is currently in use as Chickasha Villa, a 4.99 acre multifamily residential community with (4) four 2-story eightplexes, (2) two, 2-story fourplexes, (4) four single story duplexes, and (1) one single story office including a community laundry mat. The buildings are all brick and wood siding and finished out with drywall, vinyl or laminate floors, and shingle roofs. The office buildings contains a community laundry room, restrooms, and maintenance storage room.

EnviroPhase prepared a site diagram of the Subject Property, which will be available in Appendix C. The site diagram is not to scale and is intended for use as a reference only.

Utilities	Provider
Electrical	America Electric Power
Natural Gas	N/A
Potable Water	Chickasha Municipal
Wasterwater/Sewer	Chickasha Municipal
Heating and Cooling	Electrical

The Subject Property is currently in use as Chickasha Villas, also know as River Bend Villas, a 4.99 acre multifamily residential community with four eightplexes, two fourplexes, four duplexes, and one office including a community laundry mat. The buildings are all brick and wood siding and finished out with drywall, vinyl or laminate floors, and shingle roofs. The office buildings contains a community laundry room, restrooms, and maintenance storage room.

EnviroPhase prepared a site diagram of the Subject Property, which will be available in Appendix C. The site diagram is not to scale and is intended for use as a reference only.

4.0 USER PROVIDED INFORMATION

4.1 USER QUESTIONNAIRE

A User Questionnaire was provided to the User to assist in gathering information that may be material to identifying Recognized Environmental Conditions (RECs). The completed questionnaire was returned and is available for review in Appendix G. The following responses were provided.

Question	Response	Explanation
Did a review of land title records (or judicial records where appropriate) identify any environmental cleanup liens filed or recorded against the subject property under federal, tribal, state or local law?	No	
Did a review of land title records (or judicial records where appropriate) identify any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state, or local law?	No	
Do you have any specialized knowledge or experience related to the subject property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?	No	
Does the purchase price being paid reasonably reflect the fair market value of the subject property?	Yes	
If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject property?	No Response	
Do you know of the past uses of the property?	Yes	Apartments
Do you know of specific chemicals that are present or were once present at the property?	No	
Do you know of spills or other chemical releases that have taken place at the property?	No	
Do you know of any environmental cleanups that have taken place at the property?	No	
Based on your knowledge and experience related to the subject property are there any obvious indicators that point to the presence or likely presence of contamination at the subject property?	No	
Do you know of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?	No	

Do you know of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	No	

The User Questionnaire was completed by Mandi Paswaters, VP of Development on July 8th, 2024.

5.0 RECORDS REVIEW

5.1 HISTORICAL RECORDS REVIEW

The objective of the historical records review is to develop a history of the previous uses of the Subject Property and surrounding area to evaluate the likelihood of past uses having contributed to potential RECs in connection with the Subject Property.

5.1.1 Chain-of-Title

A chain-of-title report was not provided or included as part of this assessment. Historical use information was obtained using ASTM/AAI approved standard historical sources which did not include the chain-of-title document.

5.1.2 Environmental Liens and Activity/Use Limitations

Per ASTM E1527-21, the User is required to provide and/or report to the environmental professional any environmental liens or AULs so identified for the Subject Property. The environmental professional per the ASTM practice is not responsible to undertake a review of information to identify environmental liens or AULs.
EnviroPhase was not provided with any environmental lien or AUL documentation as part of this assessment.

5.1.3 Summary of Historical Resources Reviewed

EnviroPhase reviewed the following resources to evaluate the historic uses of the Subject Property and surrounding area. The historical resources reviewed presented the following data failures as defined by ASTM:

- The Subject Property's first developed use, or back to 1940 could not be determined. The earliest historical record providing discernible use is the 1948 aerial photograph.
- Historical resources reviewed are separated by intervals greater than 5 years. The largest interval encountered is 14 years.

However, based on our experience, the information that we gathered and evaluated did not present significant data gaps that affected our ability to identify Recognized Environmental Conditions (RECs) in connection with the Subject Property.

Resource	Years Reviewed	Source
Aerial Photographs	1948, 1954, 1963, 1974, 1981, 1995, 2006, 2010, 2015, 2019	EDR
City Directories	1966, 1971, 1976, 1981, 1986, 1992, 1995, 2000, 2005, 2010, 2014, 2017, 2020	EDR
Fire Insurance Maps	Not Available	EDR
USGS Topographic Maps	1902, 1904, 1966, 1975, 2012, 2016, 2018, 2022	EDR

5.1.4 Aerial Photographs, Fire Insurance Maps, Topographic Maps

A chronological summary of the history/use of the Subject Property and immediately adjacent properties as obtained from aerial photographs, fire insurance maps, and topographic maps is listed in the following tables. Fire insurance maps were not available for the Subject Property. These resources provided by EDR are available for review in Appendix F.

SUBJECT PROPERTY		
Date(s)	Resource	Description
1902,1904	Topographic Map	The Subject Property appears as vacant land.
1948-1954	Aerial Photographs	The Subject Property appears as vacant land, followed by a roadway to the south, and a roadway to the west.
1963-1981	Aerial Photographs	The Subject Property appears to have a single family residence located at the southwest corner, followed by a roadway to the south, and a roadway to the west.
1966-1975	Topographic Map	The Subject Property appears to have a single family residence located at the southwest corner, followed by a roadway to the south, and a roadway to the west listed as 4 Lane Highway 81 & 277.
1995-2019	Aerial Photographs	The Subject Property appears developed with the present -day multi-family residential community.
2012-2022	Topographic Map	The Subject Property appears developed with the present -day multi-family residential community. Directly followed by a roadway to the south listed as E Country Club Rd, and a roadway to the west listed as 4 Lane Highway 81 & 277. S 4th St first appears on the 2012 Topographic Map running parallel with north and south along Highway 81 & 277.

NORTH ADJOINING PROPERTY		
Date(s)	Resource	Description
1902,1904	Topographic Map	The north adjacent property appears as vacant land. An unnamed creek runs North and South parallel along the East of the Subject Property.
1966-1975	Topographic Map	The north adjacent property appears to be developed with a single family residence. Directly followed by a roadway or private driveway to the North, and a roadway to the West. An unnamed creek runs North and South parallel along the east of the Subject Property.
2012-2022	Topographic Map	The north adjacent property appears as vacant land. The northeast residential community roadways appear in 2012 to 2022. The nearest Roadway to the north identified as W Almar Dr. An unnamed creek runs North and South parallel along the east side of the Subject Property.

SOUTH ADJOINING PROPERTY		
Date(s)	Resource	Description
1902, 1904	Topographic Map	The South adjacent property appears as vacant land.
1948-2019	Aerial Photographs	The South adjacent property appears historically single family residences. A pond is located directly south of the Subject Property, followed to the north by a roadway.
1966-2022	Topographic Map	The South adjacent property appears as vacant land. The present day residences do not appear on the Topographic Map. A pond is located directly south of the Subject Property, followed to the north by a roadway.

EAST ADJOINING PROPERTY		
Date(s)	Resource	Description
1902, 1904	Topographic Map	The east adjacent property appears as an unidentified creek, followed by vacant land.
1948-1974	Aerial Photograph	The east adjacent property appears as an unidentified creek, followed by vacant land.
1966-1975	Topographic Map	The east adjacent property appears as an unidentified creek, followed by vacant land.
1981-2019	Aerial Photograph	The east adjacent property appears as an unidentified creek, followed by appearance the present-day residential community and roadway listed as Glenwood Dr.
2012-2022	Topographic Map	The East adjacent property appears as an unidentified creek, followed by appearance the present-day residential community and roadway listed as Glenwood Dr.

WEST ADJOINING PROPERTY		
Date(s)	Resource	Description
1902, 1904	Topographic Map	The west adjacent property appears as vacant land.
1948-1954	Aerial Photograph	The west adjacent property appears as vacant land. Followed by a roadway to the west and a roadway directly south.
1966-1975	Topographic Map	The west adjacent property appears as a commercial building located the the hard corner in 1966. A second improvement appears in the 1975 Topographic Map. Followed by 4 Lane 81 & 277 Highway and a second roadway to the south.
2006-2010	Aerial Photograph	The west adjacent property at the hard corner changes to a square shaped commercial building until present-day. In 1995, 2006, and 2010 the second west commercial building changes shape several times. A new improvement appears in 1995. Followed by 4 Lane 81 & 277 Highway and a second roadway to the south.
2012-2022	Topographic Map	The west adjacent property commercial buildings do not appear depicted in the Topographic Maps. Followed by 4 Lane 81 & 277 Highway. S 4th Street is identified and runs parallel with 81 & 277 Highway.
2015-2019	Aerial Photograph	The west adjacent property at the hard corner changes to a square shaped commercial building until present-day. The second west commercial building is current present day auto-dealership. Followed by 4 Lane 81 & 277 Highway and a second roadway to the south.

5.1.5 City Directory

A chronological summary of the history/use of the Subject Property and immediately adjacent properties is listed in the following tables for associated city directory listings. The complete EDR City Directory Report is available for review in Appendix F.

SUBJECT PROPERTY		
Address	Year	Listing
200 E Country Club Rd	1976-1986	Residence
100 E Country Club Rd	1986-2000	Town Oak Apartments
100 E Country Club Rd	2005	Multi- Family Residence
100 E Country Club Rd	2010-2020	Chickasha Villa

NORTH ADJOINING PROPERTY		
Address	Year	Listing
No Listing	1976-2020	No Listing

SOUTH ADJOINING PROPERTY		
Address	Year	Listing
305 E Country Club Rd	1995-2020	Residence
205 E Country Club Rd	2014-2020	Residence
123 E Country Club Rd	1986-2020	Residence, Flags That Last

EAST ADJOINING PROPERTY		
Address	Year	Listing
3100-3128 Glenwood Drive	None Available	Residences, No Listings Provided

WEST ADJOINING PROPERTY		
Address	Year	Listing
3121 S 4th Street	2005-2017	Chickasha Dodge Plymouth Chrysler In auto dealers new Johnsons Of Chickasha
3127 S 4th Street	1995-2000, 2010-2014	Eduardo's
3127 S 4th Street	2005	Ed Hicks Enterprises

5.1.6 Past Uses of Subject Property and Surrounding Area

As early as 1948, the Subject property appears as vacant land up until 1963, when a single family residence appears until 1981. According to Grady County Assessor the present-day Chickasha Villa was reportedly built in 1983 formerly known as Town Oak Apartments.

The surrounding properties appear as vacant land in 1948, until the first development of the west adjacent property in 1963. The west adjacent properties appear as vacant land until 1963 when first development appears and remains until 1995, in 2006 site is redeveloped and remains until

present-day Legends Pub used as a music hall. The second adjacent property appears vacant until 1974, site is a commercial building until 1981 and redevelops 1995, 2006, 2010 until present-day auto dealership. The north adjacent property is vacant land until present-day, followed by a residence which appears as early as 1948 remaining until 1981. The east adjacent property is an unnamed creek followed by present-day single family residence community appearing in 1981. The south adjoining property is vacant land that includes a pond shown as early as 1948 to present day. Single family residences appear to the south in 1971 and remain until present-day.

Historically, the north, east, and south adjacent properties have been vacant land and single family residences. To the west adjacent has been historically an auto dealership and restaurant and bar.

5.1.7 Current Use of Adjoining Properties

Direction From Subject Property	Current Use
North	Unnamed Creek and single family residential neighborhood
South	East Country Club Road followed by residence and wooded land with a pond
East	Unnamed Creek and single family residential neighborhood
West	Restaurant and Auto Dealership

5.2 STANDARD ENVIRONMENTAL RECORD REVIEW

The objective of the environmental regulatory agency database review is to obtain and review records that will help identify RECs in connection with the Subject Property within the appropriate search distances pursuant to ASTM E1527-21, Section 8.2.1. The environmental regulatory database search was performed by EDR. The EDR Radius Map Report with GeoCheck is presented in Appendix E. This report meets the government records search requirement of ASTM E1527-21, All Appropriate Inquiry (AAI).

Map Findings Summary								
Database	Subject Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
PFAS ECHO		0.25	0	1	NR	NR	NR	1
UST FINDER RELEASE		0.5	0	0	1	NR	NR	1
RCRA NonGen / NLR		0.25	1	0	NR	NR	NR	1
UST FINDER		0.25	1	2	NR	NR	NR	3
LUST		0.5	0	1	1	NR	NR	2
UST		0.25	1	4	NR	NR	NR	5
HIST UST		0.25	1	3	NR	NR	NR	4

5.2.1 Subject Property Database Records of Concern

The Subject Property was not identified within any regulatory databases as a spill site or regulated facility.

5.2.2 Surrounding Properties Database Records of Concern

EnviroPhase identified a number of database records within ASTM defined search distances. Those sites that are adjacent to the Subject Property or warranted further evaluation are summarized and discussed below. EnviroPhase considered the remaining database listings unlikely to impact the Subject Property based upon factors including (but not limited to):

- The nature of the listing;
- The use of the facility;
- When the facility was listed and its current listed status;
- The developmental density of the setting;
- The potential for vapors to encroach from the property to the Subject Property;
- The distance between the listing and subject sites related to whether releases are likely to migrate based on local surface and subsurface drainage conditions; and/or
- The presence of intervening drainage divides; and/or inferred groundwater movement.

Adjoining and Nearby Properties	
Site Name:	JOHNSONS OF CHICKASHA
Databases:	RCRA NonGen / NLR, FINDS, ECHO
Address:	3121 S 4TH
Distance (Feet):	411
Direction:	West
Elevation:	Higher
Comments:	Johnsons of Chickasha was listed as a RCRA Non-Gen / NLR 1000641233 / FINDS OKD987082591 for the generation of hazardous wastes in the 1991 and last updated 2000. The following types of hazardous wastes were identified: The following spent halogenated solvents: Tetrachloroethylene, Methylene Chloride, Trichloroethylene, 1,1,1-Trichloroethane, Chlorobenzene, 1,1,2-Trichloro-1,2,2-Trifluoroethane, Ortho-Dichlorobenzene, Trichlorofluoromethane, And 1,1,2, Trichloroethane; All Spent Solvent Mixtures/Blends Containing, Before Use, A Total Of Ten Percent Or More (By Volume) Of One Or More Of The Above Halogenated Solvents Or Those Solvents Listed In F001, F004, And F005; And Still Bottoms From The Recovery Of These Spent Solvents And Spent Solvent Mixtures. Described as Ignitable Waste. No NAICS Codes found, No violations Found, No Evaluations Found. Based on distance from the site and no violations identified, this listing is not a REC to the Subject Property.

Site Name:	PAR-MAR REAL ESTATE, INC.
Databases:	UST FINDER, HIST UST, UST
Address:	3204 S 4TH

Distance (Feet):	651
Direction:	West-Southwest
Elevation:	Higher
Comments:	Par-Mar Real Estate Inc is listed as UST Finder 1028629109. Two (2) Single-walled steel UST containing diesel and gasoline were installed in April 8th, 1976 and removed November 1st 1989 currently reported as closed. The size of the USTs were not reported. Based on regulatory oversight regulations during the time of removal, distance between site, and separation by 4 lane Highway 88 & 277 and S 4th Street EnviroPhase does not consider the historical USTs an environmental concern.

Site Name:	BRONCO'S CORNER
Databases:	HIST UST, LUST, UST, UST FINDER
Address:	402 W COUNTRY CLUB RD
Distance (Feet):	661
Direction:	West-Southwest
Elevation:	Higher
Comments:	Bronco's Corner LUST U001882900 UST N/A & Hist UST is listed on database reporting a release October 29th, 1992 and closed January 7th, 1993. Two (2) 10,000 gallon gasoline USTS and (1) one 6,000 diesel UST single-walled steel are reported as currently in use and installed March 14th, 1981. Based on age of the tanks, distance between the site, and separation by 4 lane Highway 88 & 277 and S 4th Street EnviroPhase does not consider the historical USTs an environmental concern.

6.0 SITE RECONNAISSANCE

The objective of the site reconnaissance activities is to obtain information indicating the likelihood of identifying *Recognized Environmental Conditions* in connection with the Subject Property. Any exceptions to or deletions from this practice are described in Section 2.3 of this report.

6.1 METHODOLOGY AND LIMITING CONDITIONS

The site reconnaissance included visual observation of the Subject Property and adjoining properties. Site reconnaissance details are as follows:

Site Reconnaissance Date	July 11th, 2024
Site Assessor(s)	Patty Trigueros
Escort/Relationship to Subject Property	None
Weather	Sunny, 100 degrees
Limiting Conditions	None

6.2 SITE RECONNAISSANCE OBSERVATIONS

A summary of the site reconnaissance observations is provided in the table below. Any item left blank and not marked with an "X" was not identified. Detailed information is discussed following the summary for any "X" marked answers, along with an opinion about the significance of the listing.

Item Description	Identified on Subject Property	Identified on Adjoining Property
Emergency Generators		
Elevators		
Hydraulic Lifts		X
Dry Cleaners/Laundromats		
Photo Processing		
Medical/Dental Offices - Biomedical Waste		
Automotive/Equipment Repair		X
Grease Traps and Oil/Water Separators		
Septic or Sewage Tanks		
Air Compressors		
Transformers of Other Mech/Elec Equipment That Could Contain PCBs	X	
Pipeline Markers		
Oil and Gas Wells		
Storm Water Ponds		
Quarries, Pits, Lakes, or Lagoons		
Use, Storage, or Disposal of Hazardous Substances		
Use, Storage, or Disposal of Petroleum Products	X	
ASTs/USTs		X
Drums or Other Bulk Chemical Containers		
Suspect Containers/Unidentified Contents		
Drains and Sumps		
Drinking Water, Irrigation or Monitoring Wells		

Item Description	Identified on Subject Property	Identified on Adjoining Property
Agrochemical Use/Application		
Railroad Spur/Tracks		
Interior/Pavement Stains or Corrosion	X	
Stained Soil/Stressed Vegetation		
Chemical Odors		
Surface Water Sheen or Discoloration		
Exterior Pipe Discharges/Unknown Pipes/Effluent Discharges		
Pools of Liquid of Standing Water		
Solid Waste Dumping/Landfilling/Suspect Fill Material		
Construction Debris/Material Stockpiles		X
Other Uses or Conditions of Concern		

Hydraulic Lifts

During the site reconnaissance, above ground hydraulic lifts were observed on the west adjoining property. Based on the distance and above ground nature of these off-site hydraulic lifts are not considered to be evidence of a REC in connection with the Subject Property.

Automotive/Equipment Repair

An automotive dealership business was identified on the west adjoining property. However, EnviroPhase did not note evidence of staining or improper disposal in connection with the adjoining business at the time of the site reconnaissance. Based on lack of violations this business is not considered to be evidence of a REC in connection with the Subject Property.

Transformers of Other Mech/Elec Equipment That Could Contain PCBs

Three (3) pad-mounted electrical transformers were observed where on the Subject Property. EnviroPhase did not observe non-PCB labeling on the transformers at the time of the site reconnaissance. EnviroPhase believes the electrical equipment is the property and responsibility of American Electric Power, the local electrical utility company, who would be responsible for cleanup related to the equipment that could not be attributed to tenant negligence. The identified electrical equipment appeared to be in good condition, with no apparent evidence of staining, leakage, or corrosion noted. Based on their observed condition and the local utility ownership, the observed transformers are not considered to be evidence of a REC in connection with the Subject Property.

Use, Storage, or Disposal of Petroleum Products

EnviroPhase observed typical property maintenance chemicals, such as paints, caulks, lubricants, mastics, joint compound, cleaners, and solvents in the maintenance room in the office building on the Subject Property. These chemicals were generally stored in containers of 5 gallons or less.

EnviroPhase did not observe evidence of significant or staining in connection with the containers at the time of the site reconnaissance. Based on this information, the presence of these maintenance chemicals is not considered to be evidence of a REC in connection with the Subject Property.

ASTs/USTs

EnviroPhase did not observe ASTs or USTs on the Subject Property, however (2) above ground storage tanks were observed on the west adjacent property, listed as Kalidy Chrysler Doge Jeep Ram located at 3121 S 4th Street. Based on no signs of leaking or records of violations, these ASTs do not represent a REC to the Subject Property.

Interior/Pavement Stains or Corrosion

EnviroPhase observed minor staining of the concrete flooring by motor oils in the parking spaces of the Subject Property. The staining from parked vehicles is considered de-minimis and not an environmental concern to the Subject Property.

Construction Debris/Material Stockpiles

EnviroPhase observed improper dumping related debris of household items to the east of the property. No stained soil or chemical containers were observed on the Subject Property. Based on the observed materials being related to household items these materials do not represent a REC to the Subject Property.

7.0 PHYSICAL SETTING ANALYSIS

7.1 TOPOGRAPHY

EnviroPhase has reviewed the United States Geological Survey (USGS) Chickasha, OK, 7.5 Minute quadrangle topographic map, dated 2022. The Subject Property is located at approximately 1137 feet above Mean Sea Level with a topographic gradient generally sloping in a north eastern direction.

7.2 GEOLOGY

According to the Geologic Age and Rock Stratigraphic Unit, the Subject Property is underlain by the Permian Age, Lower part of Leonardian Series (P3a). The Leonardian Series is normal marine inter stratified fossiliferous limestones and shales of the lower Permian (Wolfcampian) to the typical red beds of the upper part of Permian section.

7.3 HYDROLOGY

According to the Oklahoma Water Resources Board online mapping tool the principal aquifer underlying the Subject Property area is the Washita River. This minor bedrock aquifer is comprised of alluvium and terrace.

7.4 SOILS

According to the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, the Subject Property soils are the Tellar loam, Yahola fine sandy loam and Zaneis loam. The Teller loam, with slopes of 3 to 5 percent, are characterized by clay, well drained soils, with medium capacity to runoff, and capacity of the most limiting layer to transmit water moderately high. The Yahola fine sandy loam, with slopes of 0 to 1 percent, are characterized by fine sandy, to loam to stratified loam to loamy to fine sand to fine sandy loam, well drained soils, with negligible capacity to runoff, and capacity of the most limiting layer to transmit water high. The Zaneis loam, with slopes of 3 to 8 percent, are characterized by loam, clay loam, sandy clay loam, loam, to silt loam, well drained soils, with low capacity to runoff, and capacity of the most limiting layer to transmit water moderately low.

7.5 FLOOD POTENTIAL

According to the EDR Radius Report with GeoCheck, the Subject Property is mapped on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel number 40051C0290E , Effective Date: April 3, 2012. The Subject Property is located in flood Zone X, area of minimal flood hazard. This flood zone area is described as an area of low flood hazard outside of the 100-year and 500-year flood plains. However the east adjacent property is located in Zone AE.

Zone AE special flood hazard area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30 year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.

7.6 SURFACE WATER

The nearest surface water consists of an unnamed creek located on the eastern property line.

7.7 ON-SITE WATER WELLS

No water wells were identified on the Subject Property.

7.8 DEPTH TO GROUNDWATER

According to the Oklahoma Water Resources Board online mapping tool the depth to groundwater is approximately 30 feet below ground surface.

7.9 GROUNDWATER DIRECTION

Based on local topographic relief from the Chickasha, OK, 7.5-minute topographic map dated 2022, groundwater likely flows in a northeastern direction.

7.10 OIL AND GAS OPERATIONS, EXPLORATION, OR PRODUCTION

According to the Oklahoma Corporation Commission, a natural gas transmission pipeline meter is located on the southwest of the parcel. Typically, oil/gas companies leasing a portion of a property for drilling and extraction activities are responsible for any potential impacts caused by their activities. Generally, the lease contracts with property owners for these types of operations have a requirement for exit sampling upon decommission of a well head. Based on this information, the presence of the on site natural gas well is not expected to represent a significant environmental concern for the subject property at this time.

7.11 VAPOR ENCROACHMENT

Based on lack of operations of environmental concern on the Subject Property, it is unlikely vapor intrusion issues would be an environmental concern for the Subject Property.

7.12 Ecological Resources /Threatened or Endangered Species

A National Environmental Policy Act (NEPA) Search Map Report was obtained from Environmental Data Resources, Inc. (EDR). According to EDR, there are no officially designated wilderness areas,

wildlife preserves, sanctuaries, refuges, scenic rivers, fish and wildlife within a 1 mile radius of the Subject Property.
There are listings for threatened and endangered species in the county. See Appendix F for the county's threatened and endangered species list.

7.13 Historic Properties

A National Environmental Policy Act (NEPA) Search Map Report was obtained from Environmental Data Resources, Inc. (EDR). According to EDR, there are no national registered historic places, state historic places or Indian reservations within a 0.25-miles radius from the Subject Property.

7.14 Wetlands

A National Environmental Policy Act (NEPA) Search Map Report was obtained from Environmental Data Resources, Inc. (EDR). According to EDR, there are no wetlands areas are located on the Subject Property. However, the eastern adjacent property is mapped in flood zone AE. Zone AE special flood hazard area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30 year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. In addition, the pond located approximately 634 feet southeast of the Subject Property was mapped as Palustrine, unconsolidated bottom, permanently flooded, diked or impounded feature.

EPA defines wetlands as areas where water covers the soil or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. EPA and United States Army Corps of Engineers (USACE) require that impact to wetlands and waters of the United States be taken into consideration prior to development in the area. Determining wetland boundaries was not part of the scope of work.

7.15 FCC & FAA Properties

A National Environmental Policy Act (NEPA) Search Map Report was obtained from Environmental Data Resources, Inc. (EDR). According to EDR, no sites were mapped on or adjacent to the Subject Property.

8.0 PREVIOUS ENVIRONMENTAL REPORTS REVIEWED

A Structural Damage Evaluation dated July 12th, 2011, performed by PT&C Forensic Consulting Services, P.A. was provided to EnviroPhase upon completion of an open records request returned by City of Chickasha. It was reported high winds associated with tornadoes occurred in the area on or about May 24th, 2011. In PT&C's professional opinion, it was determined that the overall structural integrity of Building 13-14 had not been comprised to the extent that would necessitate its complete demolition and reconstruction, however building elements of Building 13-14 did sustain damage as a result of exposure to excessive high force winds. Copies of the ORR request and response are included in Appendix G - Supporting Documents.

9.0 INTERVIEWS

The objective of interviews is to obtain information indicating Recognized Environmental Conditions in connection with the Subject Property.

9.1 OWNER QUESTIONNAIRE

A Seller Questionnaire was provided and returned by the current ownership. It is available for review in Appendix G. The Owner Questionnaire did not contain pertinent information related to environmental conditions associated with the Subject Property.

9.2 LOCAL GOVERNMENT AGENCY

On July 8th, 2024, EnviroPhase submitted an Open Records Request (ORR) to the City of Chickasha for records relating to the Subject Property. On July 17th, 2024, the City of Chickasha responded with records of Inspection, Case Overview, and Structural Damage Evaluation. More discussion regarding the prior report can be found in section 8.0. Copies of the ORR request and response are included in Appendix G - Supporting Documents.

9.3 FIRE DEPARTMENT

EnviroPhase contacted the Chickasha Fire Department regarding records associated with the Subject Property. As of the date of issue of this report, EnviroPhase has not received any records.

10.0 FINDINGS AND CONCLUSIONS

EnviroPhase has conducted a Phase I Environmental Site Assessment (ESA) on the property known as Chickasha Villa located at 100 East Country Club Road in Chickasha, Grady County, OK in accordance with ASTM E1527-21/AAI to ascertain whether evidence exists indicating the potential presence or absence of hazardous substances as that term is defined in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). EnviroPhase also searched for evidence of the presence or absence of petroleum products or materials.

10.1 CONCLUSIONS

In the professional opinion of EnviroPhase, an appropriate level of inquiry has been made into the previous ownership and past and current uses of the Subject Property consistent with good commercial and customary practice to minimize liability.

This assessment has concluded the following:

Recognized Environmental Conditions (RECs) Identified:

- None

Controlled Recognized Environmental Conditions (CRECs) Identified:

- None

Historical Recognized Environmental Condition (HREC) Identified:

- None

De Minimis Conditions Identified:

- Minor oil staining in parking spaces.

Vapor Encroachment Conditions (VECs):

- None

10.2 NON-SCOPE CONSIDERATIONS

The following non-scope considerations were evaluated as part of this assessment:

- Asbestos-Containing Building Materials
- Cultural and Historic Resources
- Ecological Resources
- Endangered Species

- Wetlands

Our assessment included a Phase I ESA. The following Non-Scope Considerations are beyond the scope of ASTM E1527-21 and were not evaluated during this assessment:

- Biological Agents
- Health and Safety
- Indoor Air Quality: unrelated to releases of hazardous substances or petroleum products into the environment
- Industrial Hygiene
- Lead-based Paint: unrelated to releases into the environment
- Lead In Drinking Water
- Mold or Microbial Growth Conditions
- PCB-containing Building Materials
- Naturally Occurring Radon
- Regulatory Compliance
- Emerging Contaminants: substances not classified as a CERCLA hazardous substance

10.3 RECOMMENDATIONS

No further investigations are recommended at this time.

11.0 SIGNATURES STATEMENT

This report has been prepared by the staff of EnviroPhase for River Bend Villas, as their interests may appear, under the professional supervision of the principal staff whose signatures appear hereon. Neither EnviroPhase nor any staff member assigned to this investigation has any interest or contemplated interest, financial or otherwise, in the Subject Property or the properties surrounding the Subject Property and has no personal bias with respect to the parties involved. The information in this report has received appropriate technical review and approval. The conclusions represent professional judgments and are founded upon the findings of the investigation identified in the report and the interpretation of such data based on EnviroPhase personnel's experience and expertise according to the existing standard of care. No other warranty or limitation exists, either expressed or implied.

P. Trigueros

Patty Trigueros
Associate, Environmental Services

Jennifer Wiberg

Jennifer Wiberg
Director, Environmental Services

12.0 REFERENCES

Environmental Data Resources (EDR)
Regulatory Data Report
Physical Setting Report
Aerial Photographs
Sanborn Fire Insurance Maps
City Directory Abstract
Historic Topographic Maps

Chickasha, OK
Fire Marshall
Health Department Environmental Services

FEMA Flood Map Service Center Online
https://www.fema.gov/flood-maps/national-flood-hazard-layer
Accessed on July 19th, 2024

Oklahoma Corporation Commission
https://public.occ.ok.gov/OGCDWellRecords
Accessed on July 19th, 2024

Association of Central Oklahoma Governments
https://www.acogok.org/water/groundwater-oklahoma/aquifers-in-oklahoma/
Accessed on

USGS Geology Locator
https://webapps.usgs.gov/geologlocator
Accessed on July 19th, 2024

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Paper Document submittal.

C. Electronic document submittal.

D. Preconstruction meeting.

E. Site mobilization meeting.

F. Progress meetings.

G. Submittals for review, information, and project closeout.

H. Requests for Interpretation (RFI) procedures.

I. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions of the Contract: Dates for applications for payment.

B. Section 01 00 00 - General Requirements: IECC Energy Efficiency test reports.

C. Section 01 35 64 - Sustainable Construction Requirements: Reporting related to sustainability certification project procedures.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with the requirements of this Section for coordination of execution of administrative tasks with timing of construction activities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DOCUMENT SUBMITTAL - GENERAL

A. Submittals shall be reviewed by the Architect within ten (10) business days from receipt and shall be returned to the Contractor for action or distribution.

1. All Submittals shall be reviewed and approved – by stamp and/or signature - by the Contractor prior to submission to the Architect. Submittals received by the Architect and not approved by the Contractor will be returned without review or processing.
2. Submittals that require review by the Architect’s or Owner's Consultants shall be forwarded to the Consultant upon receipt by the Architect. The Consultant shall then have ten (10) business days from receipt of submittal to review and return to the Architect, whereupon the Architect shall forward the reviewed submittal to the Contractor. The Contractor shall take into account the additional time associated with this process when scheduling.
3. Besides submittals for review, information, and closeout, this procedure applies to requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.

3.02 PAPER DOCUMENT SUBMITTAL

A. Submit a minimum of five (5) copies of each submittal for the Architect’s review and use in distribution to the Owner. Where the submittal will require review by the Architect’s or Owner’s Consultants, submit seven (7) copies of each submittal. The Architect shall return a minimum of three (3) copies upon completion of review process.

3.03 ELECTRONIC DOCUMENT SUBMITTAL

A. All documents transmitted for purposes of administration of the contract may be in electronic (PDF) format and transmitted via e-mail.

B. All electronic Submittals shall be sent to the Architect from the Contractor – electronic submittals from sub-contractors will not be accepted.

C. All electronic submittals shall have the stamp and/or signature of approval by the Contractor indicating product or equipment submitted has been reviewed for compliance with Contract Documents.

D. All electronic submittals shall be in 8-1/2 x 11 inches (Letter) format. No other page/paper size submittals will be accepted.

E. Each electronic Submittal shall be no larger than 20 megabytes file size. Submittals with multiple PDF files that exceed this limit must be submitted in separate, smaller parts.

F. All electronic Submittals shall be reviewed and returned in (PDF) format; no hard copies shall be provided. The General Contractor shall be responsible for any necessary reproduction and distribution of the reviewed electronic submittal to his sub-contractors.

G. Electronic document requirements do not apply to samples or color selection charts.

H. The Architect is not responsible for any delays in the review process due to:
   1. Misdirected or lost emails.
   2. Corrupted files, or files that otherwise, can not be opened.
   3. Non-legible or incomplete scans.
   4. Technical issues or difficulties with email servers outside of the Architect's office.
   5. Technical issues, difficulties, or outages of the Internet that occur outside of the Architect's office.

3.04 PRECONSTRUCTION MEETING

A. Architect or Oklahoma Housing Finance Agency (OHFA) shall schedule a meeting prior to start of construction.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. OHFA Representative.
   5. USDA-RD Representative.
   6. Special consultants.
   7. Contractor's superintendent.
   8. Major subcontractors.

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and partial occupancy prior to completion.
   3. Review of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   5. Survey and building layout.
   6. Security and housekeeping procedures.
   7. Schedules.
   8. Application for payment procedures.
   9. Procedures for testing.
   10. Procedures for maintaining record documents.

D. Record minutes and distribute copies within five business days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.05 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. OHFA Representative.
   5. USDA-RD Representative.

6. Contractor's superintendent.
7. Major subcontractors.

C. Agenda:
1. Review of work progress.
2. Field observations, problems, and decisions.
3. Identification of problems that impede, or will impede, planned progress.
4. Review of submittals schedule and status of submittals.
5. Maintenance of progress schedule.
6. Corrective measures to regain projected schedules.
7. Planned progress during succeeding work period.
8. Maintenance of quality and work standards.
9. Effect of proposed changes on progress schedule and coordination.
10. Other business relating to work.

D. Record minutes and distribute copies within five working days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.06 REQUESTS FOR INTERPRETATION (RFI)

A. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

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.

C. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.

D. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

E. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.

F. 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.

3.07 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 Architect 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 .

3.08 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Sustainability design submittals and reports.
3. Certificates.
4. Test reports.
5. Inspection reports.

6. Manufacturer's instructions.
7. Other types indicated.

B. Submit for Architect's knowledge as contract administrator or for Owner.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Energy Audit Report when required.

B. Submit Correction Punch List for Substantial Completion.

C. Submit Final Correction Punch List for Substantial Completion.

D. When the following are specified in individual sections, submit them at project closeout:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

E. Submit for Owner's benefit during and after project completion.

3.10 SUBMITTAL PROCEDURES

A. General Requirements:
1. Use a separate transmittal for each item.
2. Transmit using approved form.
3. Sequentially identify each item. For revised submittals use original number and a sequential alphabetical suffix.
4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
5. 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.
6. Schedule submittals to expedite the Project, and coordinate submission of related items.
7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
8. Provide space for Contractor and Architect review stamps.
9. When revised for resubmission, identify all changes made since previous submission.
10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
11. 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.
12. Submittals not requested will be recognized, and will be returned "Not Reviewed",

B. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.
4. Do not submit (Material) Safety Data Sheets for materials or products.

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. 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. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.11 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and accept, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt, but will take no other action.

C. Architect'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.

D. Architect's and consultants' actions on items submitted for review:
   1. Authorizing purchasing, fabrication, delivery, and installation:
      a. "No Exceptions Taken", or language with same legal meaning.
      b. "Exceptions Noted", or language with same legal meaning.
         1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
   2. Not Authorizing fabrication, delivery, and installation:
      a. "Revise and Resubmit".
         1) Resubmit revised item, with review notations acknowledged and incorporated.
      b. "Rejected".
         1) Submit item complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "No Action Taken" - to notify the Contractor that the submittal has been received for record only.

END OF SECTION

SECTION 01 35 65

HERS RATING DESIGN REVIEW

DOCUMENTS

1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:

HOME ENERGY RATING SYSTEM DESIGN REVIEW

ECONSULTANTS, LLC
8 PAGES
10/22/2024

econsultants
THE FUTURE OF BUILDING

HERS Rating Design Review

Date: 10/22/24
Project: River Bend Villas
Address: 100 Country Club Road
City & State: Chickasha, OK 73018

Client: Trinity Housing Development

Highest HERS 3BR Bottom Floor = **77**. Lowest HERS 2BR Bottom Floor = **58**.

Component	River Bend Villas
Slab/Footing insulation	Assumed uninsulated
Exterior Wall	Assumed 2x4 R13 Grade 3
Windows	.40 U factor .25 SHGC
Attic	R38 Grade 1
HVAC	14.3 SEER2 7.5 HSPF2
Water heating	.93UEF/.95EF Electric Water Heater
Appliances	Energy Star Fridge & Dishwasher
Thermostat	Non-programable
Mechanical Ventilation	None
Lighting	100% LED
Blower Door Test	15 ACH
Duct Leakage TL/LO	20% & 15%
Hot waterline insulation	None
Duct insulation	Existing R4.2

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: LXEJyMbd

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

77

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$287

*Relative to an average U.S. home

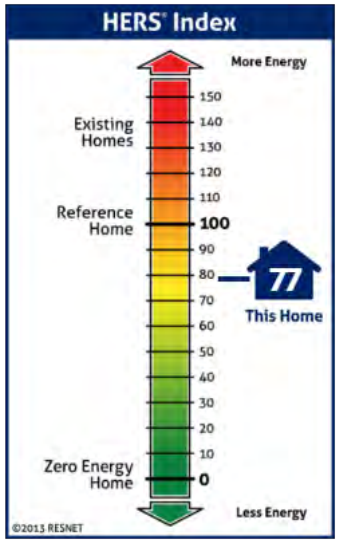
Home:
100 E Coundry Club Road 1BR Bottom EXT.
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	5.2	$121
Cooling	1.7	$40
Hot Water	6.1	$143
Lights/Appliances	9.6	$224
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**22.5**	**$588**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	675 ft²
Number of Bedrooms:	1
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 15.00 ACH50)
Ventilation:	None
Duct Leakage to Outside:	101.25 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Adiabatic, R-13
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

ekotrope

Ekotrope RATER - Version:4.2.2.3505
The Energy Rating Disclosure for this home is available from the Approved Rating Provider.
This report does not constitute any warranty or guarantee.

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: LVpoqb0v

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

64

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$572

*Relative to an average U.S. home

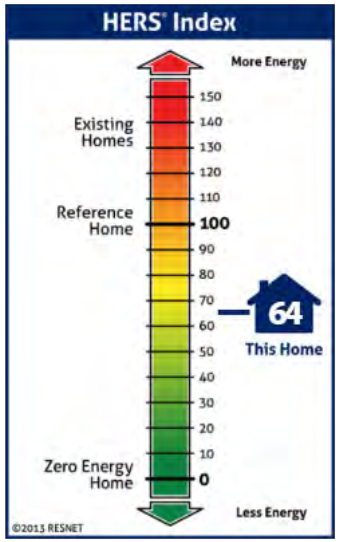
Home:
100 E Coundry Club Road 2BR Bottom EXT.
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	9.6	$225
Cooling	3.0	$71
Hot Water	6.6	$155
Lights/Appliances	10.9	$255
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**30.2**	**$767**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	793 ft²
Number of Bedrooms:	2
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 15.00 ACH50)
Ventilation:	None
Duct Leakage to Outside:	118.95 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Adiabatic, R-13
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: dNBebq8d

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

58

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$509

*Relative to an average U.S. home

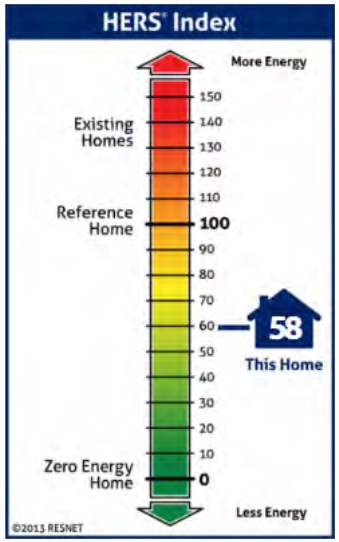
Home:
100 E Coundry Club Road2BR Bottom Middle
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	1.7	$39
Cooling	2.9	$68
Hot Water	6.9	$161
Lights/Appliances	10.9	$255
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**22.4**	**$584**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	793 ft²
Number of Bedrooms:	2
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 5.55 ACH50)
Ventilation:	None
Duct Leakage to Outside:	118.95 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Adiabatic, R-13
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: 23JexP9v

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

64

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$516

*Relative to an average U.S. home

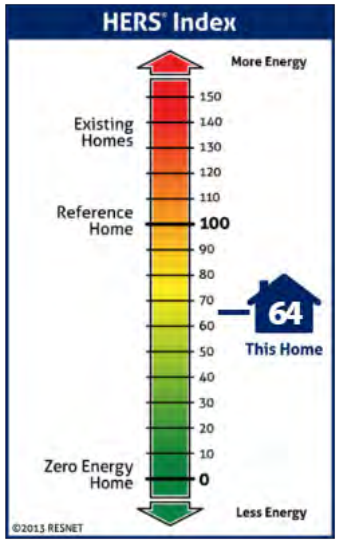
Home:
100 E Coundry Club Road 2BR Top Ext
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	4.4	$104
Cooling	4.6	$107
Hot Water	7.1	$167
Lights/Appliances	10.9	$256
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**27.1**	**$694**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	793 ft²
Number of Bedrooms:	2
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 10.80 ACH50)
Ventilation:	None
Duct Leakage to Outside:	118.95 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Attic, R-38
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	R-11

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: dG5gbMD2

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

75

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$356

*Relative to an average U.S. home

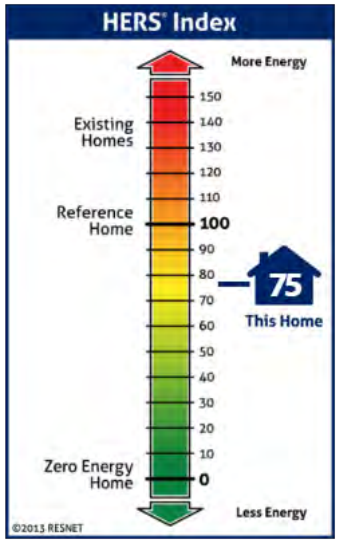
Home:
100 E Coundry Club Road 2BR Top Middle
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	6.1	$142
Cooling	2.1	$49
Hot Water	6.6	$155
Lights/Appliances	11.2	$262
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**26.0**	**$669**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, inside unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	793 ft²
Number of Bedrooms:	2
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 15.00 ACH50)
Ventilation:	None
Duct Leakage to Outside:	118.95 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Adiabatic, R-13
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

ekotrope

Ekotrope RATER - Version:4.2.2.3505
The Energy Rating Disclosure for this home is available from the Approved Rating Provider.
This report does not constitute any warranty or guarantee.

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: dq3Ag0M2

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

77

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$388

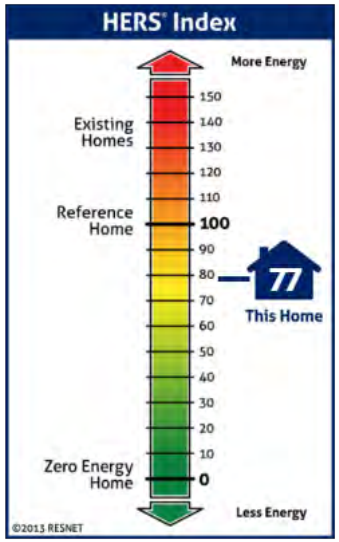
*Relative to an average U.S. home

Home:
100 E Coundry Club Road 3BR Top
Chickasha, OK 73018
Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	7.5	$176
Cooling	2.8	$66
Hot Water	8.4	$196
Lights/Appliances	12.5	$293
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**31.2**	**$791**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, inside unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	980 ft²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 15.00 ACH50)
Ventilation:	None
Duct Leakage to Outside:	147 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Adiabatic, R-13
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	N/A

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

Home Energy Rating Certificate

Projected Report
Based on Plans

Rating Date: 2024-10-22
Registry ID:
Ekotrope ID: 25Y7ozM2

econsultants
THE FUTURE OF BUILDING

HERS® Index Score:

78

Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

Annual Savings

$481

*Relative to an average U.S. home

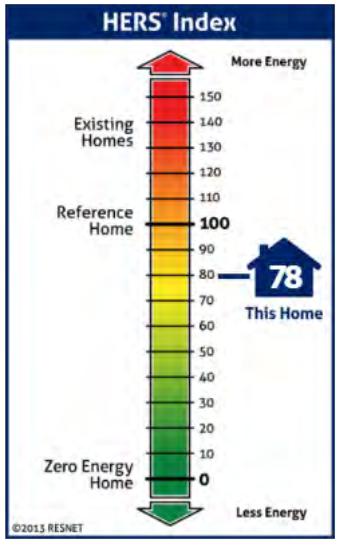
Home:
100 E Coundry Club Road 3BR Type B
Chickasha, OK 73018

Builder:

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	10.5	$245
Cooling	3.9	$93
Hot Water	8.5	$199
Lights/Appliances	13.9	$326
Service Charges		$60
Generation (e.g. Solar)	0.0	$0
Total:	**36.8**	**$923**

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	typ 3-br-b
Community:	N/A
Conditioned Floor Area:	1,350 ft²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 7.5 HSPF2
Primary Cooling System:	Air Source Heat Pump • Electric • 14.3 SEER2
Primary Water Heating:	Residential Water Heater • Electric • 0.95 Energy Factor
House Tightness:	15 ACH50 (Adjusted Infiltration: 15.00 ACH50)
Ventilation:	None
Duct Leakage to Outside:	202.5 CFM @ 25Pa (15 / 100 ft²)
Above Grade Walls:	R-13
Ceiling:	Attic, R-38
Window Type:	U-Value: 0.4, SHGC: 0.25
Foundation Walls:	N/A
Framed Floor:	R-19

Rating Completed by:

Energy Rater: Blake McClallen
RESNET ID: 5406483

Rating Company: econsultants LLC
302 Campusview Drive, Suite 209, Columbia, MO 65201
660-826-7000

Rating Provider: RATERusa
PO BOX 1280
855-273-7872

Blake McClallen, Certified Energy Rater
Digitally signed: 10/22/24 at 4:15 PM

SECTION 01 61 16

VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.
   3. Flooring.
   4. Composite wood.
   5. Products making up wall and ceiling assemblies.
   6. Thermal and acoustical insulation.

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Exterior and interior paints and coatings applied on site;.
   2. Exterior and interior adhesives and sealants applied on site, including flooring adhesives.
   3. Wet-applied roofing and waterproofing.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).

C. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers; California Department of Public Health; v1.1, 2010.

D. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; California Air Resources Board; current edition.

E. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.

F. CHPS (HPPD) - High Performance Products Database; Current Edition at www.chps.net/.

G. CRI (GLP) - Green Label Plus Testing Program - Certified Products; www.carpet-rug.org; current edition.

H. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.

I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

J. SCS (CPD) - SCS Certified Products; current listings at www.scscertified.com.

K. UL (GGG) - GREENGUARD Gold Certified Products; current listings at http://http://productguide.ulenvironment.com/QuickSearch.aspx.

1.05 SUBMITTALS

A. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

B. Sustainable Design Reporting: Submit evidence of compliance.

C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using New Single-Family Residence exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
   1. Wet-Applied Products: State amount applied in mass per surface area.
   2. Paints and Coatings: Test tinted products, not just tinting bases.
   3. Evidence of Compliance: Acceptable types of evidence are the following;
      a. Current UL (GGG) certification.
      b. Current SCS (CPD) Floorscore certification.
      c. Current SCS (CPD) Indoor Advantage Gold certification.
      d. Current listing in CHPS (HPPD) as a low-emitting product.
      e. Current CRI (GLP) certification.
      f. Test report showing compliance and stating exposure scenario used.
   4. Product data submittal showing VOC content is NOT acceptable evidence.
   5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.

B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.
      b. Certification by manufacturer that product complies with requirements.

C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Current SCS "No Added Formaldehyde (NAF)" certification; www.scscertified.com.
      b. Report of laboratory testing performed in accordance with requirements.
      c. Published product data showing compliance with requirements.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. All Products: Comply with the most stringent of Federal, State, and Local requirements, or these specifications.

B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
   1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard or contain no added formaldehyde resins.
   2. Inherently Non-Emitting Materials.

C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.

2. Joint Sealants: SCAQMD 1168 Rule.
3. Paints and Coatings: Each color; most stringent of the following:
   a. 40 CFR 59, Subpart D.
   b. SCAQMD 1113 Rule.
   c. CARB (SCM).
4. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

SECTION 02 41 00
SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

1.02 REFERENCE STANDARDS

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove portions of existing buildings in the following sequence:
   1. Interior salvage and demolition.
   2. Exterior salvage of building elements and demolition.
   3. Outlying structures or buildings, sidewalks, paving, and site features.

B. Remove roofing, underlayment, flashing and all associated items to accomplish new work.

C. Remove Soffits, flashings, gutters and downspouts, and associated items.

D. Remove paving, curbs, and sidwalks as indicated on drawings.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   6. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   7. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Minimize production of dust due to demolition operations. Do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. Hazardous Materials:
   1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.

F. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

G. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

E. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

F. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and/or existing record documents only.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction sufficient to withstand construction activities in locations where required.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove and store existing elements designated to be salvaged or re-used.
   1. Protect salvaged items from damage due to construction activities, theft, and weather until re-installed or returned to Owner.

E. Remove existing work as indicated and required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
   2. Remove items indicated on drawings.

F. Services (Including, but not limited to, HVAC, Plumbing, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. 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.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment; remove back to source of supply where possible, otherwise cap stub and tag with identification.

G. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.
   2. Prevent damage to existing elements and features, such as woodwork, fixtures, doors, and windows designated to remain
   3. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
   4. Repair adjacent construction and finishes damaged during removal work.
   5. Patch to match new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site and dispose of legally.

B. Remove from site all materials not to be reused on site; do not burn or bury.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Sections:

1. Division 31 Section "Earth Moving" for drainage fill under slabs-on-grade.

1.2 ACTION SUBMITTALS

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

B. Design Mixtures: For each concrete mixture.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Floor surface flatness and levelness measurements.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.

2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

D. Concrete Testing Service: Owner engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:

1. Portland Cement: ASTM C 150 Type I/II, gray. Supplement with the following:

a. Fly Ash: ASTM C 618, Class F or C.

b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, graded.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).

B. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

2.6 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.7 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.8 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.9 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 20 percent.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture in concrete, as required, for placement and workability.

D. Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: As required by prints at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.50 – footings; 0.45 – all other mixes

3. Slump Limit: 4 inches (125 mm) or 8 inches (200 mm for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).

4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

5. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

a. Add water vapor reducing admixture per manufacturers specified dosage rate to ready mix truck at the batch plant, or jobsite before discharge, mix rapidly for 7 minutes. (Follow Manufacturer’s Instructions).

2.10 FABRICATING REINFORCEMENT

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

2.11 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR RETARDERS

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Cold-Weather Placement: Comply with ACI 306.1.

D. Hot-Weather Placement: Comply with ACI 301.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch (3.2 mm) at the gymnasium floor and 1/4" (6.4mm) at all other locations.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. **Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.**

4. **Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.**

3.10 CONCRETE SURFACE REPAIRS

A. **Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.**

3.11 FIELD QUALITY CONTROL

A. **Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.**

END OF SECTION 033000

SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Curing Compounds.

B. Clear penetrating sealers.

PART 2 PRODUCTS

2.01 COATINGS

A. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Liquid, membrane-forming, clear sealer, for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
   1. Use this product to cure and seal all slabs to receive adhesively applied flooring.
   2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
   3. VOC Content: Less than 100 g/L.
   4. Solids Content: 25 percent, minimum.
   5. Manufacturers:
      a. Master Builders Solutions; MasterKure CC 160 WB (formerly Kure-N-Seal): www.master-builders-solutions.com
      b. Or approved equal.

B. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
   1. Application: Use at exposed slabs and toppings not scheduled to receive finish flooring.
   2. Vehicle: Water-based.
   3. VOC Content: OTC compliant.
   4. Manufacturers:
      a. Dayton Superior Corporation; Cure & Seal 1315 EF: www.daytonsuperior.com.
      b. Euclid Chemical Company; DIAMOND CLEAR VOX: www.euclidchemical.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

3.03 COATING APPLICATION

A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.

B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.

C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.

D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

END OF SECTION

SECTION 03 52 10

LIGHTWEIGHT CONCRETE FLOOR FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Lightweight concrete fill over structural floor deck (Balconies).

1.02 REFERENCE STANDARDS

A. ASTM C138/C138M - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete; 2016a.

B. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.

C. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.

D. ASTM C495/C495M - Standard Test Method for Compressive Strength of Lightweight Insulating Concrete; 2012.

E. ASTM E1993/E1993M - Standard Specification for Bituminous Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs; 1998 (Reapproved 2013).

F. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2013).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide physical characteristics, thermal values, product limitations and product compatibility with floor coverings.

C. Manufacturer's Installation Instructions: Indicate mix instructions.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer .

1.05 FIELD CONDITIONS

A. Do not place insulating concrete mix at ambient temperatures lower than 40 degrees F without heating mix water to 90 to 110 degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Lightweight Insulating Concrete:
   1. Elastizell Corp. of America: www.elastizell.com.
   2. Or approved equal.

2.02 MATERIALS

A. Cement: ASTM C150/C150M, Portland Type I - Normal, gray color.

B. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

C. Sand: ASTM C33: Washed and graded.

D. Aggregates: ASTM C332: 3/8 inch or smaller pea gravel, or lightweight aggregates may be used.

E. Admixtures: Admixtures for water reducing, or accelerating cure may be used in accordance with manufacturer's recommendations where required for unusual project conditions.

F. Reinforcement: 1/2 inch polyester fibers with a tensile strength greater than 130ksi or as recommended by by manufacturer.

2.03 CONCRETE MIX

A. Test for compressive strength in accordance with ASTM C495/C495M, for wet density in accordance with ASTM C138/C138M, and for dry density after oven drying.

B. Provide concrete mix with the following minimum properties:
   1. Cast Density: 34 to 42 pounds per cubic foot.

2. Compressive Strength: 160 pounds per square inch

2.04 ACCESSORIES

A. Reinforcement:
   1. Hexagonal woven wire mesh; galvanized, sizes as recommended by manufacturer.

B. Underslab Waterproofing and Vapor Retarder: Semi-rigid bituminous membrane, seven-ply, complying with ASTM E1993/E1993M.
   1. Composition: Weather-resistant coated, permanently bonded bituminous core board composed of an inner core, suspended and sealed within high melt point asphalt-impregnated felt, with glass mat liner and polyethylene anti-stick sheet.
   2. Permeance: 0.002 perms, maximum.
   3. Tensile Strength: 140 pounds-force/inch, minimum.
   4. Puncture Resistance: 90 pounds-force, minimum, when tested in accordance with ASTM E154/E154M.
   5. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
   6. Products:
      a. W. R. Meadows, Inc; PRECON-Blindside/Underslab Membrane: www.wrmeadows.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

B. Notify Architect immediately of conditions that would prevent correct and timely installation.

C. Do not proceed with work until detrimental conditions have been corrected.

3.02 PREPARATION

A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.

B. Vacuum clean surfaces.

C. Prime and waterproof substrate in accordance with rubberized asphalt membrane manufacturer's instructions.

D. Close floor openings.

3.03 INSTALLATION

A. Lightweight concrete shall be pumped or otherwise transported to the place of final deposition in accordance with manufacturer's approved methods.
   1. Pumping height shall not adversely affect material.

B. Field density shall be checked periodically during placement of material.
   1. Variations greater than +/- 4 pcf between the recommended density and the density at point of discharge will require a modification be made to the mix.

C. Finishing: Lightweight concrete shall be screeded from 2-1/2 inches at building face to a nominal thichness of 2 inches at outside edge of deck for drainage.
   1. Hand steel trowel and broom finish with tooled joints every 8 linear feet.

D. Slope concrete for surface drainage as indicated.

3.04 CURING

A. Prohibit load and foot traffic for a minimum of 24 hours from time of initial set, or longer if applicator determines project or weather conditions require.
   1. Floor should not be loaded for a minimum of one week (7 days), then when loaded, loads should be distributed and not concentrated.

B. Cure in accordance with lightweight aggregate manufacturer's instructions.

END OF SECTION

SECTION 04 01 00

MASONRY TUCKPOINTING AND REPAIR

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Repointing mortar joints.

B. Replacement of damaged and deteriorated masonry.

1.02 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2013.

B. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.

C. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.

D. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.

E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Include mortar design mix and indicate whether Proportion or Property specification aof ASTM C270 is to be used. Also include environmental condition and admixture limitations.

C. Samples: Submit four samples of face brick and stone units to illustrate matching color, texture and extremes of color range.

D. Manufacturer's Instructions: For cleaning materials and bonding agents; indicate special procedures, conditions requiring special attention.

1.04 QUALITY ASSURANCE - MASONRY WORK

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of Contract Documents.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store tuckpointing mortar materials in manufacturer's packaging.

1.06 FIELD CONDITIONS - MASONRY WORK

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 MANUFACTURERS

A. Restoration and Cleaning Chemicals:
   1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
   2. HMK Stone Care System: www.hmkstonecare.com.
   3. PROSOCO: www.prosoco.com.
   4. Or approved equal.

2.02 CLEANING MATERIALS

A. Cleaning Agent: Detergent type.

2.03 MORTAR MIX DESIGNS

A. Mix mortar materials in the following proportions:
   1. Pointing Mortar (cement/lime/sand): 1:1:6 (Type N).

2.04 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M.

1. Type: Type II - Moderate; ASTM C150/C150M.
2. Color: White.

B. Hydrated Lime: ASTM C207; Type S.

C. Mortar Aggregate: ASTM C144: Natural sand, color and texture to match existing.

D. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
1. Color(s): To exactly match existing.

E. Water: Clean and potable.

2.05 MASONRY MATERIALS

A. Brick: Replacement brick shall match existing brick in color, size, and texture.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify installed work of other trades effecting this work is complete and ready for work of this section to begin.

B. Verify that surfaces to be cleaned and restored are ready for work of this section.

3.02 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Cover existing landscaping with tarpaulins or similar covers.

D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

E. Close off adjacent occupied areas with dust proof and weatherproof partitions.

3.03 REBUILDING

A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.

B. Cut away loose or unsound adjoining masonry and mortar as directed.

C. Mortar Mix: Colored and proportioned to match existing work.

D. Ensure that anchors are correctly located and built in.

3.04 REPOINTING

A. Perform repointing prior to cleaning masonry surfaces.

B. Remove loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached in joints less than 3/8 inch thick.

C. Remove loose or disintegrated mortar in joints to minimum 1 inch depth or until sound mortar is reached in joints 3/8 inch thick or greater.

D. Use hand tools only. Do not use power tools.

E. Do not damage masonry units.

F. Remove dust and loose particles from joints with air jet.

G. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.

H. Moist cure for 72 hours.

3.05 CLEANING NEW (INFILL) MASONRY

A. Verify mortar is fully set and cured.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Scrub walls with cleaning agent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, pressurized water.

3.06 CLEANING

A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

C. Clean surrounding surfaces.

END OF SECTION

SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Clay facing brick.

C. Mortar and grout.

D. Reinforcement and anchorage.

E. Flashings.

F. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.

C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).

D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.

F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016.

G. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.

H. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.

I. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).

J. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2016.

K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.

L. ASTM C476 - Standard Specification for Grout for Masonry; 2016.

M. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.

N. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.

O. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2005.

P. BIA Technical Notes No. 18A - Accommodating Expansion of Brickwork; 2006.

Q. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.

R. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2005.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units and masonry accessories.

C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials such as mud, grease, or other debris.
   1. Concrete Masonry Units: Store cubes in single stacks on level ground, covered and protected from inclement weather.
   2. Veneer Brick: Inspect bricks upon delivery at site and immediately inform manufacturer or supplier of any observed defects.
   3. Protect bagged materials and brick siding units from rain and groundwater by covering and storing on pallets or other means.
   4. Carefully stack and store all flashings and metal trim to prevent creasing, twisting, or other damage.

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 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Special Shapes: Provide non-standard blocks configured for end return blocks and other detailed conditions.
   3. Load-Bearing Units: ASTM C90, medium weight.
      a. Exposed Faces: Manufacturer's standard color and texture where indicated.

2.02 BRICK UNITS

A. Manufacturers:
   1. Belden Brick: www.beldenbrick.com.
   2. Endicott Clay Products Co: www.endicott.com.
   3. Meridian Brick LLC (formerly Boral USA); : www.meridianbrick.com.
   4. Sioux City Brick and Tile Co: www.siouxcitybrick.com
   5. _____.

B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
   1. Color and texture: As selected by Owner.
   2. Actual size: 3-5/8 inches x 2-1/4 inches x 7-5/8 inches.

2.03 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.

E. Water: Clean and potable.

F. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type N.
   2. Color: Standard gray.

G. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

2.04 REINFORCEMENT AND ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.

B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

C. Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Truss.

2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

D. Residential Wall Ties: Corrugated formed sheet metal, 7/8 inch wide by 0.05 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to extend at least 1-1/2 inches into the veneer with at least 5/8 inch of mortar coverage from masonry face.

2.05 THROUGH-WALL FLASHINGS

A. Membrane Non-Asphaltic Flashing Materials:
1. Composite Polymer Flashings - Self-Adhering: Composite PVC with Elvaloy KEE; 30 mil thick with pressure-sensitive adhesive and release paper.
a. Manufacturers:
1) Nervastral Inc.; Nervastral 300 : www.nervastral.com.
2) Wire-Bond Inc.; 30 Mil PVC Flashing: www.wirebond.com.
3) Polyguard Products Inc.; Polyguard Thru Wall flashing Membrane: www.polyguardproducts.com.

B. Factory-Fabricated Flashing Corners and End Dams: by flashing manufacturer.

C. Flashing Sealant/Adhesives: VOC-compliant sealants and adhesives as supplied or recommended by flashing manufacturer.

D. Surface Conditioner: Water-based latex liquid for substrate preparation prior to installation of flashing membrane, as recommended by flashing manufacturer.
1. Application temperature: 25 degrees (F) or above.
2. Freezing Point: 14 degrees (F).
3. VOC Content: Not to exceed 125 g/L.

2.06 ACCESSORIES

A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, fused joints.

B. Joint Filler: Closed cell polyethylene; oversized 50 percent to joint width; self expanding, by maximum lengths available

C. Weeps:
1. Type: Polyester mesh.
2. Manufacturers:
a. CavClear, a Division of Archovations Inc; Weep Vent: www.cavclear.com.
b. Mortar Net Solutions; WeepVent: www.mortarnet.com.

D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
1. Manufacturers:
a. PROSOCO Inc.; SureKlean No. 600: www.prosoco.com
b. Dietrich Tecnologies Inc.; 202 New Masonry Detergent: www.dietrichtechnologies.com.
c. Cleans It All Global Inc; Envirosafe Mansonry Cleaner: www.cleansitall.com.

E. Penetrating Water Repellent: Penetrating, water-based silicone water repellent for concrete and masonry.
1. Manufacturers:
a. PROSOCO Inc.; Sure Klean Weather Seal Siloxane: www.prosoco.com
b. Applied Technologies; A-Tech Masonry and Brick Sealer: www.appliedtechnologies.com.
c. Pecora Corp.; KlereSeal 910-W/920-W: www.pecora.com.

2.07 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Exterior, non-loadbearing masonry: Type N.

B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

E. Mixing: Use mechanical batch mixer and comply with referenced standards.

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.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

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.

3.04 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, vertical dimension typical.
   3. Mortar Joints: 3/8 inch Concave/Rodded.

D. Brick Units:
   1. Bond: Running.
   2. Coursing: Three units and three mortar joints to equal 8 inches.
   3. Mortar Joints: 3/8 inch Concave/Rodded.

3.05 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Interlock intersections and external corners.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Horizontal surfaces exposed to weather: Where water may collect on ledges, caps, or other horizontal surfaces, uniformly slope top surface to provide positive drainage.

3.06 WEEPS

A. Install weeps in cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 REINFORCEMENT AND ANCHORAGE - GENERAL

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 24 inches on center.

B. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

3.08 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

1. Wall ties shall extend into the veneer a minimum of 1-1/2 inches, with not less than 5/8 inch mortar or grout cover to outside face.

3.09 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY

A. Use individual metal ties installed in horizontal joints to bond wythes together. Provide ties spaced as indicated on drawings.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

3.10 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 4 inches, minimum, to form watertight pan at nonmasonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend plastic, laminated, and EPDM flashings to within 1/4 inch of exterior face of masonry.

C. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

D. Install flashing to dry surfaces at air and surface temperatures 25° F and above in accordance with manufacturer’s written installation instructions at locations indicated on the Drawings.

E. Precut pieces of flashing to easily handled lengths for each location.

1. Remove silicone-coated release paper and position flashing carefully before placing in against the surface.
2. When properly positioned, place against surface by pressing firmly into place by hand roller. Fully adhere flashing to substrate to prevent water from migrating under flashing.
3. Overlap adjacent pieces 2 inches and roll all seams with a steel hand roller.
4. Trim bottom edge 1/2 inch back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
5. At heads, sills and all flashing terminations turn up ends a minimum of 2 inches and make careful folds to form an end dam, with seams sealed, or use pre-formed end dams, with seams sealed.
6. Apply a bead or trowel coat of mastic along flashing top edge, seams, cuts and penetrations.

F. Do not expose flashing membrane to sunlight for more than thirty days prior to enclosure.

G. When required by dusty or dirty site conditions or by surfaces having irregular or rough texture, apply surface conditioner by spray, brush or roller at the rate recommended by manufacturer, prior to flashing installation.

1. Allow surface to dry completely before flashing installation.

3.11 LINTELS

A. Install loose steel lintels over masonry openings where indicated on the drawings.

B. Maintain minimum 8 inch bearing on each side of opening.

3.12 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

3.13 CONTROL AND EXPANSION JOINTS

A. Comply with the provisions of BIA Technical Notes No. 18A except where exceeded by the requirements of the Contract Documents.

B. Vertical expansion joints shall be located/installed as shown on the Drawings and/or in accordance with the following:
   1. For brickwork without openings, space expansion joints no more than 25 feet o.c.
   2. For brickwork with multiple openings (doors, windows, etc.) consider symmetrical placement of expansion joints and spacing of expansion joints no more than 20 feet o.c.
   3. Expansion joints shall be located/installed:
      a. At or near corners.
      b. At offsets or setbacks.
      c. At wall intersections.
      d. At changes in wall height.

C. Horizontal expansion joints shall be located immediately below shelf angles. A minimum of 1/4 inch space for compressible material is required below shelf angle.

D. Do not continue horizontal joint reinforcement through control or expansion joints.

E. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

F. Form expansion joint as detailed on the Drawings, or in accordance with BIA Technical Notes No. 18A.

G. Uniformly install rod at level recommended by sealant manufacturer (minimum – depth of joint after backer rod is installed is one half the width).

3.14 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

E. Maximum Variation of Mortar Joint Thickness: 1/8 inch in 3 ft.

3.15 CUTTING AND FITTING

A. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

C. Seal all anular spaces of pipes, conduit, and sleeves penetrating masonry surfaces.

3.16 CLEANING - GENERAL

A. Clean work upon completion of each days work.

B. Remove excess mortar, droppings, and mortar smears.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution.

E. Keep walls clean daily during installation using brushes as harsh cleaning methods after walls have been erected may mar the surface of the masonry.
   1. Do not allow excess mortar lumps or smears to harden on the finished surfaces.

F. Use non-metallic tools in cleaning operations.

3.17 PROTECTION

A. A. Protect finished Work from damage from construction activities.
   1. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.18 CLEANING - FINAL

A. Clean the completed walls with masonry cleaner, strictly following the manufacturer's instructions including thorough rinsing.

B. Do not use acid or abrasives for general cleaning of the finished surfaces.
   1. ONLY for stubborn mortar stains or smears, a 15:1 solution of water and a concentrated, general-purpose acidic cleaner may be used as long as the walls are thoroughly wetted before applying the cleaning solution and thoroughly rinsed with clean water immediately after washing.

C. Failure to strictly follow these and manufacturer's instructions that results in permanent damage to the finished face and requires repair and/or replacement of material will be the responsibility of and at the cost of the Contractor.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items, including:
   1. Bollards.
   2. Trash enclosure gates and posts.

B. Miscellanious structural connectors.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.

E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.

F. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.

G. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014.

