PROJECT MANUAL

BRIARWOOD 56X30 COMMERCIAL BUILDING

DeKalb, Illinois

Architect Project 24-16230

Owner:

Housing Authority of the County of DeKalb
310 North 6th Street,
DeKalb, IL 60115

Architect:

1919 Architects
4000 Morsay Drive,
Rockford, IL 61107

1919
Architects

August 2, 2024

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HOUSING AUTHORITY OF THE COUNTY OF DEKALB
NOTICE TO BIDDERS

Housing Authority of the County of DeKalb will receive sealed bids for Project named Briarwood 56x30 Commercial Building.

3345 Resource Pkwy, DeKalb, IL 60115 DeKalb, Illinois

Bids will be received until 2:30 p.m. local time on the 29th day of August 2024 at the offices of Housing Authority of the County of DeKalb located at 310 North 6th Street, DeKalb, Illinois 60115. At that time and place all bids will be publicly opened and read aloud.

A pre-bid meeting shall take place on the 21st day, of August 2024 at 11:00 a.m. at Housing Authority of the County of DeKalb (Briarwood Apartments) 3345 Resource Pkwy, DeKalb, IL 60115 DeKalb, Illinois.

Bids must be based on electronic bid documents obtained from 1919 Architects, P.C. Hard copies may be obtained upon a deposit of $50 (in the form of cash or check) per set and bidders will be limited to (3) sets. Deposits will be refunded upon return of the Bidding Documents in good condition, without markings, notations or other defacing, within (5) days after bid opening. Contractors that do not submit a bid will not be refunded their deposit. Checks should be made payable to 1919 Architects, P.C. If it is desired for bid packets to be shipped to bidder, a separate non-refundable check shall be made payable to 1919 Architects, P.C. in the amount of $25 or a valid UPS or FedEx account number shall be provided.

Bids received must be enclosed in a sealed envelope and clearly marked "**Briarwood 56x30 Commercial Building".**

Bid Bond executed by the bidder and acceptable sureties in an amount of not less than 5% of the base bid shall be submitted with each bid. Failure to submit an acceptable bid bond with the bid will result in the rejection of the bid.

Attention is called to the provisions for Equal Employment Opportunity and payment of not less than the minimum salaries and wages set forth in the bid documents.

All Contractors who are awarded construction related contracts must document Affirmative Action to ensure Equal Opportunity in Employment. This documentation is subject to review by the Regional Office of the Department of Labor. As a part of normal contract administration, Housing Authority of the County of DeKalb is responsible for determining the Contractor's compliance with the Equal Employment Opportunity Clause and Affirmative Action Requirements as well as the Contractor's performance in executing those requirements.

All MBE/DBE/WBE Contractors, Subcontractors and Suppliers are encouraged to participate on Housing Authority of the County of DeKalb projects.

Housing Authority of the County of DeKalb reserves the right to accept or reject any and all bids and to waive any and all technicalities.

No bid shall be withdrawn for a period of (90) calendar days subsequent to the opening of the bids without the written consent of Housing Authority of the County of DeKalb.

HOUSING AUTHORITY OF THE COUNTY OF DEKALB

BID REQUIREMENTS

All Bidders seeking to do business with Housing Authority of the County of DeKalb are required to submit with any bid the following:

1. Bid Form with Addenda acknowledged
2. Bid Guarantee Equal to 5% of the Base Bid in the form of:
   a. Bid Bond secured by Surety
   b. Certified Check
   c. Bank Draft
   d. U.S. Bonds at par value.
3. Hold Harmless Agreement
4. Non-Collusive Affidavit
5. Certification of Non-Segregated Facilities
6. One (1) original and one (1) copy of the bid packet requirements

Any bid which fails to include any of these items may be considered as a nonresponsive bid.

Any questions concerning the bid requirements should be directed to Ron Billy, 1919 Architects, at (815) 229-8222 or ron@1919architects.com.

BID FORM

BID FOR: Briarwood 56x30 Commercial Building

TO: Housing Authority of the County of DeKalb
310 6th Street
DeKalb, Illinois 60115

Sir/Madam:

1. The undersigned, having familiarized _____ with the local conditions affecting the cost of the work, and with the Specifications (including Invitation for Bids, Instructions to Bidders, this Bid Form, the form of Bid Bond, the Non-collusive Affidavit, the form of Performance and Payment Bond or Bonds, the General Conditions, the Special Conditions, and the General Scope of Work), and acknowledging receipt of Addenda No. _____ through _____, (if any thereto), as prepared by 1919 Architects and on file in the office of 1919 Architects, 4000 Morsay Dr., Rockford, Illinois 61107, hereby proposes to:

    1. Furnish all bonds and insurance required by the Bidding Documents.
    2. Accomplish the work in accordance with the Contract.
    3. Complete all work, as shown and specified herein, within 270 consecutive calendar days from the date of the Notice to Proceed.

Base Bid**:**
Include all work called for, and/or specified, and described within Contract Documents

1. For the lump sum of:
   _____($_____).

In submitting this bid, it is understood that the right is reserved by Housing Authority of the County of DeKalb to reject any and all bids. If written notice of the acceptance of this bid is mailed, faxed or delivered to the undersigned within 90 calendar days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver a contract in the prescribed form and furnish the required bond within ten (10) days after the contract is presented for signature.

Bid Security in the sum of _____ Dollars
($_____), in the form of _____ is submitted herewith in accordance with the Specifications.

Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or submitting of proposals for the contract for which this proposal is submitted.
The bidder represents that it ( ) has, ( ) has not, participated in a previous contract or

subcontract subject to the equal opportunity clause prescribed by Executive Orders 10925, 11114, or 11246, or the Secretary of Labor; that they ( ) have, ( ) have not, filed all required compliance reports; and that representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with the contracts or sub-contracts which are exempt from the clause.)

Certification of Nonsegregated Facilities. By signing this bid, the bidder certifies that they do not maintain or provide for their employees any segregated facilities at any of their establishments, and that they do not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. They certify further that they will not maintain or provide for their employees any segregated facilities at any of their establishments, and that they will not permit their employees to perform their services at any location, under their control, where segregated facilities are maintained. The bidder agrees that breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms, and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom or otherwise. They further agree that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) they will obtain identical certifications from proposed subcontractors prior to the award of subcontractors exceeding $10,000.00 which are not exempt from the provisions of the Equal Opportunity clause; that they will retain such certifications in their files; and that they will forward a notice to their proposed subcontractors as provided in the instructions to bidders.

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

DATE:_____,20____.

_____

(Name of Bidding Entity)

Official Address:

BY:_____

_

_____

TITLE:_____

_____

_____ (SIGN ORIGINAL ONLY)

_____

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that We the undersigned, _____

_____

(Name of Principal)

as Principal, and _____

(Name of Surety)

are held and firmly bound unto the Housing Authority of the County of DeKalb hereinafter called the "Local Authority", in the penal sum of:

_____ Dollars ($_____),
lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITIONING OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying bid, dated _____, 20_____ for

_____

_____

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within ninety (90) days after the said opening, and shall within the period specified therefore, or, if no period be specified, within ten (10) days after the prescribed forms are presented to them for signature, enter into a written contract with the Local Authority in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the bid and amount for which the Local Authority may procure the required work or supplies or both, if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS THEREOF, the above-bounden parties have executed this instrument under their seal this _____ day of _____, 20_____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to the authority of its governing body.

_____ _____ (SEAL)
(Individual Principal)

_____ _____
(Business Address)

_____ _____ (SEAL)
(Individual Principal)

_____ _____
(Business Address)

Attest:

_____ _____

(Corporate Principal)

_____

(Business Address)

By _____ (SEAL)

_____ _____

Attest:

_____ _____

(Corporate Surety)

_____

(Address)

By _____ (SEAL)

_____ _____

(Power-of-attorney for person signing for surety company must be attached to bond)

HOLD HARMLESS AGREEMENT

All contracts for outside services require that the contractor hold the OWNER (Housing Authority of the County of DeKalb) harmless of any liability.

The following hold harmless clause is hereby entered into between the OWNER (Housing Authority of the County of DeKalb) and

_____ (Contractor).

"In consideration of your permitting us, our servants, or agents, employees and representatives from time to time to enter upon or to place or maintain equipment upon premises owned or controlled by you for the purposes of servicing our account, we agree to indemnify and hold harmless the Owner and its agents and employees from and against all claims for personal injury or property damage, including attorney's fees that may be incurred by the Owner in defending such claims, rising out of or resulting from the performance of the work and caused in whole or in part by any negligent act or omission of the Owner vendor, or anyone directly or indirectly employed by the Owner vendor or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Owner vender, under Workers Compensation Acts, Disability Acts, or other Employee Benefit Acts."

_____

Date Owner (Housing Authority of the County of DeKalb)

_____

Date Contractor

NON-COLLUSIVE AFFIDAVIT

State of: Illinois
County of: Dekalb County

_____ being first duly sworn, deposes and says:

That he/she is _____ of the party making the foregoing proposal or bid, that such proposal or bid in genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, sought by agreement or collusion or communication of conference, with any person to fix the bid price any other bidder, or to fix any overhead, profit of cost element of bid price, or that of any other bidder, or to secure any advantage against Housing Authority of the County of DeKalb or any person interested in the proposed contract, and that all statements in said proposal or bid are true.

Signature of:

_____
Bidder, if bidder is an individual

_____
Partner, if bidder is a partnership

_____
Officer, if bidder is a corporation

Subscribed and sworn to before me this_____ day of_____, 2024.

_____
Notary signature and stamp

CERTIFICATE OF NON-SEGREGATED FACILITIES

We, _____(Company)
Certify that we do not and will not maintain or provide for our employees any segregated facilities at any of our establishments, and that we do not and will not permit our employees to perform their services at any location, under our control, where segregated facilities are maintained. We understand and agree that breach of this certification is a violation of Equal Opportunity clause required by Executive Order 11246, amended.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees 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.

We further agree that (except where we have obtained identical certifications from proposed Subcontractors for specific time periods) we 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 we will retain such certification in our files; and that we will forward the following notice to such proposed Subcontractors (except where the proposed Subcontractors have submitted identical certifications for specific time periods).

NOTICE TO PROSPECTIVE SUBBUILDERS OF REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES. A certification of Non-segregated facilities as required by the 9 May 1967 order on Elimination of Segregated Facilities, by the Secretary of Labor (32 Fed. Reg. 7439, 19 May 1967), must be submitted from the provisions either for each subcontract or for all subcontracts during a period (i.e. quarterly, semi-annually, or annually).

NOTE: Whoever knowingly and willfully makes any false, fictitious or fraudulent representation may be liable to criminal prosecution under 18 U.S.C. 1001.

_____
(Name of Company)

By: _____

Date: _____ **Title:** _____

SAMPLE DOCUMENT

Project Number:_____

Job Title:_____

Housing Authority of the County of DeKalb

AGREEMENT

THIS AGREEMENT is made this _____day of _____ 20____, by and between Housing Authority of the County of DeKalb, (herein "HACD"), and_____ _____ , (herein "Contractor").

WITNESSETH, that the Contractor and the HACD, for the consideration stated herein, mutually agree as follows:

ARTICLE I – STATEMENT OF WORK.

The Contractor shall furnish all labor, materials, and equipment necessary to perform and complete all work required in strict accordance with the Contract Documents, as defined in Article IV below.

ARTICLE II – THE CONTRACT PAYMENTS.

HACD shall pay the Contractor for the full performance of the contract, subject to any properly agreed upon additions and deductions as provided in the specifications, the sum of:

_____ ($).

This amount shall be paid according to the process set forth in the General Conditions.

ARTICLE III – TIME OF COMPLETION.

The Contractor shall begin actual performance hereunder within 5 calendar days from the date of the Notice to Proceed and all work to be performed by the Contractor shall be completed within _____ calendar days after the date of the Notice to Proceed (the Completion Date). Notwithstanding the foregoing, the Contractor shall be excused from completing full performance by the Completion Date if, during the progress of the work, delay is authorized in writing by HACD, in its reasonable judgment, for any one or more of the following unforeseen or unavoidable causes:

a. Inclement weather.
b. Any act or neglect of HACD.
c. Changes in the Scope of Work that are approved in writing by HACD.
d. Any strike that is not the result of any action or inaction of the Contractor.
e. Flood or natural disaster.
f. Other good cause, as approved in writing by the HACD.

In the event of any such authorized delay, the Completion Date shall be extended for such reasonable time as is mutually agreed in writing HACD shall make all final decisions on the justifiability of causes offered by the Contractor as a basis for any requested extension(s) of time for performance.

ARTICLE IV – CONTRACT DOCUMENTS.

The Contract Documents that are incorporated herein and made a part of this agreement are the following:

a. Special Conditions
b. General Conditions
c. Specifications
d. Drawings for Construction
e. Addenda, if any

ARTICLE V – THE AGREEMENT WITH SUBCONTRACTORS.

The General Contractor shall submit one (1) complete originally executed copy of any Agreement between the General Contractor and any Subcontractor for the HACD's files. All subcontractor agreements shall require each subcontractor to be bound to all of the Contract Documents that are relevant to the work to be performed by the subcontractor.

ARTICLE VI – CONTRACTOR INFORMATION

If Contractor is an individual, doing business under any name other than the individual's name, provide the following information:

Individual's full name: _____

Business Name: _____

If Contractor is an entity, provide the following information:

Type of entity: _____

State of formation: _____

Qualified to transaction business in Illinois? Yes_____ No _____

ARTICLE VII – GENERAL

This instrument, together with the Contract Documents, form the entire agreement between the parties hereto. Contractor acknowledges that he has read and understands this agreement and the Contract Documents. In the event that any provision in any of the documents that make up the Contract Documents conflicts with any provisions of any other such document, the provision of the document first enumerated in the list in Article IV shall govern, except as otherwise specifically stated. The various provisions in any Addendum shall be construed in the order of preference of the document which it modifies.

No work under this agreement shall commence until the Contractor receives a Notice to Proceed issued by HACD.

This agreement may be executed in counterparts, each of which shall be an original, but all of which when taken together shall constitute one agreement.

IN WITNESS THEREOF, the parties hereto have caused this instrument to be executed in **two (2)** original counterparts as of the day and year first above written.

ATTEST:

_____	**Housing Authority of the County of DeKalb**
Contractor	*HACD*
_____	_____
By *Date*	*By* *Date*
_____	_____
Printed Name	*Printed Name*
_____	_____
Title	*Title*
_____	310 North 6th Street
Address	*Address*
_____	**DeKalb, Illinois 60115**
T: _____	**T:** _____

CERTIFICATION:

I, _____, certify that I am the _____ of the entity named as Contractor herein; that _____who signed this agreement on behalf of the Contractor was then _____ of said entity; that said agreement was duly signed for and on behalf of said entity by authority of its governing body, and is within the scope of its corporate powers.

_____
(Corporate Seal)

_____

Housing Authority of the County of DeKalb
SPECIAL CONDITIONS

1.) **PROJECT SITE(S)**
The Contractor shall visit the site and acquaint themselves with all existing conditions as they affect the work specified. All questions concerning this project shall be referred to 1919 Architects 4000 Morsay Drive, Rockford, IL 61107, (815) 229-8222, attention Ron Billy or ron@1919architects.com

2.) **TIME OF COMPLETION**
The work is to be commenced at the time stipulated in the Notice to Proceed, by the contract, and shall be fully complete within Two Hundred Seventy (270) calendar days.

3.) **LIQUIDATED DAMAGES**
As actual damages for any delay in completion are impossible to determine, the Contractor and his sureties shall be liable for and shall pay to Housing Authority of the County of DeKalb (HACD) the sum of Five Hundred Fifty Dollars ($550.00) as fixed, agreed and liquidated damages for each calendar day of delay until the work is totally completed and accepted by Housing Authority of the County of DeKalb and its Authorized Representatives (Architect). Any amount of liquidated damages shall be deducted from any final balance owed to the Contractor prior to final payment.

4.) **GENERAL CONTRACTOR AND SUBCONTRACTOR HOLD HARMLESS AGREEMENT**
The Contractor shall indemnify and hold harmless Housing Authority of the County of DeKalb and its employees from and against all claims for personal injury and/or property damage, including claims against HACD, its agents or servants, arising out of any claims, and all losses and expenses, including attorneys fees that may be incurred by HACD defending such claims, arising out of or resulting from the performance of the work and caused in whole or in part by a party indemnified hereunder, In any and all claims against HACD or any of its agents or servants by an employee of a Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damage, compensation or benefits payable by or for the Contractor or Subcontractor under Workers Compensation Act, Disability Acts, or their Employee Benefits Acts.

5.) **ACCESS TO WORK**
Housing Authority of the County of DeKalb shall provide the General Contractor with access to work areas at all times.

6.) **LIST OF SUBCONTRACTOR**
Contractor shall list subcontractor who will perform any portion of the work as requested. Contractor shall furnish partial waivers of lien starting with the second payout request from subcontractor and suppliers with **full waivers of liens being submitted prior to final payment.**

7.) **GUARANTEES AND WARRANTIES**
Contractor shall guarantee and warranty all materials and workmanship to be free of defects for a period of one year from the date of acceptance of said work by Housing Authority of the County of DeKalb and shall replace at Contractor's expense, any work that may be found defective within said one-year period. Contractor shall also deliver all Manufacturer's Warranties in excess of the above as offered by the Manufacturer or specified in other sections.

8.) **LOCAL LABOR**
The Contractor shall endeavor to the greatest extent feasible, to provide opportunities for training and employment for lower income residents of the project area and to award subcontracts for work in connection with the project to business concerns which are located in or owned in substantial part by persons residing in the area of the project..

9.) **RESPONSIBILITY OF CONTRACTOR**
Except as otherwise specifically stated in the Contract Documents and Technical Specifications, the Contractor shall provide and pay for all labor, tools, equipment, levies, fees, permits or other expenses

and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in this Contract or Construction complete in every respect within the specified time. Contractor shall keep the vegetation in the work area, from back-of-curb of the adjacent streets, mowed to a height of not greater than 6-inches.

10.) **COMMUNICATIONS**
All notices, demands, requests, instructions, approvals, proposals and claims must be in writing. Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Form of Agreement or at such other office as the Contractor may from time to time designate in writing to the Owner or his Authorized Representative.

11.) **CONTRACT DOCUMENTS AND DRAWINGS**
The Contractor shall be furnished without charge Contract Documents, including Technical Specifications and Drawings as follows: General Contractor - 1 set. Additional copies requested by the Contractor will be furnished at cost.

12.) **TEMPORARY SERVICES**
The Contractor is responsible for providing their own power and other utilities that may be needed.

13.) **LEAD BASED PAINT**
No Lead Based Paint of any type shall be used.

14.) **APPROVALS**
The Contractor and any subcontractors must not cut into existing structures without prior written approval of Housing Authority of the County of DeKalb or its Authorized Representative.

15.) **EEO AFFIRMATIVE ACTION PLAN STATEMENT OF POLICY**
The Contractor must certify and submit to HACD an Equal Employment Affirmative Action Plan Statement of Policy equal to the required form contained in the Bid Requirements.

16.) **RECORD RETENTION**
Contractor and Subcontractor who work on any HACD projects to maintain all accounting records related to a project for minimum of (3) years after final payment.

17.) **BUILDING MATERIALS**
Building materials known to be environmentally hazardous, or containing environmentally hazardous ingredients such as, but not limited to Lead, Mercury, Arsenic, Silver and Asbestos, will not be purchased or used by Contractor or subcontractor doing maintenance, construction or rehabilitation of Housing Authority of the County of DeKalb properties.

18.) **WORKDAY DEFINITION**
A workday shall consist of 8 hours from 8:00 AM to 4:00 PM local time Monday through Friday. If work requires access to HACD locations or properties that are closed on HACD holidays, no work will be conducted.

19.) **INSURANCE**
Pursuant to the requirements of the insurance pool in which the HACD participates, the Contractor and all subcontractor must name the HACD as an additional insured on their liability insurance policies.

Although a contract may be awarded, Notice to Proceed will not be issued until proof of the additional insured requirements has been presented to the HACD from the Contractor's and any subcontractor's insurance companies. This must occur within 10 days of the award of contract. The Contractor and any subcontractor shall maintain the minimum insurance coverage and limits of liability required under the General Conditions and supplemented below until all work is completed and accepted by the HACD.

1. Workmen's Compensation and Occupational Disease: Statutory Limits.
2. Employer's Liability: $100,000.00, Coverage "B" may be required if work is considered hazardous, i.e., asbestos.

3. Comprehensive General Liability Insurance:
    a. Bodily Injury: $1,000,000.00 Each Person/Each Occurrence
    b. Property Damage: $1,000,000.00 Each Occurrence
4. Contractor Protective Liability Coverage may be included for a period of not less that one (1) year after Final Payment to the Contractor if work is such that there could be a lawsuit; i.e., plumbing
5. Comprehensive Automobile Liability Insurance: This insurance shall include non-owned, hired or rented vehicles as well as owned vehicles.
    a. Bodily Injury: $1,000,000.00 Each Person/Each Occurrence, Combined Single Limit
6. Builder's Risk may be required if project is extremely large new construction or renovation: Full Value of Contract. Maximum Deductible: $2,500.00.
7. Umbrella Excess Liability required but may be waived for smaller projects at the discretion of HACD: $1,000,000.00.

END OF SECTION

REQUEST FOR ACCEPTANCE OF SUBCONTRACTORS

TO: All Bidders

DATE: _____
PROJECT #:24-16230

Briarwood 56x30 Commercial Building

Ladies and Gentlemen:

In accordance with our prime contract for _____ of this project, we request acceptance of the following proposed subcontractor to perform work or to supply material as indicated below:

1. (Name)

   (Address)

2. Scope of work (state kind of work if labor, or material or both and give Specification reference):

3. The subcontractor's non-collusive affidavit in the form required by our contract is furnished herewith (original only, attached to the original of this request).
4. We warrant that the provisions provided by our contract to be inserted in each subcontract will be inserted in this subcontract.
5. We certify that this proposed subcontractor is not ineligible to receive awards of contracts from the United States as evidenced by the list or lists of such contractors maintained by HUD.
6. There will be no assignment of interest in this subcontract except as follows (if none, so state).
7. Terms of payment. Price $ _____
8. Remarks:

_____
(Prime Contractor)

By _____

Title _____

* If a sales agent, identify the manufacturer under "Remarks". If for a sub-subcontract, identify principle subcontractor under "Remarks."

APPROVAL OR REJECTION

The proposed subcontractor named above is _____.

If accepted, the contracting party giving such acceptance assumes no responsibility in connection with the form or terms of the subcontract nor the performance of the subcontractor and this form <u>will not be returned.</u>

If rejected, the reason(s) will be briefly stated herein, and this form <u>will be returned</u> within 10 days after receipt.

_____ _____
(Date) (Contracting Officer)

DOCUMENT 00 6000 - FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The General Conditions for Project are based on AIA A201-2017, "General Conditions of the Contract for Construction."