H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).

I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

K. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product data: Submit manufacturer's data on products showing compliance with specified requirements and installation instructions.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Pipe: ASTM A53/A53M, Grade B Schedule 40, hot-dip galvanized finish.

D. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

E. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

F. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 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 joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

B. Gate Posts and Gates for trash enclosure: Steel, angle and tube sections with fence picket skin; prime paint finish.
   1. Provide all gate hardware including cane bolts, lock hasp, and hinges.

2.04 FINISHES - STEEL

A. Prime paint steel items.
   1. Exceptions: Galvanize items to be embedded in concrete and items to be imbedded in masonry.
   2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

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

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Obtain approval prior to site cutting or making adjustments not scheduled.

D. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 51 00
METAL STAIRS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stairs with precast concrete treads.

B. Structural steel stair framing and supports.

1.02 REFERENCE STANDARDS

A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.

E. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.

F. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).

H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

I. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's seal and signature on each sheet of shop drawings.

C. Design Data: As required by authorities having jurisdiction.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store shop-fabricated components under waterproof cover and elevated above grade, on a flat surface.

B. Separate components with solid blocking to minimize damage to shop-applied primer.

1.05 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State of Oklahoma, or personnel under direct supervision of such an engineer.

B. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.
   2. A company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pre-cast Concrete Stair Treads:
   1. Commercial Concrete Products Inc.: www.commercialconcreteproducts.com.
   2. Century Group Inc: www.centurygrp.com.
   3. Stepstone Inc.: www.stepstoneinc.com.

2.02 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings complying with the most stringent requirements of local, state, and federal regulations; where requirements of the Contract Documents exceed those of regulations, comply with Contract Documents.
   2. Structural Design: Provide complete stair and railing assemblies complying with the applicable local code.
   3. Dimensions: As indicated on drawings.
   4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
   6. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Architectural: All joints as inconspicuous as possible, whether welded or mechanical.
      a. Welded Joints: Continuously welded and ground smooth and flush.
      b. Mechanical Joints: Butted tight, flush, and hairline; concealed fastenings only.
      c. Exposed Edges and Corners: Eased to small uniform radius.
      d. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for highest quality gloss finish.
   2. Commercial: Exposed joints as inconspicuous as possible, whether welded or mechanical; underside of stair not covered by soffit is considered exposed to view.
      a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.
      b. Welds Exposed to View: Ground smooth and flush.
      c. Mechanical Joints: Butted tight, flush, and hairline.
      d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.
      e. Exposed Edges and Corners: Eased to small uniform radius.
      f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for satin or matte finish.

C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.03 METAL STAIRS WITH CONCRETE TREADS

A. Jointing and Finish Quality Level: Commercial, as defined above.

B. Risers: Closed.

C. Treads: Precast concrete tread capable of supporting a 1500 psi concentrated load at at midspan, minimum.
   1. Precast Concrete Tread Thickness: 2-1/4 inches
   2. Precast Concrete Treads:
      a. Concrete Strength: 5,000 psi at 28 days, minimum.
      b. Air Content: 4 to 6 percent.
      c. Cement Color: Natural gray.
      d. Anchorage: Bolted to carrier angles.

D. Risers: Steel as indicated on drawings; galvanized.
   1. Riser/Nosing Profile: Vertical riser anchored to underside of tread.
   2. Nosing Depth: Not more than 1 inch overhang.

E. Stringers: Rolled steel channels.
   1. Stringer Depth: 12 inches.
   2. End Closure: Sheet steel of same thickness as risers welded across ends.

F. Finish: Shop- or factory-prime painted.

G. Under Side of Stair: Exposed to view, to be finished same as specified for other exposed to view surfaces.

2.04 HANDRAILS AND GUARDS

A. Wall-Mounted Rails: As indicated on drawings and specified in Section 05 52 13.

B. Guards: Pipe railings as indicated on drawings and specified in Section 05 52 13.

2.05 MATERIALS

A. Steel Sections: ASTM A36/A36M.

B. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230 with G40/Z120 coating.

2.06 ACCESSORIES

A. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.

B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.07 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.
   1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
   2. Number of Coats: Two (2).

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

B. Supply items required to be cast into concrete and embedded in masonry with setting templates.

C. Paint sides of stringers, landings, and other components adjacent to building construction, or that otherwise would be inaccessible after installation, prior to erection.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.

C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

F. Obtain approval prior to site cutting or creating adjustments not scheduled.

G. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 05 52 13

METAL RAILINGS AND GUARDRAILS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair railings and guardrails.

C. Free-standing railings at access ramps.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

C. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013.

D. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

E. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

F. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store shop-fabricated components under waterproof cover and elevated above grade, on a flat surface.

B. Separate components with solid blocking to minimize damage to shop-applied primer.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 50 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for railing configurations and heights.
   1. Hand Rails and Wall Rails: 1-1/2 inches, diameter round.
   2. Building Stair Railings and Guards:
      a. Top and Intermediate Rails: 1-1/2 inches square.
      b. Posts: 1-1/2 inches square.
      c. Pickets: 1/2 inch square solid bar.
      d. Cane Detection Rails: 1-1/2 inches square.
   3. Site Stairs and Ramps:
      a. Top and Intermediate Rails: 1-1/2 inches diameter, round.
      b. Posts: 1-1/2 inches diameter, round.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.

2. For anchorage to stud walls, provide backing plates, for bolting anchors.
3. Posts: Provide adjustable flanged brackets.

G. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

H. Finish: Shop-primed painted.

2.02 STEEL MATERIALS

A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.

B. Welding Fittings: Factory or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

C. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

D. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.04 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.
1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
2. Number of Coats: Two (2).

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with UFAS and ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Field weld anchors as indicated on shop drawings. Grind welds smooth; Touch-up welds with primer.

F. Conceal anchor bolts and screws whenever possible.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. **Framing with dimension lumber.**
2. **Framing with engineered wood products.**
3. **Shear wall panels.**
4. **Rooftop equipment bases and support curbs.**
5. **Wood blocking, cants, and nailers.**
6. **Wood furring and grounds.**
7. **Wood sleepers.**
8. **Plywood backing panels.**

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

1. **Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements**
2. **Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.**

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. **Wood-preservative-treated wood.**
2. **Fire-retardant-treated wood.**
3. **Engineered wood products.**
4. **Shear panels.**
5. **Power-driven fasteners.**
6. **Powder-actuated fasteners.**
7. **Expansion anchors.**
8. **Metal framing anchors.**

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship for the following:

1. **Dimension lumber framing.**
2. **Laminated-veneer lumber.**
3. **Parallel-strand lumber.**
4. **Prefabricated wood I-joists.**
5. **Rim boards.**

6. Miscellaneous lumber.

B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Provide dressed lumber, S4S, unless otherwise indicated.

C. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

D. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by ration engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

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

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. **Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.**

1. **Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.**
2. **Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.**

C. **Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.**

D. **Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.**

E. **Application: Treat items indicated on Drawings, and the following:**

1. **Framing for raised platforms.**
2. **Framing for stages.**
3. **Concealed blocking.**
4. **Framing for non-load-bearing partitions.**
5. **Framing for non-load-bearing exterior walls.**
6. **Roof construction.**
7. **Plywood backing panels.**

2.4 DIMENSION LUMBER FRAMING

A. **Non-Load-Bearing Interior Partitions: Standard, Stud, or No. 3 grade.**

1. **Application: Interior partitions not indicated as load-bearing.**
2. **Species:**
   a. **Mixed southern pine; SPIB.**
   b. **Northern species; NLGA.**
   c. **Eastern softwoods; NeLMA.**
   d. **Western woods; WCLIB or WWPA.**

B. **Framing Other Than Non-Load-Bearing Interior Partitions: As shown on the drawings.**

1. **Application: Framing other than interior partitions not indicated as load-bearing.**
2. **Species:**
   a. **Hem-fir (north); NLGA.**
   b. **Southern pine; SPIB.**
   c. **Douglas fir-larch; WCLIB or WWPA.**
   d. **Mixed southern pine; SPIB.**
   e. **Spruce-pine-fir; NLGA.**
   f. **Douglas fir-south; WWPA.**
   g. **Hem-fir; WCLIB or WWPA.**
   h. **Douglas fir-larch (north); NLGA.**
   i. **Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.**

C. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Application: Exposed exterior and interior framing indicated to receive a stained or natural finish.

2. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 ENGINEERED WOOD PRODUCTS

A. Engineered Wood Products, General: Products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

1. Extreme Fiber Stress in Bending, Edgewise: As shown on drawings.

2. Modulus of Elasticity, Edgewise: As shown on drawings.

C. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.

1. Web Material: Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure.

2. Structural Properties: Provide units with depths and design values not less than those indicated.

3. Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.

D. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.

1. Material: Product made from any combination solid lumber, wood strands, and veneers.

2. Thickness: 1-1/4 inches (32 mm).

3. Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

2.6 SHEAR WALL PANELS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Shear Transfer Systems.

2. Simpson Strong-Tie Co., Inc.

3. Weyerhaeuser Company.

Wood-Framed Shear Wall Panels: Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing.

4. **Products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."**

C. Steel-Framed Shear Wall Panels: Prefabricated assembly consisting of cold-formed galvanized steel panel, steel top and bottom plates, and wood studs.

D. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.7 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. **Blocking.**
2. **Nailers.**
3. **Rooftop equipment bases and support curbs.**
4. **Cants.**
5. **Furring.**
6. **Grounds.**

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber of any species.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. **Mixed southern pine; No. 2 grade; SPIB.**
2. **Eastern softwoods; No. 2 Common grade; NeLMA.**
3. **Northern species; No. 2 Common grade; NLGA.**
4. **Western woods; Construction or No. 2 Common; WCLIB or WWPA.**

2.8 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: DOC PS 1, Exterior, AC in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.

1. **Plywood shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."**

2.9 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. **Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.**

B. Power-Driven Fasteners: NES NER-272.

C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.10 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Cleveland Steel Specialty Co.

2. KC Metals Products, Inc.

3. Phoenix Metal Products, Inc.

4. Simpson Strong-Tie Co., Inc.

5. USP Structural Connectors.

C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

E. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for wood-preservative-treated lumber and where indicated.

2.11 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.

B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

D. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Shear Wall Panels: Install shear wall panels to comply with manufacturer's written instructions.

F. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

G. Do not splice structural members between supports unless otherwise indicated.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

3.2 PROTECTION

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

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061753

SHOP-FABRICATED WOOD TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood roof trusses.
2. Wood floor trusses.
3. Wood girder trusses.
4. Wood truss bracing.
5. Metal truss accessories.

B. Allowances: Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Division 01 Section "Allowances."

1.2 ACTION SUBMITTALS

A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
6. Show splice details and bearing details.

C. Delegated-Design Submittal: For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Evaluation Reports: For the following, from ICC-ES:

1. Metal-plate connectors.
2. Metal truss accessories.

1.4 QUALITY ASSURANCE

A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Fabricator Qualifications: Shop that [participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-

party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design metal-plate-connected wood trusses.

B. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

2.2 DIMENSION LUMBER

A. Certified Wood: For metal-plate-connected wood trusses and permanent bracing, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Division 06 Section "Rough Carpentry."

2.3 METAL CONNECTOR PLATES

A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

1. Alpine Engineered Products, Inc.; an ITW company.

2. Cherokee Metal Products, Inc.; Masengill Machinery Company.

3. CompuTrus, Inc.

4. Eagle Metal Products.

5. Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.

6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.

7. Robbins Engineering, Inc.

8. Truswal Systems Corporation; an ITW company.

B. General: Fabricate connector plates to comply with TPI 1.

C. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

2.5 METAL FRAMING ANCHORS AND ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

B. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:

1. Cleveland Steel Specialty Co.
2. KC Metals Products, Inc.
3. Phoenix Metal Products, Inc.
4. Simpson Strong-Tie Co., Inc.
5. USP Structural Connectors.

C. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those [indicated] [of basis-of-design products] [of products of manufacturers listed]. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

D. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

2.6 FABRICATION

A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install wood trusses only after supporting construction is in place and is braced and secured.

B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.

C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

D. Install and brace trusses according to TPI recommendations and as indicated.

E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.

F. Securely connect each truss ply required for forming built-up girder trusses.

G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

1. Install bracing to comply with Division 06 Section "Rough Carpentry."

2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.

H. Install wood trusses within installation tolerances in TPI 1.

I. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.

J. Replace wood trusses that are damaged or do not meet requirements.

END OF SECTION 061753

SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood casings and moldings.

C. Hardware and attachment accessories.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Samples: Submit two samples of wood trim 6 inch long.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect from moisture damage.

B. Store flat, on level area, to prevent warping.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

B. Interior Finish Carpentry Items (Dwelling Units):
   1. Manufacturers: Acceptable millwork manufacturers of casings, molding and trim.
      a. Woodgrain Millwork; www.woodgrain.com.
      b. Trimco Millwork; www.trimcomillwork.com.
      c. Metrie Inc.; www.metrei.com
   2. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine, solid or finger jointed; primed for paint finish, in profiles as scheduled below:
      a. Door Trim: 11/16 inch x 2-1/4 inch Colonial Wood Casing.
      b. Baseboard Trim: 9/16 inch by 5-1/4 inch Colonial Wood Base.
      c. Window Sill: Furniture grade Clear White Pine, 1 inch x 6 inch nominal, back primed with eased edges.

C. Interior Finish Carpentry Items (OLM Building):
   1. Manufacturers: Acceptable millwork manufacturers of casings, molding and trim.
      a. Woodgrain Millwork; www.woodgrain.com.
      b. Trimco Millwork; www.trimcomillwork.com.
      c. Metrie Inc.; www.metrei.com
   2. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine, solid or finger jointed; primed for paint finish, in profiles as scheduled below:
      a. Door Trim: 11/16 inch x 2-1/4 inch Colonial Wood Casing.
      b. Baseboard Trim: 9/16 inch by 5-1/4 inch Colonial Wood Base.
      c. Window Sill: Furniture grade, 1 inch x 6 inch nominal, back primed with eased edges.

2.02 LUMBER MATERIALS

A. Softwood Lumber: Clear White Pine species, plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.03 ACCESSORIES

A. Lumber for Shimming, Blocking, and Bracing: Softwood lumber of indicated species.

B. Primer: As specified in Section 09 91 23.

C. Wood Filler: Solvent base, tinted to match surface finish color.

D. Epoxy Filler: As recommended by composite resin manufacturer, to match color of window sills.

2.04 HARDWARE

A. Countertop Support Brackets: Fixed, L-shaped, corner reinforced, face-of-stud mounting.

1. Material: Steel.
    a. Finish: Manufacturer's standard, factory-applied, textured powder coat.
    b. Color: Black.
    c. Support Length: 24 inches.
2. Products:
    a. A&M Hardware, Inc; Standard Brackets: www.aandmhardware.com.

2.05 FABRICATION

A. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

A. Set and secure materials and components in place, plumb and level.

B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

C. Install prefinished paneling with full bed contact adhesive applied to substrate.

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 91 13 and 09 91 23.

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

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter of footings and underside of floor slabs.

B. Batt insulation in new wall construction.

C. Foam insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

D. Foam or equal sill sealer insulation beneath bottom plate of all new exterior walls in contact with concrete.

1.02 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2016.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.

C. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

E. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016.

F. RESNET - Residential Home Energy Standards

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.04 QUALITY ASSURANCE

A. Formaldehyde Content: Contractor shall ensure that all products installed are certified Formaldehyde-Free by the manufacturer.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed on proposed products.
      b. Published product data showing compliance with requirements.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation in Wood Framed Walls: Batt insulation with integral Type II vapor retarder (kraft paper faced batts).

B. Insulation in Wood Framed Walls at openings and penetrations: Polyurethane expanding foam insulation.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type: ASTM C578, Type IV.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.

4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
5. Board Width: 24 inches
6. Board Edges: Tongue-and-groove.
7. Products:
    a. DuPont de Nemours, Inc; Styrofoam Brand Highload 40: building.dupont.com.
    b. Kingspan Insulation LLC; GreenGuard GG25-LG XPS Insulation Board: www.kingspan.com.
    c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com.

2.03 BATT INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
4. Thermal Resistance at new exterior walls: R-value of 19 minimum.
5. Facing: Kraft paper.
6. Products:
    a. CertainTeed Corporation: www.certainteed.com.
    b. Johns Manville: www.jm.com.
    c. Owens Corning Corporation: www.ocbuildingspec.com.

2.04 FOAM INSULATION

A. Single component polyurethane, low pressure foam sealant complying with ASTM E2178 for exterior wall penetrations.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
3. R-value; 1 inch of material at 72 degrees F: 4.7, minimum.
4. Minimum Density: 1.0 pounds per cubic foot.
5. Manufacturers:
    a. Dow Chemical Co.; Great Stuff: www.greatstuff.dow.com.
    b. FOMO Products Inc.; Handi Foam: www.fomo.com/handifoam.
    c. Touch 'n Seal Inc.; All Seasons: www.touch-n-seal.com.

B. Single component polyurethane, low pressure, low pressure build, foam sealant complying with ASTM E2178 for windows and doors.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
3. R-value; 1 inch of material at 72 degrees F: 4.7, minimum.
4. Minimum Density: 1.10 pounds per cubic foot.
5. Manufacturers:
    a. Dow Chemical Co.; Great Stuff Window & Door: www.greatstuff.dow.com.
    b. FOMO Products Inc.; Handi Foam Window & Door: www.fomo.com/handifoam.
    c. Touch 'n Seal Inc.; No Warp: www.touch-n-seal.com.

2.05 ACCESSORIES

A. Sheet Weather Barrier: See Section 07 25 00.

B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
1. Application: Sealing of interior circular penetrations, such as pipes or cables.
2. Width: Are required for application.

C. Insulation Fasteners: Lengths of unfinished, 13-gauge, 0.072-inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

D. Staples: Steel wire; electroplated or galvanized; type and size to suit application.

E. 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.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

C. Insulation shall be installed in accordance with North America Insulation Manufacturer's Association (NAIMA) RESNET Grade 1 requirements.

3.02 BOARD INSTALLATION AT FOOTING PERIMETER

A. Comply with insulation manufacturer’s printed instructions and recommendations for the installation of insulation boards. Provide adequate anchorage or support for each unit.

B. Install boards horizontally on foundation perimeter.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation at perimeter under slabs on grade after base for slab has been compacted.
   1. Width of perimeter insulation: 24 inches.

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 BATT INSTALLATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install in new exterior wall spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Staple facing flanges in place at maximum 6 inches on center.
   1. Kraft paper-faced batt insulation in stud cavities of exterior walls.
   2. Tape seal butt ends, lapped flanges, and tears or cuts in facing.

F. Retain unfaced insulation batts in place with spindle fasteners at 12 inches on center.

G. Coordinate work of this section with construction of air barrier seal specified in Section 07 25 00.

3.05 FOAM INSULATION

A. Install insulation in accordance with manufacturer's instructions.

B. Install expandable foam sealant to ensure continuity of building insulation envelope/thermal barrier.

C. Extra care shall be taken with installation of expandable foam sealant to prevent damage to surrounding work and installed items.
   1. Do not overfill gaps.

3.06 PROTECTION

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

END OF SECTION

SECTION 07 21 26
BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Attic: Blown insulation pneumatically placed into joist spaces.

1.02 REFERENCE STANDARDS

A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2011.

B. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2006 (Reapproved 2011).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and limitations.

C. Certificates: Certify that products of this section meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Formaldehyde Content: Contractor shall ensure that all products installed are certified Formaldehyde-Free by the manufacturer.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed on proposed products.
      b. Published product data showing compliance with requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Blown Insulation:
   1. Applegate Insulation: www.applegateinsulation.com.
   2. Fiberlite Technologies, Inc: www.fiberlitetech.com.
   3. GreenFiber: www.greenfiber.com.
   4. Or approved equal.

2.02 MATERIALS

A. Refer to Specification/Selection Design sheets.

B. Applications: Provide blown insulation in attic as indicated on drawings.

C. Loose Fill Insulation: ASTM C739, cellulose fiber type, bulk for pneumatic placement.
   1. Thermal Transmittance (U-value): 0.27 BTU/hr sq ft deg F, maximum.
   2. Total Thermal Resistance at Attic:
      a. Dwelling Unit Buildings: R-value of 38 (deg F hr sq ft)/Btu, minimum.
      b. O/L/M Building: R-value of 38 (deg F hr sq ft)/Btu, minimum.
      c. Storm Shelter: R-value of 38 (deg F hr sq ft)/Btu, minimum.

2.03 ACCESSORIES

A. Roof Ventilation Baffles: Prefabricated ventilation channels for placement under roof sheathing with baffles to prevent wind-washing.
   1. Material: Polyvinyl chloride (PVC).
   2. Roof Joist/Truss Spacing: 24 inch on center, nominal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate and adjacent materials 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 for proper placement of insulation.

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.

C. Place insulation against baffles, and do not impede natural attic ventilation to soffit.
   1. Insulation to cover top plates at exterior wall to a minimum installed depth of 6 inches.

D. Completely fill intended spaces leaving no gaps or voids.

3.03 FIELD QUALITY CONTROL

A. Insulation Certification - Contractor shall post in the attic of each building (near the attic access) Certification of Insulation Type, "R" value, conformance to applicable Federal Specifications, plus the date of installation and the name of the installer.

B. Installer shall install measuring “tape” for each 300 SF of attic area, stapled to side of truss webbing.

3.04 CLEANING

A. Remove loose insulation residue.

END OF SECTION

SECTION 07 25 00
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water-resistive, vapor-permeable air and water barriers.

1.02 DEFINITIONS

A. Weather Barriers: Materials or assemblies forming water-resistive barriers, air barriers, vapor retarders, or combination of one or more assemblies.

B. Water-Resistive Barriers: Materials or assemblies installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly.

1.03 REFERENCE STANDARDS

A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2015a.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.

D. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

E. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on material characteristics.

C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.05 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE AIR BARRIERS

A. Water-Resistive Air Barrier: For use in IBC Construction Types I, II, III, and IV on buildings greater than 40 feet in height.
   1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).

B. Water-Resistive and Air Barrier, Multilayers: Outer layers of nonwoven, spunbonded polypropylene with vapor permeable, watertight polymeric middle layer.
   1. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 54 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
   3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 3 months of weather exposure.
   4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
   5. Seam and Perimeter Tape: As recommended by sheet manufacturer.
   6. Products:
      a. DuPont Building Innovations; Tyvek Home Wrap with FlexWrap NF, StraightFlash, StraightFlash VF, Tyvek Wrap Caps, and Tyvek Tape: www.dupont.com.
      b. Kingspan Insulation LLC; GreenGuard HPW Building Wrap with GreenGuard Butyl Flashing and GreenGuard SuperStretch Flashing: www.trustgreenguard.com.
      c. National Shelter Products, Inc; DRYLine HP with Dryline Sheathing Tape, ATX Flashing, and ATX Flex Flashing: www.drylinewrap.com.

2.02 ACCESSORIES

A. Seal and Perimeter Tapes: As recommended by water-resistive barrier manufacturer.

B. Flexible Flashing: Self-adhering sheet flashing complying with ASTM D1970/D1970M; waive slip resistance requirement if not installed on roof.
   1. Width: 4 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Water-Resistive Air Barriers: Install continuous water-resistive barrier where indicated on drawings, with sheets lapped to shed water and with seams and joints sealed to adjacent surfaces.

C. Mechanically Fastened Sheets:
   1. Install sheets in shingle fashion to shed water; align horizontally.
   2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
   3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
   4. Attach to framed construction with fasteners extending through sheathing into framing, and space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
   5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
   6. Where stud framing rests on concrete or masonry substrate, extend lower edge of barrier sheets at least 4 inches below bottom of framing and seal to substrate with sealant or approved mounting tape.
   7. Install water-resistive barrier over jamb flashings.
   8. Install head flashings under water-resistive barrier.
   9. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

D. Openings and Penetrations in Exterior Water-Resistive Air Barriers:
   1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
   2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
   3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
   4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
   5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
   6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.04 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

B. Protect installed weather barrier from any and all damage prior to installation of exterior cladding or veneers.
   1. Any and all rips, tears and/or punctures shall be repaired in accordance with manufacturer's written repair instructions.
   2. If damaged building wrap is not repairable, then follow manufacturer's written instructions for partial removal and "patching" of building wrap to maintain integrity of building wrap membrane.

END OF SECTION

SECTION 07 31 13
ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Impact-resistant Asphalt shingle roofing.

B. Flexible sheet membranes for underlayment and valley protection.

C. Metal flashings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.

B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2015a.

C. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules; 2010a.

D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).

E. ASTM D7158/D7158M - Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method); 2017.

F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.

G. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2011.

H. ASTM F1667/F1667M - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2021a.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating material characteristics and performance criteria.

C. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store materials with labels intact in manufacturer's unopened packaging until ready for installation.

B. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

C. When storing roofing materials on roofing system ensure that no damage occurs to supporting members and other materials.

1.06 FIELD CONDITIONS

A. Do not install shingles, underlayment when ambient air temperatures are below 45 degrees F.

1.07 WARRANTY

A. Provide manufacturer's standard, transferable warranty:
   1. Materials: Warrant shingles for 30 years against defect or deterioration that results in leaks under normal weather and use conditions.
   2. Installation: Warrant total roof system, including underlayments, flashings, and other roof components for 2 years against water penetration.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Asphalt Shingles:

1. Certainteed Roofing; Landmark ClimateFlex: www.certainteed.com.
2. GAF; Timberline ArmorShield II: www.gaf.com.
3. Owens Corning Corp; Duration Flex: www.owenscorning.com.
4. Tamko; Stormfighter Flex 3: www.tamko.com.
5. Or approved equal.

2.02 ASPHALT SHINGLES

A. Asphalt Shingles, Impact-resistant: SBS-modified, Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
   1. Fire Resistance: Class A, complying with ASTM E108.
   2. Wind Resistance (Uplift): Class D, minimum, when tested in accordance with ASTM D7158/D7158M.
   3. Warranted Wind Speed: Not greater than 115 mph.
   4. Impact Resistance: Class 3 minimum.
   5. Fungal/Algae Resistant.
   6. Self-sealing type.
   7. Style: Laminated overlay.

2.03 SHEET MATERIALS

A. Valley Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

B. Eave Edge Starter Shingles: Glass felt base, with ceramic coated mineral granules tightly embedded in refined, water-resistant asphalt, complying with ASTM D3462/D3462M.
   1. Shingle Size: 7-5/8 by 38-3/4 inches, nominal.
   2. Products: By Manufacturer as required for wind resistance rating.

C. Underlayment: Synthetic non-asphaltic sheet, intended by manufacturer for mechanically fastened roofing underlayment without sealed seams and meeting requirements of ASTM D226/D226M.
   1. Type: Woven polypropylene with anti-slip polyolefin coating on both sides.
   2. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.
   3. Ultraviolet (UV) Resistance and Weatherability: Approved in writing by manufacturer for exposure to weather for minimum of two months.
   4. Low Temperature Flexibility: Passing test specified in ASTM D1970/D1970M.
   5. Water Vapor Permeance: Vapor retarder; maximum of 1 perm, when tested in accordance with ASTM E96/E96M Procedure A, desiccant method.
   6. Fasteners: As recommended by manufacturer or building code qualification report or approval.
   7. Products:
      a. Beacon Roofing Supply Inc; Tri-Built Synthetic Underlayment: www.becn.com.
      b. System Components Corporation, Inc; ProTex: www.systemcomponents.net.
      c. Or approved equal.

D. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226/D226M, Type I, No. 15.

2.04 METAL FLASHING

A. Metal Flashings: Provide sheet metal eave edge, gable board, facia board, and other flashing as indicated.
   1. Form flashings to protect roofing materials from physical damage and shed water.
   2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
   3. Hem exposed edges of flashings minimum 1/4 inch on underside.

B. Facia and Gable Flashing: Pre-formed or site-fabricated sheet metal fascia and gable board cladding to cover entire exposed faces with no horizontal seams. Overlap vertical seams 2 inches.

C. Aluminum Flashing: Prefinished aluminum, 26 gauge, 0.017 inch minimum thickness; stucco embossed, PVC coating, color as selected by Owner.

2.05 ACCESSORIES

A. Roofing Nails: Standard round wire shingle type, galvanized steel, minimum 3/8-inch head diameter, 12-gauge, 0.109-inch nail shank diameter, 1-1/2 inches long and complying with ASTM F1667/F1667M.

B. Coil Nails: Standard round wire shingle type, barbed shank, of electro-galvanized steel, 11 - 12 wire gage, 0.125 - 0.109 inch shank diameter, 3/8 inch head diameter, of sufficient length to penetrate through roof sheathing or 3/4 inch into roof sheathing or decking.

C. Asphalt Roof Cement: ASTM D4586/D4586M, asbestos-free.

D. Ridge Vents: Plastic, corrugated with vent openings that do not permit direct water or weather entry; flanged to receive shingles; Vent-Sure manufactured by Owens Corning.
   1. Free Vent Area (net): 18 square inches per linear foot.
   2. Size: 1 inch high x 11-7/16 inch wide.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to starting this work.

B. Verify that roof deck is of sufficient thickness to accept fasteners.

C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. Verify roof openings are correctly framed.

E. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Remove existing roofing, underlayment, flashings, nails, and all accessories to existing roof deck.

B. Seal roof deck joints wider than 1/16 inch as recommended by shingle manufacturer.

C. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

D. Broom clean deck surfaces before installing underlayment or eave protection.

E. Install eave edge and gable edge flashings tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure flange with nails spaced 8 inches on center.

3.03 INSTALLATION

A. Underlayment:
   1. Roof Slopes Up to 4:12: Install two layers of underlayment over area not protected by eave protection, with ends and edges weather lapped minimum 6 inches; stagger end laps of each consecutive layer and nail in place through metal disks at 12 inches on center.
   2. Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches; stagger end laps of each consecutive layer, nail in place through metal disks at 12 inches, and weather lap minimum 4 inches over eave protection.
   3. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

B. Valley Protection Membrane:
   1. Install one ply of flexible flashing, minimum 48 inches wide, centered over valleys.
   2. Install flexible flashing in accordance with manufacturer's instructions.
   3. Weather lap joints minimum 4 inches.
   4. Nail in place minimum 18 inches on center, 1 inch from edges.

C. Metal Flashing:
   1. Install flashings in accordance with manufacturer's instructions.
   2. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
   3. Secure in place with nails at 8 inches on center, and conceal fastenings.
   4. At sidewall roof lines (where a sloped roof abuts a vertical wall surface) “kickout flashing” shall be installed in accordance with the siding manufacturer written Installation Requirements

5. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

D. Shingles:
   1. Install shingles in accordance with manufacturer's instructions.
      a. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
      b. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.
   2. Place shingles in straight coursing pattern with 5-inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.
   3. Project first course of shingles 1/2 inch beyond fascia boards.
   4. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
   5. Extend shingles on one slope across valley and fasten; trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, concealing valley protection.
   6. Cap hips and ridges with pre-formed ridge and hip shingles, maintaining 5-inch weather exposure, and place to avoid exposed nails.
   7. Coordinate installation of roof mounted components or work projecting through roof with weathertight placement of counterflashings.
   8. Complete installation to provide weathertight service.

E. Vents:
   1. Ridge vent openings and ridge vent material shall not be located less than 24 inches from end of ridge.

3.04 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean exposed work upon completion of installation; remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

END OF SECTION

SECTION 07 46 46
FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiber-cement siding.

B. Fiber-cement soffits and trim; Existing Buildigs.

C. Aluminum Soffits and Trim; New Storm Shelter.

D. Aluminum Ceilings and Trim; Existing Building 2nd Floor Landings.

1.02 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.

B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.

C. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2012).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
   1. Manufacturer's requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.

C. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store materials in manufacturer's unopened packaging, with labels intact, until ready for installation.

B. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

1.05 WARRANTY

A. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

B. Manufacturer Warranty: Provide manufacturer warranty for years as indicated under Fiber-Cement Siding article sub-headings for "Warranty". Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, in compliance with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Style: Standard lap style.
   2. Texture: Simulated cedar grain.
   3. Length: 12 feet, nominal.
   4. Width (Height): 9-1/2 inches.
   5. Thickness: 7/16 inch, nominal.
   6. Finish: Factory applied primer.
   7. Warranty: 50 year limited; transferable.
   8. Products:
      a. Allura, a division of Plycem USA, Inc: www.allurausa.com.
      b. James Hardie Building Products, Inc: www.jameshardie.com.
      c. Nichiha USA, Inc: www.nichiha.com.
      d. Or approved equal.

B. Soffit Panels; Existing buildings: Perferated Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
   1. Texture: Smooth.
   2. Length: 96 inches, nominal.
   3. Width: 18 inches.
   4. Thickness: 5/16 inch, nominal.
   5. Finish: Factory applied primer.
   6. Manufacturer: Same as siding.

C. Aluminum Soffit; Storm Shelter: Prefinished Aluminum complying with ASTM B209 ; 2-coat fluoropolymer polyester coating, AAMA 2604, thermally cured.
   1. Profile: 16 inch Quad-4, 3/8 inch depth; Fully-vented.
   2. Thickness: 26 gauge, (0.016 inch).
   3. Net Free Vent Area: 9 sq. in. per linear foot, minimum.
   4. Finish: Smooth.
   5. Color: As selected from manufacturer's full range of available colors.
   6. Accessories: 'J'-channel; starter strip; associated trim.
   7. Manufacturers:
      a. Napco (a PlyGem Inc. company): www.napcoproducts.com.
      b. Alside Inc.: www.alside.com.
      c. Fabral Inc.: www.fabral.com.
      d. Or approved equal.

D. Aluminum Ceiling Panels; 2nd Floor Stair Landings: Prefinished Aluminum complying with ASTM B209 ; 2-coat fluoropolymer polyester coating, AAMA 2604, thermally cured.
   1. Profile: 16 inch Quad-4, 3/8 inch depth; Solid.
   2. Thickness: 26 gauge, (0.016 inch).
   3. Finish: Smooth.
   4. Color: As selected from manufacturer's full range of available colors.
   5. Accessories: 'J'-channel; starter strip; associated trim.
   6. Manufacturers:
      a. Napco (a PlyGem Inc. company): www.napcoproducts.com.
      b. Alside Inc.: www.alside.com.
      c. Fabral Inc.: www.fabral.com.
      d. Or approved equal.

2.02 ACCESSORIES

A. Trim: Same material and texture as siding.

B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate, 1-1/4 inches, minimum.

C. Flashing: Aluminum, 26 gage, 0.0179 inch minimum base metal thickness.

D. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.

E. Finish Paint: Latex house paint acceptable to siding manufacturer; primer recommended by paint manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

B. Verify that weather air barrier has been installed over substrate completely and correctly.

C. Do not begin until unacceptable conditions have been corrected.

D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Protect surrounding areas and adjacent surfaces during execution of this work.