B. The Supplementary Conditions for Project are enumerated in Section 00 7300.

1.2 CLARIFICATION AND MODIFICATION FORMS

A. Form for Requests for Information (RFIs): AIA Document G716, "Request for Information (RFI)."

B. Change Order Form: AIA Document G701, "Change Order."

C. Form of Change Directive: AIA Document G714, "Construction Change Directive."

1.3 PERIODIC PAYMENT FORMS

A. Application and Certificate for Payment: AIA Document G702

B. Continuation Sheet: AIA Document G703

1.4 CLOSEOUT FORMS

A. Form of Substantial Completion: AIA Document G704, "Certificate of Substantial Completion."

END OF DOCUMENT

SECTION 00 7300 - SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.1 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions and other provisions of the contract documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

PART 2 - ADDITIONAL CONDITIONS

2.1 ACCEPTANCE OF BIDS

A. Owner has the right to negotiate with the low bidder if Bid exceeds the budget.

2.2 INSURANCE COVERAGE

A. Each Subcontractor shall carry the following insurance coverages:

1. Workers Compensation
   a. Statutory Limits
   b. $1,000,000 Each Accident
2. Employer's Liability
   a. $100,000 (Coverage B)
3. Comprehensive General Liability Insurance Bodily Injury
   a. $1,000,000 Each Person
   b. $1,000,000 Each Occurrence
   c. $1,000,000 Aggregate
4. Property Damage
   a. $1,000,000 Each Occurrence
   b. $1,000,000 Aggregate, or
5. Excess (Umbrella)
   a. $1,000,000 Combined Single Limit
6. Comprehensive Automobile Liability Insurance Bodily Injury
   a. $300,000 Each Person
   b. $500,000 Each Accident
   c. $500,000 Aggregate
7. Property Damage
   a. $100,000 Each Accident, or,
   b. $500,000 Combined Single Limit

B. This insurance must include non-owned, hired and rented vehicles, as well as owned vehicles.

C. Each Subcontractor shall submit to General Contractor the Certificates of Insurance for them self and any subcontractor before work begins.

2.3 WAIVERS OF LIENS

A. Contractor shall list subcontractors who will perform any portion of the work.

B. Based on that list, Contractor shall furnish a partial waiver of liens, starting with first payout request from subcontractors and suppliers, with full waiver of liens being submitted prior to final payment.

2.4 GUARANTEES

A. Contractor shall guarantee all materials and workmanship to be free of defects for a period of one year from date of acceptance by the owner of said work. Contractor shall replace at their own expense any work that may be found defective within said one-year period.

B. Contractor shall also deliver all manufacturers' Warranties for installed items with warranties in excess of the above, as offered by manufacturer or specified in the various Technical Specifications Sections.

2.5 RESPONSIBILITY OF CONTRACTOR

A. Except as otherwise specifically stated in the Contract Documents and Technical Specifications, the Contractor shall provide and pay for all labor, tools, equipment, levies, fees and like expenses as well as all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in the Contract, complete in every respect within the specified time.

2.6 CONTRACT DOCUMENTS AND DRAWINGS

A. Contractor shall be furnished without charge Contract Documents, including Drawings and Project Manual with Technical Specifications, one (1) sets.

2.7 CONFLICT OF DIRECTIONS

A. Where specific requirements appear to be at variance with the laws, ordinances or other applicable regulations, the Bidder shall secure an interpretation from the Owner or its representative prior to submitting bids. Failure to comply with the above request will result in the Bidder bearing expenses of correcting work to conform with any and all legal requirements.

2.8 HAZARDOUS MATERIALS

A. Building materials known to be environmentally hazardous, or containing environmentally hazardous ingredients such as, but not limited to, Lead Mercury, Arsenic, Silver and Asbestos, shall not be purchased or used on this Project.

2.9 UTILITY FEES

A. Permit and hook-up fees imposed by utility companies, city, count, and state shall be deemed to be included in the Contract. Bidder shall verify such amounts with the appropriate authorities prior to bidding.

2.10 RETAINAGE

A. 10% shall be withheld from each progress payment until the date of substantial completion at which time the retainage will remain at 10% for the remainder of the project.

2.11 PERMIT

A. Contractor shall obtain any and all construction permits required by the City of DeKalb Building Department. The Architect will be providing procedural assistance.

2.12 DEFINITIONS

A. Product: Refers to new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. “Product” may also include existing materials or components required for reuse.

B. Furnish or Supply: To supply and deliver, unload, inspect for damage.

C. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, and make ready for use.

D. Provide: To furnish or supply, plus install.

E. Project Manual: The volume usually assembled for the Work which includes the Bid Documents, Contract Documents, Soils Investigations and Technical Specifications.

END OF SECTION

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and Drawing conventions.
7. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Briarwood 56x30 Commercial Building
Project Location: 3345 Resource Pkwy, DeKalb, IL 60115

1. Owner: Housing Authority of the County of DeKalb

2. Owner's Representative: Randy Bourdages.

B. Architect: Ronald G. Billy, Jr., NCARB, LEED AP

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Construction of a new 56’x30 engineered wood framed structure with an employee restroom and mop sink.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.5 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.6 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 4:00 p.m., Monday through Friday, unless otherwise indicated.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

D. Restricted Substances: Use of tobacco products and other controlled substances within the existing building or 25 feet of the building is not permitted.

E. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as

performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
h. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
i. Cost information, including a proposal of change, if any, in the Contract Sum.
j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

    a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
    b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.

g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600- CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

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

B. Related Requirements:
1. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue through Construction Manager supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
b. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 WORK CHANGE DIRECTIVE

A. Work Change Directive: Architect may issue a Work Change Directive on form acceptable to the architect. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 DEFINITIONS

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

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

   1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

   1. Identification: Include the following Project identification on the schedule of values:

      a. Project name and location.

b. Name of Architect.
c. Architect's Project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of the Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of supplier.
f. Change Orders (numbers) that affect value.
g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

1) Labor.
2) Materials.
3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site.

6. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
7. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the 25th day of the month or as mutually agreed upon. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 and HUD 51000 Schedule Amounts for Contract Payments as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. Evidence that claims have been settled.
5. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Project meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:
1. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 7 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and in prominent location inbuilt facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and scheduled activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

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

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

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

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

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

C. RFI Forms: AIA Document G716 or form acceptable to the Architect.

1. Attachments shall be electronic files in PDF format.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.

e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architectof additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number, including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of 10 working days prior to meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner and Architect; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Responsibilities and personnel assignments.
    b. Tentative construction schedule.
    c. Critical work sequencing and long lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Use of web-based Project software.
    g. Procedures for processing field decisions and Change Orders.
    h. Procedures for RFIs.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of Record Documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Procedures for moisture and mold control.
    s. Procedures for disruptions and shutdowns.
    t. Construction waste management and recycling.
    u. Parking availability.
    v. Office, work, and storage areas.
    w. Equipment deliveries and priorities.
    x. First aid.
    y. Security.
    z. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    c. Review present and future needs of each contractor present, including the following:

        1) Interface requirements.
        2) Status of submittals.
        3) Deliveries.
        4) Off-site fabrication.
        5) Access.
        6) Site use.
        7) Temporary facilities and controls.
        8) Work hours.
        9) Hazards and risks.
        10) Progress cleaning.
        11) Quality and work standards.
        12) Status of RFIs.
        13) Proposal Requests.
        14) Change Orders.
        15) Pending changes.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:

1. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
2. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
3. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
4. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 10 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 14 days for initial review of each submittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

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

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

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

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

C. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

E. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

F. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

G. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.

e. Description of product.
f. Test procedures and results.
g. Limitations of use.

1.7 CONTRACTOR'S REVIEW

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

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

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect and Construction Manager will indicate, via markup on each submittal, the appropriate action.

2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

a. Actions taken by indication on Project management software website have the following meanings:

B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

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

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

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

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

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

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

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

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" shall have the same meaning as the term "testing agency."

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

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 QUALITY ASSURANCE

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

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

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

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

E. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged in the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

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

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

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 "Allowances," as authorized by Change Orders.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

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

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

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

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

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

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

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

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

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

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

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

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

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

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

END OF SECTION 014000

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary telecommunications services.

B. Temporary sanitary facilities.

C. Temporary Barriers.

D. Security requirements.

E. Vehicular access and parking.

F. Waste removal facilities and services.

G. Field offices.

1.02 RELATED REQUIREMENTS

A. Section 01 5100 - Temporary Utilities.

1.03 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Personal computer dedicated to project telecommunications, with necessary software and printer.
   2. Internet Connections: Minimum of one; DSL modem or faster.
   3. Facsimile Service: Fax-to-email software on personal computer.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Use of sanitary facilities installed as part of the Project is not permitted.

C. Maintain temporary sanitary facilities daily in clean and sanitary condition.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades required by governing authorities for public rights-of-way.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 EXTERIOR ENCLOSURES

A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.07 SECURITY

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

1.08 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

1.09 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site weekly.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.10 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture and drawing display table located on site.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition.

END OF SECTION

SECTION 01 5100 - TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Electricity, lighting, heat, ventilation, and water.

1.02 RELATED REQUIREMENTS

A. Section 01 5000 - Temporary Facilities and Controls:
   1. Temporary telecommunications services for administrative purposes.
   2. Temporary sanitary facilities required by law.

1.03 TEMPORARY ELECTRICITY

A. Cost of Energy: By Contractor.

B. Provide power service required from utility source.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location and meter.

E. Permanent convenience receptacles may be utilized during construction.

F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations to achieve a minimum lighting level of 2 watt/sq ft.

B. In addition to lighting required for security and for safe access around the areas of construction, surfaces being constructed shall have an average illumination of at least 15 foot-candles of white light.
   1. For application of finishes, illumination shall be at least 50 foot-candles.

C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

D. Maintain lighting and provide routine repairs.

E. Permanent building lighting may be utilized during construction.

1.05 TEMPORARY HEATING

A. Cost of Energy: By Contractor. Provide allowance as required per Section 01 2100 – Allowances.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

D. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.06 TEMPORARY COOLING

A. Cost of Energy: By Contractor.

B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.

C. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.07 TEMPORARY VENTILATION

A. Existing ventilation equipment may not be used.

1.08 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Contractor.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

C. Connect to existing water source.
   1. Exercise measures to conserve water.
   2. Provide separate metering and reimburse Owner for cost of water used.

END OF SECTION

SECTION 01 5713 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

B. Section 32 9219 - Seeding: Permanent turf for erosion control.

1.03 PERFORMANCE REQUIREMENTS

A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2003 Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Comply with requirements of State of Illinois - Erosion Control.

C. Comply with all requirements of the City of Geneseo or Henry County for erosion and sedimentation control.

D. Best Management Practices Standard: State of Illinois Handbook for Erosion Control in Developing Areas.

E. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

F. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained and erosion control measures are in place; furnish all documentation required to obtain applicable permits.
   1. Obtain and pay for permits and provide security required by authority having jurisdiction.
   2. Owner will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.

G. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.

H. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

I. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

J. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

K. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

L. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

M. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

N. Open Water: Prevent standing water that could become stagnant.

O. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan:
   1. Submit not less than 30 days prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
   2. Include:
      a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
      b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
      c. Schedule of temporary preventive measures, in relation to ground disturbing activities.
      d. Other information required by law.
      e. Format required by law is acceptable, provided any additional information specified is also included.
   3. Obtain the approval of the Plan by authorities having jurisdiction.

C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

E. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

F. Contractor shall provide all required documentation as required by the Indiana Department of Environmental Management.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mulch: Use one of the following:
   1. Straw or hay.
   2. Wood waste, chips, or bark.
   3. Erosion control matting or netting.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Bales: Air dry, rectangular straw bales.
   1. Cross Section: 14 by 18 inches, minimum.
   2. Bindings: Wire or string, around long dimension.

D. Bale Stakes: One of the following, minimum 3 feet long:
   1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot.
   2. Wood, 2 by 2 inches in cross section.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
   1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
   2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491.
   3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355 after 500 hours exposure.
   4. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D4632.
   5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632.
   6. Tear Strength: 55 lb-f, minimum, when tested in accordance with ASTM D4533.
   7. Color: Manufacturer's standard.

F. Silt Fence Posts: One of the following, minimum 5 feet long:
   1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot.
   2. Softwood, 4 by 4 inches in cross section.
   3. Hardwood, 2 by 2 inches in cross section.

G. Gravel: See Section 32 1216 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

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

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.

1. Provide linear sediment barriers:
    a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
    b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
    c. Along the toe of cut slopes and fill slopes.
    d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 100 feet apart.
    e. Across the entrances to culverts that receive runoff from disturbed areas.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
    a. Slope of Less Than 2 Percent: 100 feet..
    b. Slope Between 2 and 5 Percent: 75 feet.
    c. Slope Between 5 and 10 Percent: 50 feet.
    d. Slope Between 10 and 20 Percent: 25 feet.
    e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Soil Stockpiles: Protect using one of the following measures:
1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

H. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Traffic-Bearing Aggregate Surface:
1. Excavate minimum of 6 inches.
2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
3. Place and compact at least 6 inches of 1.5 to 3.5 inch diameter stone.

B. Silt Fences:
1. Store and handle fabric in accordance with ASTM D4873.
2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
5. Install with top of fabric at nominal height and embedment as specified.
6. Embed bottom of fabric in a trench on the upslope side of fence, with 2 inches of fabric laid flat on bottom of trench facing upslope; backfill trench and compact.
7. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
8. Fasten fabric to wood posts using one of the following:

a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gage, 0.083 inch shank diameter.
b. Five staples per post with at least 17 gage, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.

9. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
10. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Straw Bale Rows:
1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
2. Install bales so that bindings are not in contact with the ground.
3. Embed bales at least 4 inches in the ground.
4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
5. Fill gaps between ends of bales with loose straw wedged tightly.
6. Place soil excavated for trench against bales on the upslope side of the row, compacted.

D. Mulching Over Small and Medium Areas:
1. Dry Straw and Hay: Apply 4 to 6 inches depth.
2. Wood Waste: Apply 2 to 3inches depth.
3. Erosion Control Matting: Comply with manufacturer's instructions.

E. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:
1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Clean out temporary sediment control structures weekly and relocate soil on site.

F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

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

B. Related Requirements:
   1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

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

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.4 ACTION SUBMITTALS

A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

    a. Form of Architect's Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
    b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

B. Delivery and Handling:

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

C. Storage:

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

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

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

   a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: …"

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

   a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: …"

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

   a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: …"

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.

   a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: …"

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.

   a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: …"

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.

   a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products

may be incorporated in the Work include, but are not limited to, the following: …"

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

    a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

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

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

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

2.2 COMPARABLE PRODUCTS

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

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
2. Evidence that proposed product provides specified warranty.
3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
4. Samples, if requested.

B. Submittal Requirements: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SUBSTITUTION APPROVAL FORM

PROJECT: **Briarwood 56x30 Commercial Building**
DeKalb, IL
(24-16230)

Request for substitution **requires burden of proof on Proposer** and constitutes a representation that the submitter:

Yes	No	
☐	☐	Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product in all respects.
☐	☐	Will provide the same warranty for the substitution as for the specified product.
☐	☐	Will coordinate installation and make changes to other work which may be required for the work to be complete with no additional cost to Owner.
☐	☐	Certifies that the cost data presented is complete and includes all related cost under this contract except architect's redesign fees and that he waives claims for additional costs or time extension related to the substitution which may subsequently become apparent.
☐	☐	Will reimburse Owner and 1919 Architects, P.C. for review or redesign services associated with re-approval by authorities.

Submit three (3) copies of request for substitution for consideration. Limit each request to one proposed substitution. **Substitution Approval Form** must be included with each request. Include product identification, including manufacturer's name and model no.

Submit Itemized comparison of the proposed substitution with product specified; List significant variations. Provide data relating to changes in construction schedule.

Submit list of changes required in other work or products.

PRODUCT SPECIFIED:

Manufacturer: _____

Model #: _____

Cost: _____

PROPOSED SUBSTITUTION:

Manufacturer: _____

Model #: _____

Cost: _____

COST DIFFERENCE: _____

_____
Company Name

1919 Architects, P.C.
Architect Firm

_____
Signature

_____
Signature

_____
Date

_____
Date

☐ **Approved** ☐ **Not Approved**

Comments:_____

_____

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
3. Complete final cleaning requirements.
4. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of

Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

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

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Architect by email to Architect.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

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

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

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.
m. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Product maintenance manuals.

B. Related Requirements:
   1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

   1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

   1. Submit on digital media acceptable to Architect by email to Architect. Enable reviewer comments on draft submittals.

C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.6 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

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

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

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

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

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

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

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.
2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit two set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit one paper-copy set(s) of marked-up record prints.
2) Submit PDF electronic files of scanned record prints and one of file prints.
3) Submit record digital data files and one two set(s) of plots.
4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit PDF electronic files of scanned record prints and three set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

c. Final Submittal:
   1) Submit record digital data files and three set(s) of record digital data file plots.
   2) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
   e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

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

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect.
    e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

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

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as paper copy.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

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

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

C. Format: Submit record Product Data as annotated PDF electronic file.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017839

SECTION 03 1000 - CONCRETE FORMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form release coatings.

E. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 2000 - Concrete Reinforcing.

B. Section 03 3000 - Cast-in-Place Concrete. Certain slab joint construction strips.

C. Section 32 1313 - Concrete Paving: Formwork for curbs and related work.

1.03 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2015.

B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute; 2020.

C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute; 2019.

D. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute; 2014.

E. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers; 2016.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on form release agent.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.

C. Comply with relevant portions of ACI 347, ACI 301, and ACI 318.

2.02 WOOD FORM MATERIALS

A. Form Materials: At the discretion of the Contractor.

2.03 FORMWORK ACCESSORIES

A. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
2. Do not use materials containing diesel oil or petroleum-based compounds.
3. VOC Content: None; water-based.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Coordinate this Section with other Sections of work that require attachment of components to formwork.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other Sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

1. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

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

B. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.

3.08 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

END OF SECTION

SECTION 03 2000 - CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - CONCRETE FORMING.

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

C. Section 32 1313 - Concrete Paving: Reinforcement for concrete pavements, curbs, etc.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2020.

B. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International; 2020.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.

D. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

E. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute; 2009.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

C. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel Bars: ASTM A615 Grade 60 (420).
   1. Deformed billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.
   1. Form: Flat Sheets.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel, galvanized, or plastic components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is not permitted.

C. Locate reinforcing splices not indicated on drawings at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Maintain concrete cover around reinforcing as follows:
   1. Walls (exposed to weather or backfill): 2 inch.
   2. Footings and Concrete Formed Against Earth: 3 inch.
   3. Slabs on Fill: 1-1/2 inch.

END OF SECTION

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete footings and foundations.

B. Floors and slabs on grade.

C. Joint devices associated with concrete work.

D. Miscellaneous concrete elements, including equipment pads, light pole bases, and thrust blocks.

E. Concrete curing.

F. Finishing of concrete exposed to view.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - CONCRETE FORMING: Forms and accessories for formwork.

B. Section 03 2000 - Concrete Reinforcing.

C. Section 03 3511 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.

D. Section 07 9200 - Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.

E. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 2009.

B. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2020.

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2015.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

E. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2020.

F. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2016.

G. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2016.

H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2022.

I. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

J. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2021.

K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2021.

L. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

M. ASTM C150/C150M - Standard Specification for Portland Cement; 2021.

N. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2023.

O. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2016.

P. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2022.

Q. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2021.

R. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017.

S. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020.

T. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2021.

U. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.

V. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2023.

W. ASTM E1643 - Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

W. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Mix Designs: Submit laboratory test reports for concrete materials and proposed concrete mix design tests at least 10 days before beginning concrete placement.

D. Samples: Submit samples of underslab vapor retarder proposed for use.

E. Project Record Documents: Accurately record actual locations of utilities and components that will be embedded in concrete.

F. Submit test Reports for tests required in Quality Assurance.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

D. Employ an Illinois Registered Professional Engineer engaged in soil testing to advise the Architect in writing that all footings will have bearing on soil having capacity required by construction documents.

PART 2 PRODUCTS

2.01 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I - Normal Portland type.
   1. Acquire all cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C 33.
   1. Acquire all aggregates for entire project from same source.
C. Fly Ash: ASTM C618, Class C or F.
D. Water: Clean and not detrimental to concrete.

2.03 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
B. Air Entrainment Admixture: ASTM C260/C260M.
C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
D. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.

2.04 ACCESSORY MATERIALS

A. Underslab Vapor Barrier shall have all the following qualities:
   1. Permeance of less than 0.01 Perms (grains/sq.ft/hr/in.Hg) per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
   2. Strength: ASTM E1745 Class A.
   3. Thickness: 15 mils minimum.
   4. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1
B. Acceptable Products:
   1. Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC., (877) 464-7834 www.stegoindustries.com.
   2. Vaporflex by Layfield. 619-273-5006 www.layfieldgroup.com
   3. Griffolyn 65 by Reef Industries, 713-507-4250. www.reefindustries.com.
   4. Moistop Ultra15 by Fortifiber Building Systems Group. 800-773-4777. www.fortifiber.com.
   5. Accessories to be used as recommended by manufacturer.
      a. Seam Tape: Permeance less than 0.3 perms per ASTM F 1249 or ASTM E 96, Stego Tape by Stego Industries LLC
      b. Vapor Proofing Mastic: Permeance less than 0.3 perms per ASTM F 1249 or ASTM E 96, Stego Mastic by Stego Industries LLC
      c. Pipe Boots: Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.
      e. Perimeter/edge seal: Stego Crete Claw, Stego Term Bar, or Stego Tack Tape by Stego Industries LLC.

2.05 BONDING AND JOINTING MATERIALS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
B. Epoxy Bonding System:
C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
   1. Material: ASTM D1751, cellulose fiber.
   2. Products:
      a. W.R. Meadows, Inc; Fiber Expansion Joint Filler with Snap-Cap: www.wrmeadows.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.
D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center; ribbed steel stakes for setting.
   1. Height: To suit slab thickness.

E. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/2 inch thick and 4 inches deep; tongue and groove profile.

2.06 CURING MATERIALS

A. Curing Compound: Type as approved by finish flooring applicators.

B. Moisture-Retaining Sheet: ASTM C171.
   1. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide.

C. Water: Potable, not detrimental to concrete.

2.07 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
   1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.

B. Concrete Strength: Establish required average strength for concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs. Mix design may not be changed without written approval of Architect.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
   2. Water-Cement Ratio: Maximum 50 percent by weight.
   3. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
   4. Maximum Slump: 4 inches without water reducing admixtures. 8 inches with water reducing admixtures.
   5. Maximum Aggregate Size: 3/4 inch maximum at foundation. 1 inch maximum at slabs.

2.08 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94.

2.09 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
   4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.
   1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
   2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

B. Verify that forms are clean and free of rust before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
2. Use latex bonding agent only for non-load-bearing applications.

E. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.

F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

G. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
2. Class C, 1/2 inch (13 mm) for rough-formed finished surfaces

3.03 INSTALLING VAPOR BARRIER

A. Interior Slabs on Grade: Install vapor barrier under interior slabs on grade. Install in accordance with ASTM E1643.

B. Prior to installing vapor retarder, verify fill materials are dry and clean, ready to receive work. Remove all loose and foreign matter and all protuberances. that would puncture or otherwise damage membrane. Coordinate work with progress of work of other trades affected. Level and compact base material.

C. Any perimeter insulation boards laid horizontally which are disturbed by vapor retarder installation shall be reset so that all butt joints in the boards are tight.

D. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.

E. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself. Seal vapor barrier to the entire slab perimeter using Stego Crete Claw, per manufacturer's instructions. OR seal vapor barrier to the entire perimeter wall or footing/grade beam with double sided StegoTack Tape, or both Stego Term Bar and StegoTack Tape, per manufacturer’s instructions. Ensure the concrete is clean and dry prior to adhering tape.

F Overlap joints 6 inches and seal with manufacturer's seam tape.

G. Apply seam tape/Crete Claw to a clean and dry vapor barrier.

H. Seal all penetrations (including pipes) per manufacturer's instructions.

I. For interior forming applications, avoid the use of non-permanent stakes driven through vapor barrier. Use blunt-end and/or threaded nail stakes (screed pad posts) and insert them into Beast Foot. Ensure Beast Foot's peel-and-stick adhesive base is fully adhered to the vapor barrier.

J. If non-permanent stakes are driven through vapor retarder, repair as recommended by vapor retarder manufacturer.

K. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.

L. Inspect vapor retarder for damage just prior to placement of concrete, and repair damages before covering. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings. Do not use sand.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Ensure reinforcement will not be disturbed during concrete placement.

D. Perimeter insulation boards laid horizontally which are disturbed by slab installation shall be reset so that all butt joints in the boards are tight.