B. Install Sheet Metal Flashing:
   1. Above door and window trim and casings.
   2. Above masonry or manufactured stone veneer termination.

3.03 INSTALLATION

A. Install siding in accordance with manufacturer's instructions and recommendations.
   1. Read warranty and comply with terms necessary to maintain warranty coverage.
   2. Use trim details as indicated on drawings.
   3. Touch up field cut edges before installing.
   4. Pre-drill nail holes if necessary to prevent breakage.

B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.

C. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.

D. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.

E. Attach soffits securely to framing, not sheathing, with horizontal components true to level, providing a weather resistant installation.
   1. Provide trim and associated hardware as required for surface-mounted and/or recessed installation of exterior lights at soffit panels.
   2. Provide vent area shown on drawings.

F. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

G. Finish Painting: See Section 09 91 13.

3.04 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, and other items as required.

B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.

C. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a.

D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).

E. CDA A4050 - Copper in Architecture - Handbook; current edition.

F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.04 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. Pre-Finished Aluminum: ASTM B209M, 3005 alloy, H12 or H14 temper; 26 gauge, 0.017 inch thick; plain finish shop pre-coated with silicone modified polyester coating.

1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.

2.02 FABRICATION

A. General: Provide prefinished aluminum sheet metal flashing at changes in adjacent siding materials and other flashing indicated, color as selected by Owner/Architect.

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 and hemmed to form drip.

2.03 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Underlayment: ASTM D2178/D2178M, glass fiber roofing felt.

C. Primer Type: Zinc chromate.

D. Concealed Sealants: Non-curing butyl sealant.

E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

F. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrates are ready to receive work.

B. Verify that water-resistive barrier has been installed over substrate completely and correctly.

C. Do not begin until unacceptable conditions have been corrected.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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, 0.015 inch.

3.03 INSTALLATION

A. Secure flashings in place using concealed fasteners, and 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.

END OF SECTION

SECTION 07 71 23

MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished aluminum gutters and downspouts.

B. Precast concrete splash blocks.

1.02 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on prefabricated components.

C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

D. Samples: Submit two samples, 6 inch long illustrating component design, finish, color, and configuration.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209/B209M, 3005 alloy, H14 temper; 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with acrylic coating.
   2. Color: As selected from manufacturer's standard colors.

2.02 COMPONENTS

A. Gutters: 5 inch K-style profile.

B. Downspouts: 2 inch by 3 inch Rectangular profile, minimum.

C. Gutter Screens: Same material and finish as gutters. Install at all gutters.

D. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Gutter Supports: Straps.
   2. Downspout Supports: Straps.

E. Fasteners: Same material and finish as gutters and downspouts, with soft neoprene washers.

2.03 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.04 FINISHES

A. Acrylic polyester coating: Baked enamel system complying with AAMA 2603.

2.05 ACCESSORIES

A. Splash Blocks: Precast concrete type, size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
   1. Size: 3 inch by 12 inch by 30 inch
   2. Manufacturer: Equal to Nitterhouse Masonry Products, LLC: www.nitterhousemasonry.com.
   3. Profile No: 36" Splash Block.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that surfaces are ready to receive work.

3.02 PREPARATION

A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Slope gutters 1/8 inch per foot, 2 percent minimum.

C. Set splash blocks under downspouts.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-sag gunnable joint sealants.

B. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.

B. ASTM C834 - Standard Specification for Latex Sealants; 2014.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

E. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).

F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.
   6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   7. Sample product warranty.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation; see Section 01 61 16.

E. Executed warranty.

1.04 WARRANTY

A. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in vertical surfaces joints without sagging or slumping.
   1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   2. Dow: www.dow.com.
   3. GE Silicones Inc.: www.ge.com.
   4. Pecora Corporation: www.pecora.com.
   5. Sika Corporation: www.usa-sika.com.
   6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
   7. Or approved equal.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints:
    a. Seal open joints except open joints indicated on drawings as not sealed. Exterior joints to be sealed include, but are not limited to:
        1) Wall expansion and control joints.
        2) Joints between door, window, and other frames and adjacent construction.
        3) Joints between different exposed materials including, but not limited to:
            (a) Flashing and adjacent building materials.
            (b) Vertical siding/masonry joints.
            (c) Sleeves or pipes penetrating exterior walls.
            (d) Sleeves or pipes penetrating masonry or concrete walls.
        4) Openings below ledge angles in masonry.
        5) Lap joints in and penetrations through weather barriers.
        6) Exterior Siding:
        7) Other joints indicated below.
2. Interior Joints:
    a. Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
        1) Joints between door, window, and other frames and adjacent construction.
        2) Gypsum board to wood or masonry.
        3) Metal to gypsum board, wood, or masonry.
        4) Perimeter of plumbing fixtures, shower surrounds, drains, or piping.
        5) Perimeter of counter tops and vanity tops
        6) Other joints indicated below.
3. Framing: In addition to locations listed above or shown on the drawings to receive continuous sealant materials, a continuous bead of sealant, appropriate to construction materials and locations, shall be provided/installed at:
    a. Horizontal joint between bottom of wood sill plate and top of foundation wall or slab on grade.
    b. Horizontal joint(s) between double/triple top plates.
    c. Vertical joint(s) between double/triple studs in general framing and at door/window rough openings.
    d. Stud cavities blocked at change in ceiling heights.
    e. Penetrations through top and bottom plates.
    f. Seam(s) in band joists.
    g. Gaps in exterior wall sheathing.
    h. Penetrations in exterior wall sheathing.
    i. Penetrations in gypsum board of insulated exterior walls.
4. Do Not Seal:
    a. Intentional weep holes in masonry.
    b. Joints indicated to be covered with expansion joint cover assemblies.
    c. Joints where sealant installation is specified in other sections.

B. Exterior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Masonry Expansion Joints: Two-part polyurethane.
2. Metal to Masonry: Two-part polyurethane.
3. Lap Joints in Sheet Metal Fabrications: Two-part polyurethane, non-curing.
4. General Flashing and Flashing to Brick: One-part polyurethane.
5. Sleeves in Walls: One-part polyurethane.

C. Interior Joints: Use non-sag acrylic sealant, unless otherwise indicated.
1. Gypsum Board or Plaster to Masonry or Wood: Acrylic.
2. Metal to Gypsum Board, Plaster or Masonry: Acrylic.
3. Metal to Brick: Two-part polyurethane.
4. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.04 NONSAG JOINT SEALANTS

A. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   1. Color: White.
   2. Products:
      a. Dow Chemical Company; 732 Silicone: www.dow.com.
      b. GE Silicones, Inc; Silicone II: www.ge.com.
      c. Or approved equal.

B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Architect from manufacturer's standard range.
   4. Products:
      a. Pecora Corporation; Dynatrol, or GC-9 polysulfide: www.pecora.com/#sle.
      b. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com/#sle.

C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
   1. Products:
      a. Pecora Corporation; AC-20 Acrylic: www.pecora.com/#sle.
      b. Sherwin-Williams Company; 850A Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
      c. Tremco Commercial Sealants & Waterproofing; Tremflex 834: www.tremcosealants.com/#sle.

2.05 ACCESSORIES

A. Sealant Backing Rod, Open-Cell Type:
   1. Cylindrical flexible sealant backings complying with ASTM C1330 Type O.
   2. Size: 25 to 50 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 CLEANING

A. Remove excess sealant and caulking materials and smears from adjacent surfaces as work progresses.

B. Repair joints which have shrunk, sagged, run or have thin spots.

END OF SECTION

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire-rated hollow metal doors and frames.

B. Tornado-resistant hollow metal doors and frames.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.

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 A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.

H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.

I. ASTM C476 - Standard Specification for Grout for Masonry; 2016.

J. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

K. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.

L. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.

M. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.

N. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.

P. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.

Q. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

R. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, gauges, reinforcements, cutouts, instaltion and anchorage details, and any indicated finish requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
   2. Fleming Door Products, an Assa Abloy Group company: www.assaabloydss.com.
   3. Republic Doors, an Allegion brand: www.republicdoor.com.
   4. Steelcraft, an Allegion brand: www.allegion.com.
   5. Or approved equal.

B. Tornado-Resistant Hollow Metal Doors and Frames:
   1. Steelcraft Doors, an Allegion brand; PW14 Paladin: www.steelcraft.com.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Manufacturers standard for application indicated.
   5. Typical Door Face Sheets: Embossed. Refer to Door Schedule for additional information.
   6. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
      a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Laundry Room, Fire-Rated Door:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 1 - Standard-duty.
      b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Door Edge: Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   2. Fire Rating: 3/4 hour, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
   3. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
   4. Provide units listed and labeled by UL (DIR).
      a. Attach fire rating label to each fire rated unit.
   5. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
   6. Door Thickness: 1-3/4 inches, nominal.
   7. Door Finish: Factory primed and field finished.

B. Tornado-Resistant Doors:
   1. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
      a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.

b. Wind-Borne Debris Resistance: Door and frame components shall have UL (DIR) approval for Large and Small Missile impact and pressure cycling at design wind loads.

2. Tornado Shelter Application: Comply with ICC 500 standard.
   a. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
3. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 4 - Maximum-duty.
   b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
4. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
5. Door Thickness: 1-3/4 inches, nominal.
6. Door Finish: Factory primed and field finished.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Door Frames, Fire-Rated: Knock-down type.
   1. Fire Rating: Same as door, labeled.
   2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
   3. Frame Finish: Factory primed and field finished.

C. Tornado-Resistant Door Frames: With same tornado resistance as door; full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
   1. Frame Metal Thickness: 12 gauge, 0.093 inch, minimum.
   2. Frame Finish: Factory primed and field finished.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

A. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

B. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

C. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 71 00.

3.03 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.04 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08 11 30
RESIDENTIAL FIBERGLASS DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulated fiberglass entry doors and wood frames.
   1. Flat in-fill panels.
   2. Flush panel, Paired.

B. Fire Rated fiberglass entry doors and frames
   1. Flat in-fill panels.

1.02 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2011.

B. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

C. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

D. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

E. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).

F. 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).

G. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007 (Reapproved 2016).

H. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2014.

I. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.

J. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014.

K. NFRC 400 - Procedure for Determining Fenestration Product Air Leakage.

L. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door skin material and thickness, core materials and construction, and installation procedures.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
   1. Include conformance and testing data for Fire-Rated doors.

D. Performance Validation: Submit certified label or test report on products as indicated under performance requirements to validate product compliance.

E. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 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. Do not store in damp or wet areas, or in areas of direct sunlight.

1.06 WARRANTY

A. Provide manufacturer's standard limited warranty for 25 years.
   1. Include coverage for warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Exterior Insulated Fiberglass Entry Doors:
   1. Therma Tru; Fiber-Classic Series; Mahogany Collection: www.thermatru.com.
   2. Bayer Built Inc; Designer Series; 3-Panel BFI: www.bayerbuilt.com.
   3. Substitutions: Or Approved Equal

2.02 COMPONENTS

A. Fiberglass Entry Doors: Insulated fiberglass-skin door entry systems; prehung in wood frames.
   1. Style: As indicated on drawings.
   2. Thickness: 1-3/4 inches, unless otherwise indicated.
   3. Exterior Skin: 1/16 inch minimum, fiberglass reinforced thermoset composite.
   4. Interior Frame: Kiln-dried pine or engineered lumber; door bottom edge: moisture/decay resistant composite.
   5. Core: Foamed-in-place, CFC-free, polyurethane foam bonded to exterior skin; density 1.9 pcf minimum.
   6. Reinforcement: Solid wood blocking in full area of passage and deadbolt locksets.
      a. Provide continuous blocking for top 8 inches of door for installation of automatic closer devise where scheduled.
   7. Finish: Factory primed; ready for field painting.

B. Configurations:
   1. Dwelling Unit Entry Doors; Ground Floor:
      a. Configuration: Single door.
      b. Style: 3-Panel Craftsman
   2. Dwelling Unit Entry Doors; 2nd Floor:
      a. Configuration: Single door.
      b. Style: 3-Panel Craftsman
      c. Rating: 20 minute.
   3. O/L/M Building Entry Doors:
      a. Configuration: As indicated on drawings.
      b. Style: 3-Panel Craftsman

C. Maintenance Room Entry Doors:
   1. Configuration: Double doors.
   2. Style: Flush panel

D. Frames: Manufacturer's standard rot-resistant composite frame, for field finishing.
   1. Frame: Laminated Veneer Lumber (LVL) core wrapped in UV-stabilized composite outer layer; profiled 1/2 inch stops with gasket kerf.
   2. Frame Depth: 4-9/16 inch, minimum.
   3. Gaskets: Factory installed Jacketed thermoset closed-cell foam, press-fit in kerfs at jamb stops in frames.
   4. Hardware preparation: Frames shall be mortised, reinforced, drilled and tapped at the factory to receive hardware as specified in the hardware schedule.
   5. Install frame reinforcing plate to strike side.

E. Thresholds: Low profile complying with ANSI Accessibility requirements. Refer to Section 08 71 00 - Door Hardware
   1. Inswing: Aluminum with Thermal Break.
   2. Outswing: Aluminum with Thermal Break.
      a. Outswing threshold may have a 1/4 inch vertical rise (against which door swings) and a 1/4 inch sloping rise (1:2 max. slope), with a total height of 1/2 inch maximum.

3. Finish: Mill finish.

F. Glazing: Double glazed, clear, Low-E coated, argon gas filled, fully tempered, with glass thicknesses as recommended by manufacturer for specified wind conditions.
   1. Fully Tempered Glass: ASTM C1048, Kind FT - Fully Tempered.
   2. Outboard Lite: Clear glass.
   3. Inboard Lite: Clear glass.
   4. Air Space: 1/4 inch.
   5. Apply protective polyolefin removable film to No. 1 and No. 4 insulating glass surfaces.

G. Glazing Stops: Aluminum channel shape, mitered corners; prepared for countersink style screws.
   1. Apply silicone glazing sealant to exterior glazing stops as recommended by manufacturer.

H. Weatherstripping: Jacketed thermoset closed-cell foam, press-fit in kerfs at jamb stops in frames.

I. Door Sweeps: Extruded thermoplastic elastomer, finned and chambered design, press-fit into bottom edge of doors.

J. Door Hardware: As specified in Section 08 71 00.

2.03 PERFORMANCE REQUIREMENTS

A. Water Penetration Resistance: No uncontrolled leakage on interior face when tested in accordance with ASTM E547 at differential pressure of 15 percent of Performance Grade (PG).

B. Air Leakage: Maximum of 0.30 cu ft/minute/sq ft at 1.57 psf differential pressure, when tested in accordance with ASTM E283.

C. Thermal Transmittance: U-factor of 0.25, maximum, that includes window glazing, door and frame system based on average window size required for project and determined in accordance with NFRC 100.

D. Forced Entry Resistance (FER): Tested to comply with ASTM F476 requirements having at least Grade 10 performance for each required swinging door assembly.

2.04 FABRICATION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other thru-bolted hardware where scheduled.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

E. Provide edge clearances in accordance with the quality standard specified.

2.05 FINISHES

A. Color: To be selected by Owner from manufacturer's standard range.

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 specified quality standard.

B. Install exterior doors in accordance with ASTM E2112.
   1. Thresholds shall be installed and sealed securely, level and without discernable movement, to underlayment below.

C. Assemble multiple units before installation in accordance with manufacturer’s installation guidelines.

D. Use machine tools to cut or drill for hardware.

E. Coordinate installation with seal of perimeter air and vapor barrier materials as specified in Section 07 25 00.

F. Coordinate installation of doors with installation of integral frames and hardware.

G. Coordinate installation of glazing.

3.03 TOLERANCES

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 CLEANING

A. Remove protective material from factory finished surfaces.

B. Clean units using cleaning material and methods in accordance with door manufacturer's written recommendations.

3.06 PROTECTION

A. Protect installed work from damage due to subsequent construction activity on the site.

B. Protect unit surfaces from masonry cleaning solution that could damage insulating glass panels, aluminum or wood finishing, and hardware.

END OF SECTION

SECTION 08 14 16
WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-hung Molded Panel doors; solid core; non-rated.

B. Pre-hung Molded Panel doors; hollow core.

1.02 REFERENCE STANDARDS

A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory priming, and other details.

D. Manufacturer's Installation Instructions: Indicate special installation instructions.

E. Warranty, executed in Owner's name.

1.04 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, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.05 WARRANTY

A. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in Owner's name and register with manufacturer.
   1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Molded Panel Doors
   1. Masonite International Corp.: www.masonite.com.
   2. Baird Brothers Sawmill Inc.: www.bairdbrothers.com.
   3. Jeld-Wen Inc.: www.jeldwen.com.
   4. Or approved Equal.

2.02 DOORS

A. Doors: Refer to drawings for locations and additional requirements.
   1. Quality Standard: Economy Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.

B. Interior Doors: 1-3/8 inches thick unless otherwise indicated; molded panel construction.
   1. Style: As indicated on drawings.
   2. Provide solid core doors at Leasing Office and Maintenance Room.
   3. Hardboard facing for field opaque finish.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

B. Hollow Core Doors: Type - Standard (FSHC); plies and faces as indicated above.

2.04 DOOR FACINGS

A. Veneer Facing for Opaque Finish: Closed grain hardwood veneer, in compliance with indicated quality standard.

B. Hardboard Facing for Opaque Finish: ANSI A135.4, Class 2 - Standard, Molded Panel hardboard, 1/8 inch thick.

C. Facing Adhesive: Type I - waterproof.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with wood stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
   1. Mortice doors for 3-1/2 inch standard duty radius hinges.
   2. Face bore(s) for cylindrical lock, where scheduled, are to be 2-1/8” diameter at 2-3/8 inch backset.

D. Vertical door edges to be beveled lock strike side and meeting rails.

E. Factory fit and hang doors to frames constructed for the opening dimensions identified on the Drawings, with edge clearances in accordance with specified quality standard.
   1. Provide 3/8 inch clearance at bottom unless additional cut-off is indicated.

2.06 FRAMES

A. Jambs: Wood jambs shall be fabricated as a flat jamb with applied stops, or a one piece jamb with milled stops, solid or finger-jointed white pine. Factory primed, white.

B. Hinges: Mortise jamb for 3-1/2 inch, standard duty radius hinges.
   1. 3 standard weight radius mortise hinges are required on doors 7’0” height or smaller.

C. Strike: Jamb to be machined for a full lip cylindrical strike plate.
   1. Double door units shall include preparations for ball catch located at the top of door on both door panels designed to strike into the head jamb.

2.07 FINISHES

A. Factory prime door faces, stiles, and rails with manufacturer's standard water based latex primer; white.

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 specified quality standard.

B. Use machine tools to cut or drill for hardware.

C. Coordinate installation of doors with installation of frames and hardware.

END OF SECTION

SECTION 08 14 33
STILE AND RAIL WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors, stile and rail design; non-fire rated.

B. Panels of louvers.

1.02 REFERENCE STANDARDS

A. WDMA I.S. 6A - Interior Architectural Wood Stile and Rail Doors; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings.

C. Manufacturer's qualification statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Accept doors on site in manufacturer's packaging, and inspect for damage.

B. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

PART 2 PRODUCTS

2.01 DOORS

A. Replicate existing, original wood door profiles, when present.

B. Quality Standard: Standard Grade, Standard Duty performance, in accordance with WDMA I.S. 6A.

C. Interior Doors: 1-3/4 inches thick unless otherwise indicated; veneer and lumber stile and rail construction; dowel joints. Opaque finish.

D. Wood veneer facing for field opaque finish.

2.02 DOOR FACINGS

A. Materials for Opaque Finishes: Closed-grain wood veneer.

B. Adhesive: Type II - Water Resistant.

2.03 DOOR CONSTRUCTION

A. Vertical Exposed Edge of Stiles: Of same species as veneer facing.

B. Fit door edge trim to edge of stiles after applying veneer facing.

C. Bond edge banding to cores.

D. Panels: Full louvered.

E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

F. Frames: Provided and assembled by third party fabricators to manufacturer's specifications.
   1. Frame: Milled from 5/4 kiln-dried white pine, finger-jointed composite at bottom of frame, profiled 1/2 inch stops, and factory-clad with prefinished metal or vinyl. Provide 6 degree sill gain prep.
   2. Frame Depth: 4-9/16 inch, minimum.

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 specified quality standards.

B. Field-Finished Doors: Trimming to fit is acceptable.

C. Machine cut for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

3.03 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

END OF SECTION

SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall-mounted access units.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Manufacturer's Installation Instructions: Indicate installation requirements and rough-in dimensions.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

2.02 WALL-MOUNTED ACCESS UNITS

A. Manufacturers:
   1. Best Access Doors: www.bestaccessdoors.com.
      a. Weather-Resistant Exterior Access Door; Series BA-EXT.
   2. Nystrom, Inc: www.nystrom.com.
   3. Or approved equal.

B. Wall-Mounted Units: Factory-fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; fully gasketed door.
   1. Material: Steel.
   2. Style: Exposed frame with door surface flush with frame surface.
   3. Door Style: Single thickness with rolled or turned in edges.
   4. Frames: 16-gauge, 0.0598-inch minimum thickness.
   5. Single Steel Sheet Door Panels: 18-gauge, 0.048-inch minimum thickness.
   6. Steel Finish:
   7. Primed and Factory Finish: Polyester powder coat; color White.
   8. Door/Panel Size: 24 inches x 24 inches.
   9. Hardware:
      a. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
      b. Latch/Lock: Cylinder lock-operated cam latch, two keys for each unit.
         1) All hatches keyed alike.
      c. Inside Latch Release: Mechanism that allows door/panel to be opened from inside.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 53 13
VINYL WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vinyl-framed, factory-glazed windows.

B. Operating hardware.

C. Insect screens.

1.02 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2011.

B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weatherstrip and Replaceable Fenestration Weatherseals; 2011.

C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

D. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

E. ASTM E1423 - Standard Practice for Determining the Steady State Thermal Transmittance of Fenestration Systems; 2014.

F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007 (Reapproved 2016).

G. ASTM F2090-13 - Standard Specification for Window Fall Prevention Devices With Emergency Escape (Egress) Release Mechanisms; 2013.

H. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2014.

I. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, anchors, fasteners, glass, and internal drainage.

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.

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. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

F. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.

G. Egress Units Compliance: Certify that bedroom window unit's net opening size and dimensions meet or exceed current minimum code requirements for use as a means of emergency egress.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.05 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.

1.06 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F.

B. Maintain this minimum temperature during and after installation of sealants.

1.07 WARRANTY

A. Manufacturer's Warranty: Provide five-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of vinyl color finish. Complete form in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vinyl Windows:
   1. Alside, Inc; Fusion Series: www.alside.com.
   2. All Temp Windows Inc.; Series 1800: www.alltempwindows.com
   3. Jeld-Wen Inc.; Builders Vinyl Series: www.jeldwen.com.
   4. Milgard Manufacturing; StyleLine Series: www.milgard.com.
   5. Alliance Window Systems; Windgate Series: www.alliancewindows.com

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.
      a. Product Type: H - Hung window, vertically sliding; Single Hung in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
      b. Egress Units: Window units installed in dwelling unit bedrooms shall meet or exceed minimum requirements for classification as emergency egress units per the currently adopted edition of the building code.
   2. Color: White.
   3. Exterior Color: White.
   4. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
   5. Operable Units: Double weatherstripped.
   6. Framing Members: Fusion welded corners and joints, with internal reinforcement where required for structural rigidity; concealed fasteners.
   7. 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.
   8. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.
   9. Mounting Flange: Integral to frame assembly, providing weather stop at entire perimeter of frame.
   10. Insect Screens: Tight fitting for operating sash location.

B. Energy Star Rating: Provide windows eligible for Energy Star Rating.

2.03 PERFORMANCE REQUIREMENTS

A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
   1. Performance Class (PC): R.
   2. Performance Grade (PG): 15, with minimum design pressure (DP) of 15.04 psf.

B. Air Leakage: Maximum of 0.30 cu ft/minute/sq ft at 1.57 psf differential pressure, when tested in accordance with ASTM E283.

C. Thermal Transmittance: Refer to drawings. U-factor to include 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.

D. Solar Heat Gain Coefficient (SHGC): Refer to drawings.

E. Visible Light Transmittance: value of 0.52 minimum.

F. Forced Entry Resistance (FER): Tested to comply with ASTM F588 requirements having at least Grade 10 performance for each required window assembly.

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.
   1. Provide tempered glass where required by Code for hazardous locations.
   2. Glass Stops: Snap-on PVC glazing bead with color to match sash and frame.

B. Frame Depth: 2-11/16 inch minimum.

C. Insect Screens: Aluminum, extruded or roll-formed frame with mitered and reinforced corners; apply screen mesh taut to frame; secure to window with hardware to allow easy removal.
   1. Hardware: Manufacturer's standard; quantity as required per screen.
   2. Screen Mesh: Vinyl-coated fiberglass, window manufacturer's standard mesh.
   3. Frame Finish: Manufacturer's standard, color to match window frame and sash color.

D. Operable Sash Weatherstripping: High density polypropylene pile; permanently resilient, profiled to maintain weather seal in accordance with AAMA 701/702.

E. Fasteners: Galvanized steel.

F. Accessories: Provide related flashings, anchorage and attachment devices as necessary for full assembly.

G. Glazing Sealant: Manufacturer's standard, tested, sealant; factory installed.

H. Sealants for Setting Window Sill Pan Flashing: Provide silicone sealant; in compliance with ASTM E2112 installation practices.

2.05 HARDWARE

A. Vertical Sliding Sash: Metal and nylon spiral friction slide cylinder, provide two for each sash and jamb.

B. Sash lock: Lever handle and keeper with cam lock, provide at least one for each operating sash.

C. Window Opening Control Devices: ASTM F2090-13 opening control devices that limit opening size to less than 4 inches maximum with release function to permit window to open fully.
   1. Required for all Dwelling Unit operable windows when sill is less than 36 inches above finish floor, and window unit is located greater than 72 inches above finish grade.

D. Finish of Exposed Hardware: Baked enamel, match interior sash and frame color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify wall openings and adjoining water-resistive air barrier seal materials are ready to receive this work.

3.02 INSTALLATION

A. Install window unit assemblies in accordance with manufacturers instructions and applicable building codes.

B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities as necessary.

C. Provide continuous shim support along full length of sill.

D. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.

E. Set sill members and sill flashing in continuous bead of sealant.

F. Provide thermal continuity of the building envelope. Fill shim spaces at perimeter of assembly with gap-filling foam specified in Section 07 21 00 - Thermal Insulation.

3.03 ADJUSTING

A. Adjust hardware for smooth operation and secure weathertight closure.

3.04 CLEANING

A. Remove protective material from pre-finished surfaces.

B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer and appropriate for application indicated.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal, residential fiberglass entry, and wood doors.

B. Thresholds.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. BHMA A156.1 - American National Standard for Butts and Hinges; 2013.

C. BHMA A156.3 - American National Standard for Exit Devices; 2014.

D. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.

E. BHMA A156.7 - American National Standard for Template Hinge Dimensions; 2014.

F. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2013.

G. BHMA A156.17 - American National Standard for Self Closing Hinges & Pivots; 2014.

H. BHMA A156.18 - American National Standard for Materials and Finishes; 2012.

I. BHMA A156.21 - American National Standard for Thresholds; 2014.

J. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems, Builders Hardware Manufacturers Association; 2012.

K. BHMA A156.28 - American National Standard for Recommended Practices for Mechanical Keying Systems; 2013.

L. BHMA A156.36 - American National Standard for Auxiliary Locks; 2014.

M. DHI (KSN) - Keying Systems and Nomenclature; 1989.

N. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.

P. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

D. Specimen warranty.

E. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. Lock Cylinders: One for each master keyed group.
   2. Leversets and Dead Latches: One for each type specified.
   3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.06 WARRANTY

A. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.

1. Closers: Five years, minimum.
2. Exit Devices: Three years, minimum.
3. Locksets and Cylinders: Three years, minimum.
4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: UFAS, ADA Standards, and ICC A117.1.
   3. Auxiliary Hardware: BHMA A156.16.

D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule at end of this section.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Fire-Rated Applications: Comply with NFPA 80.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 HINGES

A. Manufacturers:
   1. McKinney; an Assa Abloy Group company: www.assaabloydss.com.
   2. Hager Companies: www.hagerco.com.
   3. Pamex, Inc; Hinges: www.pamexinc.com.
   4. Best, dormakaba Group (formerly Stanley): www.bestaccess.com.
   5. Stanley Manufacturing Co.: www.stanleyhardware.com.

B. Hinges: Comply with BHMA A156.1, Grade 3.
   1. Self Closing Hinges: Comply with BHMA A156.17.
   2. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   3. Provide hinges on every swinging door.
   4. Provide self-closing spring hinges on dwelling unit entry doors.
   5. Provide ball-bearing hinges at each door with closer.
   6. Provide non-removable pins on exterior outswinging doors.
   7. Provide following quantity of butt hinges for each door:
      a. Doors From 60 inches High up to 90 inches High: Three hinges.
      b. Doors 90 inches High up to 120 inches High: Four hinges.

2.03 FLUSH BOLTS

A. Manufacturers:
   1. Adams Rite, an Assa Abloy Group company: www.assaabloydss.com.
   2. Hager Companies: www.hagerco.com.
   3. Ives, an Allegion brand: www.allegion.com/us.
   4. Trimco: www.trimcohardware.com.

B. Flush Bolts: Comply with BHMA A156.16, Grade 3.
   1. Flush Bolt Throw: 3/4 inch, minimum.
   2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.

a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.

2.04 EXIT DEVICES

A. Manufacturers:
1. Von Duprin, an Allegion brand; WS 98/9957: www.vonduprin.com.

B. Exit Devices: Comply with BHMA A156.3, Grade 3.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.

2.05 CYLINDRICAL LOCKS

A. Manufacturers:
1. Basis of Design: Schlage 'Elan'.
2. Sargent or Yale; an Assa Abloy Group company: www.assaabloydss.com.
3. Best, dormakaba Group (formerly Stanley): www.bestaccess.com.
4. Hager Companies: www.hagerco.com.
5. Schlage, an Allegion brand: www.allegion.com/us.

B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 3.
1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Finish: To match lock or latch.
b. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
5. Provide a lock for each door, unless otherwise indicated that lock is not required.
6. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

2.06 AUXILIARY LOCKS (DEADLOCKS)

A. Manufacturers:
1. Basis of Design: Schlage 'B60' & 'B680'.
2. Schlage, an Allegion brand: www.schlage.com.

B. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 3.
1. Type: Bored (cylindrical).
2. Backset: 2-3/4 inch, unless otherwise indicated.
3. Bolt Throw: 1 inch, with latch made of hardened steel.
4. Provide strike that matches frame.

2.07 CLOSERS

A. Manufacturers; Surface Mounted:
1. Basis of Design: Falcon SC93/94; Jamb top.
2. Sargent, Yale, or AdamsRite; an Assa Abloy Group company: www.assaabloydss.com.
3. Best, dormakaba Group (formerly Stanley): www.bestaccess.com.
4. Hager Companies: www.hagerco.com.
5. Falcon or LCN, an Allegion brand: www.allegion.com/us.

B. Closers: Comply with BHMA A156.4, Grade 3.
1. Type: Surface mounted to door.
2. Provide door closer on each exterior door of the Community Building.
3. At outswinging exterior doors, mount closer on interior side of door.
4. Provide adapter plate where required.

2.08 FLOOR STOPS

A. Manufacturers:
1. Basis of Design: Trimco 1211 Series.
2. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.

3. Hager Companies: www.hagerco.com.
4. Trimco: www.trimcohardware.com.

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Type: Manual hold-open, with pencil floor stop.
2. Material: Aluminum housing with rubber insert.

2.09 ASTRAGALS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
2. Hager Companies: www.hagerco.com.
3. National Guard Products, Inc: www.ngpinc.com.

B. Astragals: Comply with BHMA A156.22.
1. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
2. Type: Overlapping, tee type, and with sealing gasket.
3. Material: Aluminum, with neoprene weatherstripping.
4. Provide non-corroding fasteners at exterior locations.

2.10 THRESHOLDS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
2. Hager Companies: www.hagerco.com.
3. National Guard Products, Inc: www.ngpinc.com.

B. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Low Profile.
a. Thresholds at outswing exterior doors may be rabbeted with door stop type; 1/4 inch vertical rise, 1/2 inch total height; maximum 1:2 bevel.
3. Material: Aluminum.
4. Threshold Surface: Thermally broken.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.

2.11 BALL CATCH

A. Manufacturers:
1. Basis of Design: Ives 347.
2. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
3. Ives, an Allegion brand: www.allegion.com/us.

B. Ball Catch: Provide on doors not provided with latchsets that must stay in closed position within the frame.
1. Location: Mount ball catch at top of door with strike plate fastened to head of door frame.
2. Material: Brass.

2.12 VIEWER

A. Manufacturers:
1. Basis of Design: Ives U698.
2. Ives, an Allegion brand: www.allegion.com/us.
3. Prime-Line Inc: www.primeline.net
4. Gatehouse Inc.: www.lowes.com

B. Viewer: Provide at inside of door at eye level to see who is on outside of door.
1. Material: Stainless steel.
2. Size: 1/2 inch diameter mounting hole.
3. View: 190 degree field of view.
4. Finish: Brushed nickel.

2.13 KEY CONTROL SYSTEMS

A. Key Control Systems: Comply with guidelines of BHMA A156.28.

1. Provide keying information in compliance with DHI (KSN) standards.
2. Keying: All locks Master keyed.
    a. Dwelling Units: All exterior doors keyed alike.
    b. Community Building: All exterior doors keyed alike.
3. Supply keys in following quantities:
    a. 4 each Master keys.
    b. 2 each Keys for each keyed core.

2.14 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
    1. Primary Finish: 619; satin nickel plated, clear coated, with brass or bronze base material; BHMA A156.18.
    2. Exceptions:
        a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
        b. Hinges for Fire-Rated Doors: Steel base material with painted finish, in compliance with NFPA 80.
        c. Door Closer Covers and Arms: Color as selected by Architect from manufacturer's standard colors unless otherwise indicated.
        d. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.

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. Do not install surface mounted items until application of finishes to substrate are fully completed.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise on drawings.
    1. Mounting heights in compliance with ANSI, UFAS, or ADA Standards, where applicable:
        a. Locksets: 36 inch.
        b. Deadlocks (Deadbolts): 41-1/2 inch.
        c. Door Viewer: accessible unit height 42 inch; typical unit height 60 inch.

F. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

A. Adjust hardware for smooth operation.

B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

A. Do not permit adjacent work to damage hardware or finish.

PART 4 SCHEDULES

4.01 HARDWARE SETS

A. Group No 01: Dwelling Unit - Entry Door.
   1. Provide 20-Min Fire-Rated hardware at 2nd Floor Units.
   2. Provide accessible Threshold at UFAS designated units.

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Dead latch - single cylinder w/ thumb turn
1	EA	Passage Leverset
1	EA	Viewer (peephole) (2 ea. at accessible dwelling units)
1	EA	Wall-mounted Stop
1	EA	Threshold

B. Group No 02: Dwelling Unit - Bedroom and Bath Doors

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Privacy Leverset w/ push-button latching
1	EA	Wall-mounted Stop

C. Group No 03: Dwelling Unit - Closet Double Swing Doors.
   1. Provide for each door in the pair.

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Dummy Leverset
1	EA	Ball Catch
1	EA	Wall-mounted Stop

D. Group No 04: O/L/M Building - Entry Doors.
   1. Provide single cylinder w/ thumb dead latch turn at laundry room.

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Dead latch - double cylinder
1	EA	Passage Leverset
1	EA	Closer
1	EA	Accessible Threshold

E. Group No 05: Maintenance Room - Paired Exterior Doors.
   1. Provide for each leaf in pair as noted

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Dead latch - single cylinder with thumb turn - active leaf
1	EA	Locking Leverset - active leaf
1	PR	Flush Bolts; head/ floor - inactive leaf
1	Set	Astragal
1	EA	Closer
1	EA	Threshold

F. Group No 06: O/L/M Building - Toilet Room Doors.

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Privacy Leverset w/ push-button latching
1	EA	Wall-mounted Stop

G. Group No 07: O/L/M Building - Secure Interior Doors.
   1. At Office: Provide Dead Latch; single cylinder w/ thumb turn in addition.

      3 EA Hinges - 3-1/2 inch x 3-1/2 inch
      1 EA Locking Leverset
      1 EA Closer

H. Group No 08: Storm Shelter - Entry Doors.
   1. ICC-500/ FEMA 361 compliant door and hardware.

      4 EA Hinges; ball-bearing - 4-1/2 inch x 3-1/2 inch
      1 EA Exit Device; 3-Point latching, w/ outside locking lever trimset
      1 EA Closer
      1 EA Accessible Threshold

I. Group No 09: Dwelling Unit, Community Building, and Storm Shelter - Other Interior Doors.

      3 EA Hinges - 3-1/2 inch x 3-1/2 inch
      1 EA Passage Leverset
      1 EA Wall-mounted Stop

J. Group No 10: O/L/M Building - Laundry Interior Door.
   1. Provide Fire-rated hardware.

      3 EA Hinges - 3-1/2 inch x 3-1/2 inch
      1 EA Dead Latch; double cylinder
      1 EA Passage Leverset
      1 EA Closer

END OF SECTION

SECTION 08 91 00

LOUVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Louvers, frames, and accessories.

1.02 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.

B. AMCA 511 - Certified Ratings Program for Air Control Devices; 2010.

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. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.

E. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.

PART 2 PRODUCTS

2.01 LOUVERS

A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
   1. High-Velocity Wind Load Resistance: Design to comply with applicable requirements of ICC 500 and FEMA P-361, including resistance to horizontal debris impact.
   2. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

B. Stationary Louvers: Inverted "V" blade, hot-rolled steel construction.
   1. Blades: V-shaped, 3 inch by 3 inch legs, sight-proof.
   2. Frame: 8 inches deep, angle profile; corner joints mitered.
      a. Mounting Flanges: At head/sill, welded construction.
   3. Steel Thickness, Galvanized: Frame 1/4 inch minimum base metal; blades 1/4 inch minimum base metal.
      a. Frame 1/4 inch minimum base metal.
      b. Blades 1/4 inch minimum base metal.
   4. Steel Finish: Factory primed and Powder-coated.
   5. Products:
      a. Carnes Company; 8" Deep FEMA #17171B: www.carnes.com.

2.02 MATERIALS

A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.03 FINISHES

A. Pigmented Organic Coatings: AAMA 2603; polyester or acrylic baked enamel finish.

2.04 ACCESSORIES

A. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.

B. Insect Screen: 30 inches(W) x 24 inches(H) size; stainless steel mesh.

C. Fasteners and Anchors: Galvanized steel.

D. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.

3.02 INSTALLATION

A. Install louver assembly in accordance with manufacturer's instructions.

B. Install louvers level and plumb.

C. Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

D. Secure louver frames in openings with exposed fasteners.

3.03 CLEANING

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal channel ceiling framing.

B. Gypsum wallboard.

C. Joint treatment and accessories.

D. Textured finish system.

1.02 REFERENCE STANDARDS

A. AISI S220 - North American Standard for Cold-Formed Steel Framing - Nonstructural Members; 2015.

B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015.

C. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

D. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a (Reapproved 2015).

E. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.

F. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.

I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.

J. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.

K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014a.

L. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2013.

M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.

N. UL (FRD) - Fire Resistance Directory; current edition.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data:

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

B. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.

B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.

1. Ceiling Channels: C-shaped.

C. Non-structural Framing Accessories:
   1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company: www.americangypsum.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com.
   4. National Gypsum Company: www.nationalgypsum.com.
   5. USG Corporation: www.usg.com.
   6. Or approved equal.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish of the same core type shall be used in tub/shower alcoves.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at all damp locations.
         1) Locations include:
            (a) Shower and tub walls and ceilings.
            (b) Back and side walls adjacent to Water Closet, to 48 inches above finished floor.
            (c) Back wall behind Lavatory, to 48 inches above finished floor.
            (d) Back wall behind Kitchen Sink and Dishwasher, to 48 inches above finished floor.
            (e) Back wall behind location designated for Laundry appliances, to 48 inches above finished floor.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch, or as indicated.
      b. Ceilings: 5/8 inch.
   5. Paper-Faced Products:
      a. American Gypsum Company; ClassicRoc Gypsum Wallboard.
      b. American Gypsum Company; FireBloc Type X Gypsum Wallboard.
      c. American Gypsum Company; FireBloc Type C Gypsum Wallboard.
      d. CertainTeed Corporation; Type C Drywall.
      e. CertainTeed Corporation; Type X Drywall.
      f. Georgia-Pacific Gypsum; ToughRock.
      g. Georgia-Pacific Gypsum; ToughRock Fireguard X.
      h. Georgia-Pacific Gypsum; ToughRock Fireguard C.
      i. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
      j. National Gypsum Company; Gold Bond Brand Fire-Shield Gypsum Board.
      k. USG Corporation; Sheetrock Brand Gypsum Wallboard.
      l. USG Corporation; Sheetrock Brand Firecode X.
   6. Mold-Resistant, Paper-Faced Products:
      a. American Gypsum Company; M-Bloc.
      b. American Gypsum Company; M-Bloc Type X.
      c. American Gypsum Company; M-Bloc Type C.
      d. CertainTeed Corporation; M2Tech 1/2" Moisture & Mold Resistant Drywall.
      e. CertainTeed Corporation; M2Tech 5/8" Type X Moisture & Mold Resistant Drywall.
      f. Georgia-Pacific Gypsum; ToughRock Mold-Guard.
      g. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard.
      h. National Gypsum Company; Gold Bond XP Gypsum Board.
      i. USG Corporation; Sheetrock Brand Mold Tough (Firecode X).

2.04 GYPSUM BOARD ACCESSORIES

A. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.

2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
3. Products:
    a. Phillips Manufacturing Co; Metal: www.phillipsmfg.com.
    b. Stockton Products; Metal: www.stocktonproducts.com.
    c. Trim-tex, Inc; Metal: www.trim-tex.com.

B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
2. Joint Compound: Drying type, vinyl-based, ready-mixed.

C. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

D. Nails for Attachment to Wood Members: ASTM C514.

E. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members at 16 inches on center.
1. Level ceiling system to a tolerance of 1/1200.
2. Laterally brace entire suspension system.

C. Studs: Space studs as indicated.
1. Extend partition framing to structure in all locations.

D. Blocking: Install wood blocking for support of:
1. Framed openings.
2. Wall-mounted cabinets.
3. Plumbing fixtures.
4. Toilet accessories.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
1. Single-Layer Applications: Screw attachment.
2. Construct floating internal corners, except where special isolation or edge trim is indicated.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
1. At building expansion, seismic, or construction joints.
2. Not more than 30 feet apart on walls and ceilings over 50 feet long.

3. At interior ceilings with perimeter relief; not more than 50 feet apart, and area contained within joints not to exceed 2,500 square feet.
    a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
4. At interior ceilings without perimeter relief; not more than 30 feet apart, and area contained within joints not to exceed 900 square feet.
    a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
5. At exterior ceilings; not more than 30 feet apart, and area contained within joints not to exceed 900 square feet.
    a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.05 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. 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.
2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

3.06 TEXTURE FINISH

A. Apply finish texture coating by means of trowel in accordance with manufacturer's instructions.

B. Texture finish on walls and ceilings: 'Knock-down' texture

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 30 00

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Non-ceramic trim.

1.02 REFERENCE STANDARDS

A. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).

B. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2010 (Revised).

C. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.

D. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2013.1.

E. ASTM C373 - Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles; 2014a.

F. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

G. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.

H. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2016.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Tile: 1 percent of each size, color, and surface finish combination.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.05 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products of each type by the same manufacturer.
   1. American Olean Corporation: www.americanolean.com.
   2. Dal-Tile Corporation: www.daltile.com.
   3. Crossville Inc: www.crossvilleinc.com.

B. Glazed Wall Tile, Type T-1: ANSI A137.1, standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size: 4-1/4 by 4-1/4 inch, nominal.
   3. Edges: Cushioned.
   4. Surface Finish: High gloss.

5. Color(s): To be selected by Owner from manufacturer's standard range.
6. Trim Units: Matching bullnose and cove base shapes in sizes coordinated with field tile.

C. Porcelain Tile: ANSI A137.1, standard grade.
1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
2. Size: 8 by 8 inch, nominal.
3. Thickness: 1/4 inch.
4. Edges: Square.
5. Surface Finish: Non-slip.
6. Color(s): To be selected by Owner from manufacturer's standard range.

2.02 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
1. Applications:
a. Inside and outside wall corners.
b. Transition between floor finishes of different heights.
c. Thresholds at door openings.
2. Products:
a. Schluter-Systems: www.schluter.com.
b. Genesis APS International: www.genesis-aps.com.
c. Or approved equal.

2.03 SETTING MATERIALS

A. Manufacturers:
1. ARDEX Engineered Cements: www.ardexamericas.com.
2. Bostik Inc: www.bostik-us.com.
3. Custom Building Products: www.custombuildingproducts.com.
4. H.B. Fuller Construction Products, Inc; ____: www.tecspecialty.com/#sle.
5. LATICRETE International, Inc: www.laticrete.com.
6. Merkrete, by Parex USA, Inc: www.merkrete.com/sle.
7. ProSpec, an Oldcastle brand: www.prospec.com.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated.
2. Products:
a. ARDEX Engineered Cements; ARDEX X 5: www.ardexamericas.com.
b. H.B. Fuller Construction Products, Inc; TEC TotalFlex 110 Universal Mortar: www.tecspecialty.com/#sle.
c. Merkrete, by Parex USA, Inc; Merkrete 735 Premium Flex: www.merkrete.com.
d. ProSpec, an Oldcastle brand; PermaFlex 500: www.prospec.com.
e. Or approved equal.

2.04 GROUTS

A. Manufacturers:
1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Bostik Inc: www.bostik-us.com.
3. Custom Building Products: www.custombuildingproducts.com.
4. H.B. Fuller Construction Products, Inc; _____: www.tecspecialty.com/#sle.
5. LATICRETE International, Inc: www.laticrete.com.
6. Merkrete, by Parex USA, Inc: www.merkrete.com/sle.
7. ProSpec, an Oldcastle brand: www.prospec.com.

B. Standard Grout: ANSI A118.6 standard cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Architect from manufacturer's full line.

2.05 MAINTENANCE MATERIALS

A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
   1. Composition: Water-based colorless silicone.

2.06 ACCESSORY MATERIALS

A. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Fluid or Trowel Applied Type:
      a. Thickness: 25 mils, minimum, dry film thickness.
      b. Products:
         1) ARDEX Engineered Cements; ARDEX 8+9: www.ardexamericas.com/#sle.
         2) AVM Industries, Inc; System 700 with continuous polyester fabric reinforcement: www.avmindustries.com.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.

B. Center floor tile in each room so as to maintain a border of not less than one-half tile.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install non-ceramic trim in accordance with manufacturer's instructions.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep control and expansion joints free of mortar, grout, and adhesive.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.

B. Over wood substrates, install in accordance with TCNA (HB) Method F150, with standard grout, unless otherwise indicated.

C. Install tile-to-tile floor movement joints in accordance with TCNA (HB) Method EJ171F.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 2 days after installation.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Installation accessories.

1.02 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 F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

C. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2013a.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.

E. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute; October 2011.

G. RFCI (FloorScore) - Resilient Floor Covering Institute Indoor Air Quality certification program.

1.03 SUBMITTALS

A. See Section 01 30 00 - 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. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Flooring Material:
      a. Community Building: Amount equal to 5 percent of each type and color.
      b. Dwelling Unit Buildings: Amount equal to10 percent of each type and color for each multi-unit building.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 65 degrees F and 90 degrees F.

D. Do not double stack pallets.

1.05 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature between 65 degrees F and 85 degrees F to achieve temperature stability. Thereafter, maintain conditions above 65 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Vinyl Plank: Printed film type, with transparent or translucent wear layer, floating or adhered.
   1. Manufacturers:
      a. Mannington Commercial; ADURA Flex: www.manningtoncommercial.com.

b. Metroflor Corporation; Konecto - 'Project Plank': www.aspectaflooring.com.
c. Shannon Specialty Floors, Inc; Tuf Stuf Woodland Path: www.shannonspecialtyfloors.com.
d. Or approved equal.

2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
4. VOC Content Limits: As specified in Section 01 61 16.
5. Plank Tile Size: 6 by 36 inch.
6. Wear Layer Thickness: 0.012 inch.
7. Total Thickness: 0.177 inch.
8. Color: To be selected by Owner from manufacturer's full range.

2.02 ACCESSORIES

A. Subfloor Filler: Fast-setting, portland-cement based; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
1. VOC Content Limits: As specified in Section 01 61 16.

C. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
1. Test as Follows:
a. Alkalinity (pH): ASTM F710.
b. Moisture Vapor Emission: ASTM F1869.
2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove existing resilient flooring and flooring adhesives; follow the recommendations of RFCI (RWP).

B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

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 fully 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 - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
1. Spread only enough adhesive to permit installation of materials before initial set.
2. Fit joints and butt seams tightly.
3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Loose-Laid Installation: Set flooring in place in accordance with manufacturer's instructions.
   1. Fit interlocking edges tightly.

E. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

F. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
   2. Resilient Strips: Attach to substrate using adhesive.

G. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

H. Install flooring in recessed floor access covers, maintaining floor pattern.

3.04 INSTALLATION - TILE AND PLANK 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 pattern.

C. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.05 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.06 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

B. If construction activities are on-going, provide heavy, undyed, kraft paper protective coverings to prevent damage. Replace as required.

END OF SECTION

SECTION 09 65 66
RESILIENT ATHLETIC FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interlocking, loose-laid modular synthetic tile.

B. Painted game lines.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, and layout, colors, and widths of game lines and equipment locations.

D. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.

E. Manufacturer's Instructions: Indicate standard and special installation procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

PART 2 PRODUCTS

2.01 PREFORMED ATHLETIC FLOORING

A. Manufacturers:
   1. SnapSports Athletic Surfaces; DuraCourt Modular Tile: www.snapsports.com.

B. Modular Tile Flooring: High impact Polypropylene open-top court floor tile designed for exterior applications; interlocking.
   1. Thickness: 5/8 inch, Minimum.
   2. Tile Edge/Installation: Interlocking shape, loose-laid installation.
      a. Provide ramp edging tiles at gates.
   3. Size: Nominal 12 inches square.
   4. Surface Texture: Open.
   5. Color: As selected from manufacturer's standard range.

2.02 ACCESSORIES

A. Primer: Manufacturer's primer for painted court lines.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of athletic flooring. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.

3.02 PREPARATION

A. Remove coatings that are incompatible with flooring adhesives, using methods recommended by flooring manufacturer.

B. Broom clean areas to receive athletic flooring immediately before beginning installation.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Modular Tile Flooring:
   1. Lay out center lines on slab to receive tile flooring, based on location of principal edges. Start tile installation from center, and adjust as necessary to avoid tiles less than one-half width at perimeter.
   2. Lay tiles square to slab axis, matching for color and pattern by selecting from cartons and mixing as recommended by manufacturer.
   3. Install ramp edging on all sides of modular flooring.
   4. Painting: Mask game lines as required by manufacturer and per approved layout.
      a. Prime modular flooring tiles as requitred by manufacturer before painting.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Factory-primed Entry doors.
   2. Exposed surfaces of steel lintels and ledge angles.
   3. All surfaces of shop primed steel stairs except concrete treads.
   4. Steel Bollards.
   5. Mechanical and Electrical:
      a. Exposed pipe and conduit.

E. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   4. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
   5. Floors, unless specifically indicated.
   6. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   7. Glass.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.

D. SSPC-SP 1 - Solvent Cleaning; 2015.

E. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

F. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   3. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
   1. All materials used on the work shall be stored in a single place designated by the Owner/Architect and shall be kept clean and orderly at all times.
   2. Care shall be taken to prevent damage to the storage area, and any damage incurred shall be repaired.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
   1. Behr Paint Company; _____: www.behr.com/#sle.
   2. Benjamin Moore Paints: www.benjaminmoore.com.
   3. PPG Paints: www.ppgpaints.com.
   4. Sherwin-Williams Company: www.sherwin-williams.com.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes 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. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

C. Colors: To be selected from manufacturer's full range of available colors.
   1. Selections to be made by Owner.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete masonry units, fiber cement siding, engineered wood siding, primed wood, and primed urethane decorative elements.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Exterior Latex.
   3. Top Coat Sheen:
      a. Flat: MPI gloss level 1; use this sheen for overhead surfaces.
      b. Satin: MPI gloss level 4; use this sheen at all locations.

B. Paint ME-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd, water based primer.
   2. Semi-gloss: Two coats of alkyd, water based, enamel.

C. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, Water Based, 3 Coat:
   1. Applications include factory-primed entry doors, steel stairs, handrails, guardrails, and bollards.
   2. One coat of alkyd, water based primer.
      a. Entry doors: Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
   3. Semi-gloss: Two coats of water based alkyd enamel.

D. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
   1. Applications include galvanized metal fabrications, flashing, and trim.
   2. One coat galvanize primer.
   3. Semi-gloss: Two coats of alkyd, water based, enamel.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Interior/Exterior Latex Block Filler.
   2. Rust-Inhibitive Water Based Primer; MPI #107.
   3. Latex Primer for Exterior Wood; MPI #6.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. 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. Fiber Cement Siding: 12 percent.
   2. Engineered Wood Siding: 12 percent.
   3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to 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 for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Masonry:
   1. Prepare surface as recommended by top coat manufacturer.
   2. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

G. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

H. Engineered Wood Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

I. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

J. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: 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.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

K. 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.

L. Metal Entry Doors to be Painted: Shop-Primed Surfaces; 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

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. 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.

C. Exterior steel stairs: Paint sides of stringers, landings, and other components adjacent to building construction, or that otherwise would be inaccessible after installation, prior to erection.

D. Apply products in accordance with manufacturer's written instructions.

E. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

F. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

G. Apply each coat to uniform appearance.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Upon completion of the work, the Contractor shall remove all paint spots from all decks, patios, glass, and adjacent surfaces.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Both sides and all edges of interior wood doors.
   3. Mechanical and Electrical:
      a. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.

E. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   4. Floors, unless specifically indicated.
   5. Ceramic and other tiles.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.

C. SSPC-SP 1 - Solvent Cleaning; 2015.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. Cross-reference to specified paint system products to be used in project; include description of each system.
   3. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
   1. All materials used on the work shall be stored in a single place designated by the Owner/Architect and shall be kept clean and orderly at all times.
   2. Care shall be taken to prevent damage to the storage area, and any damage incurred shall be repaired.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for submittals.

B. Paints:
   1. Behr Paint Company: www.behr.com.
   2. Benjamin Moore Paints: www.benjaminmoore.com.
   3. Diamond Vogel Paints: www.diamondvogel.com.
   4. PPG Paints: www.ppgpaints.com.
   5. Sherwin-Williams Company: www.sherwin-williams.com.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes 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. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: See Section 01 61 16.

C. Colors: To be selected from manufacturer's full range of available colors.
   1. Selection to be made by Owner.
   2. Extend colors to surface edges; colors may change at any edge as directed by Architect or Owner.
   3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, wood, uncoated steel, and shop primed steel.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Interior Latex.
   3. Top Coat Sheen:
      a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
      b. Eggshell: MPI gloss level 3; use this sheen at all locations.
   4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
   1. Medium duty applications include doors, door frames, window sills and casing, and wood baseboards.
   2. Two top coats and one coat primer.
   3. Top Coat(s): Interior Alkyd, Water Based.
   4. Top Coat Sheen:
      a. Eggshell: MPI gloss level 3; use this sheen at at all locations except doors.
      b. Semi-Gloss: MPI gloss level 5; use this sheen at door edges and faces.
   5. Primer: As recommended by top coat manufacturer for specific substrate.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Interior Latex Primer Sealer.
   2. Latex Primer for Interior Wood.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.
   1. Clean floors and all adjacent surfaces prior to application.

B. Mask or otherwise protect floors, adjacent walls, fixtures, and other construction throughout application.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

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. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

J. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: 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.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

K. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

L. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions.

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Upon completion of the work, the Contractor shall remove all paint spots from the floors, glass and adjacent surfaces.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

B. Building Identification signs.

C. Dwelling Unit identification signs.

D. Monument Sign.

E. Traffic signs.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.

D. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
   1. Submit for approval by Owner through Architect prior to fabrication.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

E. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.05 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:
   1. Best Sign Systems, Inc; HC300: www.bestsigns.com.
   2. Cosco Industries (ADA signs); ADA Series 2: www.coscoarchitecturalsigns.com.
   3. Inpro; Aspen Series: www.inprocorp.com.
   4. Mohawk Sign Systems, Inc; Mohawk 1000 Sand Carved: www.mohawksign.com.
   5. National Signage Affiliates; PoliTouch Series: www.nationalsignageaffiliates.com
   6. Stamprite Supersine, Inc.; Supersine TFA: www.supersine.com

B. Dimensional Letter & Numbers:
   1. Cosco Industries; Injection Molded Acrylic: www.coscoarchitecturalsigns.com/#sle.
   2. Or approved Equal.

C. Dwelling Unit Identification Signs:
   1. Best Sign Systems, Inc; Graphic Blast FG: www.bestsigns.com.

2. Inpro; Photopolymer: www.inprocorp.com.
3. Mohawk Sign Systems, Inc; Series 200A : www.mohawksign.com.
4. Stamprite Supersine, Inc.; Supersine PPA: www.supersine.com

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with, UFAS, ADA Standards, and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide signs as indicated in Signage Schedule.
1. Sign Type: Flat signs with raised panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
3. Character Height: 5/8 inch.
4. Sign Size: As required to accommodate required graphics and text.
   a. Maintain consistent size throughout building.
5. Room Doors: Identify with room names as scheduled.
6. Public Toilet Room(s): Identify with pictograms, "MEN" and "WOMEN", International accessibility symbol, and braille.

C. Egress Door Sign, Community Building:
1. Sign Type: Printed vinyl self-adhesive, UV stable, chemical, abrasion, and moisture resistant.
2. Sign size: 2 by 24 inches, unless otherwise indicated.
3. Text Height: 1 inch minimum on contrasting background.
4. Message: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED".

D. Occupant Load Sign, Community Building: Shall be as required by the Local Fire Marshal, or Local Authority having Jurisdiction.

E. Building Identification Signs:
1. Sign Type: Dimensional Letters and Numbers, 4 inch high minimum; wall-mounted.
2. Material: plastic letters & numbers.
3. Install at building exteriors as directed by Owner

F. Dwelling Unit Identification Signs:
1. Sign Type: Flat signs with raised panel media as specified.
2. Material: Fiberglass or Photopolymer signs.
3. Mounting: Countersunk Screws.
4. Install on outside wall at apartment entries as directed or indicated on drawings.

G. Office Directional Sign:
1. Sign Type: Flat signs with printed panel media as specified.
2. Material: Fiberglass or Photopolymer signs.
3. Size: 24 inch by 36 inch.
4. Mounting: Pole- mounted.
5. Text: 'OFFICE' with directional arrow (direction of arrow per Owner)

H. Monument Sign: Provide sign as indicated on Drawings.

I. Traffic Signs: Provide Parking/Traffic signs and mounting poles of types indicated on drawings.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.
1. Edges: Square.
2. Corners: Square.
3. Wall Mounting of Interior One-Sided Signs: Tape adhesive or silicone adhesive.
4. Wall Mounting of Exterior One-Sided Signs: Countersunk screws.

B. Color and Font: Unless otherwise indicated:
1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: Selected by Owner/Architect.
4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
   1. Total Thickness: 1/8 inch.

B. Injection Molded Panels: One-piece acrylic plastic, with raised letters and braille.
   1. Total Thickness: 1/8 inch.

C. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
   1. Total Thickness: 1/8 inch.
   2. Letter Thickness: 3/32 inch.
   3. Letter Edges: Square.

2.05 NON-TACTILE SIGNAGE MEDIA

A. Sand Blasted Plastic Panels: High gloss acrylic plastic; letters sand blasted to dull sheen:
   1. Total Thickness: 1/8 inch.

2.06 ACCESSORIES

A. Exposed Screws: Chrome plated.

B. Tape Adhesive: Double sided tape, permanent adhesive.

C. Silicone Adhesive: Type as recommended by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

PART 4 SCHEDULES

4.01 FLAT AND TACTILE SIGNAGE SCHEDULE

DESCRIPTION/TEXT	LOCATION	QUANTITY
DIMENSIONAL LETTER SIGNS		
Building Number/Address	Exterior	1 per Bldg
FLAT SIGNS		
Office Directional Sign	Exterior	1
Dwelling Unit Directional Signs	Exterior	1 per Stairway
TACTILE SIGNS		
Dwelling Unit Number	Exterior	1 per Unit
Office/ Laundry/ Maintenance Building	Exterior	1
Laundry	Exterior	1
Leasing Office	Interior	1
Maintenance	Interior	1
Laundry	Interior	1
Men (with international accessiblity symbol)	Interior	1
Women (with international accessiblity symbol)	Interior	1
Storage	Interior	1
Mechanical Closet	Interior	2
Maintenance	Exterior	1
Storm Shelter	Exterior	2
Toilet (with international Unisex and accessiblity symbols)	Interior	1

END OF SECTION

SECTION 10 28 00
TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Accessories for Dwelling Unit Bathrooms and Public Toilet Rooms.

B. Grab bars.

1.02 REFERENCE STANDARDS

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a.

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 A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

D. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.

E. ASTM C1036 - Standard Specification for Flat Glass; 2011.

F. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fixture and Accessory Manufacturers::
   1. Better Homes Products, Inc.: www.betterhomesproducts.com.
   2. Pfister, a Spectrum Brands company: www.pfisterfaucets.com.
   3. Delta Faucet Company, Inc.: www.deltafaucet.com.

B. Commercial Toilet and Shower Accessories:
   1. ASI - American Specialties, Inc: www.americanspecialties.com.
   2. Bradley Corporation: www.bradleycorp.com.
   3. Bobrick Washroom Equipment Inc.: www.bobrick.com.

C. Provide products of each category type by single 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.

B. Keys: Provide 2 keys for each accessory to Owner.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Type 304.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

G. Adhesive: silicone, waterproof.

H. Fasteners, screws, and bolts: Corrosion resistant or stainless steel.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.

2.04 TOILET AND BATHROOM ACCESSORIES

A. Toilet Paper Dispenser: Single roll, surface mounted bracket type, nickel-plated solid brass.
   1. Product: Candlestick Park #2209 manufactured by Better Homes Products, or equal.

B. Paper Towel Dispenser: Folded paper type, stainless steel, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
   1. Capacity: 400 multifold minimum.
   2. Product: Model # B262 manufactured by Bobrick, or equal.

C. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gauge refill indicator, tumbler lock.
   1. Minimum Capacity: 40 ounces.
   2. Product: Model # B4112 manufactured by Bobrick, or equal.

D. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
   1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
   2. Size: As indicated on drawings.
   3. Frame: 0.04 inchchannel shapes, with mitered and welded and ground corners; satin finish.
   4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.

E. Grab Bars: Stainless steel, textured surface.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force, minimum.
      b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
      c. Finish: Safety-grip.
      d. Length and Configuration: As indicated on the Drawings.
      e. Product: Series 832 manufactured by Bradley, or equal.

F. Shower Curtain Rod: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for concealed mounting.
   1. Product: Model B-207 manufactured by Bobrick, or equal.

G. Towel Bar: Solid brass, nickel-plated.
   1. Finish: Satin.
   2. Length: 24 inches.
   3. Product: Candlestick Park #2224 manufactured by Better Homes Products, or equal.

H. Robe Hook: Solid brass, nickel-plated, double-prong for concealed attachment.
   1. Finish: Satin.
   2. Product: Candlestick Park #2202 manufactured by Better Homes Products, or equal.

I. Medicine Cabinet: One-piece construction of molded plastic, recessed, satin finish stainless steel mirror frame, reversible type.
   1. Shelves: Fixed.
   2. Door: Fitted with continuous piano-type hinge, magnetized catch, swing as indicated.
   3. Product: Model X311 manufactured by Zenith Products, or equal.

J. Under-Counter Pipe and Drain Covers
   1. Specified in 22 00 00 - Plumbing.

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. See Section 06 10 00 - Rough Carpentry for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

A. 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.
   1. Towel bars and shower curtain rods shall be secured to solid blocking or studs.
   2. Grab bars shall be secured to solid blocking capable of withstanding a 250 pound-force of 5 minute duration.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. Grab Bars: As indicated on drawings.
   2. Mirrors: 40 inch, measured from floor to bottom of mirrored surface.
   3. Robe Hooks:
      a. Typical locations: 60 inches measured to top of hook.
      b. Accessible locations: 48 inches measured to top of hook.
   4. Other Accessories: As indicated on drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

PART 4 ACCESSORY SCHEDULES

4.01 PUBLIC TOILET ROOMS

Qty	Description	Model #	Mfr
1	Toilet Paper Holder; surface-mounted	#2209	BHP
1	Paper Towel Dispenser; surface-mounted	#B262	Bobrick
1	Soap Dispenser	#B4112	Bobrick
1	Mirror; size as indicated	---	---
1	Grab Bar; 42 inch	BR832-00142	Bradley
1	Grab Bar; 36 inch	BR832-00136	Bradley
1	Grab Bar; 18 inch	BR832-00118	Bradley

4.02 TYPICAL DWELLING UNIT BATHROOMS

Qty	Description	Model #	Mfr
1	Toilet Paper Holder; surface-mounted	#2209	BHP
1	Mirror; size as indicated	---	---
1	Shower Curtain Rod	B-207	Bobrick
1	Towel Bar; 24 inch	#2224	BHP
1	Robe Hook, typical height	#2202	BHP
1	Medicine Cabinet; recessed	#X311	Zenith

4.03 UFAS DWELLING UNIT BATHROOMS

Qty	Description	Model #	Mfr
1	Toilet Paper Holder; surface-mounted	#2209	BHP
1	Mirror; size as indicated	---	---
1	Grab Bar; 42 inch (toilet)	BR832-00142	Bradley

1	Grab Bar; 36 inch (toilet)	BR832-00136	Bradley
1	Shower Curtain Rod	B-207	
Provide factory-installed grab bars and shower seat as part of the tub enclosure			
1	Towel Bar; 24 inch	#2224	BHP
1	Robe Hook; accessible height	#2202	BHP
1	Medicine Cabinet; recessed	#X311	Zenith

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Accessories.

1.02 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features, extinguisher ratings and classifications, color and finish, and anchorage details.

C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Kidde, a unit of United Technologies Corp: www.kidde.com.
   2. Nystrom, Inc: www.nystrom.com.
   3. Pyro-Chem, a Tyco Business: www.pyrochem.com.
   4. Strike First Corporation of America: www.strikefirstusa.com.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Stored Pressure Operated: Deep Drawn.
   2. Class: A:B:C type.
   3. Size: 5 pound; For installation in OLM Building and Storm Shelter.
   4. Size: 2.5 pound; For installation in individual Dwelling Units.
   5. Finish: Baked polyester powder coat, Red color.
   6. Temperature range: Minus 40 degrees F to 120 degrees F.

2.03 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated, by extinguisher manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install brackets plumb and level.

C. Secure rigidly in place.

D. Install Common Area extinguishers on wall brackets.
   1. Install extinguishers in conspicuous locations where indicated or otherwise directed with bottom of extinguisher 27 inches above finished floor, maximum.
   2. Provide Multi-Purpose Dry Chemical extinguishers in Office, Laundry, Maintenance Room, and Storm Shelter

E. Install Dwelling Unit fire extinguishers in brackets, where indicated or otherwise directed.
   1. Extinguisher brackets in Accessible Dwelling Units shall be mounted in conspicuous, accessible locations and with bottom of extinguisher 27 inches above finished floor, maximum.

END OF SECTION

SECTION 10 55 00
POSTAL SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Central mail delivery boxes.

B. Rent Drop and Collection box.

1.02 REFERENCE STANDARDS

A. 39 CFR 111 - U.S. Postal Service Standard 4C; effective date September 3, 2006.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, maintenance information, and current USPS approval documentation.

C. Shop Drawings: Indicate plans for each unit or groups of units, front elevations with compartment layout and model number, overall dimensions, rough-in opening sizes, construction and anchorage details.

1.04 WARRANTY

A. Provide manufacturer's warranty against defects in materials or workmanship for a period of 5 years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 CENTRAL MAIL DELIVERY BOXES

A. Manufacturers:
   1. Florence Manufacturing Company: www.florencemailboxes.com.
   2. Salsbury Industries: www.mailboxes.com.

B. Central Mail Delivery Boxes: Provide products approved for United States Postal Service (USPS) delivery.
   1. Materials: Aluminum with stainless steel hardware.
   2. Finish: Powder coat in color selected by Owner from manufacturer's standard colors.
   3. Unit Types and Sizes: As specified.
   4. Configurations: Refer to Drawings for quantity of units and locations.
      a. Provide a minimum of one (1) customer compartment for each Dwelling Unit and the Manager's office.