E. Place concrete continuously without construction (cold) joints.

F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

4.01 SLAB JOINTING

A. Locate joints as indicated on the drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
   1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
   1. In addition to locations shown on drawings or approved by Architect/Engineer prior to construction, install construction joints in slabs on fill at intervals not exceeding 30 feet.
   2. Form control joints between construction joints at 15 ft. on center.

E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.
   1. Keyways: Continue reinforcement through joints except as indicated otherwise.

4.02 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
   1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
   2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15, on-grade only.
   3. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
   4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.

B. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.

C. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

4.03 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Concrete Slabs: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

D. In areas with floor drains, maintain floor elevation at walls and a distance of 2 feet from drains. Pitch surfaces uniformly to drains at 1/4 inch/foot nominal.

4.04 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
   1. Normal concrete: Not less than 7 days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:
   1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
   2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water-saturated sand, water-fog spray, or saturated burlap.
      a. Spraying: Spray water over floor slab areas and maintain wet.
      b. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
   3. Final Curing: Begin after initial curing but before surface is dry.

4.05 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 50 cu yd or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143.

4.06 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

4.07 PROTECTION

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

END OF SECTION

SECTION 03 3511 - CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface treatments for concrete floors and slabs.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

B. Section 03 3000 - Cast-in-Place Concrete: Curing compounds that also function as sealers.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with concrete floor placement and concrete floor curing.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

1.05 DELIVERY, STORAGE, AND HANDLING

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

1.06 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

B. Do not finish floors until interior heating system is operational.

C. Maintain ambient temperature of 50 degrees F minimum.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

A. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound (CSLR): ASTM C 1315, Type 1, Class A.
   1. Products:
      a. Euclid Chemical Company (The); Super Diamond Clear VOX.
      b. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
      c. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.

B. Penetrating Liquid Floor Treatment (PLFT): Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.
   1. Products:
      a. Dayton Superior Corporation; Day-Chem Sure Hard.
      b. Euclid Chemical Company (The); Euco Diamond Hard.
      c. Meadows, W. R., Inc.; Liqui-Hard.
      d. L&M Construction Chemicals, Inc.; Seal Hard.

2.02 COATINGS

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 06 1000 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Non-structural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Structural wall framing.

E. Built-up structural wood headers and beams.

F. Sheathing.

G. Preservative treated wood materials.

H. Fire retardant treated wood materials.

I. Miscellaneous framing.

J. Concealed wood blocking, nailers, and supports.

K. Prefabricated metal connectors incidental to wood framing.

1.02 RELATED REQUIREMENTS

A. Section 06 1753 - Shop-Fabricated Wood Trusses.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide technical data on wood preservative materials.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: 15% maximum.

C. Stud Framing:
   1. Species and Grade: As indicated on the structural drawings.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.

2. Boards: Standard or No. 3.

E. Miscellaneous Blocking, Furring, and Nailers:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.03 LAMINATED HEADERS

A. Laminated headers shall meet or exceed the requirements listed on the structural drawings.

B. Composition:
1. The term "Structural Glue Laminate Timber" refers to an engineered, stress rated product of a timber laminating plant, comprising of assemblies of specially selected and prepared wood laminations securely bonded together with adhesives.
2. The grain of all laminations is approximately parallel longitudinally.
3. Lumber used for laminating is structurally graded in accordance with the standard grading provision for the species and supplementary specifications, surfaced to laminating tolerances and dried according to the required moisture content at the time of gluing.
4. Adhesives of structural glue laminated timber must comply with the specifications contained in ANSI/AITC A190.1.

2.04 CONSTRUCTION PANELS

A. Roof Sheathing: 5/8” Exterior APA span rated plywood roof sheathing, or as indicated on structural drawings

2.05 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
3. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions. Provide connectors manufactured by Simpson Strong Tie.
1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653.

C. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions. Provide hangers manufactured by Simpson Strong Tie Co..

D. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

2.06 FACTORY WOOD TREATMENT

A. Treated Wood Products: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
1. Manufacturers:
a. Arch Wood Protection, Inc; www.wolmanizedwood.com.
b. Hoover Treated Wood Products, Inc; www.frtw.com.
c. Osmose, Inc; www.osmose.com.
d. Substitutions: See Section 01 6000 - Product Requirements.

2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
    a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

C. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
    1. Kiln dry lumber after treatment to maximum moisture content of 15 percent.
    2. Treat lumber in contact with concrete.

D. Preservative Pressure Treatment of Lumber Set in Concrete: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative to 0.4 lb/cu ft retention.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.

E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

F. Frame wall openings with two or more studs at each jamb; support headers on jack studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

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

B. In framed assemblies that have concealed spaces, provide solid wood fire blocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

E. Provide the following specific non-structural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Roof Sheathing: Secure panels to framing members, with ends staggered and sheet ends over firm bearing.
   1. Screw panels to framing; staples are not permitted.

B. Wall Sheathing: Secure with ends over firm bearing and staggered, using nails, or screw.
   1. Place air infiltration barrier over wall sheathing, weather lapping edges and ends.

C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.

3.06 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum.

3.08 CLEANING

A. Do not burn scrap on project site.

B. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

C. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

D. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 1613

INSULATING SHEATHING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Insulating sheathing attached to cold-formed metal framing members or wood framing members at exterior wall.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 06 10 00 - ROUGH CARPENTRY for plywood backing panels.
2. Section 07 27 00 - AIR BARRIERS for modified bituminous sheet membrane over gypsum sheathing and membrane flashing.
3. Section 07 62 00 - SHEET METAL FLASHING AND TRIM for flashing applied to gypsum sheathing.

1.3 REFERENCED STANDARDS

A. APA - The Engineered Wood Association:

1. APA Reports T2022P-06 and T2022P-13, and other qualification data.

B. ASTM International (ASTM):

1. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

C. Department of Commerce (DOC):

1. DOC PS 2-18 - Performance Standard for Wood Structural Panels.

D. International Building Code (IBC):

1. IBC Section 104.11 - Alternative Materials, 2021, 2018, 2015 and 2012.
2. IBC Section 2303.1.5 - Wood structural panels, 2021, 2018, and 2015.
3. IBC Section 2303.1.4 - Wood structural panels, 2012.

E. International Residential Code (IRC):

1. IRC Section R104.11 – Alternative Materials, 2021, 2018, 2015 and 2012.
2. IRC R503.2 – Wood structural panel sheathing.

1.4 SUBMITTALS

A. Product Data: For each product specified.

B. Evaluation Reports: For wood sheathing and seam tape, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each gypsum sheathing product through one source from a single manufacturer.

1.6 WARRANTY:

A. Limited Warranty: 20 years. Visit lpcorp.com/warranties for details.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles, each bearing brand name and identification of manufacturer.

1. Identification: The NovaCore Thermal Insulated Sheathing described in this report is identified by a label bearing the manufacturer's name (Louisiana-Pacific Corporation) and/or trademark, the report number PR-N139, and a means of identifying the date of manufacture.

B. Store panels indoors or protected from extended UV exposure of the insulation or water exposure of the sheathing prior to installation.

C. Keep panels off the ground, well-supported, on a flat surface.

D. Use a minimum of 3 stickers spaced evenly under each unit. Stickers shall be a minimum 2-1/2 inch wide (i.e., a flat 2x3).

1. Ensure stickers are aligned vertically when stacking units.
2. Do not stack higher than 3 units.

E. Space unit stacks a minimum of 6 inches on all sides.

F. Panels are packaged with a weather-resistant unit cover to provide protection on the jobsite prior to installation. Replace the cover over the unused portion of panels. Keep panels clean and dry. Inspect prior to application.

G. If the original cover cannot be used, use only opaque white covers to avoid damage to the insulation. Do not use non-white or non-opaque covers as these can build up excess heat or expose the insulation to UV.

H. Be careful not to drop insulation on corners or crush the edges of the insulation. Note: A panel with damaged insulation may still be used as a fill-in panel by cutting off the affected area and trimming to the needed size.

1.8 SEQUENCING AND SCHEDULING

A. Sequence installing sheathing with installing exterior cladding to comply with requirements indicated below:

1. Do not leave Insulated sheathing board exposed to weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Provide insulating sheathing manufactured by the following:

1. Louisiana-Pacific Corporation, 1610 West End Ave., Suite 200, Nashville, TN 37203. Phone: (888) 820-0325. URL: www.lpcorp.com

B. Substitutions: In accordance with provisions in Section 01 60 00.

1. It is the responsibility of manufacturers to confirm non-infringement on intellectual property.

2.2 THERMAL INSULATED SHEATHING

A. Basis of Design: Product: LP NovaCore™ Thermal Insulated Sheathing. An insulated sheathing made by combining 7/16 Category OSB with a layer of nominal 1 inch thick XPS rigid foam insulation laminated to the OSB with a non-structural polyvinyl acetate (PVA) adhesive. The OSB complies with DOC PS 2 in accordance with the in-plant manufacturing standard approved by APA.

1. Nominal Product Thickness: 1-7/16 inches.
2. Nominal OSB Sizes: **4x8-ft**, **4x9-ft**, **4x10-ft**., Square edges. Category: 7/16.
3. XPS Foam: Owens Corning® FOAMULAR® NGX™ XPS foam. Nominal Thickness: 1 inch.
    a. Water Absorption Owens Corning foam plastic sheathing doesn't absorb water.
    b. R-Value: 5
4. Cuts and installs like oriented strand board (OSB). A solid nailing substrate for a variety of facades and a layer of continuous insulation.
5. Installs with insulation facing the studs.
6. Zero Ozone Depletion Potential: Specifying and installing LP NovaCore sheathing helps builders achieve LEED®, ENERGY STAR®, and Green Building Standard ICC 700-2008 certifications.
7. In some climate zones can use 2x4 studs while still meeting strict energy codes.

2.3 PERFORMANCE AND DESIGN REQUIREMENTS

A. Can be used to meet energy code requirements anywhere a climate zone allows an R-Value of 13+5, or 20+5.

B. ASTM C578 Compliance Type 4, Compressive strength 25 PSI.

C. Dimensions are reduced 1/8 inch for proper spacing during installation.

D. Panel Orientation: Installed vertically or horizontally, provided panel edges are supported and fastened to wall framing or blocking.

E. May be installed on wall surfaces of a detached garage, pole barn, telecommunication shelter, concrete modular building, agricultural building, buildings under the IBC Utility and Miscellaneous Group U or other structures under the IBC or IRC, with no thermal or ignition barrier applied to the foam plastic sheathing, based on testing in accordance with NFPA 286, and Section 2603.9 of the IBC or Section R316.6 of the IRC, when all other requirements of the building code for that building are met.

F. Intermittent Wall Bracing (WSP Method): In accordance with both the 2021, 2018, 2015 and 2012 IRC and IBC.

1. IRC: Section R602.10
2. IBC: Section 2308.6
3. Not approved for use as prescriptive wall bracing where wind design is required by Section R301.2.1.1 of the IRC.
4. Segments of the wall with openings shall not be counted as the length of wall bracing for the WSP intermittent wall bracing method.
5. Framing: All panel edges must be backed by framing or blocking. When not used as bracing panels, horizontal edges may be left unblocked.

    a. Nominal Stud Size (Min.): 2 x 4 inches.
    b. Maximum Stud Spacing: 24 inches on center.
    c. Nailing Requirements: Nails must be full round head.

        1) Minimum Nail Size (Length x Shank Dia. x Head Dia.): 3 x 0.131 x 0.281 inches.
        2) Minimum Penetration into Framing: 1.5 inches.
        3) Maximum Nail Spacing (Edge / Field): 4 / 12 inches. Panel edge nails must be located approximately 3/8 inch from panel edges except at the corner of a brace wall line, in which the recommendation by the manufacturer is to be followed.

6. Engineered Shear Wall: Table 2 lists the LP NovaCore Thermal Insulated Sheathing in-plane nominal unit shear capacities for engineering design in accordance with Section 2305 of the IBC and ANSI/AWC Special Design Provisions for Wind and Seismic (SDPWS) for wood structural panel shear walls unless otherwise specified in this report. The seismic design coefficients and factors shall be in accordance with the ASCE-7 Bearing Wall Systems for light-frame wood walls sheathed with wood structural panels (Item 15) with the maximum shear wall aspect ratio of 2:1. Segments of the wall with openings shall not be counted as a shear wall.

    a. Nominal Unit Shear Capacities for Douglas Fir/Larch Wood-Framed Shear Walls Sheathed with LP NovaCore Insulated Sheathing:

        1) Sheathing Thickness: 1-7/16 inches
        2) Minimum Nail Penetration into Framing: 1.5 inches
        3) Nail Size (Length x Shank Dia. x Head Dia.): 3 x 0.131 x 0.281 inches
        4) Nail Spacing Edge / Field: **3 / 12**

5) Nominal Unit Shear Capacity (lbf/ft): **870**
6) Apparent Shear Stiffness, G_a (kips/in.): 5.90

b. Seismic Design:

1) Allowable stress design (ASD):

a) Allowable Shear Capacity: Determine by dividing the tabulated nominal shear capacity by the ASD reduction factor of 2.8.
b) LRFD Factored Shear Resistance: Determine by multiplying the nominal shear capacity by a resistance factor, ϕ_D, of 0.50.
c) No further increases are permitted.

c. Wind Design:

1) ASD Allowable Shear Capacity: Determine by dividing the tabulated nominal shear capacity by the ASD reduction factor of 2.0
2) LRFD Factored Shear Resistance: Determine by multiplying the nominal shear capacity by a resistance factor, ϕ_D, of 0.80. No further increases are permitted.

d. Values assume Douglas Fir-Larch lumber at 19 percent or less moisture content at time of fabrication.
e. For Species of Framing Lumber other than Douglas Fir-Larch: Reduce nominal unit shear capacity by multiplying the tabulated value by the Specific Gravity Adjustment Factor.

1) Specific Gravity Adjustment Factor: (1-(0.50-G)) ≤ 1.0.
2) G is the specific gravity of the framing lumber from NDS Table 12.3.3A.

f. Shear Wall Deflection: Determined in accordance with SDPWS using the G_a value provided in the Engineered Shear Wall paragraph of this specification.

G. Limitations of LP NovaCore™ Thermal Insulated Sheathing:

1. Limited to dry service conditions that result in the average equilibrium moisture content of sawn lumber of less than 16 percent.
2. Requires being covered with a water-resistive barrier on the exterior of the OSB sheathing in accordance with the code.
3. An approved thermal barrier, such as minimum 1/2 inch gypsum wallboard, is to be installed on the interior side of the wall framing, opposite the Thermal Insulated Sheathing, in accordance with Section R316.4 of the IRC or Section 2603.4 of the IBC.
4. Is not by itself fire resistant.
5. Not a Water Resistive Barrier: With the OSB facing outwards and exposed, an approved house wrap must be used.
6. Not Fire Retardant: A layer of minimum 1/2 inch gypsum wallboard must be installed on the interior face of the wall as a thermal barrier in accordance with the IBC and IRC to protect the foam insulation
7. Not a Roofing Panel: Can only be used as wall sheathing.

PART 3 - EXECUTION

3.1 PREPARATION

A. All mechanical strapping or connectors (e.g., to resist uplift) must be installed directly to the wall

framing before installing the LP NovaCore panels.

B. An approved thermal barrier, such as a minimum of 1/2 inch gypsum wallboard, must be installed on the interior side of the wall framing, opposite the LP NovaCore panels, in accordance with Section R316.4 of the IRC or Section 2603.4 of the IBC.

C. Use of an interior vapor retarder with LP NovaCore panels shall be in accordance with the continuous insulation provisions of Section 702.7 of the IRC or Section 1404.3 of the IBC.

3.2 INSTALLATION

A. General:

1. Install sheathing to comply with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of the IRC or the IBC, and authorities having jurisdiction.
2. Do not allow foam plastic sheathing to come in contact with flame or heat sources over 165 degrees F.
3. Panels must be covered by an approved water-resistive barrier.
4. The OSB substrate of panels is not preservative treated and must be installed in accordance with the code for untreated wood structural panel wall sheathing. The OSB must not be in direct contact with concrete or masonry foundations. In the absence of approved project specifications:

    a. When the OSB is located above the foundation (wall framing set back from face of foundation), provide a minimum 1/2 inch gap between the bottom edge of the panel and the foundation.
    b. When the OSB extends along the outside of the foundation, provide an air gap behind the OSB, or protect it from direct contact with the foundation with flashing or other impervious material.
    c. Always maintain code-required clearance above grade.

5. Termites: Panels are not treated for protection against termites. Follow all code requirements for protection of wood structural panels and foam plastic sheathing. Refer to Sections R316.7 and R318 in the IRC, and Sections 2304.12 and 2603.8 in the IBC.
6. Panels can be cut with standard woodworking tools. It can be easier to cut the panels from the OSB side.
7. Exercise safe practices always while handling and using this product. Refer to the Safety Data Sheet (SDS) for important information on the safe handling and use of this product. These can be found at LPCorp.com.

B. Walls:

1. Panels must be installed with the insulation direct to the studs, with the OSB to the outside.
2. Wall studs must be minimum 2x4 framing lumber, spaced no more than 24 inches on center.
3. The panels may be installed vertically or horizontally. In horizontal installations, stagger joints a minimum of one stud space.
4. All panel edges must be backed by framing or 2x blocking except that horizontal edges may be left unblocked when not used as a braced wall or shear wall panels.
5. Provide 1/8 inch minimum space between panel ends and edges. Use a spacer tool (e.g., a 10d box nail) to assure accurate and consistent spacing.
6. To nail panels to the framing and blocking:

    a. Nails must be a minimum of 3 inches long x 0.131 inch diameter, full round head, framing nails. Nails may be galvanized or stainless steel if specified or if required by

code.

b. For braced wall panels, panel edge nails must be spaced no farther than 4 inches on center. For shear walls, panel edge nails shall be 3 or 4 inches on center, as specified. Exception: When not used as bracing or shear wall panels, panel edge nailing may be 6 inches on center.
c. Panel field nails must be spaced no more than 12 inch on center along intermediate supports.
d. Place nails 3/8 inches from all panel edges. At outside corners the nails may be set back approximately 2 inches from the panel edge depending on the overlap. See installation instructions for more detail.
e. Nail heads must be flush to the OSB.
f. Do not overdrive the nails. Reduce pressure to the gun if needed to avoid overdriving or breaking the corners of the OSB. In case of a broken corner, add a nail 1 inch away from the break along both adjoining edges of the panel.

C. Outside Corners: Install 1st panel within an 1/8 inch of the edge of the corner end stud. Install the 2nd panel to overlap so that the edge of the 2nd panel is flush with the outer face of the OSB from the 1st panel. Alternatively, the insulation of the 2nd panel may be trimmed, and the 1st panel shifted to cover the insulation of the 2nd panel (leave an 1/8 inch gap). Nails will be approximately 2 inches from the corner depending on the detail.

D. Inside Corners: Install 1st panel into the flat stud of the connecting wall (leave an 1/8 inch gap). Install the 2nd panel from the other side to leave an 1/8 inch gap with the 1st panel.

E. Do not bridge building expansion joints with sheathing; cut and space edges to match spacing of structural support elements.

F. Coordinate insulating sheathing application with installation of materials so insulating sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

END OF SECTION

SECTION 06 2000 - FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Installation of door hardware.

B. Knox box.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 06 8201 - Glass Fiber Reinforced Panels.

C. Section 08 1416 - Wood Doors.

D. Section 08 7100 - Door Hardware: Furnishing of door hardware to site.

E. Section 09 9000 - Painting and Coating: Field painting and finishing of finish carpentry items.

F. Section 10 2800 - Toilet and Bath Accessories: Grab bars.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot.
   2. Provide the information required by AWI/AWMAC/WI (AWS).

1.04 QUALITY ASSURANCE

A. Perform work in accordance with Woodwork Institute Manual of Millwork, Custom grade.

B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

1.06 PROJECT CONDITIONS

A. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

B. Coordinate the work with installation of associated and adjacent components.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI (AWS) for Premium Grade.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Running Trim: Prefinished hardwood.

2.03 SHEET MATERIALS

A. Hardwood Plywood: Veneer core, type of glue recommended for application; Birch face species.

B. Particleboard: ANSI A208.1; composed of wood chips, sawdust, or flakes of 45 pound density, made with waterproof resin binders; of grade to suit application; sanded faces.

C. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

2.04 FASTENINGS

A. Fasteners: Of size and type to suit application; mill finish in concealed locations and polished finish in exposed locations.

B. Concealed Joint Fasteners: Threaded steel.

2.05 ACCESSORIES

A. Lumber for Shimming and Blocking: Softwood lumber of pine species.

B. Primer: Alkyd primer sealer.

C. Wood Filler: Solvent base, tinted to match surface finish color.

2.06 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.07 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. Except for handrails, finish the work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Section 1500, System OP-2, OP-5 or OP-7 (Opaque) Synthetic Enamel coating except as approved otherwise by Architect.

D. Seal internal surfaces and semi-concealed surfaces. Brush apply only.

E. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

C. See Section 06100 - Rough Carpentry for installation of recessed wood blocking.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

D. Install trim with nails at 8 inch on center.

E. Install hardware supplied by Section 08710 - Door Hardware in accordance with manufacturer's instructions.

3.03 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.04 MISCELLANEOUS INSTALLATIONS

A. Knox Box: Locate where directed by local fire department, recessed into wall.

3.06 SCHEDULE

A. Interior:

1. Knox Box: Provide one for fire department keys. Mount in location directed by local fire department - recess. Contractor to purchase directly from fire department or purchase model specified by local fire department.

END OF SECTION

SECTION 06 8201 - GLASS FIBER REINFORCED PLASTIC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass fiber reinforced panel system and moldings (FRP and GFR).

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified component products.

C. Samples: Submit two sets of color selection samples, minimum 1x3 inch in size, illustrating color, texture, and finish.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Protect components from damage by retaining shipping protection in place until installation.

1.04 FIELD CONDITIONS

A. Do not install site fabricated components when site conditions may be detrimental to successful installation.

B. Maintain temperature and humidity conditions favorable to proper curing of resin during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fiber and Resin Fabrications:
   1. Marlite; www.marlite.com; Product Standard FRP.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Plastic Panel System to include Factory Finished Panels, trim, moldings, sealant and all accessories.

B. Panels: Marlite Standard, smooth finish.
   1. Panel Length: To match ceiling height, unless noted otherwise on drawings.

C. Panel Trim: Extruded PVC in manufacturer's standard color to match panel color. Include all required trim not limited to outside corners, inside corners, edge trim, and division molding.

D. Sealant as recommend by panel system manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work and dimensions are as instructed by the fabricator.

3.02 INSTALLATION

A. Install panels vertically, unless noted otherwise in drawings.

B. Install panels in full beds of adhesive, providing flush, smooth surfaces. Enclose panel edges with plastic trim.

3.03 CLEANING

A. Clean components of foreign material without damaging finished surface.

B. Clean fabrications in accordance with fabricator's instructions.

END OF SECTION

SECTION 07 2100 - BOARD AND BATT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall, slab, and exterior wall assemblies.

B. Batt thermal insulation and vapor retarder in exterior wall construction.

C. Batt thermal insulation for filling perimeter window and door shim spaces.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-In-Place Concrete: Repositioning of perimeter insulation boards disturbed by placement of concrete slab on grade.

B. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.

C. Section 07 2126 - Blown Insulation: Blown-in, gravity-held fibrous insulation.

D. Section 07 2510 - Weather Barrier: Air barrier in outside wall assemblies.

E. Section 07 8400 - Firestopping: Insulation included in fire-rated through-penetration assemblies.

F. Section 09 2116 - Gypsum Board Assemblies: Acoustical insulation for interior partitions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.04 SEQUENCING

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

PART 2 PRODUCTS

2.01 FOAM BOARD INSULATION

A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. R-value; 1 inch of material at 72 degrees F: 5, minimum.
   4. Board Thickness: 1 and 2 inches (See drawings).
   5. Board Edges: Square.
   6. Compressive Resistance: 20 psi.
   7. Water Absorption, Maximum: 0.3 percent, by volume.
   8. R-value at 75 degrees F per 1" of thickness: 5.0 min.
   9. Manufacturers:
      a. Dow Chemical Co: www.dow.com.
      b. Owens Corning Corp: www.owenscorning.com.
      c. U.C. Industries.