C. Cluster Box Units (CBU): Pedestal-mounted, mail receptacle with weather-resistant cabinet for outdoor installation; front-loading, double-column design.
   1. Unit A: 16 customer compartments (3 inch high), 1 outgoing mail receptacle, and 2 parcel compartments.
      a. Florence Manufacturing Company; Model # 1570-16.
      b. Salsbury Industries; Model # 3316.
      c. Quantity: 3 Units.

D. Outdoor Parcel Lockers (OPL): Pedestal-mounted, parcel receptacle with weather-resistant cabinet for outdoor installation.
   1. Unit A: Front-loading with master door, single-column design, no customer compartments, no outgoing mail receptacle, and 4 parcel compartments.
      a. Florence Manufacturing Company; Model #1590-T2.
      b. Salsbury Industries; Model #3304.
      c. Quantity: 1 Unit.

2.02 COMPONENTS

A. Locking - Front Loading Master Door: Three-point latching mechanism with USPS master lock furnished and installed by postmaster.

B. Locking - Customer Compartment Doors: USPS approved cam lock, 3 keys each lock.

C. Locking - Parcel Compartment Doors: Double-lock arrangement with USPS approved cam lock for customer access, and USPS master lock furnished and installed by postmaster.

D. Identification - Customer and Parcel Compartments: Sequential numerical or alphabetic characters, top to bottom, left to right; factory-installed.
   1. Silver adhesive decals, 3/4 inch high black characters centered on 1-1/2 inch high by 1-3/4 inch long decal.
   2. Customer Name Marking: Self-adhesive labels; attach below front of each compartment shelf.

2.03 AUXILIARY ITEMS

A. Tenant Payment Drop: Through-Wall payment drop with interior surface mounted locking collection box. Install at Leasing office where indicated on the drawings.
   1. Materials: Aluminum with steel hardware.
   2. Finish: Powder coat in color selected by Owner from manufacturer's standard colors.
   3. Size:
      a. Deposit Slot: 4 by 9 inches.
      b. Collection Box: 15 by 19 by 7-1/2 inches.
   4. Text engraved on flap: RENT.
   5. Manufacturers:
      a. Salsbury Industries; Model 2255 & 2256: www.mailboxes.com.
      b. Or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Coordinate location of postal specialties with local USPS District authority.

B. Verify that concrete base and anchor bolts are ready to receive pedestal-mounted units.

C. Do not begin installation until unacceptable conditions are corrected.

3.02 INSTALLATION

A. Install postal specialties in accordance with approved shop drawings, manufacturer's instructions, and USPS requirements.

B. Adjust and lubricate door hardware to operate properly.

END OF SECTION

SECTION 10 57 23
CLOSET AND UTILITY SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted wire closet shelving.

B. Accessories.

1.02 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

C. Store flat to prevent warpage and bending.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wire Storage Shelving:
   1. ClosetMaid Corporation: www.closetmaidpro.com.
   2. Rubbermaid, Inc: www.rubbermaidpro.com.

2.02 WIRE STORAGE SHELVING SYSTEMS

A. Applications:
   1. Shelf Depth: 12 inches, unless otherwise indicated.
   2. Bedroom Closets:
      a. Wall-to-wall shelf with free sliding hanger rod.
      b. Provide intermediate bracing for shelves longer than 36 inches.
   3. Coat Closets:
      a. Wall-to-wall shelf with integral hanger rod.
      b. Provide intermediate bracing for shelves longer than 36 inches.
   4. Linen and Pantry Shelving:
      a. Wall-to-wall shelves spaced as shown on the drawings, not less than 16 inch deep.

B. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with components and connections required to produce a rigid structure that is free of buckling and warping.
   1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
   2. Coating: PVC or epoxy, applied after fabrication, covering surfaces.
   3. PVC Coating: 9 to 11 mils thick.
   4. Epoxy Coating: Nontoxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils thick.
   5. Standard Mesh Shelves: Cross deck wires spaced at 1 inch.
   6. Close-Mesh Shelves: Cross deck wires spaced at 1/2 inch.
   7. Shelf and Rod Units: Integral hanging rod at front edge of shelf.
   8. Free-Sliding Hanging Rod: Integral hanging rod that permits uninterrupted sliding of hangers the full width of the shelf.

C. Hanging Rod: Tubular steel, 1 inch diameter, with end caps on open ends.
   1. Finish: Epoxy powder coat.
   2. Wall Thickness: 20 gauge, 0.035 inch.

D. Wall-Mounted Standards for Wire Shelving: Vertically slotted channel standards with double-tab cantilever brackets to suit shelving; factory finished to match shelving.

E. Mounting Hardware for Wire Shelving: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.

F. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect areas to receive shelving or storage system, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.

B. Verify appropriate fastening hardware.

C. Do not begin installation until substrates have been properly prepared.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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 wire shelving in accordance with manufacturer's instructions, with shelf surfaces level.

B. Cap exposed ends of cut wires and hanging rods.

C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces at 32 inches on center, maximum, or as recommended by manufacturer.

D. Mounting Heights:
   1. Single Hanging Rod Units:
      a. Typical Dwelling Units Install shelf at 68 inches above floor.
      b. Accessible Dwelling Unit(s) install shelf at 48 inches maximum above floor.

3.04 CLEANING

A. Clean soiled surfaces after installation.

3.05 PROTECTION

A. Protect installed work from damage.

B. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

END OF SECTION

SECTION 11 30 13
RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Kitchen appliances.

1.02 REFERENCE STANDARDS

A. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

1.05 SERVICE AGREEMENT

A. Provide one (1) year service contract on all appliances with qualified local area dealer or bona fide repair service, regardless of where purchased.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

A. Energy Star Rating: Provide Equipment Eligible for Energy Star Rating where available and applicable.

B. Refrigerator; UFAS Dwelling Units: Free-standing, top-mounted freezer, and frost-free.
   1. Capacity: Total minimum storage of 17.0 cubic ft; minimum 25 percent freezer capacity.
   2. Energy Usage: Energy Star Rated.
   3. Features: Include glass shelves, automatic icemaker, light in freezer compartment, and ADA compliant front-mounted controls.
   4. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
   5. Manufacturers:
      a. To be selected by Owner.

C. Refrigerator; Typical Dwelling Units: Free-standing, top-mounted freezer, and frost-free.
   1. Capacity: Total minimum storage of 17.0 cubic ft; minimum 29 percent freezer capacity.
   2. Energy Usage: Energy Star Rated.
   3. Features: Include glass shelves and light in freezer compartment.
   4. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
   5. Manufacturers:
      a. To be selected by Owner.

D. Range; UFAS Dwelling Units: Electric, free-standing, with plug-in heating elements and removable drip pans.
   1. Size: 30 inches wide.
   2. Oven: Self-cleaning.
   3. Elements: Four (4).
   4. Controls: Solid state electronic.
   5. Features: Include oven door window, broiler pan and grid, oven light, anti-tip restraint, and front mounted controls.
   6. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
   7. Manufacturers:
      a. To be selected by Owner.

E. Range; Typical Dwelling Units: Electric, free-standing, with plug-in heating elements and removable drip pans.

1. Size: 30 inches wide.
2. Oven: Manual cleaning.
3. Elements: Four (4).
4. Controls: Push-to-turn knobs with electronic clock and timer.
5. Features: Include oven door window, broiler pan and grid, oven light, and anti-tip restraint.
6. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
7. Manufacturers:
    a. To be selected by Owner.

F. Cooking Exhaust; UFAS Dwelling Units: Range hood; fan and light wired to wall switches. Refer to drawings for switch heights.
1. Size: 30 inches wide.
2. Fan: Two-speed, 220 cfm
3. Exhaust: Ducted, match existing connections.
4. Features: Include cooktop light and removable grease filter.
5. Exterior Finish: Painted steel, color as selected by Owner.
6. Manufacturers:
    a. To be selected by Owner.

G. Microwave/Hood; Typical Dwelling Units: Over-the-range, microwave/hood combination.
1. Capacity: 1.7 cubic ft.
2. Power: 1000 watts.
3. Fan: Two-speed, 220 cfm
4. Exhaust: Ducted, match existing connections.
5. Features: Include turntable, cooktop light, night light, 2-speed exhaust fan, built-in trim kit, and undercabinet mounting kit.
6. Exterior Finish: Painted steel, color as selected by Owner.
7. Manufacturers:
    a. To be selected by Owner.

H. Microwave; UFAS Dwelling Units: Countertop.
1. Capacity: 1.3 cubic ft.
2. Power: 1000 watts.
3. Height: 12 inches maximum.
4. Features: Include turntable.
5. Exterior Finish: Painted steel, color as selected by Owner.
6. Manufacturers:
    a. To be selected by Owner.

I. Dishwasher; UFAS Dwelling Units: Undercounter, for installation at 34 inch counters.
1. Controls: Solid state electronic.
2. Energy Usage: Energy Star Rated.
3. Wash Options: Two (2).
4. Cycles: Six (6), including heavy, sanitize, normal, eco, quick, and rinse and hold.
5. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
6. Finish: Porcelain enameled steel, color as selected by Owner.
7. Manufacturers:
    a. To be selected by Owner.

J. Dishwasher; Typical Dwelling Units: Undercounter.
1. Controls: Solid state electronic.
2. Energy Usage: Energy Star Rated.
3. Wash Options: Three (3).
4. Cycles: Four (4), including heavy, normal, light, and auto-sense.
5. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and customizable bottom rack .
6. Finish: Porcelain enameled steel, color as selected by Owner.
7. Manufacturers:
    a. To be selected by Owner.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

A. All appliances to be installed in locations as shown on Drawings.

B. Install in accordance with manufacturer's instructions.

C. Coordinate installation/operating dimensions/clearances for all appliances with Millwork Cabinetry layouts.

D. Provide all installation hardware, accessories kits, and power cords as required for complete installation of each appliance.

E. Anchor built-in equipment in place.

3.03 ADJUSTING

A. Adjust equipment to provide efficient operation.

3.04 CLEANING

A. Remove packing materials from equipment and properly discard.

B. Wash and clean equipment.

3.05 CLOSE OUT

A. Operating Manuals for each appliance shall be left in the individual Dwelling Units and Community Building kitchen respectively, unless directed otherwise.

B. Warranty registration information shall be turned over to Owner upon completion of installation.

END OF SECTION

SECTION 11 68 13
PLAYGROUND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Playground layout (staking).

B. Playground equipment.

C. Protective Ground cover.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.

B. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe; 2009 (Reapproved 2014).

C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

D. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2015.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.

G. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test; 2005 (Reapproved 2011).

H. ASTM D6662 - Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards; 2013.

I. ASTM F1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use; 2011.

J. ASTM F2075 - Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment; 2015.

K. CPSC Pub. No. 325 - Public Playground Safety Handbook; 2010.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Convene a meeting one week before starting earthwork for playground to discuss coordination between various installers.
   1. Require attendance by personnel responsible for grading and installers of playground equipment, protective surfacing, footings, and adjacent work.
   2. Include representatives of Contractor.
   3. Notify Architect at least 2 weeks prior to meeting.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: For manufactured equipment, provide manufacturer's product data showing materials of construction, compliance with specified standards, installation procedures, safety limitations, and the number of users permitted.

C. Shop Drawings: Detailed scale drawings showing play event layout, Use Zone perimeters, and fall height for each play event.
   1. Show locations and dimensions of footings and anchorage points.
   2. Clearly identify mounting elevations in relation to a fixed survey point on site and to subgrade elevation and depth of protective surfacing.
   3. Show locations of underground utilities, storm drainage system and irrigation system.
   4. Show locations of related construction such as walkways and roadways, fences, site furnishings, and plantings.

D. Samples: For each item that a color must be selected, provide color chart showing full range of colors and finishes.

E. Maintenance Data: Provide manufacturer's recommended maintenance instructions and list of replaceable parts for each equipment item, with address and phone number of source of supply.

F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company regularly engaged in manufacturing materials and products specified in this section, with not less than three years of experience.

B. Installer Qualifications: Company certified by manufacturer for training and experience installing play events and equipment.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store equipment to project site in accordance with manufacturer's recommendations.

B. Store materials in a dry, covered area, elevated above grade.

1.07 WARRANTY

A. Provide manufacturer's standard Limited Lifetime Warranty for playground equipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Playground Equipment:
   1. GameTime, Inc: www.gametime.com.
   2. Landscape Structures, Inc: www.playlsi.com.
   3. Park Structures, Inc: www.parkstructures.com.

2.02 PLAYGROUND EQUIPMENT - GENERAL

A. Design Assumptions: Because the safety of the playground depends on strict compliance with design criteria, this information is provided for Contractor's information.
   1. Provide a 12 place, multiple-play structure.
      a. Provide layout and specifications from manufacturer for Owner's approval.
   2. Playground is to be designed for children ages 5 through 12.
   3. Access by wheelchair into playground area is not required.
   4. If deviations from specified dimensions, especially fall heights, is required, obtain approval prior to proceeding; follow approval request procedure as specified for substitutions.

B. Mount equipment on concrete footings, unless otherwise indicated.
   1. Playground protective surfacing constitutes a resilient layer installed over subgrade; locate top of footings and anchorage devices below surface of subgrade.
   2. Provide supports as required to mount equipment at proper height above finish and sub-grades to allow installation of sufficient depth of protective surfacing; portion of support below top of surfacing must comply with specified requirements for equipment.

2.03 CUSTOM PLAY STRUCTURES

A. Materials, Configuration, and Dimensions: As indicated on shop drawings.

B. Fabricate in accordance with ASTM F1487, unless otherwise indicated; in particular, requirements for sharp points and edges, protrusions, entanglement hazards, crush and shear points, and head and neck entrapment.

C. Stairs and Ship's Ladders: Treads and handrails of vinyl-coated steel and stringers of vinyl-coated steel.

D. Ladders: Stringers of vinyl-coated steel with rungs of vinyl-coated steel, secured to prevent turning.

E. Sliding Poles: Hot-dipped galvanized steel pipe, 1.9 inch diameter, maximum; continuous surface with no protruding welds or joints along the sliding area.

F. Flexible Climber: Flexible grid of cables to provide access to an elevated platform; anchored at both ends; ground anchor below bottom of protective surfacing.

2.04 MATERIALS

A. Steel Pipe and Tube: Comply with ASTM A135/A135M, ASTM A500/A500M, or ASTM A513/A513M; hot-dipped galvanized and free of excess weld and spatter.
   1. Tensile Strength: 45,000 psi, minimum.
   2. Yield Point: 33,000 psi, minimum.
   3. Galvanizing: Hot-dip metal components in zinc after fabrication, in accordance with ASTM A123/A123M; remove tailings and sharp protrusions and burnish edges.

B. Extruded Aluminum: ASTM B221 or ASTM B221M, Alloy 6061, 6062, or 6063.
   1. Tensile Strength: 39,000 psi, minimum.
   2. Yield Point: 36,500 psi, minimum.

C. Chain: Corrosion resistant zinc plated steel; minimum size 4/0; polyvinyl chloride (PVC) coating.

D. Rope Cable: Strands of steel cable with UV-stabilized polypropylene synthetic covering; ends capped to prevent fraying.

E. Hardware: Provide without hazardous protrusions, corners, or finishes, and that require tools for removal after installation; countersunk fasteners are preferred.
   1. Use stainless steel for metal-to-metal connections; select type to minimize galvanic corrosion of materials connected by hardware.
   2. Use stainless steel with plastic components.
   3. Bearings: Self lubricating.
   4. Hooks, Including S-Hooks: Closed loop; maximum gap 0.04 inches, less than the thickness of a dime.
   5. Rails, Loops, and Hand Bars: Same metal as item is mounted on or galvanized steel; with polyvinyl chloride coating.
   6. Anchors: In accordance with manufacturer's recommendations.

F. Transparent Plastic: Clear polycarbonate plastic sheets, flat; shatterproof; resistant to crazing, cracking, and fogging.
   1. Sheet Thickness: 3/16 inch, minimum.

G. Opaque Plastic: Molded homogeneous plastic; do not use plastic as major load bearing members; use as panels and railings is acceptable.
   1. Homogeneous Plastic: Ultraviolet (UV) and color stabilized polyethylene without applied surface coating; color through entire thickness.
   2. Wood-Polymer Composite Lumber: Comply with ASTM D6662; factory finished.
   3. Panel Thickness: 3/16 inch, minimum.
   4. Panel Edges: 3/16 inch radius, minimum.

H. Polyvinyl Chloride (PVC) Coating: Ultraviolet (UV) stabilized and mold-resistant; slip-resistant finish; prime parts to be coated with clear acrylic thermosetting solution, and preheat prior to dipping in liquid PVC.
   1. Thickness: 0.08 inch, minimum, plus/minus 0.02 inch.
   2. Hardness: 85 durometer, when tested in accordance with ASTM D3363.

I. Concrete: As specified in Section 03 30 00.

2.05 PROTECTIVE GROUND COVER

A. Engineered Wood Fiber Fill: Manufactured for the purpose of protective surfacing; complying with ASTM F2075; do not use mulch manufactured from recycled pallets, or lumber containing nails or metal fasteners.
   1. Depth - Other Than High Play Activity Area: 9 inches, maximum.
   2. Depth - High Play Activity Area: 12 inches.
   3. Manufacturers:
      a. Fibar Systems: www.fibar.com.
      b. GameTime, Inc: www.gametime.com.
      c. Sof' Fall: www.sof-fall.com.

B. Geotextile Fabric: Nonwoven polypropylene sheet.

C. Containment Edging: Manufacturer's standard molded, interlocking High-density polyethylene, UV stabilized, free of sharp vertical edges, protruding elements, and trip hazards, complete with installation hardware.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that playground area has been graded to subgrade elevations required and that excess soil, rocks, and debris have been removed.

B. Verify that playground equipment footings have been installed in proper locations and at proper elevations.

C. Verify location of underground utilities and facilities in playground area; damage to underground utilities and facilities will be repaired at Contractor's expense.

3.02 PREPARATION

A. Stake location of playground elements, including Use Zone perimeters, perimeter of protective surfacing, access and egress points, hard surfaces, walls, fences, and structures, and planting locations.

3.03 INSTALLATION

A. Install in accordance with CPSC Pub. No. 325, ASTM F1487, manufacturer's instructions, and requirements of authorities having jurisdiction (AHJ).

B. Anchor equipment securely below bottom elevation of resilient surfacing layer.

C. Install without sharp points, edges or protrusions, entanglement hazards, pinch, crush, or shear points.

D. Do not modify play events on site without written approval of manufacturer.

E. Install required signage if not factory-installed.

F. Protective Ground Cover:
   1. Install in accordance with CPSC Pub. No. 325 and ASTM F1487, and requirements of authorities having jurisdiction.
   2. Cover subgrade with geotextile fabric:
      a. Lap minimum 4 inches width at seams. Adhere seams in accordance with manufacturer's recommendations.
      b. Install fabric smooth, and free of tensile stresses, folds, or wrinkles.
      c. Protect fabric from clogging, tears, or other damage during surfacing installation.
      d. Repair or replace damaged fabric in accordance with manufacturer's recommendations.
   3. Install loose fill to depths indicated, with smooth even surface flush with tops of containment curbs.

3.04 CLEANING

A. Restore adjacent existing areas that have been damaged from the construction.

B. Clean playground equipment of construction materials, dirt, stains, filings, and blemishes due to shipment or installation; clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.

C. Clean playground area of excess construction materials, debris, and waste.

D. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction (AHJ).

3.05 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 12 21 13
HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Horizontal PVC faux-wood slat louver blinds.

B. Operating hardware.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating physical and dimensional characteristics and operating features.

C. Manufacturer's Installation Instructions: Indicate special procedures.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Horizontal Louver Blinds:
   1. CACO Inc.: www.cacoinc.com
   2. SWFcontract, a division of Spring Window Fashions, LLC.: www.swfcontract.com.
      a. Bali Blinds.
      b. Graber Blinds

2.02 BLINDS

A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
   1. Provide 2 inch 'Faux-Wood' horizontal louver blinds at all Dwelling Unit windows.
   2. Provide 2 inch 'Faux-Wood' horizontal louver blinds at all Common Area windows.

B. Manual Operation: Control of raising and lowering by counterbalance spring with full range locking; blade angle adjustable by control wand.

C. Plastic Slats: Extruded PVC, square slat corners.
   1. Width: 1 inch.
   2. Width: 2 inch.
   3. Thickness: 0.10 inch.
   4. Color: As selected by Owner.
   5. Texture: Simulated wood-grain.

D. Slat Support: Woven polypropylene cord, ladder configuration.

E. Head Rail: Pre-finished, formed steel box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
   1. Height: 1 inches.
   2. Color: Same as slats.

F. Bottom Rail: Pre-finished, formed steel ; with end caps.
   1. Color: Same as headrail.

G. Control Wand: Extruded solid plastic; hexagonal shape.
   1. Length of window opening height less 3 inch.

H. Headrail Attachment: Wall brackets.

I. Accessory Hardware: Type recommended by blind manufacturer.

2.03 FABRICATION

A. Fabricate blinds to fit within openings with uniform edge clearance of 1/8 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings are ready to receive the work.

B. Ensure structural blocking and supports are correctly placed. See Section 06 10 00.

3.02 INSTALLATION

A. Install blinds in accordance with manufacturer's instructions.

B. Secure in place with concealed fasteners.

C. Install intermediate head supports at midpoint of double windows.

3.03 ADJUSTING

A. Adjust blinds for smooth operation.

3.04 CLEANING

A. Clean blind surfaces just prior to occupancy.

END OF SECTION

SECTION 12 35 30
RESIDENTIAL CABINETS AND COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Kitchen cabinets.

B. Kitchen countertops.

C. Vanity cabinets.

D. Vanity countertops.

E. Miscellaneous Work Surfaces.

1.02 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2009.

B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.

C. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

E. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.

F. KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; 2012.

G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

H. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, configurations, and construction details.

C. Certificate: Submit Kitchen Cabinet Manufacturers Association (KCMA) certificate showing conformance with KCMA A161.1.

D. Shop Drawings: Indicate casework locations, scale plans, elevations, clearances required, rough-in and anchor placement dimensions and tolerances, and color samples.

E. Manufacturer's Qualification Statement.

F. Warranty: Manufacturer's warranty for all items provided under this section.
   1. Cabinets: Manufacturer's standard 1 year warranty.
   2. Acrylic or Acrylic/Polyester Vanity Countertop: Manufacturer's 10 year warranty against defects.

1.05 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 CABINETS

A. Manufacturers:
   1. American Traditions/S&W Cabinets, Inc; Shaker Poplar: www.swcabinets.com
   2. Mid-America Cabinets Inc; "Sierra/Mesa" : www.midamericacabinets.com.
   3. Wellborn Cabinet, Inc; Home Concepts - All Plywod: www.wellborn.com.
   4. Wolf Home Products; Wolf Classic Cabinets: www.wolfhomeproducts.com.
   5. Or approved equal.

B. Kitchen and Vanity Cabinets: Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1.

C. Cabinet Box: Framed construction.
   1. Side Panels: 5/8 inch Plywood.
      a. Exposed Side Panel Finish: Hardwood veneer, coordinate with cabinet door and drawer color/finish.
   2. Back Panel: 1/4 inch Plywood.
   3. Bottom (and Top) Panel: 1/2 inchPlywood, dadoed into side panels and interlocked with hanging rail.
   4. Face Frame: 3/4 inchkiln-dried hardwood, screwed and glued.
   5. Interior Cabinet Finish: Thermally fused laminate.
   6. Exposed Panel Edges: Finish with manufacturer's standard edge banding, color coordinated with other exposed finishes.
   7. Extend base and upper cabinets, and shelves into corners, typical.

D. Cabinet Door/Drawer Configuration: Partial overlay.

E. Cabinet Doors:
   1. Solid wood, stained finish.
   2. 3/4 inch kiln-dried hardwood frame; mortice and tenon construction, 1/4 inch plywood center panel with hardwood veneer finsh.
   3. Stain Color: As selected by Owner.

F. Drawers:
   1. 1/2 inch Birch plywood full box with butted joints, 1/4 inch Birch plywood bottom.
   2. Drawer Front: 3/4 inch kiln-dried hardwood.
   3. Interior Finish: Manufacturer's standard.

G. Shelves: 5/8 inch plywood.
   1. Exposed shelf edges: Finish with manufacturer's standard edge banding, color coordinated with other exposed finishes.

H. Cabinet Hardware: As selected from manufacturer's standard types, styles and finishes.
   1. Drawer and Cabinet Pulls: Satin nickel, wire pulls 4 inches wide
      a. Hardware to comply with accessibility requirements of UFAS, and ADA Standards where applicable.
   2. Hinges: Manufacturer's standard self-closing concealed hinges.
   3. Drawer Slides: Manufacturer's premium self-closing drawer slides.
      a. Full extension, ball-bearing slides; side-mount.
      b. Dynamic load rating: 100 pounds, minimum.

I. Exterior Finish: Factory-applied urethane; 2 color coats with top coat min.
   1. Color: To be selected by Owner from manufacturer's standard line.

2.02 COUNTERTOPS

A. Kitchen Countertops and all Countertops in common areas: Post formed plastic laminate over particle board with, rolled edge, and coved to back splash.
   1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile, and of equal height.
      a. Provide side splash where end of countertops abut partitions/endwalls.
   2. Colors/Patterns: To be selected by Owner from manufacturer's standard line.

B. Vanity Countertops: Post formed plastic laminate over particle board, coved to back splash.
   1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile.
      a. Provide side splash where end of countertops abut partitions/endwalls.
   2. Colors/Patterns: To be selected by Owner from manufacturer's standard line.

2.03 MATERIALS

A. Adhesives Used for Assembly: Comply with VOC requirements for adhesives and sealants as specified in Section 01 61 16.

B. Wood-Based Materials:

1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.

C. Solid Wood: Clear, dry, sound, plain sawn, selected for species grain and color, no defects.

D. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.

E. Concealed Solid Wood or Plywood: Any species and without defects affecting strength or utility.

F. Particleboard: Composed of wood chips, medium density, with waterproof resin binders; of grade to suit application; sanded faces; complying with ANSI A208.1.

G. Medium Density Fiberboard (MDF): Composed of cellulosic fibers and resin cured under heat and pressure; grade to suite application; complying with ANSI A208.2.

H. Thermally Fused Laminate (TFL): Melamine resin, NEMA LD 3, Type VGL laminate panels.

2.04 FABRICATION

A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fabricate corners and joints without gaps.

C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.

D. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1/2 inch except where top butts against cabinet or wall.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
4. Finish all exposed ends of countertops, including ends abutting appliances.

E. When necessary to cut and fit countertops on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

F. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.

G. Wall-Mounted Counters: Provide aprons, brackets, and braces as indicated on drawings.

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. Set casework items plumb and square, securely anchored to building structure.

C. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch.

3.03 CLEANING

A. Clean casework, countertops, shelves, and hardware.

3.04 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

END OF SECTION

SECTION 22 00 00

PLUMBING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe, pipe fittings, specialties, and connections for piping systems.
   1. Sanitary sewer.
   2. Domestic water.
   3. Pipe hangers and supports.
   4. Valves.
   5. Check valves/Backflow preventers.
   6. Water pressure reducing valves.

B. Piping Specialties
   1. Drains.
   2. Cleanouts.
   3. Washing machine boxes and valves.
   4. Water hammer arrestors.
   5. Mixing valves.
   6. Under-counter pipe and drain covers.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011.

C. ASME A112.6.3 - Floor and Trench Drains; 2001 (R2007).

D. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.

E. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.

F. ASME B31.9 - Building Services Piping; 2014.

G. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems; 2009.

H. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).

I. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2015a.

J. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.

K. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.

L. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping; 2015.

M. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012.

N. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.

O. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.

P. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2015.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

R. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014.

S. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2015a.

T. ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems; 2011a.

U. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing; 2015.

V. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.

W. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2013.

X. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.

Y. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.

Z. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

AA. NSF 61 - Drinking Water System Components - Health Effects; 2014 (Errata 2015).

AB. NSF 372 - Drinking Water System Components - Lead Content; 2011.

AC. NSF/ANSI 372 - Drinking Water System Components - Lead Content; 2016.

AD. NSF/ANSI 61 - Drinking Water System Components - Health Efects; 2013.

AE. PDI-WH 201 - Water Hammer Arresters; 2010.

AF. PPI TR-4 - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe; 2016.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Project Record Documents: Record actual locations of valves, cleanouts, backflow preventers, and water hammer arrestors.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with applicable State and City codes and the currently adopted edition of the International Plumbing Code.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

B. Accept specialties on site in original factory packaging. Inspect for damage.

C. Store cross-linked polyethylene (PEX) out of direct sunlight.

1.06 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide all fixtures and equipment as scheduled on the Drawings.

B. Potable Water Supply Systems: Provide piping, piping specialties, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

C. Water Efficiency: EPA WaterSense label is required for all water closets, lavatory faucets, and showerheads.
   1. Showerhead flow rate: Between 2.0 gpm, minimum to less than 2.5 gpm (NGBS).
   2. Lavatory faucet flow rate: 1.5 gpm, maximum (NGBS).
   3. Toilet flush: 1.28 gpf, maximum (NGBS).

D. Full S-traps and Trap Standards shall be allowed only where specifically called for on the Drawings.

2.02 SANITARY SEWER PIPING, BURIED BEYOND 5 FEET OF BUILDING

A. PVC Pipe: ASTM D3034 SDR 35.
   1. Fittings: PVC.
   2. Joints: Push-on, using ASTM F477 elastomeric gaskets.

2.03 SANITARY SEWER PIPING, BURIED UNDER FLOOR SLAB

A. PVC Pipe: ASTM D2665 or ASTM D3034 SCH 40.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 SANITARY SEWER PIPING, ABOVE GRADE

A. PVC Pipe: ASTM D2665 SCH 40.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

B. PVC - DWV Pipe: ASTM D2949 SCH 30.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.05 DOMESTIC WATER PIPING, BURIED BEYOND 5 FEET OF BUILDING

A. Copper Pipe: Type K complying with ASTM B42, annealed.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

2.06 DOMESTIC WATER PIPING, BURIED UNDER FLOOR SLAB

A. Copper Pipe: Type K complying with ASTM B42; annealed between meter and water heater.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

B. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
   1. PPI TR-4 Pressure Design Basis:
      a. 100 psig at maximum 180 degrees F.
   2. Fittings: Brass and engineered polymer (EP) ASTM F1960.
   3. Joints: Mechanical compression fittings.

2.07 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Pipe: Type K or L complying with ASTM B42, hard drawn, between meter and water heater.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
   2. Joints: ASTM B32, alloy Sn95 solder.

B. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
   1. PPI TR-4 Pressure Design Basis:
      a. 100 psig at maximum 180 degrees F.
   2. Fittings: Brass and engineered polymer (EP) ASTM F1960.
   3. Joints: Mechanical compression fittings.

2.08 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with manufacturer's recommendations for material type and application.

B. Plumbing Piping - Drain, Waste, and Vent:
   1. Wall Support for Pipe Sizes to 3 Inches: molded plastic hook.
   2. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.

2.09 GATE VALVES

A. Manufacturers:
   1. Crane Company, Inc.: www.cranefs.com
   2. Jenkins, a Crane CPE brand: www.cranecpe.com/chem-energy/brand/jenkins

3. Nibco, Inc: www.nibco.com.

B. Construction, 2-1/2 inches and Smaller: MSS SP-80, Type 1, 200 psi CWP, bronze body, non-rising stem, bronze wedge disk, with balancing stops, solder or threaded ends.

2.10 BALL VALVES

A. Manufacturers:
1. Crane Company, Inc.: www.cranefs.com
2. Jenkins, a Crane CPE brand: www.cranecpe.com/chem-energy/brand/jenkins
3. Nibco, Inc: www.nibco.com.

B. Construction, 2-1/2 Inches and Smaller: MSS SP-110, Class 150, 200 psi CWP, bronze body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder or threaded ends with union.

2.11 WALL HYDRANTS

A. Manufacturers:
1. PRIER Products, Inc, Inc.; C-244: www.prier.com
2. Or approved equal.

B. ASSE 1019 and C-UPC approved anti-siphon vacumbreaker with backflow check valve, solid cast brass body, valve stem cap, seat and stem ends; nickel-plated. Vandel-proof extended lockshield with separate operating key.

2.12 WATER PRESSURE REDUCING VALVES

A. Up to 2 Inches:
1. ASSE 1003, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.

B. Over 2 Inches:
1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.

2.13 HORIZONTAL SWING CHECK VALVE ASSEMBLIES

A. Manufacturers:
1. Crane Company, Inc.: www.cranefs.com
2. Jenkins, a Crane CPE brand: www.cranecpe.com/chem-energy/brand/jenkins
3. Nibco, Inc: www.nibco.com.

B. Check Valve Assemblies:
1. Construction, 2-1/2 Inches and Smaller: MSS SP-80, NSF/ANSI 61, NSF/ANSI 372, 200 psi CWP, Lead-free Bronze body, Y-pattern, with corrosion resistant internal parts, renewable seat and disk, and stainless steel springs.

2.14 DRAINS

A. Floor Drain:
1. ASME A112.6.3; PVC or ABS, one piece body with Schedule 40 hub connection, round polypropylene strainer, concealed cleanout, and backwater valve.

2.15 CLEANOUTS

A. Cleanouts at Exterior:
1. Line type Extension Cleanout with Dura-coated cast iron body and round bronze, scored, gasketed cover.

B. Cleanouts at Interior Finished Floor Areas:
1. Dura-coated cast iron body with anchor flange, threaded top assembly, square polished nickel bronze frame and scored cover.

C. Cleanouts at Interior Finished Wall Areas:
1. Line type with PVC molded body, and round gasketed cover, and round chrome plated access cover secured with machine screw.

2.16 WASHING MACHINE BOXES AND VALVES

A. Description: Plastic preformed rough-in box with brass valves with single lever handle, socket for 2 inch waste, slip in finishing cover.

2.17 WATER HAMMER ARRESTORS

A. Water Hammer Arrestors:
   1. Copper construction, piston type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range minus 100 to 300 degrees F and maximum 150 psi working pressure.

2.18 MIXING VALVES

A. Thermostatic Mixing Valves:
   1. Valve: Chrome plated cast brass body, stainless steel or copper alloy bellows, integral temperature adjustment set to 120 degrees F.

B. Pressure Balanced Mixing Valves:
   1. Valve: Chrome plated cast brass body, stainless steel cylinder, integral temperature adjustment set to 120 degrees F.

2.19 UNDER-COUNTER DRAIN AND SUPPLY COVERS

A. Under-Counter Pipe and Supply Covers:
   1. Insulate exposed drainage piping including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
   2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
   3. Construction: 1/8 inch flexible PVC.
      a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
      b. Comply with ASTM C1822, type indicated.
      c. Comply with ASME A112.18.9.
      d. Comply with ICC A117.1.
      e. Microbial and Fungal Resistance: Comply with ASTM G21.