B. Extruded Polystyrene Latex Modified Concrete Faced Board Insulation: Extruded polystyrene board; ASTM C578-92; Latex modified concrete faced, and the following characteristics:
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. R-value; 1 inch of material at 72 degrees F: 5, minimum.
   4. Board Thickness: 2 inches (See drawings).
   5. Board Edges: Tongue & Grooved Long Edges.
   6. Compressive Resistance: 40 psi.
   7. Water Absorption, Maximum: <0.1 percent, by volume.

8. R-value at 75 degrees F per 1" of thickness: 5.0 min.
9. Manufacturers:
   a. T Clear Corporation: WallGUARD

2.02 BATT INSULATION

A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.

2.03 ACCESSORIES

A. Stakes for Anchoring Perimeter Insulation: 16 gage steel wire lengths 10 inches long with 2 inches of one end bent 90 degrees.

B. Sheet Vapor Retarder: Clear polyethylene film for above grade application, 6 mil thick.

C. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
   1. Substitutions: See Section 01 6000 - Product Requirements.

D. Staples: Steel wire; electroplated or galvanized; type and size to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Install boards from top of footing to bottom of slab, using sufficient adhesive to hold boards in place while backfill is placed.
   1. Butt edges and ends tightly to adjacent boards.

B. Install boards horizontally on foundation perimeter after underslab fill has been compacted.
   1. Fix boards in place with 16-gauge wire "stakes" 10 inches long driven into the granular fill below the insulation. Provide at least 2 wire "stakes" for each 4 square feet of board.
   2. Butt edges and ends tightly to adjacent boards.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in 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. At wood framing, place vapor retarder on warm side of insulation with sufficient staples to hold the vapor barrier in place until covered with interior wall finish. Lap and seal sheet retarder joints over member face.

F. Tape seal tears or cuts in vapor retarder.

G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

H. Extend vapor retarder to ceiling joist height.

3.04 PROTECTION

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

END OF SECTION

SECTION 07 2126 - BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Attic: Loose insulation pneumatically placed and poured into joist spaces.

1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Board and Batt Insulation.

1.03 SYSTEM DESCRIPTION

A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements, in conjunction with Section 07 2100.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, limitations.

C. Manufacturer's Installation Instructions: Indicate procedure for preparation and installation.

D. Certificates: Certify that products of this section meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Blown Insulation:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Johns Manville Corporation: www.jm.com.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Loose Fill Insulation: ASTM C764, glass fiber type, nodulated for pour and bulk for pneumatic placement.
   1. Thermal Conductivity: 0.27 BTU in/(hr sq ft deg F).
   2. Installed Thickness: As required to create R-value indicated on drawings.

2.03 ACCESSORIES

A. Ventilation Baffle: Equal to 20 inch wide x 2 inch deep x 36 inch long Airflow Air Chute fabricated from minimum 20mil polystyrene.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.

C. Verify spaces are unobstructed to allow placement of insulation.

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. Do not impede natural attic ventilation to soffit.

D. Place against and behind mechanical and electrical services within the plane of insulation.

E. Completely fill intended spaces. Leave no gaps or voids.

F. Assure that no places are under-filled and that the minimum specified R-value is achieved throughout the areas of installation.

3.03 CLEANING

A. Remove loose insulation residue.

END OF SECTION

SECTION 07 2500 - WEATHER BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air barriers membrane stopping passage of air through exterior walls and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.

B. Section 06 1000 - Rough Carpentry: Sheathing.

1.03 DEFINITIONS

A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
   1. Water Vapor Permeance: For purposes of conversion, 57.2 ng/(Pa s sq m) = 1 perm.

D. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture-resistant, to the degree specified, intended to be installed to shed water without sealed seams.

1.04 REFERENCE STANDARDS

A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2014.

C. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

D. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; ICC Evaluation Service, Inc.; 2013.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on material characteristics and installation requirements.

C. Manufacturer's Installation Instructions: Indicate preparation.

1.06 FIELD CONDITIONS

A. Adhere to temperature and humidity limitations recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 AIR BARRIER MATERIALS

A. Air Barrier Sheet, Mechanically Fastened:
   1. Air Permeance: 0.004 cubic feet per square foot, maximum, when tested in accordance with ASTM E2178.
   2. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant method).
   3. Ultraviolet and Weathering Resistance: Approved in writing by manufacturer for minimum of 6 months weather exposure.
   4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 50 or less, when tested in accordance with ASTM E84.

5. Water Resistance: Comply with applicable water-resistive requirements of ICC-ES Acceptance Criteria AC38.
6. Products:
   a. DuPont Company; Tyvek HouseWrap: www.dupont.com.
   b. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

A. Flexible Flashing: Type recommended by air barrier manufacturer.

B. Fasteners: Cap nails, cap screws, or cap staples.

C. Sealing tape: Type recommended by air barrier manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.02 INSTALLATION

A. Install materials in accordance with manufacturer's instructions.

B. Air Barriers: Install continuous air tight barrier over exterior wall surfaces, with sealed seams and with sealed joints to adjacent surfaces.

C. Mechanically Fastened Sheets - On Exterior:
   1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
   2. Overlap seams as recommended by manufacturer but at least 6 inches.
   3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
   4. Attach to framed construction with fasteners extending through sheathing into framing. Space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
   5. Attach to masonry construction using mechanical fasteners spaced at 12 to 18 inches on center vertically and maximum 24 inches on center horizontally.
   6. Seal seams, laps, penetrations, tears, and cuts with self-adhesive tape.
   7. Where stud framing rests on concrete or masonry, extend lower edge of sheet at least 4 inches below bottom of framing and seal to foundation with sealant.
   8. Install water-resistive barrier over jamb flashings.
   9. Install air barrier UNDER jamb flashings.
   10. Install head flashings under weather barrier.

D. Openings and Penetrations in Exterior Weather Barriers:
   1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
   2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with at least 4 inches wide; do not seal sill flange.
   3. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
   4. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.03 FIELD QUALITY CONTROL

A. Do not cover installed weather barriers until required inspections have been completed.

END OF SECTION

SECTION 07 3113 - ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt shingle roofing for outside the building.

B. Flexible sheet membranes for eave protection, underlayment, and valley protection.

C. Flexible sheet membranes for eave protection, underlayment, and valley protection.

D. Box vents on shingled roofs.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Roof sheathing.

B. Section 07 6205 - Metal Roof Flashings and Vents.

C. Section 07 7123 - GUTTERS AND DOWNSPOUTS.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating material characteristics and performance criteria.

C. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern; for color selection.

D. Manufacturer's Standard 30-year warranty.

1.04 FIELD CONDITIONS

A. Do not install shingles or eave protection membrane when surface or ambient air temperatures are below 45 degrees F.

PART 2 PRODUCTS

2.01 SHINGLES

A. Manufacturers: Furnish shingles equal to the following:
   1. Owens Corning; Product Oakridge.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3642M; Class A fire resistance.
   1. Color: TBD.

2.02 SHEET MATERIALS

A. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D 1970; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226, Type I ("No.15").

C. Flexible Flashing: 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.

2.03 ACCESSORIES

A. Nails: Standard round wire shingle type, of hot-dipped zinc coated steel, 10 wire gage, 0.1019 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.

B. Plastic Cement: ASTM D4586/D4568M, asphalt roof cement.

C. Attic box vents: Lomanco Model # 770D and 770, as indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

B. Verify that 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. Seal roof deck joints wider than 1/16 inch with deck tape.

B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.

C. Broom clean deck surfaces before installing underlayment or eave protection.

D. 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 - EAVE PROTECTION MEMBRANE

A. Install eave protection membrane from eave edge to minimum 4 ft up-slope beyond interior face of exterior wall.

B. Install eave protection membrane in accordance with manufacturer's instructions.

3.04 INSTALLATION - UNDERLAYMENT

A. 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. Weather lap minimum 4 inches over eave protection.
   1. Where asphalt shingles are installed inside the building, underlayment is not required except as will assist in alignment of shingles.

B. Items projecting through or mounted on roof: Weather lap and seal watertight with plastic cement.

3.05 INSTALLATION - VALLEY PROTECTION

A. Install one ply of flexible flashing, minimum 24 inches wide, centered over valleys.

B. Install flexible flashing in accordance with manufacturer's instructions.

C. Weather lap joints minimum 2 inches.

D. Nail in place minimum 18 inches on center, 1 inch from edges.

3.06 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Edge Drip: Weather lap the joints minimum 2 inches and seal weather tight with plastic cement.
   1. Secure in place with nails at 8 inches on center. Conceal fastenings.

B. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.07 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions.
   1. Fasten individual shingles using 2 nails per shingle, or as required by code, whichever is greater.
   2. Fasten strip shingles using 4 nails per strip, or as required by code, whichever is greater.

B. Place shingles in straight coursing pattern with 5-1/3 inch weather exposure to produce double thickness over full roof area. Provide double course of shingles at eaves.

C. Do not cut shingles laid on roof.

D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.

E. Valleys shall be "closed-cut," formed by laying shingles from one side across valley and fastening 6 inches from center of valley. Shingles from other side shall be cut to create an edge 2 inches from the center of the valley, with no weather edge less than 12 inches wide, and fastened 6 inches from center of valley.
   1. Embed each cut edge in full bed of plastic cement shielded from view.

F. Cap hips with individual shingles, maintaining 5-inch weather exposure. Place to avoid exposed nails.
   1. After installation, place one daub of plastic cement, one-inch diameter under each individual shingle tab exposed to weather, to prevent lifting.

G. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counter-flashings.

H. Complete installation to provide weather tight service.

3.08 PROTECTION

A. Do not permit traffic over finished roof surface.

END OF SECTION

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings and roof edge drip.

B. Sheet metal wrap protection for roof fascia's.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Fascia boards.

B. Section 07 3113 - Asphalt Shingles: Underlayment to be coordinated with metal flashings.

C. Section 07 7123 - Gutters and Downspouts.

1.03 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels; 2013.

B. ASTM B101 - Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction; 2012.

C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2010.

D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2010.

E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012)e1.

F. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, terminations, and installation details.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA CA4050 requirements and standard details, except as otherwise indicated.

B. Fabricator Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Aluminum: ASTM B209; 0.016 inch thick; mill finish.

B. Pre-Finished Aluminum: ASTM B209; 0.016 inch thick; plain finish shop pre-coated with modified silicone coating.

1. Modified Silicone Polyester Coating: Pigmented Organic Coating System, AAMA 2603; baked enamel finish system.
2. Color: As selected by Architect from manufacturer's standard colors.

C. Terne Coated Steel: 0.015 inch thick copper bearing carbon steel core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

2.02 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

C. Plastic Cement: ASTM D4586, Type I.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in lengths 6 feet long to minimize thermal distortion.

C. Fabricate edge drip flashings to allow toe to extend 2 inches over roofing deck. Return and brake edges.

D. Fabricate fascia wrap to completely cover wood substrate.

E. Fabricate metal flashings for all vent pipes penetrating roof deck, complete with integral mounting flange at least 4 inches wide. Provide rainproof seal

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, pipes, sleeves, and vents through roof are solidly set, reglets in place, and nailing strips located.

3.02 INSTALLATION

A. Apply plastic cement compound between metal flashings and felt flashings.

B. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

C. Seal metal joints watertight.

END OF SECTION

SECTION 07 7123 - GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished aluminum gutters and downspouts.

1.02 RELATED REQUIREMENTS

A. Section 07 6205 - Metal Roof Flashings: Drip edge flashings.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

C. Product Data: Provide data on splash blocks and on prefabricated components including manufacturer's standard color selections.

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; 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: As selected from manufacturer's standard colors.

2.02 COMPONENTS

A. Gutters: Profile as indicated.

B. Downspouts: Corrugated Rectangular profile.

C. Anchors and Supports: Galvanized steel or aluminum, profiled to suit gutters and downspouts.
   1. Anchoring Devices: In accordance with SMACNA requirements.
   2. Gutter Supports: Screwed-in-place anchors. Spikes and ferrules not allowed.
   3. Downspout Supports: Brackets.

D. Fasteners: Galvanized steel.

2.03 ACCESSORIES

A. Downspout Boots: Neoprene or EPDM; Color to match downspouts.

B. Expansion Joint Seal: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

C. Joint Sealant: Gutter sealant approved for prolonged submersion by gutter manufacturer.

2.04 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.
   1. If not indicated otherwise, use "K" style ogee profile.

B. Fabricate gutters on-site from continuous coil to provide single lengths for each run of gutter.

C. For runs over 50 feet, provide a hidden expansion joint located as approved by Architect.
   1. Cover inside of expansion joint with modified asphalt membrane adhered to at least 3 inches of clean aluminum each side of joint but not adhered within 1 inch of center of joint.
   2. Fill all voids with compatible sealant suited for immersion.

D. Fabricate with required connection pieces having profiles exactly matching running lengths.

E. Form sections square, true, and accurate in size, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

F. Fabricate gutter and downspout accessories; seal watertight.

2.05 FACTORY FINISHING

A. Modified silicone polyester coating: Baked enamel system conforming to AAMA 2603.
   1. Color: Selected by Architect from full range of manufacturer's options.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that surfaces are ready to receive work.

3.02 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.

C. Locate gutter elevation such that plane of roof slope will extend at least 3/4 inch above outer edge of gutter.

D. Slope gutters 1/8 inch per foot.

E. Install gutters with hangers spaced so as to support gutters filled with ice, using hanger manufacturer's lag screws sized to penetrate wood roof framing at least 1-1/4 inches.

F. Connect downspouts to storm sewer system as indicated on Civil Drawings. Seal connection watertight.

G. Secure gutters and downspouts in place using secure fasteners.

END OF SECTION

SECTION 07 8400 - FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not.

1.02 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealants: Sealants not part of fire resistant assemblies.

B. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
   1. Submit VOC content documentation for all non-preformed materials.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the specified fire ratings when tested in accordance with methods indicated.
   1. Listing in the current-year classification or certification books of UL or FM will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Approved by Factory Mutual Research under FM Standard 4991, Approval of Firestop Contractors, or meeting any two of the following requirements: Able to show at least 5 satisfactorily completed projects of comparable size and type, or licensed by authority having jurisdiction.

1.05 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING - GENERAL REQUIREMENTS

A. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.02 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.

1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E 814 that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and that meets all other specified requirements.

2.03 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
   1. Durability and Longevity: Permanent.
   2. Color: Black, dark gray, or red.
   3. Manufacturers:
      a. A/DFire Protection Systems Inc: www.adfire.com.
      b. 3M Fire Protection Products: www.3m.com/firestop.
      c. Hilti, Inc: www.us.hilti.com.

C. Foam Firestoppping: Single component silicone foam compound; conforming to the following:
   1. Durability and Longevity: Permanent.
   2. Manufacturers:
      a. 3M Fire Protection Products: www.3m.com/firestop.
      b. Hilti, Inc: www.us.hilti.com.
      c. Specified Technologies, Inc: www.stifirestop.com.

D. Fibered Compound Firestopping: Formulated compound mixed with incombustible non-asbestos fibers; conforming to the following:
   1. Durability and Longevity: Permanent.
   2. Manufacturers:
      a. A/DFire Protection Systems Inc: www.adfire.com.
      b. USG: www.usg.com.

E. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening; conforming to the following:
   1. Durability and Longevity: Permanent.
   2. Manufacturers:
      a. A/DFire Protection Systems Inc: www.adfire.com.
      b. Pecora Corporation: www.pecora.com.
      c. Thermafiber, Inc: www.thermafiber.com.

F. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and collar, intended to be installed after penetrating item has been installed; conforming to the following:
   1. Durability and Longevity: Permanent.
   2. Manufacturers:
      a. Grace Construction Products: www.na.graceconstruction.com.
      b. 3M Fire Protection Products: www.3m.com/firestop.
      c. Hilti, Inc: www.us.hilti.com.

G. Intumescent Putty: Compound that expands on exposure to surface heat gain; conforming to the following:
   1. Potential Expansion: Minimum 1000 percent.
   2. Durability and Longevity: Permanent.
   3. Manufacturers:
      a. Grace Construction Products: www.na.graceconstruction.com.
      b. 3M Fire Protection Products: www.3m.com/firestop.
      c. Hilti, Inc: www.us.hilti.com.

END OF SECTION

SECTION 07 9005 - JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

B. Hollow gasket seals.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping: Firestopping sealants.

B. Section 08 8000 - Glazing: Glazing sealants and accessories.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Manufacturer's Installation Instructions: Indicate special procedures and surface preparation.

1.04 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.05 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silicone Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   4. Tremco, Inc: www.tremcosealants.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Polyurethane Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   4. Tremco, Inc: www.tremcosealants.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

C. Butyl Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. Tremco, Inc: www.tremcosealants.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

D. Acrylic Emulsion Latex Sealants:
   1. Bostik Inc: www.bostik-us.com.
   2. Pecora Corporation: www.pecora.com.
   3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.

4. Tremco, Inc: www.tremcosealants.com.
5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SEALANTS

A. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
   1. Color: Standard colors matching finished surfaces.
   2. Product:
      a. Dymonic manufactured by Tremco.
      b. Dynatrol manufactured by Pecora.
      c. Sonolastic NP manufactured by BASF.
   3. Applications: Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.

B. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
   1. Product: Except as specified otherwise, JS-773 manufactured by Tremco.
   2. Applications: Use for:
      a. Concealed sealant bead in sheet metal work.

C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
   1. Color: Standard colors matching finished surfaces.
   2. Product: Except as specified otherwise:
      a. Tremflex 834 manufactured by Tremco.
      b. AC-220 manufactured by Pecora.
      c. Sonolastic NP manufactured by Sonneborne.
   3. Applications: Use for:
      a. Interior wall and ceiling control joints.
      b. Joints between door and window frames and wall surfaces.
      c. Other interior joints for which no other type of sealant is indicated.

D. Bathtub/Tile Sealant: Clear silicone; ASTM C920, Uses M and A; single component, mildew resistant.
   1. Product: Except as specified otherwise, Tremsil 200 manufactured by Tremco.
   2. Applications: Use for:
      a. Joints between plumbing fixtures and floor and wall surfaces.
      b. Joints between kitchen and bath countertops and wall surfaces.

E. Acoustical Sealant for Concealed Locations:
   1. Applications: Use for concealed locations only:
      a. Sealant bead between top stud runner and structure and between bottom stud track and floor.

F. Interior Floor Slab Joint Sealant: Polyurethane, self-leveling; ASTM C920, Grade P, Class 25, Uses T, M and A; single component.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   1. Width/depth ratio of 2:1.
   2. Neck dimension no greater than 1/3 of the joint width.
   3. Surface bond area on each side not less than 75 percent of joint width.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave, creating a smooth surface. Where sealant is placed along a joint without cut edges, as between two perpendicular surfaces, tool the joint to have workmanlike straight edges.

I. Compression Gaskets: Avoid joints except at ends, corners, and intersections; seal all joints with adhesive; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect sealants until cured.

END OF SECTION

SECTION 08 1416 - WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood doors non-fire-rated.

1.02 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Door frame trim; installation of door hardware not furnished with doors.

B. Section 08 7100 - Door Hardware: Furnishing of door hardware not furnished with doors.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Indicate door core materials, door construction; veneer species, type and characteristics.

C. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria.

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. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.05 PROJECT CONDITIONS

A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Door Panels and Pre-Hung Doors:
   1. Masonite Corp. www.masonite.com; Product Flush Series Embossed Prefinished Hardboard.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Quality Level: Custom Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS).

2.02 CORES

A. Non-Rated Solid Core and 20-Minute Fire Rated Doors: Type particleboard core (PC).

2.03 DOOR FACINGS

A. Hardboard Facing for Opaque Finish: ANSI A135.4, Class 1 - Tempered, S2S (smooth two sides) hardboard, 1/8 inch thick.

B. Facing Adhesive: Type I - waterproof.

2.04 ACCESSORIES

A. Wood Frames: Solid wood.
   1. Stops: Solid wood at jambs and head, rabbeted to frame or continuously glued.

2. Hardware Preparation: Factory machined for standard hinges and latch set.

B. Hinges: Butt hinges and latch set specified in Section 08 7100 - Door Hardware.

2.05 DOOR CONSTRUCTION

A. Cores Constructed with stiles and rails:
1. Provide solid blocks at lock edge and top of door for closer for hardware reinforcement.
2. Provide solid blocking for other throughbolted hardware.

B. Fit door edge trim to edge of stiles after applying veneer facing.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory bevel doors.

E. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING

A. Finish System: Approved door manufacturer's standard.

B. Factory finish flush doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.

B. Install fire-rated doors in accordance with NFPA 80 requirements.

C. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

D. Adjust width of non-rated doors by cutting equally on both jamb edges.
1. Trim maximum of 3/4 inch off bottom edges.

E. Use machine tools to cut or drill for hardware.

F. Coordinate installation of doors with installation of frames and hardware.

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.

END OF SECTION

SECTION 08 3100
ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Roof framing and opening support.

1.2 SUBMITTALS

A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

B. Shop Drawings: Indicate exact position of all access door units.

C. Submit under provisions of Section 01300.

D. Manufacturer's data sheets, including:
1. Brochures.
2. Installation Instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Store attic access door hatch in manufacturer's unopened packaging until ready for installation.

B. Store attic access door hatch until installation inside under cover in dry area out of direct sunlight.

1.4 WARRANTY

A. Limited Warranty: One year against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer:

Battic Door Energy Conservation Products.
Box 15, Mansfield, MA 02048-0015 U.S.A.
Phone: (508) 320-9082; Fax: (508) 339-4571
e: info@batticdoor,com; i: www.batticdoor.com

2.2 FABRICATION

A. Manufacture each access panel assembly as an integral unit ready for installation.

2.3 OVERVIEW OF PRODUCT

A. Model 22 x 30 Attic Access Door System is an R-50 insulated and triple-gasketed door that installs in minutes and provides an air sealed, insulated access opening to residential attic space. Door is provided with wood trim attached to the wood frame. The door face and trim are pre-finished satin white and the unit is shipped ready to install. Exceeds 2009, 2012, 2015, 2018, and 2023 IBC and IECC requirements.

2.4 MATERIALS

A. Wood frame and door. Unit installs into a 22-1/2” x 30-1/2” framed opening. Fits within the standard space between trusses spaced 24' o.c. or joists 16" o.c. to simplify installation. Pre-painted satin white door face and trim. R-50 insulated door core is 10" thick Extruded Polystyrene (EPS). Door face is mineral board facer and is painted satin white. Wood trim is attached to door frame and is painted satin white. Triple rubber gaskets provided for airtight seal. Solid wood frame and trim.

2.5 ACCESS DOOR AND FRAME FOR ATTIC ACCESS IN RESIDENTIAL APPLICATIONS

A. Non-rated attic access doors and frames.

1. Door: White mineral board face, extruded polystyrene (EPS) R-50 core, and fire rated rubber sealing gasket over top of EPS core. Door is pre-finished and painted satin white to match trim.

2. Frame: Plywood frame is installed into a wood framed 22-1/2” x 30-1/2” rough opening. Frame is 12” tall and provides insulation dam. Wood trim is pre-secured to frame. Rubber gasket is installed on trim on each side of frame.

3. Trim: Tapered wood trim 2" wide is pre-secured to frame and painted satin white to match door.

4. Finish: Pre-finished satin white painted wood door and trim.

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PART 3 EXECUTION

3.1 EXAMINATION

A. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.3 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 08 36 16

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Commercial sectional doors.
   1. Thermal sandwich doors.

B. Electric operators.

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry. Door opening jamb and head members

B. Section 13 34 00 – Engineered Post Framed Structures.

1.3 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI/DASMA 102 - Specifications for Sectional Overhead-Type Doors
   2. ANSI/DASMA 105 - American National Standard Institute Test Method for Thermal Transmittance and Air Infiltration of Garage Doors
   3. ANSI/DASMA 108 - American National Standards Institute Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference.
   4. ANSI/DASMA 115 - Standard Method for Testing Sectional Doors, Rolling Doors, and Flexible Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure

B. ASTM International (ASTM):
   1. ASTM A123 - Standard Specification for Zinc (hot-dipped galvanized) coatings on iron and steel products.
   2. ASTM A229 - Steel wire, oil-tempered for mechanical springs.
   3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   4. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   5. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
   6. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
   7. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.
   8. 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.
   9. ASTM E330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
   10. ASTM E413 - Classification for Rating Sound Insulation

C. Food and Drug Administration (FDA):
   1. FDA 21 CFR 177.1520 - Olefin polymers

D. Underwriters Laboratories (UL):
   1. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Performance Standards: Provide test data validating the following:
   1. Door Section: Gloss retention, fade resistance, FDA compliance, cold crack performance, load to rebound, dent resistance impact.
   2. Drive Train: Spring cycle life, track, hinges, rollers, cable assembly, cable strength.
   3. Door Assembly: Thermal performance, deflection, wind load.

D. Shop Drawings:
   1. Provide drawings indicating track details, head and jamb conditions, spring shafts, anchorage, accessories, finish colors, patterns and textures, operator mounts and other related information.
   2. Regulatory Requirements and Approvals: Provide shop drawings in compliance with local Authority having Jurisdiction (AHJ).

E. Certifications:
   1. Submit manufacturer's certificate that products meet or exceed specified requirements.
   2. Submit installer qualifications.

F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an authorized installer of door manufacturer who has demonstrated experience on projects of similar size and complexity.

B. Manufacturer Qualifications: Company with a minimum of five-year experience in producing the specified type of doors.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

A. Provide manufacturer's standard warranty against defects in material and workmanship, as further described with each model in Part 2 of this Section.

B. Raynor warrants the electrical operator and component parts for two (2) years against defects in material and workmanship when purchased as operator only.

C. Raynor warrants the electrical operator and component parts against defects in material and workmanship for three (3) years, on the operator only, when purchased with any model of Raynor commercial sectional door.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Raynor, which is located at: 1101 East River Rd. P. O. Box 448; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Email: request info (architectsupport@raynor.com); Web: http://www.raynor.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 SECTIONAL THERMAL SEALING DOORS

A. ThermaSeal Doors as manufactured by Raynor Garage Doors:
   1. Operation: Electric motor.
   2. Jamb Construction: Steel jambs with self-tapping fasteners.
   3. Structural Performance Requirements:
      a. Wind Loads: 10.0 psf design load /15.0 psf test load standard.
      b. International Energy Conservation Code (IECC) Requirements:
         1) Air Infiltration: Maximum air leakage of 0.4 cfm per sq ft is required. Testing to be in accordance with DASMA 105 test procedure.
         2) Raynor ThermaSeal TM175 provides an air leakage rating of 0.22 cfm per sq ft with optional IECC Compliance Package.
         3) Raynor ThermaSeal TM175 provides an installed U-factor of 0.21.
   4. Sections: ThermaSeal TM175:
      a. Pressure bonded to injected polyurethane foam insulated core. Hinge reinforcement strips shall be 20 gauge galvanized steel, located within section interior. End stiles to be 16 gauge galvanized steel.
      b. Material: Steel sandwich construction, 1-3/4 inches (44 mm) thick, roll formed from commercial quality, hot-dipped galvanized (G40 exterior) steel complying with ASTM A 653. Exterior skin shall be constructed of 25 gauge steel and interior skin shall be 26 gauge steel with embossed stucco texture.
      c. Finish: Exterior skin to have two coats of paint, one primer coat and one finish coat.
         1) ColorWave Enamel paint finish, color as selected by Architect from Raynor's ColorWave post paint process featuring 1500 colors of Sherwin Williams Polane Enamel paint.
         2) Insulation: Expanded polyurethane with R-value of 16.4.
   5. Seals: Interior and exterior skins to be separated by a molded thermal break and weather seal along section joint. Bottom of door to have flexible U-shaped vinyl seal retained in aluminum rail. Optional dual-durometer vinyl blade seal on top section to prevent airflow above header/
   6. Trussing: Doors designed to withstand specified windload. Deflection of door

in horizontal position to be maximum of 1/120th of door width.

7. Windows: Locations to comply with door elevation drawings.
   a. Window in Rectangular Two-Piece Black Frame:
      1) Size: 24 x 12 inches (610 x 305 mm).
         a) Insulated, two panes of 1/8 inch (3.2 mm) thick tempered glass.
8. Track: Hot-dipped galvanized steel per ASTM A 653, fully adjustable for adequate sealing of door to jamb or weatherseal.
   a. Configuration Type: Normal Headroom.
   b. Track Size: 2 inches (51 mm).
      1) Jamb Type: Wood only.
         a) Mounting: Adjustable track brackets.
   c. Finish: Galvanized.
9. Counterbalance System: Aircraft-type, galvanized steel lifting cables with minimum safety factor of 5. Torsion Springs consisting of heavy-duty oil-tempered wire torsion springs on a continuous ball-bearing cross-header shaft.
   a. Spring Cycle Requirements: Standard 10,000 cycles.
10. Hardware:
    a. Hinges and Brackets: Fabricated from galvanized steel.
    b. Track Rollers: 2 inches (51 mm) diameter consistent with track size, with hardened steel ball bearings.
    c. Perimeter Seal: Complete weather stripping system to reduce air infiltration. Weather stripping shall be replaceable.
       1) For bracket mounted doors provide climate seal or vinyl seal with aluminum retainer.
       2) For angle mounted doors provide angle clip-on seal.
11. ThermaSeal Limited Warranty: Raynor warrants the door sections against defects in material and workmanship, and deterioration due to rust-through for ten years from date of delivery to the original purchaser. Raynor also warrants the door sections against delamination of the insulation from the steel skins for ten years from date of delivery to the original purchaser. Window components are warranted against defects in material and workmanship for one year from date of delivery to the original purchaser. Raynor warrants all hardware and spring components against defects in material and workmanship for one year (or cycle life of the springs) from date of delivery to the original purchaser. Additional Limited Warranty requirements in accordance with manufacturer's full standard limited warranty documentation.

2.3 ELECTRIC OPERATORS

A. ControlHoist as manufactured by Raynor Garage Doors:
   1. Model: Raynor ControlHoist Optima:
      a. Type: Trolley.
      b. Motor Horsepower Rating: Continuous 1-1/2 HP.
      c. Electrical Requirements: 115 volt single phase.
      d. Duty Cycle: 30 cycles per hour or 300 cycles per day.
      e. Control Wiring: Solid state circuitry with provisions for connection of safety edge to reverse, external radio control hook-up and maximum run timer. Provisions for timers to close, monitored reversing devices, mid stop, and lock bar sensor capability.
         1) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).
         2) Custom wiring.
      f. Entrapment Protection:
         1) Wired Monitored electric reversing edge extending full width of

door.

2) Wireless Monitored electric reversing edge extending full width of door.
3) NEMA 1 Monitored photo electric eyes mounted on jambs.
4) NEMA 4X Monitored photo electric eyes mounted on jambs.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared. Verify that site conditions are acceptable for installation of doors, operators, controls, and accessories. Ensure that openings are square, flush, and plumb.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 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.

3.3 INSTALLATION

A. General: Install door, track and operating equipment complete with all necessary accessories and hardware according to shop drawings, manufacturer's instructions.

B. Lubricate bearings and sliding parts, and adjust doors for proper operation, balance, clearance, and similar requirements.

3.4 PROTECTION

A. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and legally dispose of construction debris from project site.

B. Remove temporary coverings and protection of adjacent work areas. Repair or replace installed products damaged prior to or during installation.

C. Lubricate bearings and sliding parts, assure weather tight fit around door perimeter and adjust doors for proper operation, balance, clearance, and similar requirements. Protect installed products until completion of project.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 08 7100 - DOOR HARDWARE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Door hardware, including electric hardware.

B. Power supplies for electric hardware.

C. Cylinders for doors fabricated with locking hardware.

D. Wiring and riser diagrams for electric hardware.

E. Key Cabinets.

1.2 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Finish Hardware Installation

B. Section 08 1113 - Hollow Metal Doors and Frames: In-factory preparation for hardware.

C. Section 08 1416 - Wood Doors: In-factory preparation for hardware; pre-hung doors.

D. Section 08 4229 - Automatic Entrance: Sliding entrance door.

E. Section 08 5313 - Vinyl Windows: Locks for windows.

F. Division 26 - Electrical: Wiring and power to electrically operated hardware.

G. Section 32 3119 - Ornamental Steel Fence: Hinges and hold opens for fence gate.

1.3 SUBMITTALS & SUBSTITUTIONS

A. Submit six copies of schedule per Division 1. Organize vertically formatted schedule into “Hardware Sets” following guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule with index of doors and headings, indicating complete designations of every item required for each door or opening. Horizontal schedule format will be returned “Not Approved”. Include following information:

1. Type, style, function, size, quantity and finish of hardware items. Use BHMA Finish codes per ANSI A156.18.
2. Name, part number and manufacturer of each item.
3. Fastenings and other pertinent information.
4. Location of hardware set coordinated with floor plans and door schedule.
5. Explanation of abbreviations, symbols, and codes contained in schedule.
6. Mounting locations for hardware.
7. Door and frame sizes, materials and degrees of swing.
8. List of manufacturers used and their nearest representative with address and phone number.
9. Catalog cuts.
10. Manufacturer’s technical data and installation instructions for electronic hardware.
11. Date of jobsite visit.

B. Bid and submit manufacturer’s updated/improved item if scheduled item is discontinued.

C. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.

1. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.

2. For products specified by naming several Products or Manufacturers select any one of the products or manufacturers named, which complies with the specifications. No substitute product will be considered.

D. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Hardware supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years. Who is or who employs an experienced Architectural Hardware Consultant (AHC) who is available, at reasonable times during the course of the Work, for consultation about project's hardware requirements to Owner, Architect and Contractor.

2. Electrified hardware supplier: An experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design and extent to that indicated for this project, who has a record of successful in-service performance and is acceptable to manufacturer of materials. Shall prepare data for electrified door hardware based on testing and engineering analysis of manufacturer's assemblies similar to those in this project.

3. Responsible for detailing, scheduling and ordering of finish hardware.

B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Fire-Rated Openings: In compliance with NFPA 80. Provide proper latching hardware, non-flaming door closers and approved-bearing hinges. Furnish openings complete.

E. Pre-Installation Meetings: Prior to start of hardware installation, contractor shall schedule and conduct pre-installation meeting with hardware supplier, lock, exit device, and door closer manufacturers' representative(s), installer and related trades, to coordinate materials and techniques, and sequence complex hardware items and systems installation. Proper and correct installation and adjustment of hardware is to be reviewed, and criteria for punch list review will be established. Convene at least one week prior to commencement of related work. Written documentation of date and attendees/participants is to be provided to architect and owner for record.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery: coordinate delivery to appropriate locations (shop or field).

1. Key cabinet, permanent keys and cores: secured delivery direct to Owner's representative.

B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate

contents, locations in hardware schedule and door numbers. Shipments direct from manufacturer to Site are not acceptable.

C. Storage: Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc…

1.6 PROJECT CONDITIONS

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.

B. Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including size, strike plate size, quantities, and sill conditions material. This means a job site visit. If conflict between the scheduled material and existing conditions, submit request for directions from Architect.

1.7 SEQUENCING AND COORDINATION:

A. Reinforce walls for wall stops.

B. Coordinate finish floor materials and floor-mounted hardware.

C. Conduit and raceways as needed for electrical and electronic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.

D. Furnish manufacturer templates to door and frame fabricators.

E. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

1.8 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' warranties:

1.	Bored Locksets:	Seven years.
2.	Closers:	Ten years mechanical, two years electrical.
3.	Exit Devices:	Three years.
4.	Butt Hinges:	One year
5.	Geared Hinges:	Limited Lifetime
6.	Other Hardware:	One year.

1.9 COMMISSIONING:

A. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.

B. Test electrical hardware systems for satisfactory operation.

C. Test hardware interfaced with fire/life-safety system for proper operation and release.

1.10 MAINTENANCE:

A Extra Materials: See schedule under “Attic Stock”. Include as part of the base bid.

B. Furnish operating and maintenance data of manufacturers for door hardware items. Include instructions for operation, adjustments and maintenance and parts list.

C. Instruct personnel of Owner in proper adjustments and maintenance of door hardware and hardware finishes during final adjustment phase of hardware installation.

D. Key bitting list shall be delivered from lock manufacturer directly to representative of Owner with return receipt. Furnish copy of transmittal letter to Architect.

E. Furnish a complete set of specialized tools as needed for continued adjustment, maintenance, removal and replacement of door hardware by Owner.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	McKinney, Hager
Continuous Hinges	(IVE) Ives	Select, Zero, *McKinney*
Key System	(SCH) Schlage	Best, Sargent
Locks	(SCH) Schlage	Best, Sargent
Exit Devices	(VON) Von Duprin	Sargent, Precision
Closers	(LCN) LCN	Corbin Russwin, Sargent, Stanley
Flush Bolts	(IVE) Ives	Hiawatha, Rockwood
Push & Pull Plates	(IVE) Ives	Hiawatha, Rockwood
Kickplates	(IVE) Ives	Hiawatha, Rockwood
Stops & Holders	(IVE) Ives	Hiawatha, Rockwood
Overhead Stops	(GLY) Glynn-Johnson	Sargent, Rixson
Thresholds	(NGP) National Guard	Pemko, Reese
Seals & Bottoms	(NGP) National Guard	Pemko, Reese
Key Cabinets	(TEL) TelKey	Lund

B. Provide hardware items required to complete the work in accordance with these specifications and manufacturers’ instructions.

1. Include items inadvertently omitted from this specification. Note these items in submittal for review. There will not be any extra’s allowed for items that should have been picked up during bidding.
2. Where scheduled item is now obsolete, bid and furnish manufacturers updated item at no additional cost to the project.

2.2 HANGING MEANS:

A. Conventional Hinges: Hinge open widths minimum, but, of sufficient throw to permit maximum door swing. Steel or stainless steel pins and concealed bearings.

1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height, or any fraction thereof.
2. Extra heavy weight hinges on doors over 3 foot, 5 inches in width.

3. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins.
4. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
5. Interior doors; steel base hinges with steel pin.
6. Exterior doors; stainless steel hinges with stainless steel pin.
7. All hinges to be ball bearing type.
8. Provide shims and shimming instructions for proper door adjustment.
9. Scheduled Hinges are Ives
10. Finish of hinges is to be as indicated in the hardware sets.
11. Accepted substitutions: McKinney, Hager

B. Continuous Hinges: A pinless assembly of three interlocking extrusions applied to the full height of the door and frame without mortising. The door leaf and jamb leaf shall be geared together for the entire length of the hinge and joined by a channel. Hinge knuckle shall be monolithic in appearance. Continuous hinge with visible knuckle separations are not acceptable. Vertical door loads shall be carried on minimum ¾" acetal bearings through a full 180 degrees. The door leaf and jamb leaf shall have templated screw hole locations for future replacement needs. All heavy duty hinges (HD) shall have a minimum of 32 bearings for a 7' length.

1. Factory machine hinge leaves for electric power transfer device where specified in Hardware Sets.
2. Scheduled Hinge: Ives 224HD
3. Accepted substitution: Select SL11 HD /SL24 HD, Zero 910DB / 914DB

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Extra Heavy Duty Cylindrical Locks and Latches:

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
2. Locking Spindle: stainless steel, interlocking design.
3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
4. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.
5. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
6. Lock Series and Design: Schlage ND series, "Sparta" design.
7. Certifications:
   a. ANSI A156.2, 1994, Series 4000, Grade 1.
   b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
8. Accepted substitutions: Best 9K series, Falcon T series.

B. Standard Duty Cylindrical Locks and Latches:

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
2. Locking Spindle: stainless steel, interlocking design.
3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel or stainless steel.
4. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to face of door.
5. Lock Series and Design: Schlage AL series, "Neptune" design.
6. Certifications:

a. ANSI A156.2, 1994, Series 4000, Grade 2
b. UL listed for A label and lesser class single doors up to 4ft x 8ft.

7. Accepted substitutions: Best 7KC series, Falcon B series.

2.4 KEYING REQUIREMENTS:

A. Key System: standard keyway, non-interchangeable core. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner to determine system keyway(s) and structure. Furnish Owner's written approval of the system.

1. New factory registered master key system.
2. Construction keying: Furnish cylinders construction keyed.
3. Furnish 10 construction keys.
4. Furnish 2 construction control keys.

B. Key Cylinders6-pin solid brass construction.

C. Locksets and cylinders: keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.

D. Permanent Keys: secured shipment direct from point of origination to Owner.

E. Bitting List: secured shipment direct from point of origination to Owner.

F. Supply three (3) cut keys per cylinder or lock.

G. Supply 200 key blanks stamped with "Do Not Duplicate".

H. All keys to be stamped with "Do Not Duplicate".

I. Stamp all keys with appropriate key set.

2.5 EXIT DEVICES/PANIC HARDWARE

A. General features:

1. Independent lab-tested 2,000,000 cycles.
2. Push-through touch pad design. No exposed touch bar fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. ¾" throw deadlocking latchbolts.
4. No exposed screws to show through glass doors.
5. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
6. Releasable with 32 lb. maximum pressure under 250 lb. load to the door.
7. Heavy cast metal flush mounted end caps finished to match exit device.

B. Power Supplies: Power supplies are to provide filtered, regulated power to operate electrical products including electrified exit devices. Output power is to be field-selectable for either 24VDC @ 2 ampere or 12VDC @ 4 ampere. Standard input is to be 120VAC @ 1.0 ampere or 240VAC @ 0.5 ampere. Steel enclosure shall incorporate key lock and

have minimum quantity of five knockout holes for conduit connection. Terminal block to accept up to 14 gauge wire.

1. Scheduled Power Supplies: Von Duprin
2. Accepted substitutions: Sargent, Falcon.

C. Electrical Power Transfer Devices: Fully concealed when door is closed, power transfer device is to have two 18 gauge or ten 24 gauge wires as indicated by model scheduled.

1. Scheduled Power Transfer Devices: Von Duprin EPT
2. Accepted substitutions: No Sub per Owners Request

2.6 CLOSERS

A. General: One manufacturer for closer units throughout the Work, including surface closers, high security closers, overhead concealed closers, floor closers, low-energy door operators and electromagnetic hold-open closers.

B. Surface Closers:

1. Full rack-and-pinion type cylinder with removable non-ferrous cover. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Thru-bolts at wood doors unless doors are provided with closer blocking. Non-sized, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb.
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Extra-duty arms (EDA) at all doors scheduled with parallel arm units.
9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
10. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to –30 degrees F, furnish data on request.
11. Non-flaming fluid will not fuel door or floor covering fires.
12. Scheduled Closers: LCN 4011/4111
13. Finish of Door Closers is to be as indicated in the hardware sets.
14. Accepted substitutions: Corbin Russwin DC8000, Falcon SC70.

C. Low-Energy Door Operators:
1. Where “Low Energy Power Operated Door” as defined by ANSI Standard A156.19 is indicated for doors required to be accessible to the disabled, provide pneumatically powered operators complying with the ADA requirements.
2. Full closing force shall be provided when the power or assist cycle ends.
3. Modular design, adjustments easily accessible from the front, UL listed for use on labeled doors.
4. Shall have “Second Chance” function to accommodate momentary resistance, “Breakaway” function in the electronically controlled clutch, “Soft Start” motor control function and “Maintain Hold-Open Switch” to hold the door open at 90 degrees.
5. Shall have built in 12V and 24V power supply for actuators, card readers, electric strikes and magnetic door locks, inputs for both swing and stop side sensors and

available to accept either 120VAC or 220VAC input power. All wiring connections between operator modules made by easy-to-handle electrical connectors. Shall comply with both UL and NEC requirements for Class 1 and Class 2 wiring by providing separate conduits for each.

6. Shall have seven independent electronic adjustments to tailor the operator for specific site conditions. Opening speed, holding force at 90 degrees, sequential trigger and time delay, hold-open time at 90 degrees, opening force, clutch “breakaway” force setting, electric strike trigger and dime delay.
7. Shall have separate and independent adjustments for back check, main speed and latch speed.
8. Furnish actuators and other controls as specified in Hardware Sets.
9. Scheduled Operators: LCN 4630, 4640 series
10. Approved substitutions: Horton 4000LE, Gyro-Tech 500

2.7 FLUSH BOLTS AND DUSTPROOF STRIKES, COORDINATORS

A. Constant Latching Flush Bolts shall be UL listed for use in pairs or as single top bolt with auxiliary latch for labeled pairs of wood or hollow metal doors. Low actuation forces. Inactive door will re-latch automatically.

1. Scheduled constant latching flush bolts: Ives FB51P / FB52
2. Finish of constant latching flush bolts is to be 630
3. Accepted substitutions: Rockwood, Hiawatha

B. Dustproof Strikes are to be spring loaded plunger type, with locking ring for use with threshold, or mounting flange for installation where no threshold is present.

1. Scheduled dustproof strikes: Ives DP2
2. Finish of dustproof strike is to be
3. Accepted substitutions: Hiawatha, Rockwood

2.8 OVERHEAD STOPS AND HOLDERS

A. Surface mounted and concealed overhead stops and holders shall be heavy duty 300 series stainless steel, brass/bronze and steel materials, as required for specified finish, with finished metal end caps. Holders shall incorporate selective, adjustable hold-open mechanism. Templating of both surface and concealed overhead stops and holders allows for 85 to 115 degree stop/hold open position.

1. Scheduled surface mounted overhead stops and holders are Glynn-Johnson 90 Series; scheduled concealed overhead stops and holders are Glynn-Johnson 100 series.
2. Finish is to be as indicated in the hardware sets.
3. Accepted substitutions: Sargent, Rixson

2.9 OTHER HARDWARE

A. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

1. Scheduled kick plates are: Ives 8400
2. Finish of kick plates is to be 630
3. Accepted substitutions: Hiawatha, Rockwood

B. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide overhead type.
2. Scheduled door stops are: Ives WS406CVX
3. Finish of door stops is to be as indicated in hardware sets.
4. Accepted substitutions: Hiawatha, Rockwood

C. Roller Latches: Provide roller latches for doors as scheduled.

1. Projection of the roller to be easily adjusted by turning knob on back of latch.
2. Projection of the roller should be up to ½" to allow for variance in the door clearance.
3. Meets ANSI A156.16
4. Scheduled roller latches are*: Ives RL32 and 336 as listed in Hardware Sets*
5. Finish of roller latches is to be 626
6. Accepted substitutions: Hager, Rockwood

D. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

1. Scheduled door bottoms: National Guard Products
2. Finish of door bottoms is to be *AL*
3. Accepted substitutions: Pemko, Reese, *Zero*

E. Sweeps: Specially formulated to withstand greater temperature extremes while providing maximum protection against air infiltration. Neoprene or nylon brush type as scheduled.

1. Scheduled sweeps: National Guard Products 199NA, 600A
2. Finish of sweeps is to be US28
3. Accepted substitutions: Pemko, Reese, *Zero 39A*

G. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Set in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous ¼ inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
3. Sound control openings: Set in bed of mastic sealant.
4. Scheduled thresholds: National Guard Products
5. Finish of thresholds is to be mill finish aluminum.
6. Accepted substitutions: Pemko, Reese

H. Pulls: When specified for use with exit devices pulls shall be 1" round bar offset type with 10" center-to-center offset pulls.