B. Color: White.

C. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.

D. Products:
   1. Plumberex Specialty Products, Inc; Plumberex Trap Gear: www.plumberex.com/#sle.
   2. Or approved equal.

2.20 ACCESSORIES

A. Escutcheons: Chrome-plated steel collar escutcheon, sure-grip mounting.

B. Controls: Provide blade or lever type handles at Community Building and all Dwelling Unit sinks, lavatories, and tub/shower faucets.

C. Traps: Provide Chrome-plated brass traps where exposed in finished spaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 INSTALLATION - GENERAL

A. Install all items in accordance with manufacturer's instructions.

B. Provide support for utility meters in accordance with requirements of utility companies.

C. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

D. Excavate in accordance with Section 31 23 16.

E. Backfill in accordance with Section 31 23 23.

3.03 INSTALLATION - PIPING

A. Establish elevations of buried piping outside the building to ensure not less than 3 ft of cover.

B. Install bell and spigot pipe with bell end upstream.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

E. Install, at each building water device, a pressure reducing valve as required to maintain proper water pressure.

F. Perform Hydrostatic testing of all piping systems, as per prevailing codes, prior to placing concrete slabs or enclosing interior walls with gypsum board. System shall maintain 50 psi for 15 minutes min.

G. Install required vents at all new fixtures per prevailing codes. Locate vents through roof to rear facing roof slope or least visible area.

H. Install vent piping penetrating roofed areas to maintain integrity of roof assembly; refer to Section 07 31 13 - Asphalt Shingles.

I. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
   1. Painting of interior plumbing systems and components is specified in Section 09 91 23.
   2. Painting of exterior plumbing systems and components is specified in Section 09 91 13.

J. Install water piping to ASME B31.9.

K. Install approved portable water protection devices on plumbing lines where contamination of domestic water may occur or as required by prevailing codes.

L. Install water hammer arrestors on hot and cold water supply piping to each fixture in accordance with prevailing codes and per manufacturer's specification, where applicable.

M. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

N. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

O. Cross-Linked Polyethylene (PEX) Pipe shall not be installed within the first 18 inches of piping connected to a water heater.

P. Install valves on hot and cold supply piping at water heater, at fixtures as indicated, or where required to allow future maintenance.

Q. Provide access where valves and fittings are not exposed.

R. Install valves with stems upright or horizontal, not inverted.

S. Install overflow piping from water heater temperature/pressure relief valve directly over floor drain. Mount securely to walls, floor and drain. Provide air gap separation at drain in accordance with prevailing codes.

3.04 INSTALLATION - CLEANOUTS, TRAPS, DRAINS

A. Provide cleanouts at base of each soil stack, interior downspout stack, or as otherwise indicated on plans.

B. Provide cleanouts to all traps not integral with fixtures or floor drains, or traps located below floor slabs. Locate downstream of trap.

C. Install floor cleanouts and drains at elevation to accommodate finished floor.

D. Install cleanouts in horizontal waste lines at required intervals and size noted:
   1. 4 inches or smaller: 50 feet maximum; Opening equal to line size.
   2. 6 inches or larger: 100 feet maximum; 4 inch opening.

E. Extend cleanouts to finished floor. Ensure clearance at cleanout for rodding of drainage system.

F. Encase exterior cleanouts in 12 in by 12 in by 12 in block of concrete flush with grade.

G. Install separate, water-sealed P-traps at each floor drain and fixture with waste connections. Locate as close to drain or fixture as possible.

H. Floor drains in concrete slabs; set drain elevation to allow for positive slope to drain.

3.05 SERVICE CONNECTIONS

A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

B. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves.

END OF SECTION

SECTION 23 00 00

HEATING, VENTILATING, AND AIR CONDITIONING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air-source heat pumps.

B. Forced air furnaces.

C. Indoor air handler units for duct connection.

D. Single-zone ductless heat pump unit at Storm Shelter (Mini-Split).

E. Controls.

F. Manufactured (flexible) ductwork.

G. Accessories.

1.02 REFERENCE STANDARDS

A. AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2008, Including All Addenda.

B. AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.

C. ANSI/ACCA 2 - Manual J Residential Load Calculation; 2016.

D. ASHRAE Std 23.1 - Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant; 2010.

E. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2015.

F. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2015.

G. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Rev. 2009).

H. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; current edition, including all revisions.

I. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

C. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.

D. Sustainable Design Documentation: Submit manufacturer's product data on refrigerant used, showing compliance with specified requirements.

E. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.

F. Warranties: Submit manufacturer's standard warranties and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. All equipment furnished, and all work performed under this Contract shall be in strict compliance with current applicable standards as set forth by the National Fire Protection Association (NFPA), Underwriters' Laboratories (UL), the American Gas Association (AGA), the American Society of Heating, Refrigeration and air-conditioning Engineers (ASHRAE), Sheet Metal and air-conditioning Contractors National Association (SMACNA), and other national standards where applicable.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

C. Load Calculations: Contractor shall verify capacity of specified heating and cooling components by submitting to the Architect load calculations as set forth in the current edition of the Air Conditioning Contractors of America (ACCA) Manual J - Residential Load Calculation.

1.05 WARRANTY

A. Provide manufacturer's standard ten year limited warranty on furnace and air conditioner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Goodman Air Conditioning and Heating: www.goodmanmfg.com (O/L/M/ Building).

B. Mitusbishi Corp: www.mitsubishi.com (Storm Shelter).

C. Carrier Corporation: www.carrier.com.

D. Rheem Manufacturing Co.

E. York International Corporation / Johnson Controls: www.york.com.

F. Or Approved Equal.

2.02 SYSTEM DESIGN

A. Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
   1. Cooling: Air-source electric heat pump located in outdoor unit with evaporator.
   2. Heating; Dwelling Units: Electric resistance heating.
   3. Heating; O/L/M/Builbing: Natural Gas fired.
   4. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.

B. Performance Requirements: See Drawings for additional requirements.
   1. Efficiency:
      a. Seasonal Energy Efficiency Ratio: 15.0, minimum.
      b. Heating Seasonal Performance Factor: 8.5, minimum.

C. Electrical Characteristics: See Drawings for additional requirements.
   1. 120/240 volts, single phase, 60 Hz.
   2. Disconnect Switch: Factory mount disconnect switch on equipment under provisions of Section 26 20 00.

2.03 OUTDOOR UNITS: HEAT PUMP

A. Outdoor Units/Heat Pumps: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
   1. Comply with AHRI 210/240.
   2. Refrigerant: Puron (R410a) .
   3. Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23.1 and UL 207.

B. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
   1. Condenser Fan Motor: Enclosed, 1-phase type, permanently lubricated.

C. Coil: Air-cooled, aluminum fins bonded to copper tubes.

D. Accessories: Filter drier, high pressure switch (manual reset), low pressure switch (automatic reset), service valves and gage ports, thermometer well (in liquid line).
   1. Provide thermostatic expansion valves.
   2. Provide heat pump reversing valves.

E. Operating Controls:
   1. Control by room thermostat to maintain room temperature setting.

F. Mounting Pad: Pre-cast concrete condenser pad:
   1. Size: 36 inches x 42 inches.
   2. Thickness: 3 inches, minimum.
   3. Product: DiversiTech Ultralite Condenser Pad: www.build.com.

2.04 INDOOR UNITS FOR DUCTED SYSTEMS

A. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating and cooling element(s), controls, and accessories; wired for single power connection with control transformer.
   1. Air Flow Configuration: Upflow.
   2. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.

B. Supply Fan: Centrifugal type rubber mounted with direct or belt drive with adjustable variable pitch motor pulley.
   1. Motor Electrical Characteristics:
      a. 120 volts, single phase, 60 Hz.

C. Air Filters: 1 inch thick glass fiber, disposable type arranged for easy replacement.

2.05 GAS FURNACE COMPONENTS

A. Heat Exchanger: Aluminized and stainless steel tubular type.

B. Burner: Atmospheric type with adjustable combustion air supply,
   1. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
   2. Combustion air damper with synchronous spring return damper motor.
   3. Non-corrosive combustion air blower with permanently lubricated motor.

C. Burner Safety Controls:
   1. Thermocouple Sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.
   2. Flame Rollout Switch: Installed on burner box and prevents operation.
   3. Vent Safety Shutoff Sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.
   4. Limit Control: Fixed stop at maximum permissible setting, de-energizes burner on excessive bonnet temperature, automatic resets.

D. Operating Controls:
   1. Cycle burner by room thermostat to maintain room temperature setting.
   2. Supply fan energized from bonnet temperature independent of burner controls, with adjustable timed off delay and fixed timed on delay, with manual switch for continuous fan operation.

E. Flue Termination: Concentric roof kit.

2.06 ELECTRIC FURNACE COMPONENTS

A. Electric Heater: Helix wound bare nichrome wire heating elements arranged in incremental stages, with porcelain insulators.

B. Operating Controls:
   1. Heater stages energized in sequence with pre-determined delay between heating stages.
   2. High limit temperature control to de-energize heating elements, with automatic reset.
   3. Supply fan started before electric elements are energized and continues operating after thermostat is satisfied until bonnet temperature reaches minimum setting. Include manual switch for continuous fan operation.

2.07 MULTI-ZONE UNIT FOR DUCTLESS SYSTEMS (MINI-SPLIT)

A. Basis of Design:
   1. Storm Shelter: Mitsubishi.
      a. Model # MXZ-SM48NAMHZ2-U1 & MSZ-FS18NA-U1.

B. Indoor/ Outdoor Units: Wall-mounted, thru-wall, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heater coil, evaporator coil, and controls with remote heat pump; wired for single power connection with control transformer.
   1. Location: High Wall.
   2. Cabinet: Galvanized steel.
      a. Finish: Factory applied powder coat; Soft grey.
   3. Fan: Line-flow fan direct driven by a single motor.

4. Wall-Mounted Units:
    a. Heating Output: 19000 Btuh.
    b. Cooling Output: 48000 Btuh.

C. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
2. Manufacturer: System manufacturer.

2.08 ACCESSORY EQUIPMENT

A. Room Thermostat: Wall-mounted, electric solid state microcomputer based room thermostat with remote sensor to maintain temperature setting; low-voltage; with following features:
1. Automatic switching from heating to cooling.
2. Programming based on weekdays, Saturday and Sunday.
3. Battery replacement without program loss.
4. Thermostat Display:
    a. Time of day.
    b. Actual room temperature.
    c. Programmed temperature.
    d. Day of week.
    e. System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.

2.09 MANUFACTURED DUCTWORK

A. Flexible Ducts: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound spring steel wire.
1. Insulation: Fiberglass insulation with aluminized vapor barrier film.
    a. R-value: 8.0 minimum where installed in unconditioned spaces, unless noted otherwise.
2. Pressure Rating: 10 inches WG positive and 1.0 inches WG negative.
3. Maximum Velocity: 4000 fpm.
4. Temperature Range: Minus 20 degrees F to 210 degrees F.

B. Exhaust Fan and Dryer Vent: Minimum 28 gauge, 0.0156 inch thick, single wall, galvanized steel. Sizes as indicated on the Drawings.
1. Install insulation wrap where ducts pass through unconditioned space.

2.10 REGISTERS AND GRILLES

A. Supply Vents: Provide ceiling or wall mounted rectangular, multi-louvered with damper diffuser to discharge air in two way pattern as scheduled on the Drawings.
1. Frame: Provide surface mount type.

B. Return Air Grilles: Provide ceiling or wall mounted fixed, streamlined blades with 15 degree deflection as scheduled on the Drawings.
1. Frame: Provide surface mount type.

C. Manufactured by Lima, Air-Vent, or Titus, sized per plan.

2.11 FLEXIBLE DUCT CONNECTIONS

A. Fabricate in accordance with SMACNA (DCS) and as indicated.

B. Flexible Duct Connections: Fabric crimped into metal edging strip.
1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.
    a. Net Fabric Width: Approximately 2 inches wide.
2. Metal: 3 inches wide, 24 gage, 0.0239 inch thick galvanized steel.

2.12 VENT HOODS

A. Wall hood with backdraft damper and insect/bird screen. Located as per the plans.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.

B. Verify that proper power supply is available and in correct location.

C. Verify that ducts have been tested before applying insulation materials.

D. Verify that duct surfaces are clean, and dry before applying insulation materials.

3.02 INSTALLATION

A. Install equipment and products accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.

B. Installation of electrical wiring for power and control of mechanical systems included in this section shall be by the Electrical Contractor.

C. Install HVAC system in accordance with NFPA 90A and NFPA 90B.

D. Provide vent connections in accordance with NFPA 211, and all prevailing codes.

E. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.

F. At exterior wall louvers, seal duct to louver frame.

G. Flexible Ducts: Connect to metal ducts with draw bands.

H. Install insulated duct liner where metal ductwork is located in non-conditioned spaces, or as indicated on the Drawings.

I. At fans and motorized equipment, except inline dryer booster fans, associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

END OF SECTION

SECTION 26 20 00
ELECTRICAL SERVICE AND DISTRIBUTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Main service disconnect switchgear
B. Breaker panels.
C. Conductors and cables
D. Conduit and raceways
E. Overcurrent protective devices for panelboards.
F. Wiring devices

1.02 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2015.
B. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.
C. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013.
D. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
E. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Revision E with Supplement 1, 2013.
F. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Revision G, 2014.
G. FS W-C-596 - Connector, Electrical, Power, General Specification for; Revision H, 2014.
H. IEEE C37.20.1 - IEEE Standard for Metal-Enclosed Low-Voltage (1000 Vac and below, 3200 Vdc and below) Power Circuit Breaker Switchgear; 2015.
I. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
J. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
K. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2003.
L. NECA 407 - Standard for Installing and Maintaining Panelboards; 2009.
M. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
N. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2012.
O. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
P. NEMA RN 1 - Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit; 2005 (R2013).
Q. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
R. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2009.
S. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (R2015).
T. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2016.
U. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
V. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
W. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.
X. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.
Y. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

Z. UL 4 - Armored Cable; Current Edition, Including All Revisions.

AA. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

AB. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

AC. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

AD. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

AE. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

AF. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

AG. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

AH. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

AI. UL 719 - Nonmetallic-Sheathed Cables; Current Edition, Including All Revisions.

AJ. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

AK. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

AL. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

AM. UL 1699 - Arc-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70 (National Electric Code - NEC).
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
   4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
   5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Main Service Disconnect
   1. Coordinate with Utility Company to provide switchgear with suitable provisions for electrical service and utility metering, where applicable.
   2. Obtain Utility Company approval of switchgear prior to fabrication.

C. Conduit
   1. Coordinate minimum sizes and types of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
   3. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
   1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.

2. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.

D. Service Entrance Switchgear: Include documentation of Utility Company approval of switchgear.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70 (NEC).

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature within the following limits during and after installation of panelboards:
1. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.
2. Panelboards Containing Fusible Switches: Between -22 degrees F and 104 degrees F.

PART 2 PRODUCTS

2.01 PANELBOARDS - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Short Circuit Current Rating:
1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.

C. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

D. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.

E. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
a. Indoor Clean, Dry Locations: Type 1.
b. Outdoor Locations: Type 3R.
2. Boxes: Galvanized steel unless otherwise indicated.
a. Provide wiring gutters sized to accommodate the conductors to be installed.
3. Fronts:
a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
4. Lockable Doors: All locks keyed alike unless otherwise indicated.

2.02 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:
1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
2. Interrupting Capacity:

a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated.
b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.

3. Conductor Terminations:
   a. Provide mechanical lugs unless otherwise indicated.
   b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
4. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
5. Provide the following circuit breaker types where required:
   a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
   b. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
6. Do not use handle ties in lieu of multi-pole circuit breakers.
7. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.

2.03 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Nonmetallic-sheathed (NM) cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. For branch circuit wiring in dry locations within multifamily dwellings permitted to be of Types III, IV, and V construction.
   2. In addition to other applicable restrictions, may not be used:
      a. Where exposed to view.
      b. Where exposed to damage.
      c. For damp, wet, or corrosive locations.

C. Service Entrance cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. For overhead Service Entrance (SE) drop; installed in raceway to service head.
      b. For Underground Service Entrance (USE); direct buried.

D. Amored cable (AC) is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. Where concealed in hollow stud walls and ceilings for branch circuits up to 20 A.
   2. In addition to other applicable restrictions, may not be used:
      a. Where not approved for use by the authority having jurisdiction.
      b. Where exposed to damage.
      c. For damp, wet, or corrosive locations.

E. Metal-clad (MC) cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. Where concealed in hollow stud walls and ceilings for branch circuits.
   2. In addition to other applicable restrictions, may not be used:
      a. Where not approved for use by the authority having jurisdiction.
      b. Where exposed to damage.
      c. For damp, wet, or corrosive locations.

2.04 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70 (NEC).

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Conductor Material:
   1. Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless

specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.

a. Substitution of aluminum conductors for copper is permitted, when approved by Owner and authority having jurisdiction, only for the following:
   1) Service Feeders: Copper conductors size 1/0 AWG and larger.
b. Where aluminum conductors are substituted for copper, comply with the following:
   1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and equivalent or less voltage drop.
   2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.
   3) Provide aluminum equipment grounding conductor sized according to NFPA 70.

G. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.

H. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.05 NONMETALLIC-SHEATHED CABLE

A. Description: NFPA 70, Type NM multiple-conductor cable listed and labeled as complying with UL 719, Type NM-B.

B. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

2.06 ARMORED CABLE

A. Description: NFPA 70, Type AC cable listed and labeled as complying with UL 4, and listed for use in classified firestop systems to be used.

B. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation: Type THHN.

E. Grounding: Combination of interlocking armor and integral bonding wire.

F. Armor: Steel, interlocked tape.

2.07 METAL-CLAD CABLE

A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

B. Conductor Stranding:
   1. Size 10 AWG and Smaller: Solid.
   2. Size 8 AWG and Larger: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

E. Grounding: Full-size integral equipment grounding conductor.

F. Armor: Steel, interlocked tape.

2.08 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

2.09 CONDUIT

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

B. Underground:

1. Under Slab on Grade: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
2. Exterior, Direct-Buried: Use PVC-coated galvanized steel rigid metal conduit or rigid PVC conduit.
3. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit or PVC-coated galvanized steel rigid metal conduit where emerging from underground.
4. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use PVC-coated galvanized steel rigid metal conduit elbows for bends.

C. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
1. Locations subject to physical damage include, but are not limited to:
a. Where exposed below 8 feet, except within electrical and communication rooms or closets.

D. Exposed, Exterior: Use galvanized steel rigid metal conduit or PVC-coated galvanized steel rigid metal conduit.

2.10 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
1. Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.11 INTERMEDIATE METAL CONDUIT (IMC)

A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

B. Fittings:
1. Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.12 PVC-COATED GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit with external polyvinyl chloride (PVC) coating complying with NEMA RN 1 and listed and labeled as complying with UL 6.

B. Exterior Coating: Polyvinyl chloride (PVC), nominal thickness of 40 mil.

C. PVC-Coated Fittings:
1. Manufacturer: Same as manufacturer of PVC-coated conduit to be installed.
2. Use fittings listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
4. Exterior Coating: Polyvinyl chloride (PVC), minimum thickness of 40 mil.

D. PVC-Coated Supports: Furnish with exterior coating of polyvinyl chloride (PVC), minimum thickness of 15 mil.

2.13 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 or Schedule 80 as required; rated for use with conductors rated 90 degrees C.

B. Fittings:
1. Manufacturer: Same as manufacturer of conduit to be connected.
2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

C. Accessories:

1. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

2.14 WIRING DEVICES

A. Wiring Devices, Unless Otherwise Indicated: White with white nylon wall plate.

B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

C. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.

D. Mounting Heights: As scheduled on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that interior of building has been protected from weather.

C. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.

D. Verify that mounting surfaces are ready to receive panelboards.

E. Verify that work likely to damage wire and cable has been completed.

F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install switchgear in accordance with NECA 1 (general workmanship) and IEEE C37.20.1.

C. Install galvanized steel rigid metal conduit (RMC) and intermediate metal conduit (IMC), in accordance with NECA 101.

D. Install rigid polyvinyl chloride (PVC) conduit, electrical nonmetallic tubing (ENT), and liquidtight flexible nonmetallic conduit (LFNC) in accordance with NECA 111.

E. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

F. Install all field-installed devices, components, and accessories.

G. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1 (general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.

H. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

I. Install all equipment plumb and level.

J. Mount panelboards at heights as indicated on the Drawings.

K. At Accessible Dwelling Units, mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 48 inches above the floor.

L. Install all field-installed branch devices, components, and accessories.

M. Direct Burial Cable Installation:
   1. Provide trenching and backfilling in accordance with Division 02 - Earthmoving: (by Gonzales-Strength & Assoc; Refer to drawings)
   2. Install cable with minimum cover of 48 inches unless otherwise indicated or required.
   3. Protect cables from damage in accordance with NFPA 70.

N. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies.

2. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

O. Conduit Routing:
1. Unless dimensioned, conduit routing indicated is diagrammatic.
2. When conduit destination is indicated and routing is not shown, determine exact routing required.
3. Conceal all conduits unless specifically indicated to be exposed.
4. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
5. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
6. Arrange conduit to provide no more than 150 feet between pull points.
7. Route conduits above water and drain piping where possible.
8. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
9. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
   a. Heaters.
   b. Hot water piping.
   c. Flues.

3.03 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers. Tests listed as optional are not required.

C. Test GFCI circuit breakers to verify proper operation.

D. Test AFCI circuit breakers to verify proper operation.

E. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

B. Adjust alignment of panelboard fronts.

END OF SECTION

SECTION 26 50 00
LIGHTING AND FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior lighting fixtures, ceiling fans, lamps, and all accessories.

B. Exterior lighting fixtures, controllers, lamps and all accessories.

C. Photoelectric switches for control of exterior lighting.

D. Mounting hardware, stems, and brackets.

1.02 REFERENCE STANDARDS

A. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

E. UL 1598 - Luminaires; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of lighting fixtures with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of lighting fixtures and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of lighting fixtures with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on lighting fixture construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

1. LED lighting fixtures:
   a. Include estimated useful life, calculated based on IES LM-80 test data.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Provide products certified as complying with Energy Star ratings where applicable.

C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, handle, and store products according to manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.07 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

PART 2 PRODUCTS

2.01 LIGHTING FIXTURES GENERAL

A. Furnish products as indicated on the Drawings, including lighting for exterior building, common areas, and monument sign.

B. Provide complete fixtures including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to mount, position, energize and protect the lamp and distribute the light.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.

D. Provide products that comply with requirements of NFPA 70.

E. Provide products that are listed and labeled as complying with UL 1598, where applicable.

F. All lighting fixtures in the Dwelling Units, Community Building, and Public spaces shall be Energy Star rated for the fixtures and controls.

G. All Ceiling Fans shall be Energy Star rated.

H. Provide a photocell of 1800 watt capacity, 120 volt, single phase, for control of each building's exterior light fixtures circuits, as required.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting fixtures.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 20 00 as required for installation of lighting fixtures provided under this section.

B. Install products according to manufacturer's instructions.

C. Install lighting fixtures securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship), NECA 500 (commercial lighting), and NECA 502 (industrial lighting).

D. Install lighting fixtures plumb and square and aligned with building lines and with adjacent lighting fixtures.

E. Recessed lighting fixtures:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated lighting fixtures: Maintain required separation from insulation and combustible materials according to listing.

3. Lighting fixtures Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

F. Suspended fixtures:
   1. Unless otherwise indicated, specified mounting heights are to bottom of fixture.
   2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
   3. Install canopies tight to mounting surface.
   4. Unless otherwise indicated, support pendants from swivel hangers.

G. Wall-Mounted lighting fixtures: Unless otherwise indicated, specified mounting heights are to center of lighting fixture.

H. Install accessories furnished with each lighting fixture.

I. Bond products and metal accessories to branch circuit equipment grounding conductor.

J. Emergency Lighting Units:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

K. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

L. Install lamps in each lighting fixture.

END OF SECTION

SECTION 26 56 00
EXTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Replacement exterior area lighting.

1.02 REFERENCE STANDARDS

A. ANSI C136.10 - American National Standard for Roadway and Area Lighting Equipment - Locking-Type Photocontrol Devices and Mating Receptacles - Physical and Electrical Interchangeability and Testing; 2010.

B. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.

C. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015.

D. IES RP-8 - Roadway Lighting; 2014.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2006.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 1598 - Luminaires; Current Edition, Including All Revisions.

I. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

1.04 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.06 WARRANTY

A. Provide five year manufacturer warranty for all LED luminaires, including drivers.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

A. Type 1: Pole-mounted LED luminaire.
   1. Configuration: Single luminaire(s).
   2. Luminaire(s):

a. Products:
1) Neptun Light; model LED 335.
b. Housing: Die-cast Aluminum.
c. Finish: Dark Grey.
d. Shape: Round.
e. Nominal Size: 25.5 inches by 26.5 inches.
f. Lamp: 12000 lm/100 watts.
g. Lamp Orientation: Horizontal.
h. Shielding: Shatter-proof lens.
i. Lighting Distribution per IES RP-8:
1) Lateral Distribution: Type V.
j. Voltage: 120/277V.
k. Mounting: Pole-top suitable for mounting on specified pole.
l. Provide with the following features/accessories:
1) Integral locking receptacle for photo control complying with ANSI C136.10.

3. Pole:
a. Material: Fiberglass.
b. Shape: Round straight.
c. Finish: Match luminaire finish.
d. Mounting Height: 10.0 feet.
e. Mounting: Direct bury.

2.02 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

F. LED Luminaires:
1. Components: UL 8750 recognized or listed as applicable.
2. Tested in accordance with IES LM-79 and IES LM-80.
3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

B. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Install luminaires in accordance with NECA/IESNA 501.

D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

E. Install accessories furnished with each luminaire.

F. Bond products and metal accessories to branch circuit equipment grounding conductor.

G. Install lamps in each luminaire.

3.04 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 27 50 10

TELEPHONE, CABLE TELEVISION, AND NETWORK WIRING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Telephone Wiring.

B. Cable Television Wiring.

C. Computer Network Cabling.

D. Accessories.

1.02 REFERENCE STANDARDS

A. BICSI TDMM - Telecommunications Distribution Methods Manual; 13th Edition.

B. FCC Title 47, Part 76 - Multichannel Video and Cable Television Service; 2013.

C. NECA/BICSI 568 - Standard for Installing Building Telecommunications Cabling; National Electrical Contractors Association; 2006.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SYSTEM DESCRIPTION - TELEPHONE

A. Service entrance from local telephone company.

B. Premises wiring for individual dwelling unit telephone service including individual terminal jacks.

C. Combine Telephone and Cable TV jacks into one box where applicable.

1.04 SYSTEM DESCRIPTION - CABLE TELEVISION

A. Service entrance from local cable utility.

B. Premises wiring for broadband distribution of television signal/ internet, including individual outlets.

C. Signal at each outlet: 3 dBmV across 75 ohms, minimum, plus 5 dB, minus 0 dB.

D. Combine Telephone and Cable TV jacks into one box where applicable.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide showing electrical characteristics and connection requirements for each component.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

D. Operation Data: Instructions for setting and tuning channels.

E. Maintenance Data: Basic trouble-shooting procedures.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70 and cable television utility company.

B. Cable television system shall conform to the standards as set forth in FCC Title 47, Part 76.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience with service facilities within 100 miles of Project.

D. Installer Qualifications: Authorized installer of specified manufacturer with service facilities within 100 miles of the project.

1. Installer shall be capable of providing full system testing, inspection, and maintainence services, including spare parts.

E. Products: Listed, classified and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Manufacturers:
   1. Blonder Tongue Laboratories, Inc: www.blondertongue.com.
   2. Hubbell Electrical Systems: www.hubbell-wiring.com
   3. Channel Master: www.channelmaster.com.
   4. Thomas and Betts: www.tnb.com
   5. Or approved equal.

2.02 ACCESSORIES

A. Coax Demarcation Enclosure: Secure compartment for terminating coax and mounting of spliters and groundblocks for distribution to individual units.
   1. Provide one demarcation enclosure for every Dwelling Unit.
   2. Keptel OPE-92000 or equal.

B. Telephone Tap (Jack)
   1. Recessed, suitable for mounting in standard electrical wall box, type and model suitable to local telephone company.

C. Cable Tap (Outlet):
   1. Recessed, suitable for mounting in standard electrical wall box, all channel, back-matched tap.
   2. Through Loss: 0.7 dB, maximum.
   3. Return Loss: 20 dB, maximum.
   4. Isolation: 12 dB.
   5. Connector: F type coaxial connector.

D. Ethernet/Internet Tap (Cat-6 jack)
   1. Recessed, suitable for mounting in standard electrical wall box, conforming to TIA/EIA-568.
   2. Frequency Range: 250MHz
   3. Connector: 'Keystone' type connector.

E. Splitter:
   1. Inline, all channel, back-matched splitter.
   2. Through Loss: 3.5 dB for two-way; 6.7 dB for four-way.
   3. Isolation: 16 dB, minimum.

F. Main Distribution Cable:
   1. Description: RG11/F or RG6/F as required.

G. Branch Distribution Cable:
   1. Description: RG 6/F.

H. Network Cable:
   1. Description: CAT6 multistrand cable.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Connect cable television service in accordance with cable utility instructions.

C. Install telephone and cable television in accordance with the requirements of BICSI TDMM and NECA/BICSI 568, current editions.

D. Provide proper grounding of telephone and television system components and wiring. Bond outdoor components to lightning protection system.

3.02 CABLE TELEVISION SYSTEM MAINTENANCE

A. Provide service and maintenance of television system for 3 years from Date of Substantial Completion.

END OF SECTION

SECTION 28 46 00

SMOKE DETECTORS AND SIGNALING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Typical Dwelling Unit: Dual chamber smoke detectors.

B. UFAS and Audible/Visual Dwelling Unit, and O/L/M Building: Dual chamber smoke detectors with visual strobe alarm.

C. Carbon Monoxide Detector at O/L/M Building.

D. Audible/Visual Doorbell Signaler for A/V designated Dwelling Units.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities; 2009.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. NFPA 72 - National Fire Alarm and Signaling Code; 2016.

F. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

G. UL 1638 - Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories; 2016.

H. UL 2034 - Standard for Single and Multiple Station Carbon Monoxide Alarms; 2017.

I. UL 217 - Standard for Smoke Alarms; 2015.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Manufacturer's detailed data sheet for each component, including wiring diagrams, and installation instructions.

C. Furnish spare smoke detectors, strobe alarms, and A/V door signalers of same manufacturer and model as those installed; deliver in original packaging, labeled in same manner as in operating and maintenance data.
   1. 1 of each type of component specified.

1.04 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 WARRANTY

A. Provide manufacturer's standard warranty that system components other than wire and conduit are free from defects and will remain so for 10 years after date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Smoke Detectors:
   1. Kidde/FireX; Model PI2010: www.kidde.com.
   2. FirstAlert/BRK; Model 3120B: www.brkelectronics.com

B. Visual Strobe Alarms:
   1. Kidde/FireX; Model SLED 177i: www.kidde.com.
   2. FirstAlert/BRK; Model SL177: www.brkelectronics.com

C. Carbon Monoxide Detectors:
   1. Kidde; Model KN-COB-IC: www.kidde.com.
   2. FirstAlert/BRK; Model CO5120BN: www.brkelectronics.com.

D. Audible/Visual Doorbell Signaler:
   1. Edwards Signalling Inc; Model 6536-G5: www.edwards-signals.com
   2. Cooper Wheelock; Model RSS-24MCW-DW
   3. W L Jenkins Co.; Model BL-1: www.wljenkinsco.com.

2.02 GENERAL

A. Provide all components necessary, regardless of whether shown in the contract documents or not.

B. Extent of Protection: Community Building and Individual Dwelling Units

C. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
   1. UFAS and ADA Standards.
   2. The requirements of the State Fire Marshal.
   3. The requirements of the local authority having jurisdiction.
   4. Applicable local codes.
   5. The contract documents (drawings and specifications).
   6. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.

D. Hearing Impaired Occupants: Provide visible notification devices in all public areas and in A/V designated dwelling units.

E. Smoke detectors shall not be interconnected between dwelling units.

2.03 COMPONENTS

A. Smoke Detectors: UL 217, NFPA 72 certified, single station, 120v AC/ 60hz powered, monitored battery backup, dual type smoke-sensing chambers - ionization and photoelectric.
   1. Solid state, piezo horn rated at 85dB minimum measured at 10 feet.
   2. Visual power indicator to confirm unit is receiving AC power.
   3. Latching Features: Alarm latch to identify initiating unit after alarm condition has subsided, and Low Battery latch to identify which unit is operating in low battery mode.
   4. Anti-tampering locking features to deter removal of battery or unit.
   5. Test/temporary alarm silence button for nuisance alarms and low battery.
   6. Operating temperature range: 40 to 100 degrees F and 10 - 95% relative humidity.
   7. Plug in connection capable of interconnection of up to 18 alarms, 12 of which may be smoke detectors.

B. Visual Strobe Alarm: UL 217, NFPA 72, ICC/ANSI A117.1 certified, single station, 120v AC / 60 hz powered strobe light signalling device for use in conjunction with smoke detectors listed above.
   1. Xenon or LED strobe capable of producing 177 candela light output.
   2. Separate flash patterns to distinguish smoke/heat and carbon monoxide dangers.
   3. Visual power indicator to confirm unit is receiving AC power.
   4. Listed for installation on ceiling or walls.
   5. Anti-tampering locking features to deter removal of unit.
   6. Operating temperature range: 32 to 120 degrees F and 10 - 95% relative humidity.
   7. Plug in connection capable of interconnection of up to 18 multiple alarms.

C. Carbon Monoxide Detectors: UL 2034, NFPA 72 certified, single station, 120v AC/ 60hz, monitored battery backup, electrochemical sensing chamber.
   1. Solid state, piezo horn rated at 85dB minimum measured at 10 feet.
   2. Visual power indicator to confirm unit is receiving AC power.
   3. Unit shall alarm for time ranges and exposure levels in accordance with UL 2034.
   4. Anti-tampering locking features to deter removal of battery or unit.
   5. Test/temporary alarm silence button for nuisance alarms and low battery.
   6. Operating temperature range: 40 to 100 degrees F and 10 - 95% relative humidity.
   7. Plug in connection capable of interconnection of up to 18 alarms, 12 of which may be smoke detectors.

D. Audible/Visual Door Entry Unit: UL 1638 Integrated, low-voltage signalling unit that provides audible/visible notification when video intercom is activated.