1. Scheduled pulls: Ives *8190HD-0*
2. Finish of pulls is to be as indicated in the hardware sets.
3. Accepted substitutions: Hiawatha, Rockwood

I. Push Plates: Push plates shall be minimum .050” thickness brass, bronze or stainless steel as appropriate for specified finish. Plates are to be in size scheduled in Hardware Sets. Beveled four sides, and provided with fasteners appropriate for attaching to doors. Where “CFC” or “CFTP” is indicated in Hardware Sets, factory drill holes in face of push plates to accommodate deadbolt cylinder or turnpiece.

1. Scheduled push plates: Ives 8200 4” X 16”
2. Finish of push plates is to be as indicated in the hardware sets.
3. Accepted substitutions: Hiawatha, Rockwood.

J. Pull Plates: Where pull plates are listed in the Hardware Sets, provide half round pull, 10” center-to-center, with 2-1/2” projection, factory attached to push plate in size indicated.

1. Scheduled pull plates: Ives 8303-0
2. Finish of pull plates is to be as indicated in the hardware sets.
3. Accepted substitutions: Hiawatha, Rockwood.

K. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

L. Key Cabinet: As part of this contract, the finish hardware supplier shall provide one TelKey surface mounted key cabinet, Aristocrat “AWC” model. Cabinet shall be fully set-up and indexed with all keys attached to hook clips, indexed and recorded. Capacity of key cabinet shall be same as number of locks and cylinders on project, plus an additional 50% for future expansion. Components of key cabinet shall include, in quantities to accommodate “job plus 50%” requirements listed above, the following:

1. Numbered Label Sheets
2. Key Gathering Envelopes
3. Key Tags
4. Permanent Key Tags for File Keys
5. Duplicate Key Tags
6. System Index Sheets:
   a. Alphabetical Index
   b. Hook Number Index
   c. Key Numerical Index
   d. Master Index
   e. Cross Index
7. Signature Cards
8. Permanent Loan Register

Mtedf. Card Readers: Access control system, including master panels, expansion panels, IP link module, and software by owner. Contractor to provide and install card readers, including pigtail from card reader to nearest accessible ceiling. Contractor to provide 25 key fobs or proximity cards.

2.10 FINISH:

A. As indicated in the hardware sets.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Installer must demonstrate suitable competence and experience with installing finish hardware on like projects.

3.2 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.

1. Notify Architect of any code conflicts before ordering material.
2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

C. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Owner. Match new locksets strike plates to existing frame preps.

1. Patch and fill wood frames and doors with solid wood stock or dowel material before cutting for new hardware. Do not reuse existing screw holes - - fill and re-pilot.
2. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth by using non-metallic filler material.
3. Patch all holes, sand smooth and paint existing doors and frames scheduled to receive new hardware.

3.3 INSTALLATION

A. Install hardware per manufacturer’s instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation.

1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.

B. Drill pilot holes for fasteners in wood doors and/or frames.

C. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

3.4 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction at no additional cost to Owner.

B. Inspection: Prior to owner's occupancy, the general contractor shall schedule and conduct a post-installation meeting with the hardware supplier and the manufacturer representative who supplied the commercial locks, the exit devices, the door controls/closers, etc.. The purpose is to eliminate any or all institutional door hardware "punch list" items. This will enable the general contractor and the owner to gain approval for their building occupancy permit much quicker.

C. Follow-up inspection: Installer to provide letter of agreement to Owner that approximately 6 months after substantial completion, installer will visit Project with representatives of the manufacturers of the locking devices and door closers to accomplish following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems and likely future problems.

3.5 DEMONSTRATION:

A. Demonstrate electrical hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

B. Manufacturers and their abbreviations used in this schedule:

DET	Detex
GLY	Glynn-Johnson Hardware
HAG	Hager Hinge
IVE	H. B. Ives
LCN	LCN Closers
NGP	National Guard Products
SCE	Schlage Electronics
SCH	Schlage Lock Company
SOS	Soss Door Hardware
TEL	TelKey
VON	Von Duprin

C. The following is a general listing of finish hardware requirements and is not intended as a final detailed schedule. It is the responsibility of the finish hardware supplier to thoroughly review these plans and specifications, and to include in his bid any items of finish hardware, whether or not specifically called for in the following hardware groups, required by established standards or practices, or as necessary to meet state and local building codes. These items include, but are not specifically limited to, special templates, wiring diagrams, shim kits for exit devices, filler bars and door closer arm mounting brackets for bar type coordinators, drop plates or other door closer accessory items, special fasteners required for attachment of hardware to doors, frames, or other substrates, and filler plates for use as required by the permanent removal of hardware items from existing doors and/or frames. Where there is unclear or conflicting information in the Hardware Sets, the hardware supplier shall make every effort to gain clarity from the architect prior to bid date. If clarification is not made prior to bid date, the hardware supplier is to make note of any ambiguities or conflicts in the documents in his bid, and these issues will be resolved post-bid. There will be no “Extras” or Change Orders to cover errors and/or omissions which should have been evident prior to bidding.

3.8 HARDWARE SETS

Hardware Group No. 01

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	HINGES	BY DOOR MANUFACTURER		
1	EA	STOREROOM LOCK	ND80PD x RHO	626	SCH
1	EA	OVERHEAD STOP	410S	630	GLY

Hardware Group No. 2

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGES	BY PRE-HUNG SUPPLIER		
1	EA	PRIVACY SET	ALX40 x RHO	626	SCH
1	EA	DOOR STOP	70	626	IVE

END OF SECTION

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood stud wall framing.

B. Acoustic insulation.

C. Gypsum wallboard.

D. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Partition and wall framing.

B. Section 06 1000 - Rough Carpentry: Wood blocking.

C. Section 07 2100 - Board and Batt Insulation: Thermal batt insulation in exterior walls.

D. Section 07 9005 - Joint Sealers: Acoustic sealant.

E. Section 09 9000 - Painting and Finishing: Final, decorative finish systems on gypsum board.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on acoustic insulation, gypsum board and joint finishing system.

1.04 QUALITY ASSURANCE

A. Perform in accordance with GA-214 and GA-216. Comply with requirements of GA-600 for fire-rated assemblies.

B. Gypsum Board Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 5 years of documented experience.

1.05 MOCK-UP

A. Provide a mock-up of special drywall installation and finishing indicated and specified for bathrooms.

B. Before installing gypsum board in unit bathrooms, Contractor shall select one of the bathrooms framed and ready to receive drywall and shall install in it gypsum board as shown on Drawings, complete with a prefabricated shower unit, for Architect's approval of material application and workmanship.

1. Coordinate with Painting Contractor for application of paint typically indicated for bathrooms.

C. Rework the mock-up's finishes until Architect's approval is received.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated assemblies as indicated on drawings.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:

1. CertainTeed Corporation: www.certainteed.com.
2. Georgia-Pacific Gypsum: www.gpgypsum.com.
3. National Gypsum Company: www.nationalgypsum.com.
4. CertainTeed Corp.
5. USG Corporation: www.usg.com.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Edges: Tapered.
   3. Thickness:
      a. Typical Vertical Surfaces on Partitions: 1/2 inch typical, or 5/8" where indicated on drawings.
      b. Ceilings: 5/8 inch.
      c. Multi-Layer Assemblies: Thicknesses and layers as indicated on drawings.

C. Fire Resistant Type: Complying with Type X requirements; UL or WH rated.
   1. Application: Where required for fire-rated assemblies, unless otherwise indicated.
      a. Thickness: 5/8 inch.
      b. Edges: Tapered.
   2. Special Fire-Resistant Type: "Type C"; meeting and exceeding requirements of Type X; UL or WH rated.
      a. Thickness: 1/2 inch, and 5/8 inch, as indicated.
      b. Edges: Tapered.

D. Mold-Resistant Board ("Fiberglass facing or other non-paper face") Non-paper faced, mold-resistant gypsum board.
   1. Manufacturer:
      a. Georgia-Pacific Gypsum LLC; DensArmor Plus.
      b. USG Fiberock brand Aqua-Tough.
      c. Substitutions: See Section 01 6000 - Product Requirements.
   2. Core: Fire-resistant gypsum.
   3. Thickness: 1/2 inch and 5/8 inch, as indicated.
   4. Edges: Tapered.
   5. Ends: Square cut.
   6. Width: 48 inches.

E. Tile Backing Panels
   1. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
      a. Products: Subject to compliance with requirements, provide one of the following:
         1) Georgia-Pacific Gypsum LLC; DensShield Tile Backer.
         2) CertainTeed Corp.; GlasRoc Tile Backer.
      b. Core: 5/8 inch (15.9 mm), Type X.
      c. Mold Resistance: ASTM D 3273, score of 10.

2.04 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thicknesses as indicated.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Finishing Accessories: Edge and corner beads meeting ASTM C1047, paper flanged metal only.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional cornerbead and control joints, provide LC-bead at exposed panel edges.

D. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
   1. Typical Installations:
      a. Tape: 2 inch wide, creased paper tape for joints and corners.
      b. Ready-mixed vinyl-based joint compound.
   2. Mold-Resistant Board Installations: Use ONLY the following:

a. Tape: USG Sheetrock fiberglass tape.
b. Tape Setting Compound: USG Durabond compound.
c. Concealing Compound: USG Sheetrock All Purpose joint compound; lightweight compounds not allowed.

E. Screws: ASTM C 1002; self-piercing tapping type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FURRING INSTALLATION

A. Acoustic Furring: Install resilient channels at maximum 24 inches on center perpendicular to framing. Locate joints over framing members. Install not more than 4 inches from floor, ceiling and abutting walls.
   1. Install with open leg facing upward.

B. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place continuous bead at perimeter of each layer of gypsum board in acoustically rated assemblies.
   2. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

3.04 BOARD INSTALLATION

A. Comply with GA-216 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board parallel to framing, with ends and edges occurring over firm bearing.

C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer parallel to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For non-rated assemblies, install as follows:
   1. Single-Layer Applications: Screw attachment.
   2. Double-Layer Application: Install base layer using screws. Install face layer using screws.

F. Mold-Resistant Installation in Bathrooms: Install boards same as specified for other applications, assuring that boards are not allowed to be forced together.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths. Use single length on vertical corners.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.06 JOINT TREATMENT

A. Finish gypsum board in scheduled areas in accordance with levels defined in ASTM C 840 and as scheduled below.
   1. Above Finished Ceilings Concealed From View: Level 1.
   2. Utility Areas and Areas Behind Cabinetry: Level 2.
   3. Walls and Ceilings to Receive Flat or Eggshell Paint Finish: Level 4.
   4. Walls and Ceilings in Unit Bathrooms: Cover joints, edges and fasteners with as many coats of compound as needed to create even appearing surface when painted.
      a. Use graduated arcs to prevent recesses or ridges, and do not apply compound flush or flat to panel surface.
      b. Cover entire room with a single coverage coat of Sheetrock Tuff-Hide primer-surfacer, in preparation for paint finishing system including a primer coat of Sheetrock First Coat Primer.
   5. Ceilings in units, including living areas, bedrooms, closets, and bathrooms: Provide sprayed or troweled knockdown finish.

B. 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 is not required at base layer of double layer applications.

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 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Vinyl base.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches (300 mm) long.

C. Samples for Initial Selection: For each type of product indicated.

D. Product Schedule: For resilient base and accessory products.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

   1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Tarkett Traditional Wall Base.

B. Product Standard: ASTM F1861, Type TP.

1. Group: I (solid, homogeneous).
2. Style and Location:
   a. Traditional Wall Base: Provide areas with sealed concrete and or other hard surface flooring.
   b. Minimum Thickness: 0.080 inch. Coordinate height retained in "Height" Paragraph below with length retained in "Lengths" Paragraph; some manufacturers do not offer coils in every height.
   c. Height: 6 inches (15.24 mm).
   d. Lengths: 100’ coiled lengths.

C. Colors and Patterns: As indicated by manufacturer's designations.

2.2 INSTALLATION MATERIALS

A. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

C. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

    a. Miter or cope corners to minimize open joints.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

    a. Miter or cope corners to minimize open joints.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 096513

SECTION 09 9000 - PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, and varnishes.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Polished metals.
   6. Floors, unless specifically so indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Acoustical materials.
   10. Concealed pipes, ducts, and conduits.

E. See Schedule - *Surfaces to be Finished*, at end of Section.

1.02 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Pre-finished trim option; back priming of wood trim.

B. Section 08 1416 - Wood Doors: Factory finished doors.

C. Section 09 2116 - Gypsum Board Assemblies: Mock-up requiring painting.

D. Section 32 1723.13 - Painted Pavement Markings.

1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all finishing products, including VOC content.

C. Samples: Submit 2 manufacturer's fan decks for each type of pigmented finish.

D. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.06 MOCK-UP

A. The bathroom mock-up specified in Section 09 2116 - Gypsum Board Assemblies will require painting.

B. Repaint mock-up each time gypsum board is reworked until Architect's approval is received.

C. The approved mock-up will be accepted as part of the completed Work.

1.07 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.

D. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.08 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 exterior coatings 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: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 50 ft candles measured mid-height at substrate surface.

1.09 EXTRA MATERIALS

A. Supply 1 gallon of each color; store where directed.

B. Label each container with color, type, texture, and room locations in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. Paints and Stains:
   1. Duron, Inc: www.duron.com.
   2. Benjamin Moore & Co: www.benjaminmoore.com.
   3. Sherwin-Williams Co: www.sherwin-williams.com

C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
   1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. 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 coating material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Volatile Organic Compound (VOC) Content:
   1. Provide coatings that comply with the most stringent requirements specified in the following:

a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
    1) Opaque, Flat: 50 g/L, maximum.
    2) Opaque, Nonflat: 150 g/L, maximum.
    3) Opaque, High Gloss: 250 g/L, maximum.
    4) Varnishes: 350 g/L, maximum.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint CE-OP-2A - Masonry/Concrete, Opaque, Alkyd, 2 Coat:
1. One coat of alkyd primer sealer.
2. Flat: One coat of alkyd enamel.

B. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:
1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
2. Semi-gloss: Two coats of alkyd enamel.

C. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of alkyd enamel.

2.04 PAINT SYSTEMS - INTERIOR

A. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel.

B. Paint WI-OP-2L - Pre-primed Wood, Opaque, Latex, 2 Coat:
1. Semi-gloss: Two coats of latex enamel.

C. Paint WI-TR-VS - Wood, Transparent, Varnish, Stain:
1. One coat of stain; to match wood door color.
2. One coat sealer.
3. Gloss: One coat of varnish.
4. Satin: One coat of varnish.

D. Paint MI-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
1. One coat of latex primer.
2. Flat: Two coats of latex enamel.

E. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with latex primer.
2. Flat: Two coats of latex enamel.

F. Paint MgI-OP-3L - Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer.
2. Flat: Two coats of latex enamel.

G. Paint GI-OP-3L - Gypsum Board, Latex, 3 Coat:
1. One coat of USG "Sheet Rock First Coat" or Gold Bond "Drywall Primer" primer sealer.
2. Eggshell: Two coats of latex enamel.

H. Paint GI-OP-2E - Gypsum Board, Epoxy, 3 Coat:
1. One coat of acrylic latex primer sealer
2. Semi-Gloss: Two coats of waterborne epoxy

I. Paint GI-P-1A - Gypsum Board to Receive Vinyl Wall Covering:
1. One coat of alkyd primer sealer.

J. Paint FI-OP-3A - Fabrics/Insulation Jackets, Alkyd, 3 Coat:
   1. One coat of alkyd primer sealer.
   2. Flat: Two coats of alkyd enamel.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Concrete and Masonry: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection
   1. Furnish sufficient drop clothes, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted, including surfaces within storage and preparation area.

D. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove factory finish.

E. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.

F. Seal surfaces that might cause bleed through or staining of topcoat.

G. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

H. Concrete and Masonry to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry.

I. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

J. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.

K. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

L. Uncorroded Uncoated Ferrous Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

M. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

N. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

O. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

P. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Darker Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

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. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Divisions 21, 22, 23 and Division 26 for color coding of equipment, duct work, piping, and conduit.

B. Paint shop-primed equipment, where indicated.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finished coatings until completion of project.

B. Touch-up damaged coatings after Substantial Completion.

3.07 SCHEDULE - SURFACES TO BE FINISHED

A. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.
   3. Stainless steel items.

B. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop-primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint.
   4. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

C. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

D. Gypsum Board: Finish all surfaces exposed to view.

E. Wood: Finish all surfaces exposed to view.

F. Wood Doors: Factory-finished.

G. Steel Doors and Frames: Finish all surfaces including tops and bottoms.

H. Shop-Primed Metal Items: Finish all surfaces exposed to view.

3.08 SCHEDULE - COLORS

A. Apartment Units: Single color throughout units; same color for all units.

B. Public Spaces: Up to 25 colors. See schedules.

END OF SECTION

SECTION 10 2800 - TOILET AND BATH ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Accessories for toilet rooms and utility rooms.

B. Grab bars.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates.

1.03 SUBMITTALS

A. See Section 01 3000 - 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.

1.04 COORDINATION

A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Toilet Accessories:
   1. Bradley Corporation: www.bradleycorp.com.
   2. Basco Inc.: www.bascoinc.com.
   3. Bobrick Washroom Equipment, Inc.: http://www.bobrick.com
   4. American Specialties, Inc.: http://americanspecialties.com/
   5. Gamco Commercial Restroom Accessories: http://gamcousa.com/
   3. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Keys: Provide 4 keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Type 304 or 316.

E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

G. Hollow Wall Fasteners: Toggle bolts only.

H. Expansion Shields: Not allowed.

2.03 FINISHES

A. Stainless Steel: No. 4 Brushed finish, unless otherwise noted.

B. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 TOILET ROOM ACCESSORIES

A. Toilet Paper Dispenser; Single roll, surface mounted bracket type, chrome-plated zinc alloy brackets.

1. Product: 505 manufactured by Bradley Corp.

B. Framed Mirrors: Stainless steel frame, 6 mm thick float glass mirror.
   1. Mounting: Hidden surface-mount bracket.
   2. Size: as indicated on drawings and schedule below.
   3. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
   4. Product: #781 Series manufactured by Bradley Corp.

C. Grab Bars Stainless steel, 1-1/2 inches outside diameter, minimum 0.05 inch wall thickness, nonslip grasping surface finish, concealed flange mounting; 1-1/2 inches clearance between wall and inside of grab bar.
   1. Length and configuration: As scheduled below and as indicated on drawings.
   2. Product: 812 Series manufactured by Bradley Corp.

2.05 UTILITY ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Hooks: 4, 0.06 inch stainless steel rag hooks at shelf front.
   2. Mop/broom holders: 3 spring-loaded rubber cam holders at shelf front.
   3. Length: Manufacturer's standard length for number of holders/hooks.
   4. Product: 9933 manufactured by Bradley Corp..

B. Paper Towel Dispenser: Surface mounted, stainless steel; continuous piano hinges, tumbler lock on door.
   1. Towel dispenser capacity: minimum 400 C-fold.
   2. Product: 250-15 manufactured by Bradley Corp.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.

B. Provide solid wood blocking behind grab bars, shower rod, towel bars, etc.

C. Install plumb and level, securely and rigidly anchored to substrate.

D. Mounting Heights: As required by accessibility regulations, and as noted on drawing sheet G001.

3.04 SCHEDULE

A. Each Bathroom
   1. 1 - Toilet paper dispenser
   2. 1 - 24"x36" fixed frame mirror "F"
   6. 1 - 42" grab bar with 1-18" vertical grab bar
   7. 1 - 36" grab bar

B. Mop Sink - Each sink
   1. Combination Utility Shelf/Mop and Broom Holder

END OF SECTION

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood blocking to receive mounting brackets.

B. Section 09 9000 - Painting and Coating: Field paint finish on cabinets.

1.03 PERFORMANCE REQUIREMENTS

A. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, and location.

C. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc; Ambassador Series Steel FX2. www.jlindustries.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL for the purpose specified and indicated.

B. Dry Chemical Type Fire Extinguishers: Cast steel tank, with pressure gage.
   1. Class A:B:C.
   2. Size 10.
   3. Finish: Epoxy finish.
   4. Product: Cosmic 10E as manufactured by JL Industries

2.03 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated.

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. Secure rigidly in place.

C. Mount each wall-mounted extinguisher on bracket securely mounted to wall studs or solid wood blocking.

END OF SECTION

SECTION 13 34 00

ENGINEERED POST FRAME STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Engineered wood-framed structures consisting of the following components:
      a. Factory-engineered wall columns.
      b. Factory-engineered roof truss.
      c. Factory-engineered metal **wall** panels.
      d. Factory-engineered building system accessories including doors and windows.
      e. Prefinished metal trim items.
      f. Prefinished ridge vents and soffits.

1.2 REFERENCES

A. Reference Standards:
   1. Preservative Treated Lumber:
      a. American Wood Preservers Association (AWPA).
   2. Lumber grading rules and wood species:
      a. National Design Specifications for Wood Construction, current edition.
      b. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
      c. Southern Pine Inspection Bureau (SPIB): Southern Pine.
      d. West Coast Lumber Inspection Bureau (WCLIB): Douglas Fir.
      e. Western Wood Products Association (WWPA): Douglas Fir and Ponderosa Pine.
   3. MSR Lumber Producers Council (MSR) for machine stress rated lumber.
   4. National Design Specifications for Wood Construction.
   5. National Design Standard for Metal Plate Connected Wood Truss Construction (TPI).

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-engineered product. Indicate component materials, dimensions, profiles, and construction and installation details.
   1. Include information for specialty accessory products specified for this Project.
   2. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   3. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to truss fabricator.
   4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Sizes, stress grades, and species of lumber.
   2. Anchor-bolt layout.

3. Structural Framing Drawings: Show complete fabrication of primary and secondary framing. Include provisions for openings and the following information:
    a. Slope or depth, span, and spacing of truss.
    b. Heel bearing height.
    c. Design loading to include:
        1) Top chord live load.
        2) Top chord dead load.
        3) Bottom chord dead load.
        4) Concentrated loads and their points.
    d. Adjustments to lumber and plate design values for conditions of use.
    e. Plate type, thickness of gauge, and size.
    f. Lumber size, species and grade for each member.
4. Metal **Wall** Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, and special details. Indicate the following components:
    a. Roof mounted items.
    b. Wall mounted items.
5. Submit Shop Drawings that have been engineered and certified by professional engineer licensed in the State of Illinois. Include seal and signature of professional engineer on Shop Drawings.

C. Design Data: Truss engineering calculations for loading and stresses, bearing seal and signature of professional engineer licensed in the State of Illinois. Include the following calculations:
1. Minimum design shall meet design standards of latest edition of International Building Code unless other, more stringent requirements are in force in Project location.
2. Bending moments and axial forces for each member.
3. Basic plate design values.
4. Design analysis for each joint indicating that proper plates have been used.
5. Provide design calculations for exterior walls, canopies, soffit systems, and lateral bracing walls. Design wind loads and lateral bracing loads are indicated on structural Drawings.
6. Submit design calculations that have been engineered and certified by professional engineer licensed in the State of Illinois. Include seal and signature of professional engineer on calculations

D. Samples for Initial Selection: For units with factory-applied color finish, color chart of manufacturer's standard colors.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:
1. Wood-preservative-treated wood.
2. Engineered wood products.

B. Quality Control Submittals:
1. Test Reports: Certified test reports showing compliance with specified performance characteristics.
2. Certification: Manufacturer’s certification that Products furnished meet specified design and performance criteria.

C. Submit written proof of third party inspection program in force for truss manufacturer used on Project.

D. Certifications: Certify that specified roof and wind load requirements are met.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with minimum 5 years’ documented experience that participates in recognized quality-assurance program that complies with quality-control procedures

and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Manufacturer shall have engineering department.
3. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by qualified professional engineer.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Source Limitations: Obtain engineered post frame building components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle and store materials per manufacturer's requirements.

B. 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."

1. Store trusses flat, off of ground, and adequately supported to prevent lateral bending.
2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
3. Provide for air circulation around stacks and under coverings.
4. Store trusses to avoid contact with other materials that could create staining or discoloration.

C. Inspect trusses upon deliver to Project site and notify manufacturer immediately if members have damage from handling or show discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.7 WARRANTY

A. Manufacturer's Special Warranty – Treated Material: Manufacturer agrees to repair, restore, or replace columns that fail in materials within specified warranty period.

1. Warranty Period: 50 years from date of Substantial Completion.
2. Manufacturer shall repair treated structural columns that fail because of insect damage or because of decay that occurs under normal conditions and proper use. If manufacturer is not able to repair structural posts to satisfaction of Architect and Owner, manufacturer shall replace damaged treated structural columns.

B. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes the following:
   a. Color fading more than 5 Hunter units when tested per ASTM D2244.
   b. Chalking in excess of a No. 8 rating when tested per ASTM D4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: From date of Substantial Completion, 40 years on chalk; 30 years on color change:
3. Warranty Exclusions: Manufacturer will not warrant metal panel finishes damaged due to exposure to atmospheric pollutants including animal waste or other corrosive conditions. Manufacturer will not warrant labor by others.
4. Manufacturer shall repair painted steel roofing or siding panels if the paint peels, cracks, checks, flakes or blisters to an extent that is apparent by ordinary outdoor visual observation when exposed to normal weather and atmospheric conditions. If manufacturer is not able to repair steel panels to satisfaction of Architect and Owner, manufacturer shall replace damaged steel panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products from the following manufacturer:
Energy Panel Structures, Inc. or approved equal
102 East Industrial Park
Graettinger, IA 51342
Toll Free: 800.967.2130
Fax: 712.859.3275
Email: sales@epsbuildings.com
Website: www.epsbuildings.com

2.2 PERFORMANCE CRITERIA

A. Design Requirements:
1. Design wood members per formulas published in National Design Specifications (NDS) for Wood Construction.
2. Design light meta-toothed connector plates and joint design in compliance with Truss Plate Institute's (TPI) National Design Standard for Metal Plate Connected Wood Truss Construction.
3. Include unbalanced roof loads required by ASCE-7, current edition.

2.3 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC3b for exterior construction not in contact with ground and Use Category UC4a for items in contact with ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Maximum moisture content of 19 percent or per appropriate grading rules. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of inspection agency approved by ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:
1. Laminated columns.
2. Baseboards.
3. Hold down blocks.

2.4 MATERIALS - WOOD

A. Laminated Columns: Factory-fabricated from minimum 3 ply 2 inch by 6 inch #1 or better southern yellow pine.
1. Columns to 20 Feet Lengths: Full-length (unspliced) nail laminated plys. Provide middle ply with short truss support block.
2. Columns over 20 Feet Lengths: Spliced laminated plies per approved Shop Drawings and manufacturer's design.
3. Preservative-Treatment: Treat portions of columns designed to be in contact with ground to net retention of 0.60 pounds per cubic foo of CCA per AWPA U1 requirements.

B. Wood Trusses: Factory-fabricated surfaced lumber.
1. Lumber:
a. Top and Bottoms Chords: No. 1 or better Southern yellow pine or comparable Spruce-pine-fir.

b. Webs: No. 2 or better Southern yellow pine or SPF.

2. Metal Connector Plates: Fabricated from ASTM A653; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A); G60 hot-dip galvanizing coating designation.
   a. Plate Thicknesses: 0.036 inch and 0.0556 inch thick.

C. Baseboards: 2 inch by 8 inch No. 2 or better Southern yellow pine, tongue-and-groove.
   1. Preservative-Treatment: Treat baseboards for ground contact conditions. per AWPA U1 requirements. Preservatives shall penetrate 100 percent of sapwood.

D. Wall Girts: 2 inch by 6 inch girts, No. 1 or better Southern yellow pine.

E. Purlins and Truss Ties: 2 inch by 4 inch laid on edge, MSR SPF 1650.
   1. Purlins may be installed over top chord of truss, flat, or in purling hangers. Where purlins and truss ties are set in hangers, provide 2 inch by 6 inch laid on edge, MSR SPF 1650 or No. 1 or better Southern yellow pine.

F. Overhang Framing: Fabricated rafter frames.
   1. Provide factory beveled facia boards, 2 inch by 6 inch Spruce-pine-fir, No. 2.

G. Wind Bracing:
   1. 2 inch by 6 inch, No. 2 or better Spruce-pine-fir from end wall column to first truss back.
   2. 2 inch by 4 inch diagonal in roofline bracing as required by design.

H. Framing Around Openings:
   1. Provide 2 inch by 6 inch/2 inch by 4 inch No. 2 around door, window, and overhead sectional door openings.

I. Headers: Provide built-up No. 1 or better Southern yellow pine headers as required to meet loading designs.

J. Incidental Framing: No.2 or better 2 inch by 4 inch.

2.5 MATERIALS – PREFINISHED MATERIALS

A. General: Factory-formed metal panels, roll-formed in manufacturer's facility, designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.

B. Metal Panels: Exposed-fastener metal **wall** panels, formed with raised ribs and recesses.
   1. Material: Zinc-coated (galvanized) steel sheet, 0.0125 inch nominal thickness.
      a. Exterior Finish: Siliconized polyester.
      b. Color: Selected by Architect from manufacturer's full range.
   2. Rib Spacing: 2 major ribs at 9 inches on center. 2 minor ribs at 3 inches on center between major ribs.
   3. Panel Coverage: 36 inches.
   4. Panel Height: 3/4 inch.

C. Metal Trim: Match material and color of metal panels. Provide trim for corners, ridge lines, rakes, eaves, and panel bases.
   1. Lengths: Minimum 10 feet .
   2. Trim, overhang facias, track covers, and slide door jambs available in building panel covers.
   3. Overhead Sectional Door and Slide Door Jamb Trim: Fabricated from 1 piece up to 10 feet in length.

D. Soffits: Aluminum or steel, vented as required. Colors shall match roof and wall panel colors.

2.6 RELATED MATERIALS

A. Anti-Condensation Felt: Manufacturer's shop-applied, proprietary, self-adhered felt designed to trap condensation moisture and release moisture as humidity.
   1. Acceptable Product: DripStop by Filc d.d.

B. Walk Doors: Where indicated on Drawings, provide the following type of doors:

1. Steel or extruded aluminum frame and sash with electrostatically coated enamel paint finish, and locking options based on Project requirements.
    a. Acceptable Product:
        1) AJ Manufacturing: 7100 Series Commercial Post Frame Entry / Walk Doors.

C. Closure Strips: Closed cell, 2 psf density polyethylene foam, premolded to match configuration of panels.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
1. 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 A153.
2. Exposed Fastener Heads: Match color of steel panel.
3. Where steel panels or trim is attached to preservative-treated lumber, provide fasteners of unpainted Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.
1. Framing Lumber: 10d, 16d and 60d ring shank nails.
2. Machine Bolts: Minimum grade 1, A307.
3. Metal Panels: Minimum 1-1/2 inch No. 10 screw fasteners with EPDM sealing washers bearing on weather side of metal panels.
    a. Match color of metal panels.

2.8 FABRICATION

A. Shop-fabricate wood trusses in TPI inspected plant.

B. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

C. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

D. 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.

E. 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 EXAMINATION

A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.
1. Engage land surveyor to perform surveying.

C. Verify that mechanical and electrical utilities are in correct position.

D. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent framing, connections, and bracing are in place unless indicated otherwise.

3.3 ERECTION OF FRAMING

A. General: Do not use materials that are unsound, warped, improperly finished, or with defective surfaces, sizes, or patterns.
   1. Comply with frame manufacturer's approved Shop Drawings for details and building erection.
   2. Comply with NFBA document “Accepted Practices for Post-frame Construction Framing Tolerances.”

B. Columns:
   1. Auger hole to depth of diameter indicated on Drawings.
   2. Pour ready mix concrete pad in bottom of each hole per Drawings.
   3. Install hold down blocks at bottom of each column per approved Shop Drawings.
   4. Accurately position column in hole.
   5. Backfill with dry soil compacted in 8 inch lifts.

C. Baseboards: Install [**1 run**] [**2 runs**] of 2 inch by 8 inch tongue-and-groove plank, at grade, using manufacturer recommended fasteners.

D. Wall Girts: Install at centers indicated on Drawings.
   1. If required, install overhang framing at top of wall girts.

E. Trusses:
   1. Set trusses in place in center of column using lifting methods as approved by manufacturer.
   2. When trusses are properly positioned, install 1/2 inch by 5-1/2 inch machine bolt and manufacturer recommended 20d ring shank nails through 2 of column laminates and truss heel.
   3. Brace trusses per WTCA guidelines and BCSI Manual

F. Purlins: Install purlins with fasteners and at spacings per approved Shop Drawings.

G. Truss Ties: Install truss ties at locations recommended by structure manufacture and per approved Shop Drawings
   1. Run truss ties from end wall to end wall.

H. Incidental Framing: Install 2 inch by 4 inch or 2 inch by 6 inch blocking as required per structure manufacturers recommendations.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Install metal panels per manufacturer’s established construction procedures.

B. Install metal panels and components plumb, square, straight, and true to lines, and to assure freedom from rattles.

C. Take care when cutting prefinished materials to ensure cuttings do not remain on finished surface.

D. Properly install fasteners taking care to not under- or overdrive.

3.5 METAL PANEL INSTALLATION

A. Wall Panels: Install metal panels perpendicular to wall girt and purlin supports, aligned level and plumb. Anchor with fasteners at spacings recommended by manufacturer and design loads.

B. Soffits: Install soffits to interlock with trim items at top of steel siding and at facias.
   a. Solid or optional vented soffit shall be used at end overhang.
   b. A combination of solid and perforated soffits shall be provided for balanced ventilation at side overhangs.

C. Trim Items: Install trim items at base, wainscot transitions, corners, top of steel siding, facia, gables, and ridges using no less than 1 inch screw fasteners.
   a. Trim items shall be installed at the base, at any wainscot transition, corners, top of steel siding, fascias, gables and ridge using appropriate 1” screw fasteners.

D. Closure Strips: Provide closure strips at top and bottom of roofing panels.

END OF SECTION

SECTION 31 2200 - GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site.

C. Topsoil and finish grading.

1.02 RELATED REQUIREMENTS

A. Section 015713 - Temporary Erosion and Sedimentation Control.

B. Section 31 2316 - Excavation: Removal of soils not specified as part of grading work.

C. Section 31 2316.13 - Trenching: Trenching and backfilling for utilities.

D. Section 31 2323 - Fill: Re-use of soils harvested from site, including filling and compaction.

E. Section 32 9219 - Seeding: Preparation of topsoil for seeding.

F. Section 32 9223 - Sodding: Raking of topsoil in preparation for placing sod.

G. Section 32 9300 - Plants: Topsoil in beds and pits.

1.03 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with State of Indiana Department of Transportation standards, and Geotechnical Engineering Report.

1.05 PROJECT CONDITIONS

A. Protect below-grade utilities that are to remain active.

B. Protect bench marks, survey control points, sidewalks, paving, and curbs from grading equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 MATERIALS

A. Acceptable Topsoil: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

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. Protect site features to remain, including but not limited to bench marks, survey control points, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

F. 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.

3.03 ROUGH GRADING

A. Remove such vegetation as may degrade the quality of topsoil harvested from the site.

B. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
   1. In areas to receive building structures or paving which also have topsoil more than 6 inches deep, continue removal of topsoil down to subsoil.
   2. Do not remove topsoil when wet.

C. When excavating through roots of existing trees to remain, perform work by hand and cut roots with sharp axe.

3.04 SOIL STOCKPILING

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpiles: Use areas on site approved by Contractor; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

A. Before Finish Grading:
   1. Verify building and trench backfilling have been inspected and approved.
   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 3 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 and sodding 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: 6 inches.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Near buildings 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.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.

B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

3.08 CLEANING

A. Remove unused stockpiled topsoil. Grade stockpile area to prevent standing water.

B. Protect newly graded areas from traffic and erosion. Recompact and re-grade areas as necessary to restore quality, appearance, and condition of work.

C. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 31 2316 - EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for building volume below grade, footings, paving, site structures, and utilities within the building.

B. Removal of existing paving as required for new work.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Soil removal for reshaping the ground around structures.

B. Section 31 2316.13 - Trenching: Excavating for utility lines outside the building to utility main connections.

C. Section 31 2323 - Fill: Fill materials, filling, and compacting.

1.03 REFERENCES

A. Indiana Department of Transportation Standard Specification.

B. Geotechnical Engineering Report.

1.04 PROJECT CONDITIONS

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Protect bench marks, survey control points, paving, and curbs from excavating equipment and vehicular traffic.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Notify utility company to remove and relocate utilities.

D. Prior to removing existing paving, saw cut edges at perimeter of areas designated for removal. Make straight, clean cut edges; remove cutting dust.

3.02 EXCAVATING

A. Excavate to accommodate new structures and construction operations. Excavation is unclassified and includes excavation to subgrade regardless of materials encountered. Repair Excavations beyond elevations and dimensions indicated as follows:
   1. At structure: Concrete or structural fill.
   2. Elsewhere: backfill and compact as directed.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Hand trim excavations. Remove loose matter.

E. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.

F. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

G. Grade top perimeter of excavation to prevent surface water from draining into excavation.

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 in accordance with Section 31 2200. Allow for proper drainage and do not stockpile materials within drip line of trees.

J. Remove excess excavated material from site.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

3.04 PROTECTION

A. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 31 2316.13 - TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Trenching for placement of utility lines outside the building.

B. Backfilling and compacting for utility lines.

1.02 RELATED REQUIREMENTS

A. Section 31 2316 - Excavation: Building and foundation excavating.

B. Section 31 2323 - Fill: Backfilling at building and foundations.

C. Section 32 9219 - Seeding: Placement of topsoil at top of trenches in seeded lawn areas.

D. Section 32 9223 - Sodding: Placement of topsoil at top of trenches in sodded lawn areas.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: 10 lb sample of each type of fill; submit in air-tight containers to testing laboratory.

C. Materials Sources: Submit name of imported materials source.

D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

E. Compaction Density Test Reports.

1.04 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 designated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

C. Verify that survey bench marks and intended elevations for the Work are as indicated.

D. Protect bench marks and survey control points from excavating equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Conforming to Indiana Department of Transportation standard.

B. Structural Fill: Conforming to State of Indiana Department of Transportation standard.

C. Concrete for Fill: As specified in Section 03 3000; compressive strength of 3000 psi.

D. Granular Fill: Coarse aggregate, conforming to Indiana Department of Transportation standard.

E. Sand: Conforming to State of Indiana Department of Transportation standard.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 2200 for additional requirements.

C. Identify required lines, levels, contours, and datum locations.

D. Locate, identify, and protect utilities that remain and protect from damage.

E. Notify utility company to remove and relocate utilities.

F. Protect bench marks, survey control points, existing structures, paving, and curbs from excavating equipment and vehicular traffic.

3.02 TRENCHING

A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

B. Do not interfere with 45 degree bearing splay of foundations.

C. Cut trenches wide enough to allow inspection of installed utilities.

D. Hand trim excavations. Remove loose matter.

E. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

F. Remove lumped subsoil, boulders, concrete rubble and rock up to 1/3 cu yd measured by volume.

G. Remove excavated material that is unsuitable for re-use from site.

H. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.

I. Remove excess excavated material from site.

3.03 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.04 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage other work.

D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

H. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

I. Correct areas that are over-excavated.
   1. Thrust bearing surfaces: Fill with concrete.
   2. Other areas: Use structural fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.

J. Compaction Density Unless Otherwise Specified or Indicated:
   1. Under paving and similar construction: 95 percent of maximum dry density.
   2. At other locations: 90 percent of maximum dry density.

K. Reshape and re-compact fills subjected to vehicular traffic.

3.05 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

B. At Paved Areas and within Public Right-of-Ways:
   1. Use compacted granular trench backfill.

C. Utility Piping, Conduits, and Duct Bank:
   1. Bedding: Use granular fill.
   2. Cover with general fill.
   3. Fill up to subgrade elevation.
   4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

D. At Pipe Culverts:
   1. Bedding: Use granular fill.
   2. Place filter fabric specified in Section 33 0513 over compacted bedding.
   3. Cover with general fill.
   4. Fill up to subgrade elevation.
   5. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

3.06 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 1557 ("modified Proctor").

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.08 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 2323 - FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for footings, slabs-on-grade, site structures, utilities within the building, and to achieve site contours and elevations indicated.

B. Filling holes, pits, and excavations generated as a result of removal operations.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Topsoil placement for general site work.

B. Section 31 2200 - Grading: Removal and handling of existing soil to be re-used.

C. Section 31 2200 - Grading: Site grading.

D. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.

E. Section 31 2316.13 - Trenching: Excavating and backfilling for utility trenches outside the building.

F. Section 32 1216 - Asphalt Paving: Aggregate base course under asphalt paving.

G. Section 32 1313 - Concrete Paving: Aggregate base course under concrete paving.

H. Section 32 9300 - Plants: Topsoil fill mix for planting beds, shrub and tree pits.

1.03 DEFINITIONS

A. Finish Grade Elevations: Elevations of soils indicated on drawings.

B. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: 10 lb sample of each type of fill; submit in air-tight containers to testing laboratory.

C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports.

E. An Indiana registered engineer, engaged in soil testing, shall advise the architect in writing that all footings are bearing on soil having design capacity.

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 approved by owner.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

C. Verify that survey bench marks and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. Subbase material: graded for intended use as subbase for paving materials: Conforming to State of Illinois Department of Transportation standard.

B. Drainage Fill: Washed gravel or crushed stone, 1/4" to 3/4" size; ASTM C33, Size 67.

C. General Fill - Fill Type mineral soil substantial free from organic and unsuitable materials: Subsoil excavated on-site.
   1. Graded.

2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris; 80% passing No. 40 sieve and not more than 50% passing No. 200 sieve.

D. Structural Fill - Fill Type gravel or sandy gravel free of organic and unsuitable materials and within following gradation limits and conforming to State of Illinois Department of Transportation standard.

E. Concrete for Fill: Lean concrete.

F. Granular Fill - Gravel: Pit run washed stone; free of shale, clay, friable material and debris.
1. Graded in accordance with ASTM C136, within the following limits:
   a. 2 inch sieve: 100 percent passing.
   b. 1 inch sieve: 95 percent passing.
   c. 3/4 inch sieve: 95 to 100 percent passing.
   d. 5/8 inch sieve: 75 to 100 percent passing.
   e. 3/8 inch sieve: 55 to 85 percent passing.
   f. No. 4 sieve: 35 to 60 percent passing.
   g. No. 16 sieve: 15 to 35 percent passing.
   h. No. 40: 10 to 25 percent passing.
   i. No. 200: 5 to 10 percent passing.

G. Granular Fill - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter.
1. Grade in accordance with ASTM D2487 Group Symbol GM.

H. Sand: Conforming to State of Illinois Department of Transportation standard.

I. Topsoil: Conforming to State of Illinois Department of Transportation standard.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

E. The contractor shall employ and pay for an independent approved testing laboratory, approved by Architect, to make the following tests.
1. Maximum dry density at optimum moisture content in accordance with ASTM D 1557 for each type of soil to be used for compacted fill.
2. In place field dry density tests for every 2,500 square feet of area of each layer of compacted subgrade fill other than drainage fill under building slabs as directed by the Architect.
3. In-place field dry density tests of each layer of compacted fill under all footings as directed by Architect.
4. If compaction is found to be unsatisfactory, make the necessary number of extra in-place field dry density tests to determine the extent of re-compaction work required and perform whatever re-compaction is then necessary.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 2200 for additional requirements.

C. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

D. Verify structural ability of unsupported walls to support imposed loads by the fill.

3.02 PREPARATION

A. Refer to the soils report and follow recommendations

B. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.

C. Cut out soft areas of subgrade not capable of compaction in place. Backfill with appropriate fill.

D. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

E. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Refer to soils report and follow recommendations.

B. Backfill at segmental masonry retaining walls according to requirements of Section 32 3223.

C. Place acceptable materials in layers not more than 8" loose depth for materials compacted by heavy equipment and not more than 4" loose depth for materials compacted by hand equipment to subgrades indicated as follows:
   1. Structural fill: Use under foundations, slabs, on grade in layers as indicated.
   2. Drainage fill: Use under building slabs, at foundation drainage and elsewhere as indicated.
   3. Common fill: Use under unpaved areas.
   4. Subbase material: Use under steps, piping, and conduit.

D. Fill up to subgrade elevations unless otherwise indicated.
   1. 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 6 inches compacted depth.

H. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

I. Slope grade away from building minimum 2 inches in 10 ft, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

J. Correct areas that are over-excavated.

K. Protect newly graded areas from traffic and erosion. Recompact and re-grade settled, disturbed and damaged areas as necessary to restore quality, appearance, and condition of work.
   1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density.
   2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.

L. Compact the materials at the optimum moisture content as determined by ASTM D 1557 by aeration or wetting to the following percentages of maximum density.
   1. Under slabs-on-grade and similar construction: Subgrade and each fill layer to 95 percent of maximum dry density.
   2. Unpaved areas: Top 6 inch of subgrade and each fill layer to 90 percent of maximum dry density.

M. Reshape and re-compact fills subjected to vehicular traffic.

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. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, ASTM D2922, or ASTM D3017.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor"), ASTM D 1557 ("modified Proctor"), or AASHTO T 180.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

E. Proof roll compacted fill at surfaces that will be under slabs-on-grade and paving.

3.06 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 32 0190 - OPERATION AND MAINTENANCE OF PLANTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Maintenance of plants and lawns of Project Site in manner that promotes health, growth, color and appearance, to quality levels specified; replace dead, dying, and damaged plants at no extra cost to Owner.

B. Clean up of landscaped areas.

C. Maintenance Period: The time frame covered by these requirements is 90 days:
   1. Start Date: Project Date of Substantial Completion.

1.02 RELATED REQUIREMENTS

A. Section 32 9219 - Seeding: Temporary maintenance until Substantial Completion.

B. Section 32 9223 - Sodding: Temporary maintenance until Substantial Completion.

C. Section 32 9300 - Plants: Temporary maintenance until Substantial Completion.

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.

B. ANSI Z133.1 - American National Standard For Arboricultural Operations - Pruning, Repairing, Maintaining, And Removing Trees, And Cutting Brush - Safety Requirements; 2012.

C. ASTM D4972 - Standard Test Method for pH of Soils; 2001 (Reapproved 2007).

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver U.S. EPA-controlled materials to site in original containers with legible labels indicating registration number and registered uses.

B. Deliver fertilizer and manufactured soil amendments to site in original containers bearing manufacturer's chemical analysis, name, trade name or trademark, and indication of compliance with applicable state and federal laws and regulations; alternatively, bulk delivery with equivalent certificate is acceptable.

C. Store fertilizer, soil amendments, and mulch in dry locations away from contaminants.

D. Do not store pesticides, herbicides, or other chemical treatment materials in locations where they could damage seeds or plants.

PART 2 PRODUCTS

2.01 PRODUCT STANDARDS

A. It is Contractor's responsibility to determine type and quantity of soil amendments and fertilizer required.

PART 3 EXECUTION

3.01 EXAMINATION

A. If soil analysis has not already been performed, take sufficient samples to obtain a comprehensive analysis; perform analysis in accordance with ASTM D4972.

3.02 LANDSCAPE MAINTENANCE - GENERAL

A. Protect existing vegetation, pavements, and facilities from damage due to maintenance activities; restore damaged items to original condition or replace, at no extra cost to Owner.

B. General Cleanup: Remove debris from all landscape areas at least once a week and from turf areas before each mowing.
   1. Debris consists of trash, rubbish, dropped leaves, downed branches and limbs of all sizes, dead vegetation, rocks, and other material not belonging in landscaped areas.
   2. Remove debris from site and dispose of properly.