1. Solid state, piezo horn rated at 85dB minimum measured at 10 feet.
2. Strobe output: 50 cd on-axis
3. Flash Rate: 5 fps.
4. Transformer: 120v AC / 60hz primary; 24v AC secondary; remote located.

PART 3 EXECUTION

3.01 APPLICATION

A. Typical Dwelling Unit; 1 - Bedroom:
   1. Install one smoke detector in bedroom, and one in the hallway leading to the bedroom.
   2. Interconnect all units within each dwelling unit, such that in an alarm event, all detector units activate.
   3. Remove existing chime unit and doorbell button and replace with new battery-powered wireless receiver/ chime unit and doorbell button.

B. Typical Dwelling Unit; 2 and 3 - Bedroom:
   1. Install one smoke detector in each bedroom, and in the hallway leading to the bedrooms.
   2. Interconnect all units within each dwelling unit, such that in an alarm event, all detector units activate.
   3. Remove existing chime unit and doorbell button and replace with new battery-powered wireless receiver/ chime unit and doorbell button.

C. UFAS and Audible/Visual Dwelling Units:
   1. Install one smoke detector and one visual strobe alarm in each bedroom, and in the hallway leading to the bedrooms. Interconnect strobes with the smoke detectors to activate during an alarm event.
   2. Install an additional visual strobe alarm in the bathrooms.
   3. Interconnect all units/strobes within each dwelling unit, such that in an alarm event, all units/strobes activate.
   4. Install video visual door signaler at entry door in lieu of door bell.

D. O/L/M Building:
   1. Install a smoke detector and visual strobe alarm at each location indicated on the drawings. Interconnect strobes with the smoke detectors to activate during an alarm event.
   2. Install an additional visual strobe in each Toilet Room.
   3. Install one ceiling-mounted CO gas detector adjacent to the mechanical closet.
   4. Interconnect all detectors and strobes within the Office/Laundry Building, such that in an alarm event, all detector/strobe units activate.

3.02 EXAMINATION

A. Verify that conditions are satisfactory for installation prior to starting work.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Do not begin work until unacceptable conditions have been corrected.

3.03 INSTALLATION

A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and the contract documents.

B. Coordinate all wiring, conduit, boxes, and supports locations for installation of work in this section.

C. Obtain Owner's approval of locations of devices, before installation.

D. Leave one copy of unit operation instructions in each dwelling unit and the leasing office.

3.04 INSPECTION AND TESTING FOR COMPLETION

A. Notify Owner 7 days prior to beginning completion inspections and tests.

B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.

C. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.

D. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.

E. Correct defective work, adjust for proper operation, and retest.

END OF SECTION

SECTION 31 22 00
GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Rough grading the site for site structures and building pads.

B. Finish grading for improved drainage away from buildings.

1.02 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

A. Gravel: Excavated on-site.
   1. Graded according to ASTM D2487 Group Symbol GW, GP, or SP.

B. Topsoil: Friable loam; imported borrow.
   1. Graded.
   2. Free of roots, rocks larger than 2 inch, subsoil, debris, large weeds and foreign matter.

C. Other Fill Material: Materials as approved by the Geotechnical Engineer, consistent with the soils report.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify bench mark and intended elevations for the Work.

B. Verify the absence of standing or ponding water.

C. Provide consistant on-site supervision during all clearing and grading activities.

D. Reference Architectural Site Plans for additional information.

E. Reference Civil Drawings for additional information.
   1. Information contained on Civil Drawings shall take precedence over any information contained in this section.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum. Stake and flag limits and/or boundaries of each lot prior to any clearing or grading activities.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage above- and below-grade utilities to remain.

D. Notify utility company to remove and relocate utilities.

E. Provide temporary means and methods to remove standing or ponding water from areas prior to grading.

F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, and paving and curbs.

G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

H. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A. Excavate and fill subgrade material to elevations indicated on plans.

B. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

C. Do not remove topsoil when wet.

D. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

E. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.

F. When excavating through roots, perform work by hand and cut roots with sharp axe.

G. Horizontally bench existing slopes greater than 1:4.

H. Replace displaced subgrade in accordance with Section 31 23 23.

I. Remove and replace unsuitable materials as specified fill.

3.04 SOIL REMOVAL AND STOCKPILING

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpile subsoil to be re-used on site; remove remainder from site.

C. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

D. Excavated soil shall not be exposed for more than 14 calendar days.

3.05 FINE GRADING

A. Scrape and spread subgrade material uniformly smooth and without disruptions as indicated on drawings.

3.06 FINISH GRADING

A. Before Finish Grading:
   1. Verify building and trench backfilling have been inspected.
   2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.

C. Where topsoil is to be placed, scarify surface to depth of 6 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.

E. Place topsoil in areas where seeding, sodding, and planting are indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil to the following compacted thicknesses:
   1. Areas to be Seeded with Grass: 6 inches.
   2. Areas to be Sodded: 4 inches.
   3. Shrub Beds: 18 inches.
   4. Flower Beds: 12 inches.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Near plants spread topsoil manually to prevent damage.

K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

L. Lightly compact placed topsoil.

M. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.07 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.

B. Top Surface: Plus or minus 1/2 inch.

3.08 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.09 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

C. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for footings, slabs-on-grade, paving, and utilities within the building.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.03 PROJECT CONDITIONS

A. Verify bench mark and intended elevations for the Work.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify bench mark and intended elevations for the work.

B. Provide consistant on-site supervision during all clearing and grading activities.

C. Reference Architectural Site Plans for additional information.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations. Stake and flag limits and/or boundaries of each lot prior to any clearing or grading activities.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Notify utility company to remove and relocate utilities.

D. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

E. Protect plants, lawns, and other features to remain.

F. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 EXCAVATING

A. Excavate to accommodate construction operations.
   1. Excavate to the specified elevations.
   2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
   3. Cut utility trenches wide enough to allow inspection of installed utilities.
   4. Hand trim excavations. Remove loose matter.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

D. Do not interfere with 45 degree bearing splay of foundations.

E. Remove lumped subsoil, boulders, and rock up to 1 cu yd measured by volume.
   1. Classified excavation of large boulders or rock ledges requiring drilling or blasting is not included in the Base Bid of the Work. Notify Architect for directions if encountered.

F. Correct areas that are over-excavated, and load-bearing surfaces that are disturbed, as directed by Geotechnical Engineer.

G. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

H. Remove excavated material that is unsuitable for re-use from site.

I. Stockpile excavated material to be re-used in area designated on site 31 22 00.

J. Remove excess excavated material from site.

3.04 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

3.05 FIELD QUALITY CONTROL

A. Provide for visual inspection of load-bearing excavated surfaces by Architect before placement of foundations.

3.06 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 31 23 23
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for footings, slabs-on-grade, paving, and utilities within the building.

1.02 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: 4 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.03 SUBMITTALS

A. Samples: 1.0 pounds sample of each type of fill; submit in air-tight containers to testing laboratory.
   1. Disregard sample submission if recent test results are available for type of fill.

B. Compaction Density Test Reports.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.

B. Granular Fill - Gravel : Angular crushed stone; free of shale, clay, friable material, broken concrete or asphalt, and debris.
   1. Graded in accordance with ASTM C136/C136M, within the following limits:
      a. 3/4 inch sieve: 95 to 100 percent passing.

2.02 SOURCE QUALITY CONTROL

A. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.

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 bench marks and intended elevations for the Work.

B. Identify required lines, levels, contours, and datum locations.

C. See Section 31 22 00 for additional requirements.

D. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

E. Verify structural ability of unsupported walls to support imposed loads by the fill.

F. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Fill to proper contours and elevations using unfrozen materials.

C. Fill up to subgrade elevations unless otherwise indicated.

D. Employ a placement method that does not disturb or damage other work.

E. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

F. Maintain optimum moisture content of fill materials to attain required compaction density.

G. Granular Fill: Place and compact materials in equal continuous layers not exceeding 12 inches compacted depth.

H. Soil Fill: Place and compact material in equal continuous layers not exceeding 9 inches compacted depth.

I. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

J. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving, slabs-on-grade, and similar construction: 97 percent of maximum dry density.

K. Reshape and re-compact fills subjected to vehicular traffic.

L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.05 FIELD QUALITY CONTROL

A. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.

B. If tests indicate work does not meet specified requirements, remove work, replace and retest.

END OF SECTION

SECTION 31 31 16
TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chemical soil treatment.

1.02 REFERENCE STANDARDS

A. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.

B. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 1947 (Revised 2001).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.

C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.

D. Test Reports: Indicate regulatory agency approval reports when required.

E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.

F. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.

G. Manufacturer's Instructions: Indicate caution requirement.

H. Record and document moisture content of soil before application.

I. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three (3) years of documented experience.

J. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing this type of work and:
   1. Having minimum of three (3) years documented experience.
   2. Approved by manufacturer of treatment materials.
   3. Licensed in the State of Oklahoma.

1.05 WARRANTY

A. Provide five year installer's warranty against damage to building caused by termites.

B. Termite-Resistant Vapor Barrier Sheet: Provide five year manufacturer's limited warranty.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.

B. Diluent: Recommended by toxicant manufacturer.

C. Manufacturers:
   1. Bayer Environmental Science Corp; Premise Pre-Construction: www.backedbybayer.com/pest-management.
   2. FMC Professional Solutions; Dragnet SFR: www.fmcprosolutions.com.
   3. Syngenta Professional Products; Altriset: www.syngentapmp.com.

D. Mixes: Mix toxicant to manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.

B. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT

A. Comply with requirements of U.S. EPA and applicable state and local codes.

B. Inject toxicant in accordance with manufacturer's instructions.

C. Apply toxicant at following locations:
   1. Under Slabs-on-Grade.
   2. In Crawl Spaces.
   3. At Both Sides of Foundation Surface.
   4. Soil Within 10 feet of Building Perimeter For a Depth of 4 feet.

D. Under slabs, apply toxicant 24 hours prior to installation of vapor barrier.

E. At foundation walls, apply toxicant 12 hours prior to finish grading work outside foundations.

F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.

G. Re-treat disturbed treated soil with same toxicant as original treatment.

H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 INSTALLATION - BARRIER SHEET

A. Comply with ASTM E1643.

B. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

3.04 PROTECTION

A. Do not permit soil grading over treated work.

B. Protect sheet materials from damage after completed installation. Repair damage with manufacturer's recommended products and according to the manufacturer's written instructions.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Milling existing surface in prepartion of resurfacing.

B. Single course bituminous concrete topping.

C. Surface sealer.

1.02 PERFORMANCE REQUIREMENTS

A. Design paving and subbase for parking.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with State of Oklahoma.

B. Mixing Plant: Conform to State of Oklahoma Highways standard.

C. Obtain materials from same source throughout.

1.04 FIELD CONDITIONS

A. Do not place asphalt binder or wear courses when ambient air or base surface temperature is less than 50 degrees F.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for paving work on public property.

2.02 MATERIALS

A. Asphalt Cement: ASTM D946.

B. Aggregate for Wearing Course: In accordance with State of Oklahoma Highways standards.

C. Fine Aggregate: Sand.

D. Primer: In accordance with State of Oklahoma Highway standards.

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

A. Asphalt Wearing Course: Materials and composition of mixtures for surface leveling (wear) course shall conform to State of Oklahoma Highway standards.

B. Submit proposed mix design of each class of mix for review prior to beginning of work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing paving is dry.

B. Verify gradients and elevations of base are correct.

3.02 PREPARATION - MILLING

A. Mechanically sweep pavement surfaces immediately prior to commencement of work. Clean pavement surfaces of loose foreign matter. Verify that surfaces are dry.

B. Remove and store manhole covers and frames.

3.03 REMOVAL

A. Do not disfigure adjacent Work.

B. Heat pavement surface uniformly by continuous movement of a heated scarifier.

C. Execute removal to a depth not less than 1 inch at any point across the full width of surface without detrimental aggregate degradation.

3.04 PREPARATION - TACK COAT

A. Apply tack coat in accordance with manufacturer's instructions.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

C. Apply tack coat to contact surfaces of curbs and gutters.

D. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. Install Work in accordance with State of Oklahoma Highway standards.

B. Place asphalt within 24 hours of applying primer or tack coat.

C. Place to 2 inch compacted thickness.

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.

3.06 SEAL COAT

A. Apply seal coat to surface course in accordance with State of Oklahoma Highway standards.

3.07 TOLERANCES

A. Flatness: Maximum variation of 1/8 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.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. New concrete sidewalks, integral curbs, gutters, and curb ramps.

B. New concrete paving for accessible parking spaces and crosswalks.

1.02 REFERENCE STANDARDS

A. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

B. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

C. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

D. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

E. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.

H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.

I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2016a.

J. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.

K. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on joint filler, admixtures, and curing compound.

C. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI SPEC-301.

B. Design paving for parking and limited truck traffic.

C. Concrete sidewalks and miscellaneous slabs: 3500 psi 28 day concrete, 4 inches thick, 6 by 6 - W1.4 by W1.4 mesh reinforcement, broom finish.

D. Concrete curb walks: 3500 psi 28 day concrete, 4 inches thick walk portion, 6 by 6 - W1.4 by W1.4 mesh reinforcement, and toe turn-down with two - #4 bars, broom finish.

E. Parking Area Pavement: 4000 psi 28 day concrete, 4 inch thick, non-reinforced, wood float finish.

F. Trash Enclosure: 4000 psi 28 day concrete, 6 inch thick, 6 by 6 - W2.9 by W2.9 mesh reinforcement, wood float finish.

G. Drive adjacent to Trash Enclosures: 4000 psi 28 day concrete, 8 inches thick, 6 by 6 - W2.9 by W2.9 mesh reinforcement, wood float finish.

2.02 FORM MATERIALS

A. Steel, wood, or other suitable form material, profiled to suit conditions and able to resist movement during concrete placement.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751).
   1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.

B. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.

2.04 CONCRETE MATERIALS

A. Obtain cementitious materials from same source throughout.

B. Concrete Materials: As specified in Section 03 30 00.

2.05 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.

C. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 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. Concrete Properties:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; As scheduled.
   2. Total Air Entrainment: 6 percent, determined in accordance with ASTM C173/C173M.
   3. Maximum Slump: 4 inches.

2.06 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.

C. Reference Civil Drawings for additional information.
   1. Information contained on Civil Drawings shall take precedence over any information contained in this section.

3.02 SUBBASE

A. Prepare subbase in accordance with State of Virginia Highways standards.

3.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of catch basin frames with oil to prevent bond with concrete pavement.

C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

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.

D. Automatic forming machines may be used on curbs and gutters to produce required profile.

3.05 REINFORCEMENT

A. Place reinforcement as indicated.

B. Interrupt reinforcement at contraction and expansion joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

3.06 COLD AND HOT WEATHER CONCRETING

A. Follow recommendations of ACI PRC-305 when concreting during hot weather.

B. Follow recommendations of ACI PRC-306 when concreting during cold weather.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Do not place concrete when base surface is wet.

C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.08 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 1/2 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. Provide sawn joints.
   1. As indicated on Drawings.
   2. At 5 feet intervals in sidewalks.
   3. At intervals to create 15 feet by 20 feet maximum panels for parking, drives, and other slabs.

D. Provide keyed joints at all predetermined construction joints, where placement operations are suspended for more than 30 min, or as indicated.

E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.09 FINISHING

A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

B. Curbs and Gutters: Light broom, texture parallel to pavement direction.

C. Inclined Vehicular Ramps: Broomed perpendicular to slope.

3.10 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

A. 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.
   2. Perform one slump test for each set of test cylinders taken.

B. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

SECTION 32 17 13
PARKING BUMPERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precast concrete parking bumpers and anchorage.

1.02 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide unit configuration, dimensions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Parking Bumpers: Precast concrete, complying with the following:
   1. Profile: Match Existing.
   2. Concrete Materials: ASTM C330/C330M aggregate, water, and sand.
   3. Reinforcing Steel: ASTM A615/A615M, deformed steel bars; unfinished, strength and size commensurate with precast unit design.
   4. Air Entrainment Admixture: ASTM C260/C260M.
   5. Concrete Mix: Minimum 5,000 psi compressive strength after 28 days, air entrained to 5 to 7 percent.
   6. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
   7. Embed reinforcing steel, and drill or sleeve for two dowels.
   8. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
   9. Minor patching in plant is acceptable, providing appearance of units is not impaired.

B. Dowels: Cut reinforcing steel, 1/2 inch diameter, 14 inch long, pointed tip.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units without damage to shape or finish. Replace or repair damaged units.

B. Install units in alignment with adjacent work.

C. Fasten units in place with 2 dowels per unit.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Painted pavement markings.

1.02 REFERENCE STANDARDS

A. AASHTO MP 24 - Standard Specification for Waterborne White and Yellow Traffic Paints; 2015 (Reapproved 2020).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work of this section with adjoining work.

B. Verify crosswalk marking color requirements, if any, with local authority having jurisdiction.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.

C. Manufacturer's Instructions:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authority having jurisdiction.

1.06 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.07 SEQUENCING

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of markings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Painted Pavement Markings:
   1. Product: Pro-Park Waterborne made by Sherwin-Williams Paints.
   2. Product: ZONELINE Traffic Marking Paint made by PPG Paints.
   3. Product: Traffic And Zone Marking Paint made by Valspar Corp..

2.02 PAINTED PAVEMENT MARKINGS

A. Painted Pavement Markings: As indicated on drawings.
   1. Marking Paint: In accordance with AASHTO MP 24, No. 97 Latex Traffic Marking Paint; Colors as indicated
      a. Parking Lots: Yellow.
      b. Crosswalks: White. or as required by AHJ.
      c. Accessible Striping: Blue.
      d. Symbols and Text: White.
      e. Wheelchair Symbols: Provide blue and white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that pavement is dry and ready for installation.

B. Notify Architect of unsatisfactory conditions before proceeding.

3.02 PREPARATION

A. Establish survey control points for locating and dimensioning of markings.

B. Clean surfaces prior to installation.
   1. Remove dust, dirt, and other debris.
   2. Remove rubber deposits, existing paint markings, and other coatings.

C. Apply paint stencils by type and color at necessary intervals.

3.03 INSTALLATION

A. General:
   1. Position pavement markings as indicated on drawings.
   2. Field location adjustments require approval of Architect.

B. Painted Pavement Markings:
   1. Apply in accordance with manufacturer's instructions.
   2. Marking Paint: Apply uniformly, with sharp edges.
      a. Applications: One coat.
      b. Wet Film Thickness: 0.015 inch, minimum.
      c. Stencils: Lay flat against pavement, align with striping, remove after application.
      d. Length Tolerance: Plus or minus 3 inches.
      e. Width Tolerance: Plus or minus 1/8 inch.

3.04 PROTECTION

A. Prevent approaching traffic from crossing newly applied pavement markings.

B. Replace damaged or removed markings at no additional cost to Owner.

END OF SECTION

SECTION 32 17 26

TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tactile warning surfacing for pedestrian walking surfaces.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

C. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; 2011.

D. SAE AMS-STD-595 - Colors Used in Government Procurement; 2017a.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's product data, standard details, details specific to this project; written installation and maintenance instructions.

C. Warranty: Submit manufacturer warranty; complete forms in Owner's name and register with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.

B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.06 WARRANTY

A. Plastic Tiles: Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 TACTILE AND DETECTABLE WARNING DEVICES

A. Plastic Tactile and Detectable Warning Tiles: Comply with ADA Standards, glass fiber and carbon fiber reinforced, exterior grade, matte finish polyester sheet with truncated dome pattern, solid color throughout, internal reinforcing of sheet and of truncated domes, integral radius cut lines on back face of tile; with factory-applied removable protective sheeting.
   1. Installation Method: Cast in place.
   2. Shape: Rectangular.
   3. Dimensions: 24 inches by 48 inches.
   4. Pattern: In-line pattern of truncated domes complying with ADA Standards.
   5. Edge: Square.
   6. Joint: Butt.
   7. Color: SAE AMS-STD-595, Table IV, Federal Yellow No. 33538.
   8. Products:
      a. Access Tile, a brand of Access Products, Inc; Cast in Place Replaceable Tactile Warning Tile: www.accesstile.com/#sle.
      b. ADA Solutions, a division of SureWerx USA; Cast in Place (Wet-Set): www.adatile.com.
      c. Detectable Warning Systems; Alert Cast: www.detectable-warning.com
      d. Or approved equal.

2.02 ACCESSORIES

A. Fasteners: ASTM A666, Type 304 stainless steel
   1. Type: Countersunk, color matched composite sleeve anchors
   2. Size: 1/4 inch diameter and 1-1/2 inches long.

B. Sealant: Elastomeric sealant of color to match adjacent surfaces; approved by surfacing tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. When installation location is near site boundary or property line, verify required location using property survey.

B. Verify that work area is ready to receive work:
   1. Examine work area with installer present.
   2. If existing conditions are not as required to properly complete the work of this section, notify Architect.
   3. Do not proceed with installation until deficiencies in existing conditions have been corrected.

C. Reference Architectural Site Plans for additional information.

D. Reference Civil Drawings for additional information.
   1. Information contained on Civil Drawings shall take precedence over any information contained in this section.

E. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's written instructions.
   1. Install tactile warning units full width of walk, ramp, or access aisle.
   2. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
   3. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.

B. Field Adjustment:
   1. Cut units as required to fit width of walk, ramp, access aisle.
   2. Do not cut plastic tiles to less than 9 inches wide in any direction.
   3. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
   4. Orient so dome pattern is aligned with the direction of ramp.
   5. Align truncated dome pattern between adjacent units.

C. Install units fully seated to substrate, square to straight edges and flat to required slope.

D. Align units so that tops of adjacent units are flush and joints between units are uniform in width.

3.03 INSTALLATION, CAST IN PLACE PLASTIC TILES

A. Concrete:
   1. See Section 03 30 00.
   2. Slump: 4 to 7 percent.

B. When installing multiple adjacent units, leave a 3/16 inch gap between units to allow for expansion.

C. Tamp and vibrate units as recommended by manufacturer.

D. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

3.04 CLEANING PLASTIC UNITS

A. Remove protective plastic sheeting within 24 hours of installation.

B. Remove excess sealant or adhesive from joints and edges.

C. Clean four days prior to date of scheduled inspection.

3.05 PROTECTION

A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.

B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Posts, rails, and frames.

B. Wire fabric.

C. Manual gates with related hardware.

D. Accessories.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

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 F567 - Standard Practice for Installation of Chain-Link Fence; 2014a.

D. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric; 2011.

E. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.

F. FS RR-F-191/1D - Fencing, Wire and Post Metal (Chain-Link Fence Fabric); 1990.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.

C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

D. Manufacturer's Installation Instructions: Indicate installtion requirements and post foundation anchor bolt templates.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Chain Link Fences and Gates:
   1. Master-Halco, Inc: www.masterhalco.com/#sle.
   2. Merchants Metals: www.merchantsmetals.com/#sle.
   3. Or approved equal.

2.02 COMPONENTS

A. Line Posts: 2.38 inch diameter.

B. Corner and Terminal Posts: 3.5 inch diameter.

C. Gate Posts: 2.38 inch diameter.

D. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.

E. Gate Frame: 1.66 inch diameter for welded fabrication.

F. Fabric: 2 inch diamond mesh interwoven wire, 11 gauge, 0.1205 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.
   1. Fabric Height: 12 feet.

G. Tie Wire: Aluminum alloy steel wire.

2.03 MATERIALS

A. Posts, Rails, and Frames: Formed from hot-dipped galvanized steel sheet, ASTM A653/A653M, HSLAS, Grade 50, with G90 (Z275) zinc coating.

B. Line Posts: Type I round in accordance with FS RR-F-191/1D.

C. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round in accordance with FS RR-F-191/1D.

D. Wire Fabric: ASTM F668 polymer-coated steel chain link fabric.

E. Concrete: Type specified in Section 134.

2.04 MANUAL GATES AND RELATED HARDWARE

A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp.

2.05 ACCESSORIES

A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

2.06 FINISHES

A. Components and Fabric: Vinyl coated over coating of 1.8 ounces per square foot galvanizing.

B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.

C. Accessories: Same finish as framing.

D. Color(s): Black.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install framework, fabric, accessories and gates in accordance with ASTM F567.

B. Place fabric on outside of posts and rails.

C. Set intermediate, terminal, and gate posts plumb, in concrete footings with top of footing flush with finish grade. Slope top of concrete for water runoff.

D. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

E. Do not stretch fabric until concrete foundation has cured 28 days.

F. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

G. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

H. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

I. Install bottom tension wire stretched taut between terminal posts.

J. Install hardware and gate with fabric to match fence.

END OF SECTION

SECTION 32 33 00

SITE FURNISHINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bench(es).

B. Picnic Table(s).

C. BBQ Grill(s).

D. Basketball goals.

1.02 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, and maintenance information.

1.04 WARRANTY

A. Provide manufacturer’s warranty against defects in materials or workmanship for a period of 10 years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 METAL FURNISHINGS

A. Metal Furnishings, General:
   1. Pipe: Carbon steel, ASTM A53/A53M, Schedule 40.
   2. Tube: Carbon steel, ASTM A500/A500M.
   3. Steel components: Plates, bars, and shapes complying with ASTM A36/A36M and tubing complying with ASTM A500/A500M; cleaned, treated, and vinyl-coated.
      a. Color: As selected by Owner from manufacturer's standard range.
   4. Hardware: Stainless steel.

B. Bench(es): Metal frame and seat section with back; thermoplastic coated (Plastisol).
   1. Frame: Steel.
   2. Seat: Punched steel.
   3. Length: 60 inches.
   4. Mounting: Embedded in concrete.
   5. Products:
      a. Belson Outdoors LLC; Model #940SM-V6
      b. Or approved equal.

C. Picnic Table(s); Accessible: Metal frame, tabletop, and seat section complying with ADA Standards; thermoplastic coated (Plastisol).
   1. Frame: Steel.
   2. Tabletop and seat: Punched steel.
   3. Length: 96 inches.
   4. Length of seat: 72 inches
   5. Width: 70 inches.
   6. Mounting: Freestanding; anchored to slab.
   7. Products:
      a. Belson Outdoors LLC; Model #238HS-PR8: www.belson.com.
      b. Or approved equal

D. BBQ Grill(s): Park style, rotating, pedestal grill with adjustable steel bar grate, and galvanized mounting post.
   1. Frame: Galvanized Steel
   2. Cooking grate: 0.5 inch diameter steel bar welded to flat stock.
   3. Height: 34 inches to cooking surface, maximum.
   4. Mounting: Embedded in concrete.
   5. Products:
      a. Belson Outdoors LLC; Pedestal Grill #620H: www.belson.com.
      b. Or approved equal.

2.02 ATHLETIC AND PLAYGROUND EQUIPMENT

A. Basketball System: Backboard assembly, goal, and mounting pole.
   1. Backboard: 35-1/2 inch by 54 inch, Fan-shaped.
   2. Material: One-piece aluminum casting.
   3. Finish: Powder coat, White, with silkscreened border and target.
   4. Goals: Steel double-ring rim, mounted to backboard, with attached nylon net; complete with mounting hardware.
      a. Net Attachment Device: Tube-tie.
      b. Finish: Powder coat orange.
   5. Mounting Pole: Galvanized steel, Gooseneck design with direct attachment to backboard.
      a. Size: 4-1/2 inch O.D. by 0.18 inch wall.
      b. Offset from backboard: 48 inches.
      c. Height: 120 inches to top of rim.
      d. Mounting: Embedded in concrete.
   6. Products:
      a. Performance Sports Systems Inc.; Package #4565: www.perfsports.com
      b. Bison Inc.; Package #PR52: www.bisoninc.com.

B. Exercise/Fitness Equipment: Metal frames with molded-plastic seats and parts, specially designed to provide extra support for users ages 50+; powder-coated frames and thermoplastic coated gripping surfaces.
   1. Frame; Steel Pipe: ASTM ASTM A53/A53M, standard weight.
   2. Factory Finish: Powder coated.
      a. Color: Green.
   3. Mounting: Embedded in concrete.
   4. Exercise Type: To be selected by Owner.
      a. No. of stations: __ stations.
   5. Products:
      a. GameTime, Inc; Theraputic Fitness Series: www.gametime.com.
      b. _____.
      c. Or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect areas and conditions before installation. Notify Architect in writing of unsatisfactory or detrimental conditions. Do not proceed until conditions have been corrected. Commencing installation constitutes acceptance of work site conditions.

B. Verify proper installation of mounting surfaces, preinstalled anchor bolts, and other mounting devices; and ready to receive site furnishing items.

3.02 INSTALLATION

A. Install site furnishings in accordance with the Contract Documents, approved shop drawings, and manufacturer's installation instructions.

B. Coordinate installation of inserts and anchor bolts that must be built in to concrete slabs.

C. Secure all site furnishings with manufacturer's recommended anchoring devices.

D. Provide level mounting surfaces for site furnishing items.

END OF SECTION

SECTION 32 90 00

LANDSCAPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Placing topsoil.

B. Seeding, mulching and fertilizer.

C. New plants and shrubs.

D. Mulch and Fertilizer.

E. Maintenance.

F. Tree pruning and removal.

1.02 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.03 REFERENCE STANDARDS

A. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices; 2008 (R2014).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Planting Schedule: Submit schedule detailing coordination of normal planting times with construction schedule for related work.

1. If conditions exist which warrant a variance in the stated planting dates, a request may be made to the Owner stating the cause, and the proposed variance.

C. Certification: Submit certification of grass species and location of sod source.

D. Maintenance Data: Include maintenance instructions, cutting and trimming methods, maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.05 QUALITY ASSURANCE

A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years experience.

1.06 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

B. Provide certificate of compliance from authority having jurisdiction indicating approval of fertilizer and herbicide mixture.

C. Plant Materials: Described by ASTM Z60.1; free of disease or hazardous insects.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Protect and maintain plant life until planted.

1.08 FIELD CONDITIONS

A. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.

B. Do not install plant life when wind velocity exceeds 30 mph.

1.09 WARRANTY

A. Provide one year warranty.

B. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

PART 2 PRODUCTS

2.01 CLIMATE / GROWING ZONE

A. The Grass Adaptation Climate Zone for this project is: Transition Zone.

B. The Plant Hardiness Zone for this project is: Select Zone by Zip code

C. Planting Season: All Planting shall occur between the dates specified.
   1. Early Spring planting season: March 15th through May 15th.
   2. Early Fall planting season: August 15th through October 15th.

D. Seeding operations that take place during the above planting seasons require no further work other than maintenance and Warranty work.

E. Seeding operations that take place outside the above planting seasons shall require re-seeding during the next planting season.

2.02 SEED MIXTURE

A. Seed Mixture:
   1. Kentucky Blue Grass: 15 percent.
   2. Tall Fescue Grass: 65 percent.
   3. Norlea Perennial Rye: 20 percent.

2.03 PLANTS

A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

B. Furnish balled and burlapped (B&B) trees and shrubs, except container-grown plants may be furnished if indicated size is below limit established in ANSI Z60.1.
   1. Deciduous shrubs may be furnished in bare root conditions if adequately maintained and protected from drying through transplanting period.

2.04 SOIL MATERIALS

A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

2.05 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 85 percent organic material measured by oven dry weight, pH range of 4 to 5; moisture content of 30 percent.

C. Fertilizer: 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: 5 percent.
   2. Phosphoric Acid: 10 percent.
   3. Soluble Potash: 5 percent.

D. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

E. Erosion Fabric: Jute matting, open weave.

F. String: Inorganic fiber.

G. Weed Membrane: 20 mil thick, water permeable polyolefin fabric.

H. Edging: Steel, factory finished. 3/16 by 4 inch with steel stakes.
   1. Color: Green

2.06 PLANT SOIL MIX

A. A uniform mixture of 1 part peat and 3 parts topsoil by volume.

2.07 SOURCE QUALITY CONTROL

A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

B. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing laboratory in sealed containers to prevent contamination.

C. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this Section.

B. Saturate soil with water to test drainage.

C. Verify that required underground utilities are available, in proper location, and ready for use.

3.02 PREPARATION GENERAL

A. Plant at the earliest possible date site conditions permit in the Early spring planting season.

B. Install edging at periphery of seeded or sodded areas in straight lines to consistent depth.

3.03 PLACING TOPSOIL

A. Spread topsoil to a minimum depth of 4 inches over area to be planted. Rake smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

E. Install topsoil into pits and beds intended for plant root balls, to a minimum thickness of 6 inches.

3.04 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.05 SEEDING

A. Apply seed to all other areas disturbed by construction activities and not designated to receive hydroseed and sod as shown on the Landscape Plan.

B. Apply seed at a rate of 8-10 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

C. Do not seed areas in excess of that which can be mulched on same day.

D. Do not sow immediately following rain, when ground is too dry, or during windy periods.

E. Immediately following seeding and compacting, apply mulch to a thickness of 1/4 inches. Maintain clear of shrubs and trees.

F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

G. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.06 PLANTING

A. Place plants as indicated.

B. Set plants vertical.

C. Remove non-biodegradable root containers.

D. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth of 6 inches under each plant. Remove burlap, ropes, and wires, from the root ball.

E. Place bare root plant materials so roots lie in a natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.

F. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

G. Build 6 inch high berm of topsoil beyond edge of excavation around each tree.

H. Apply mulch to a depth of 4 inches. Keep mulch from direct contact with tree trunks.

3.07 TREE PRUNING AND REMOVAL

A. Prune trees as recommended in ANSI A300 Part 1.

B. Prune newly planted trees as required to remove dead, broken, and split branches.

C. Trees removal:
   1. Chip, grind, crush, or shred branches or limbs for mulching, composting, or other purposes; preference should be given to on-site uses.
   2. Branches or trunks too large to mulch: Remove from site.
   3. Remaining Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
   4. Fill holes left by removal of stumps and roots, using suitable fill material, with top surface neat in appearance and smooth enough not to constitute a hazard to pedestrians.
   5. All exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

3.08 PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at 48 inches.

B. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

C. Secure outside edges and overlaps at 36 inch intervals with stakes.

D. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.09 MAINTENANCE

A. Seeding and Sodding shall be completed 30 days prior to Final Inspection, weather permitting.

B. Provide maintenance at no extra cost to Owner until completion and/or occupancy of the project; Owner will pay for water.

C. Maintain plant life immediately after placement and until plants are well established and exhibit a vigorous growing condition. Continue maintenance until completion/occupancy of the project.

D. Irrigate sufficiently to saturate root system and prevent soil from drying out.

E. Cultivate and weed plant beds and tree pits.

F. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

G. 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.

H. Neatly trim edges where necessary.

I. Immediately remove clippings after mowing and trimming.

J. Water to prevent grass and soil from drying out.

K. Roll surface to remove minor depressions or irregularities.

L. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

M. Immediately reseed areas that show bare spots.

N. Protect seeded areas with warning signs during maintenance period.

END OF SECTION