C. Watering, Soil Erosion, and Sedimentation Control: Comply with federal, state, local, and other regulations in force; prevent over-watering, run-off, erosion, puddling, and ponding.
   1. Repair temporary erosion control mechanisms provided by others.
   2. Repair eroded areas and replant, when caused by inadequate maintenance.
   3. Prevent sediment from entering storm drains.

D. Trees: Exercise care to avoid girdling trees; provide protective collars if necessary; remove protective collars at end of maintenance period.

E. Fertilizing: Apply fertilizer only when necessary.

F. Earth Mound Watering Basins: Maintain in good condition and as required to permit efficient application of water without waste; reapply mulch if soil surface shows.

G. Drainage Channels: Remove obstructions in gutters, catch basins, storm drain inlets, yard drains, swales, ditches, and overflows.
   1. Remove grates from catch basins to clean.
   2. Prevent encroachment of other vegetation on turfed surface drainage channels.

H. Health Maintenance: Inspect all plants regularly for health:
   1. Eradicate diseases and damaging pests, regardless of severity or speed of effect.
   2. Treat accidental injuries and abrasions.
   3. If a plant is unhealthy but not yet dead, according to specified definitions, determine reason(s) and take remedial action immediately.
   4. Remove dead plants immediately upon determining that they are dead.

I. Pesticide and Herbicide Application: Comply with manufacturer's instructions and recommendations and applicable regulations.
   1. Obtain Owner's approval prior to each application.
   2. Apply in manner to prevent injury to personnel and damage to property due to either direct spray or drifting, both on and off Owner's property.
   3. Use backflow preventers on hose bibbs used for mixing water; prevent spills.
   4. Inspect equipment daily before application; repair leaks, clogs, wear, and damage.
   5. Do not dispose of excess mixed material, unmixed material, containers, residue, rinse water, or contaminated articles on site; dispose of off site in legal manner.
   6. Rinse water may be used as mix water for next batch of same formulation.
   7. Contractor is responsible for all recordkeeping, submissions, and reports required by laws and regulations.

J. Replanting: Perform replacement and replanting immediately upon removal of dead plant.

3.03 IRRIGATION

A. Irrigation: Do not allow plants to wilt; apply water as required to supplement rainfall; do not waste water; do not water plants or areas not needing water; do not water during rainfall; shut off water flow when finished; repair leaks.
   1. Owner's water source may be used.
   2. Do not drive water trucks over turf, seeded areas, or planting beds.

3.04 TURF MAINTENANCE

A. Maintain turf in manner required to produce turf that is healthy, uniform in color and leaf texture, and free from weeds and other undesirable growth.
   1. Grass Density - Lawns: 20 plants per square foot, minimum.
   2. Bare Spots - Lawns: 2 percent of total area, maximum; 6 inches square, maximum.
   3. Keep turf relatively free of thatch, woody plant roots, diseases, nematodes, soil-borne insects, stones larger than 1 inch in diameter, and other materials detrimental to grass growth.
   4. Limit broadleaf weeds and patches of foreign grass to a maximum of 2 percent of the total area.

B. Mowing: During growing season(s) mow turf to uniform height, in manner that prevents scalping, rutting, bruising, and uneven or rough cutting.
   1. Prior to mowing clean all debris and leaves from turf surface.
   2. Schedule frequency of mowing so that no more than one-quarter to one-third of grass leaf length is removed during a cutting.
      a. Maximum grass height before mowing: 4 inches.
      b. Height of turf is measured from the soil surface.
   3. Make each successive mowing at approximately 45 degrees to the previous mowing, if practical.
   4. Cool Season Grasses:
      a. Reduce mowing height in fall and spring.
      b. Use rotary type mowers; mulcher type mowers may be used.
   5. Warm Season Grasses:
      a. Increase mowing height slightly as fall approaches.
      b. Use reel type mowers; do not use mulcher mowers.

C. Trimming: Immediately after each mowing, neatly trim perimeter of each turf area and around obstructions within turf area; match height and appearance of adjacent turf.
   1. Adjacent to Pavements: Cut edges of turf to form a distinct, uniform turf edge.
   2. Adjacent to Planting Beds and Permanently Mulched Areas: Trimming with string trimmer is acceptable.
   3. Around Trees and Poles: Where no planting bed or mulched area exists, trimming with string trimmer is acceptable.

D. Fertilizer: Apply as recommended by manufacturer and at rate indicated by soil analysis.
   1. Cool Season Grasses: Apply at least once, in Fall before first frost; do not apply high nitrogen fertilizer during Summer; Spring application is optional but must be reduced in quantity.

E. Reseeding: Comply with requirements of Section 32 9219.

F. Resodding: Comply with requirements of Section 32 9223.

3.05 PLANTING BED MAINTENANCE

A. Planting beds include all planted areas except turf.

B. Begin maintenance immediately after plants have been installed; inspect at least once a week and perform needed maintenance promptly.

C. Keep planting beds free of pests; remove weeds and grass by hand before reaching 1 inch height.

D. Do not allow climbing, twining, or creeping plants to encroach into other species.

E. Ground Cover and Vines:
   1. Trim to encourage dense, well-developed growth covering intended areas.
   2. Do not allow plants to grow up trees, shrubs, or vines or encroach into turf or drainage channels, unless the drainage channel is intended to be planted with ground cover.
   3. Remove existing plants grown up trees, shrubs, and vines.

F. Flowering Plants: Remove dead flower heads; do not trim off leaves of flowering bulbs until they are brown.

G. Replace mulch as required and remove debris.

3.06 TREE AND SHRUB MAINTENANCE

A. Trees will be considered dead when main leader has died back or when 25 percent or more of crown has died.

B. Shrubs will be considered dead when 25 percent or more of plant has died.

C. Inspect woody plants for health by scraping up to 1/16 inch square area of bark; no green cambium layer below bark shall be evidence of death.

D. Adjust stakes, guys and turnbuckles, ties, and trunk wrap as required to promote growth and avoid girdling.

E. Fertilizing: Fertilize all trees at least once during maintenance period, preferably in the Fall; use accepted standards for determining type and method of fertilization.

F. Pruning: Unless otherwise indicated, prune only to maintain balanced natural shape; follow recommendations of ANSI A300 and ANSI Z133.1 and best local practices for species involved.

G. Shrubs: Prune at least once during maintenance period at best time to influence ultimate shape and size for the particular species.
   1. Prune to balance the plant's form and according to its natural growth characteristics.
   2. Remove water shoots, suckers, and branches not conforming to desired shape and size.

H. Young Trees: Prune at least once during maintenance period at best time to influence ultimate shape and size for the particular species; do not remove or cut off leader.

3.07 CLEANING

A. Remove fallen deciduous leaves in Fall; removal may wait until all leaves have fallen.

B. Clean adjacent pavements of plant debris and other debris generated by maintenance activities.

C. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner; Owner's trash collection facilities may be used.

D. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner.
   1. Non-Biodegradable Debris: Owner's trash collection facilities may not be used; dispose of off site in accordance with applicable regulations.

3.08 CLOSEOUT ACTIVITIES

A. 10 days prior to end of maintenance period, submit request for final inspection.

B. Final inspection will be conducted by Owner.

END OF SECTION

SECTION 32 1313 - CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Base course for concrete pavements.

B. Concrete driveways, sidewalks, integral curbs, gutters, and patios.

C. Installation of drain and manhole frames in concrete paving.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - Concrete Forming and Accessories: Concrete formwork related to construction of the building.

B. Section 03 2000 - Concrete Reinforcing: Concrete reinforcing related to construction of the building.

C. Section 03 3000 - Cast-in-Place Concrete: Cast concrete work related to construction of the building.

D. Section 31 2200 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.

E. Section 31 2323 - Fill: Compacted base course under interior slabs on grade.

F. Section 32 1216 - Asphalt Paving: Asphalt wearing course.

G. Section 33 0513 - Site Storm Utility Drainage: Manhole and drain frames furnished for placement under this section.

1.03 SUBMITTALS

A. See Section 01 3000 - 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.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain cementitious materials from same source throughout.

C. Follow recommendations of ACI 305R when concreting during hot weather.

D. Follow recommendations of ACI 306R when concreting during cold weather.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI 301.

B. Design paving for parking and residential streets.

C. Concrete Sidewalks: 3,000 psi 28 day concrete, 4 inches thick, air entrained Portland cement, broom finish.

D. Concrete Drives: 4,000 psi 28 day concrete, 5 inches thick, 6/6 - 6 x 6 inch mesh reinforcement, wood float finish.

2.02 FORM MATERIALS

A. Form Materials: Conform to ACI 301.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber (ASTM D1752).

1. Thickness: 3/8 inch.

2.03 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 80 - 80,000 psi yield strength; deformed billet steel bars; unfinished.

B. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.

C. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M Normal - Type I portland type, grey color.

B. Recycled concrete Fine and Coarse Mix Aggregates: ASTM C 33.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: Clean, and not detrimental to concrete.

E. Air-Entraining Admixtures: ASTM C260/C260M.

2.05 ACCESSORIES

A. Curing Compound: ASTM C 309, Type 1, Class A.

B. Joint Sealer: Type as specified in Section 07 9005.

C. Detectable Warning Mats: ADA compliant molded plastic with anchor lugs on back; UV resistant with integral color.
   1. Manufacturer: USA Safety Domes; tel. 303-227-1444; www.usasafetydomes.com.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of trial mixtures, as specified in ACI 301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Concrete Properties:
   1. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
   2. Total Air Content: 7 percent +/- 1.5 percent on grade, determined in accordance with ASTM C 173/C 173M.
   3. Maximum Slump: 4 inches.

2.07 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 BASE COURSE

A. Prepare subbase in accordance with State of Indiana Highways standards.

B. Place and compact base course.

C. Bring sub-base course to required depths and profiles indicated. Compact to 95% of the maximum dry density obtained in accordance with ASTM Standard D 1557, Modified Proctor Method. Properly compact with mechanical or hand tamping devices the areas adjacent to

curbs, catch basins, manholes, and other areas not accessible to rollers. Ensure sub-base course materials are not contaminated with deleterious materials.

D. Add water during compaction to bring granular material to optimum moisture content.

E. Place base course materials over prepared sub-base to a compacted depth as indicated on the plans. Compact to 95% of the maximum dry density obtained in accordance with ASTM Standard D1557, Modified Proctor Method. Ensure top surface of base course is true to lines and grades indicated, with all points within 1/2 inch of elevations indicated.

F. Add water during compaction to bring base course materials to optimum moisture content in accord with standard proctor test (ASTM D698). When excess moisture exists, rework base course materials until optimum moisture content is obtained.

3.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient in accord with Indiana DOT specification.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, true to indicated lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

A. Place reinforcement as indicated.

B. Place reinforcement to achieve pavement and curb alignment as detailed.

C. Provide doweled joints at with one end of dowel set in capped sleeve to allow longitudinal movement.

3.06 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

C. 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.

D. Place concrete to pattern indicated.

E. Re-tamping will not be allowed except at exposed aggregate areas.

F. Do not allow concrete to free fall more than 4 feet.

G. Once started, place concrete continuously between predetermined construction and control joints. Continue placing until panel or section is complete; keep top surfaces level. Do not break or interrupt successive pours such that cold joint occur. Consolidate by vibration.

H. Weather conditions:
   1. Concrete temperatures when deposited:
      a. Minimum: 50 degrees F
      b. Maximum: 85 degrees F
   2. Cold weather concreting: Comply with ACI 306 except as follows:
      a. In freezing weather, provide suitable means for maintaining concrete temperature at a minimum of 70 degrees F for three days, or 50 degrees F for five days after placing
      b. Cooling of concrete to outside temperature: not faster than 1 degree F per hour for the first day and 2 degrees F per hour thereafter until outside temperature is reached.
      c. Maximum temperature of concrete produced with heated aggregate, heated water, or both at any time during its production or transportation: 90 degrees F.

d. Do not mix salt, chemicals or other foreign materials in concrete to prevent freezing or to accelerate hardening of concrete, except as approved by Architect/Engineer.

I. Bring to level with a straight edge and strike off. Use bull floats or darbies to force coarse aggregate down and to produce a smooth surface, free from lumps and hollows.

J. Pitch to drains 1/4 inch per foot nominal, except as otherwise indicated on Drawings.

3.07 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 3/8 inch wide expansion joints at 20 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 1/4 inch of finished surface.
   2. Place joint filler between paving components and buildings and other appurtenances.

C. Provide scored joints.
   1. At intervals as shown on drawings.
   2. Between sidewalks and curbs.

D. Saw cut contraction joints 3/16 inch wide as soon as operation can be performed. Cut 1/4 into depth of slab.

3.08 FINISHING

A. Finish all concrete in accord with Iiilinois DOT specification Paving: burlap drag.

B. Walkway Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius. Finish to Class B tolerance per ACI 301.

C. Curbs and Gutters: Light broom, texture parallel to pavement direction.

D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

E. Detectable Warning Mats: Embed in fresh concrete, accurately laid to dimensions indicated, even with adjoining concrete surfaces.

3.09 JOINT SEALING

A. See Section 07 9005 for joint sealer requirements.

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. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
   1. Provide free access to concrete operations at project site and cooperate with appointed firm.
   2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
   3. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.

B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
   1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
   2. Perform one slump test for each set of test cylinders taken.

C. 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 until 75 percent design strength of concrete has been achieved.

END OF SECTION

SECTION 32 9219 - SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Seeded turf for permanent erosion control.

B. Temporary maintenance of seeded turf.

C. Edging between seeded turf and planting beds.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.

B. Section 31 2323 - Fill: Standards for acceptable topsoil material.

C. Section 32 0190 - Operation and Maintenance of Planting: Post-occupancy maintenance.

D. Section 32 9223 - Sodding: Sodded lawns.

1.03 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.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Seed analysis, fertilizer analysis, soil amendments and erosion fabric.

C. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.05 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.06 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.

1.07 QUALITY ASSURANCE

A. Contractor's Qualifications: Same subcontractor as for sodded lawn work.

1.08 MAINTENANCE SERVICE

A. See end of section.

PART 2 PRODUCTS

2.01 SEED MIXTURE

A. Seed Mixture:
   1. Kentucky Blue Grass: 50 percent.
   2. Creeping Red Fescue Grass: 20 percent.
   3. Norlea Perennial Rye: 30 percent.

2.02 ACCESSORIES

A. Fertilizer: Commercial; 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: 2 percent.
2. Phosphoric Acid: 4 percent.
3. Soluble Potash: 2 percent.

B. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

C. Erosion Fabric: Jute matting, open weave.

D. Permanent Erosion Control Blanket: Biodegradable, meeting specifications of Erosion Control Technology Council specifications for the installation indicated.
1. Manufacturer: North American Green; www.nagreen.com. Product S150.
   a. Stakes: As recommended by blanket manufacturer.
2. Substitutions: See Section 01 6000 - Product Requirements.

E. String: Inorganic fiber.

F. Edging: PVC.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared topsoil base is ready to receive the work of this Section.

3.02 PREPARATION

A. Install edging at division of seeded areas and planting beds. Install in straight lines, except as indicated otherwise, to consistent depth.

3.03 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 4 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.04 SEEDING

A. Apply seed at a rate of 5 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Do not seed areas on steep slopes in excess of that which can be covered with erosion control blanket on same day.

D. Do not sow immediately following rain, when ground is too dry, or during windy periods.

E. Roll seeded area with roller not exceeding 112 lbs.

F. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

G. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

H. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 HYDROSEEDING

A. Apply seeded slurry with a hydraulic seeder at a rate of 45 lbs per 1000 sq ft evenly in two intersecting directions.

B. Do not hydroseed area in excess of that which can be mulched on same day.

C. Immediately following seeding, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

E. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.06 EROSION BLANKET

A. Cover seeded areas on steep slopes with permanent erosion control blanket.

B. Dig trenches at top and bottom ends of slopes in accordance with blanket manufacturer's recommendations and secure blanket roll end in trenches with staples and topsoil according to blanket manufacturer's recommendations.

C. Overlap edges of adjacent rolls 4 inches to 8 inches as recommended by manufacturer.

D. Secure blanket edges with staples spaced 12 inches apart. Secure blankets with additional staples in the field of each blanket as appropriate for conditions.

3.07 MAINTENANCE

A. See Section 32 0190 - Operation and Maintenance of Planting for post-occupancy maintenance.

B. During maintenance period specified on Landscape Drawings provide temporary maintenance at no extra cost to Owner.

1. 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.
2. Immediately remove clippings after mowing and trimming.
3. Water to prevent grass and soil from drying out.
4. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
5. Immediately reseed areas that show bare spots.
6. Protect seeded areas with warning signs during maintenance period.
7. Replace unsatisfactory material.

END OF SECTION

SECTION 33 1116 - SITE WATER UTILITY DISTRIBUTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings for site water lines including domestic water lines and fire water lines.

B. Valves and Fire hydrants.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Standards for concrete for thrust restraints.

B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 33 1300 - Disinfecting of Water Utility Distribution: Disinfection of site service utility water piping.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

C. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with municipality requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

PART 2 PRODUCTS

2.01 WATER PIPE

A. Ductile Iron Pipe: AWWA C151, cement lined, bituminous coated:
   1. Fittings: Ductile iron, standard thickness.
   2. Joints: AWWA C111, rubber gasket with rods.
   3. Jackets: AWWA C105/A21.5 polyethylene jacket.

2.02 VALVES

A. Underground gate valves: Valves shall have 360 degree sealing surfaces and shall be designed for use in very infrequent operation and for permanent duty in underground service. Accessories (bolts, glands, and gaskets) shall be in complete compliance with AWWA Specification and for 150 psi working pressure. Valve operator shall be of traveling-nut type, sealed, gasketed, and lubricated for underground services. Operator shall have sufficient number of turns to close to prevent water hammer. All valves shall open list and be equipped with AWWA operating nut.

B. Valve boxes and extensions: Cast iron, two or three piece type with matching cover and marked "water". Furnish also as part of valve and cast iron box installation a valve operating wrench of length required for specifies depth of bury.

C. Valves: Manufacturer's name and pressure rating marked on valve body.

2.03 HYDRANTS

A. Hydrants: Type as required by utility company.

B. Hose and Pumper Connection: Match sizes with utility company, two hose nozzles, one pumper nozzle. Comply with local fire department requirements.

C. Finish: Primer and two coats of enamel in color required by utility company.

2.04 ACCESSORIES

A. Concrete for Thrust Restraints: Concrete type specified in Section 03 3000.

B. Manholes: Precast Concrete; ASTM C478

C. Manhole Frames, Covers, Gratings, and Steps: Gray Cast Iron Construction with Service Type Cast in Covers.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.02 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

A. See Section 31 2316.13 for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Form and place concrete for pipe thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on subsoil.

D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.04 INSTALLATION - PIPE

A. Maintain 10 foot separation of water main from sewer piping and in accordance with local code.

B. Group piping with other site piping work whenever practical.

C. Establish elevations of buried piping to ensure minimum 4 ft of cover or as per local code.

D. Install pipe to indicated elevation.

E. Install ductile iron piping and fittings to AWWA C600.

F. Install grooved and shouldered pipe joints to AWWA C606.

G. Route pipe in straight line.

H. Install pipe to allow for expansion and contraction without stressing pipe or joints.

I. Install access fittings to permit disinfection of water system performed under Section 33 1300.

J. Slope water pipe and position drains at low points.

3.05 INSTALLATION - VALVES AND HYDRANTS

A. Set valves on solid bearing.

B. Center and plumb valve box over valve. Set box cover flush with finished grade.

C. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.

D. Set hydrants to grade, with nozzles at least 20 inches above ground.

E. Provide drainage pit filled with washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to sewer.

F. Paint hydrants in accordance with Section 09 9000.

3.06 SERVICE CONNECTIONS

A. Provide water service to utility company requirements .

B. Provide sleeve in foundation wall for service main. Support with reinforced concrete bridge. Calk enlarged sleeve watertight.

C. Anchor service main to interior surface of foundation wall.

3.07 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000.

B. Pressure test water piping to 125 psi.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 33 1300 - DISINFECTING OF WATER UTILITY DISTRIBUTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disinfection of site domestic water lines and site fire water lines.

B. Disinfection of building domestic water piping.

C. Testing and reporting results.

1.02 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping: Water piping system.

B. Section 33 1116 - SITE WATER UTILITY DISTRIBUTION.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Test Reports: Indicate results comparative to specified requirements.

C. Certificate: Certify that cleanliness of water distribution system meets or exceeds specified requirements.

D. Disinfection report:
   1. Type and form of disinfectant used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test locations.
   4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
   5. Date and time of flushing start and completion.
   6. Disinfectant residual after flushing in ppm for each outlet tested.

E. Bacteriological report:
   1. Date issued, project name, and testing laboratory name, address, and telephone number.
   2. Time and date of water sample collection.
   3. Name of person collecting samples.
   4. Test locations.
   5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
   6. Coliform bacteria test results for each outlet tested.
   7. Certification that water conforms, or fails to conform, to bacterial standards of State of Illinois.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with AWWA C651.

B. Testing Firm: Company specializing in testing potable water systems, approved by governing authorities of the State in which the Project is located.

C. Submit bacteriologist's signature and authority associated with testing.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code or regulation for performing the work of this Section.

B. Provide certificate of compliance from authority having jurisdiction indicating approval of water system.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

A. Chemicals: AWWA B300, Hypochlorite, AWWA B301, Liquid Chlorine, AWWA B302, Ammonium Sulfate, and AWWA B303, Sodium Chlorite.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping system has been cleaned, inspected, and pressure tested.

B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.02 DISINFECTION

A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.

B. Provide and attach equipment required to perform the work.

C. Inject treatment disinfectant into piping system.

D. Maintain disinfectant in system for 24 hours.

E. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water.

F. Replace permanent system devices removed for disinfection.

G. Pressure test system to 125 psi. Repair leaks and re-test.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000.

B. Test samples in accordance with AWWA C651 or requirements of local health department.

END OF SECTION

SECTION 33 3111 - SITE SANITARY UTILITY SEWERAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewerage drainage piping, fittings, and accessories.

B. Connection of building sanitary drainage system to municipal sewers.

C. Manholes and covers.

D. Cleanout Access.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.

B. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling for piping.

1.03 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

C. Project Record Documents:
   1. Record location of pipe runs, connections, catch basins, manholes, cleanouts, and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for materials and installation of the Work of this section.

1.06 PROJECT CONDITIONS

A. Coordinate the Work with termination of sanitary sewer connection outside building, connection to municipal sewer utility service, and trenching.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Provide products that comply with applicable code(s).

B. Plastic Pipe: ASTM D 3034, SDR 26, Poly(Vinyl Chloride) (PVC) material.
   1. Joints: ASTM D3212, flexible elastomeric seals.

C. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 SANITARY MANHOLE

A. Lid and Frame: Grey Cast iron construction with service type cast in covers:

B. Shaft construction and Eccentric Cone Top Section: Reinforced precast Concrete pipe sections, lipped male/female joints, cast steel ladder rungs into shaft sections at 16 inches.

C. Base Pad: Cast-in-place concrete of type specified in Section 03 3000, levelled top surface to receive concrete shaft sections, sleeved to receive sanitary sewer pipe sections.

2.03 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Section 31 2316.13.

B. Pipe Cover Material: As specified in Section 31 2316.13.

PART 3 EXECUTION

3.01 TRENCHING

A. See Section 31 2316.13 for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
   1. Plastic Pipe: Also comply with ASTM D2321.

C. Install pipe, fittings, and accessories in accordance with ASTM D 2321 and manufacturer's instructions. Seal joints watertight.

D. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

E. Connect to building sanitary sewer outlet and municipal sewer system.

3.03 INSTALLATION - CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

C. Establish elevations and pipe inverts for inlets and outlets as indicated.

D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 4000.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

C. Perform Pressure, Infiltration, and Deflection tests per applicable standards.

3.05 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION