

SECTION 00100 - INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL: To be considered, Bids must be made in accordance with these instructions to Bidders.

1.1 PROJECT

- A. Building Addition for:
Wintech Window Technology, Inc.
201 Industrial Drive
Monett, Missouri 65708

1.2 RECEIPT OF BIDS

- A. Bids for the project above will be received by Anderson Engineering, Located at 215 5th Street, Monett Missouri 65708 until 2:00 p.m. local time, Wednesday, May 25, 2016. At that time all bids submitted in accordance with these Instructions to Bidders and the Bid Form will be opened and reviewed privately. Bids shall include all taxes (as appropriate), freight, overhead and profit, and any other miscellaneous charges relating to the work.

1.3 CONTRACT DOCUMENTS

- A. Copies of the Bid Documents may be obtained by the invited General Contractors only as PDF files from the office of the architect. The invited General Contractors will be responsible to provide the documents to the subcontractors or suppliers, and responsible to distribute and addendums the subcontractors or suppliers. The architect will not distribute any of the bid documents or addendums to subcontractors or suppliers.
- B. Bid Documents will be available May 5, 2016 form the Architect.

1.4 EXAMINATION

- A. Bidders shall carefully examine the contract Documents and the site to obtain a first-hand knowledge of the conditions affecting the project. Contractors will not be given extra compensation, as defined in Article 12 of the General Conditions, which can be determined by examining the site, the Contract Documents, and any other information herein referenced.
- B. In the event of a conflict within the Contract Documents, it will be assumed that the better quality or greater quantity of the two is intended.
- C. Each Bidder by submitting a Bid represents that the Bid Documents have been read and understood. This responsibility will not be limited to Paragraphs, Sections, or Drawings pertaining to the trade, or Contract of Subcontract of a particular bidder. Bidders shall examine the Documents pertaining to the work of all other trades, Subcontracts, or Contracts, where responsibilities for certain work may be implicitly established therein.
- D. Bidders are cautioned to be alert for the possibility of missing Project Manual pages due to printer error. In all cases, pages are numbered consecutively within each Section, and the final page of each section is identified by the words END OF SECTION followed by section number.

1.5 QUALIFICATION STATEMENTS

- A. Each Bidder shall submit with their Bid Form evidence of their experience, qualifications and financial ability to carry out the terms of the contract. Bidders shall submit a properly executed Contractor's Qualification Statement, AIA Document A305 or equal information on their own form and format. These qualifications include but are not limited to the Owner being satisfied that the bidder involved:
1. Maintain a permanent place of business.
 2. Has adequate equipment to do the Work properly and expeditiously.
 3. Has appropriate technical ability with a minimum of (3) years experience.
 4. Has satisfactorily completed a minimum of (3) contracts of similar nature.

1.6 EQUAL EMPLOYMENT COMPLIANCE

- A. The successful Bidder will be required to comply and to cause his subcontractor, if any, to comply with all federal statutes, regulations, and directive against discrimination against any person in connection with the contract, on account of race, color or national origin, and that such discrimination extends to procurement to materials and lease of equipment for use in connection with the contract.

1.7 PREVAILING WAGE RATE REQUIREMENTS

- A. No prevailing wage rate requirements.

1.8 SALES TAX EXEMPTION

- A. This is not a tax-exempt project.

1.9 QUESTIONS AND INTERPRETATIONS

- A. Submit all questions about the Contract Documents to the Architect/Engineer, in writing. Replies, which modify the Documents, will be issued to the Bidders of record as Addenda to the Drawings and Specifications, and will form a part of the Contract. The Architect and Owner will not be responsible for oral clarifications. The Architect must receive questions no later than four (4) working days prior to the bid opening date. No Addenda will be issued less than two (2) days prior to the Bid opening date. Failure to request clarification will not wave the responsibility of the comprehension of the Documents and performance of the Work in accordance with the intent of the Documents. Signing of the agreement will be considered as implicitly denoting comprehension of intent of the Bid Documents.
- B. A pre bid meeting will be held at the site May 17, 2016 at 9:00 am. It is mandatory that each General Contractor be in attendance and sub contractors are welcome. The plant facility requires steel toe footwear.

1.10 SUBSTITUTIONS

- A. Prior to the receipt of Bids, if any Bidder wishes to incorporate products other than those specified herein, in their bid, the bidder will notify the Architect/Engineer in writing no later than five (5) days before the bid opening date for review of the substitution. Late request might be considered. Approval of any substitutions will be in the form of written addenda issued to the bidders of record. Substitutions after the signing of the contract will be as identified in the General Conditions of the Contract and the appropriate Division 1 Sections.
- B. Clearly describe and indicate the product for which approval is requested, including data, clearly marked necessary to demonstrate acceptability. Written request must indicate the section number, page number and line number of the Specification for the request of the product being

made.

1.11 BIDDING PROCEDURES

- A. Bids shall be made on unaltered Bid Forms (all of Section 00200). Bid amounts shall be both written and printed numerically in the space provided. In the case of conflicts between figures, the written amount in words will prevail. Submit one (1) copy of the completed Bid Form. Acknowledge, in the space provided, the receipt of all Addenda issued during the Bidding period. Fill in all blank spaces; failure to do so may be cause for rejection of bid.
- B. Include all Alternates and Unit Prices as described in Division 1; failure to do so may be cause for rejection of bid.
- C. At the Architects request the apparent low bidder shall provide a list of Subcontractors and material suppliers within 24 hours after bid opening.
- D. Submit signed Bid with name typed. Bids which are not signed by individuals making them should have attached thereto a power of attorney evidencing authority to sign the bid in the name of the person for whom it is signed.
- E. Bids which are signed for a partnership shall be signed by the partners or by an attorney-in-fact, there should be attached to the bid documentation of power of attorney evidencing authority to sign the bid, executed by the partners.
- F. Bids which are signed for a corporation shall show the correct corporate name thereof and the state of incorporation. The signature of the president or other authorized officer of the corporation shall be handwritten below the corporate name following the word "signature". If such a bid is manually signed by an officer other than the president of the corporation, a certified copy of a resolution of the board of directors evidencing authority of such official to sign the bid should be attached to it. Such a bid should also bear the attesting signature of the secretary of the corporation and the impression of the corporate seal.

1.12 BID SECURITY

- A. Submit a Bid Security, with the Bid Form, payable to the owner, in the amount of 5% of the bid sum. Submit bid security in the form of certified check, cashier's check, or bid bond issued by a Surety licensed to conduct business in the state in which the project is being constructed. The successful bidder's security will be retained until the agreement has been signed and the payment and performance bonds in the amount of 100% (if required by the owner), have been furnished. The owner reserves the right to retain the security of the next two (2) lowest bidders until the execution of the agreement or until thirty (30) days after bid opening date, whichever is shorter. Other bid securities will be returned.
- B. Bids without the above referenced bid security will not be considered.
- C. If any bidder refuses to enter into Agreement, the bid security will be retained as liquidated damages, but not as penalty.

1.13 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

- A. Include the price to furnish and pay for bonds covering faithful performance of the agreement and payment of obligations arising thereunder. Furnish bonds in such form as the owner may prescribe and with surety company acceptable to the owner. Deliver said bonds to the owner not later than the date of execution of the agreement. Failure or neglecting to deliver said bonds as specified will be considered as having abandoned the agreement and the bid security will be retained as liquidated damages.

1.14 FEES

- A. The owner shall pay all utility connection fees, including the following if required:
 - 1. Sewer connection fee.
 - 2. Water service tap fee.
 - 3. Generally, there is no charge for electrical service unless underground electrical service is specified or under certain conditions under utility company policies. The owner will cover these fees if required. (Temporary electrical service however is to be provided by the contractor.)

1.15 SUBMITTAL

- A. Submit completed bid and other required attachments in a sealed envelope clearly marked with:
 - Project name.
 - Name of Architect
 - The phrase "BID - DO NOT OPEN UNTIL DESIGNATED BID OPENING."
 - Bid time and date.
 - Name and address of bidder.
- B. No responsibility will be attached to the Architect, Owner or their authorized representative for the premature opening of any bid not properly addressed and identified. At bid opening time and date, all bids will be considered complete and final.
- C. Telegraphic or faxed bids, conditional bids, or alterations to the bid will not be accepted.

1.16 MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bidders may withdraw their bid at any time before bid closing time. Bids may be modified and resubmitted or new bids submitted, so long as the requirements for submittal of bids are met. No bid may be withdrawn during the bid holding period as stated in the Bid Form.

1.17 DISQUALIFICATION

- A. The owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with the intent to defraud or other illegal practices upon the part of the bidder.

1.18 AWARD OF CONTRACT

- A. Contracts will be awarded to the responsible bidder proposing the most advantageous bid. The acceptable bid will be determined on the basis of the base bid, or a combination of base bid and any or all alternates, as required to obtain the optimum work possible within the available funds. The owner reserves the right to accept any bid, and to reject any bid and all bids, or to negotiate contract terms with the various bidders, when such is deemed by the owner to be in the owner's best interest, and to waive any formalities in bidding. Notwithstanding any delay in the preparation and execution of the formal contract agreement, each bidder will be prepared, upon written notice of bid acceptance, to commence work within five (5) calendar days following receipt of official written order of the owner to proceed, or on the date stipulated in such order. The accepted bidder will assist and cooperate with the owner in preparing the formal contract agreement, and within three (3) days following its presentation will execute same and return it to the owner.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

END OF SECTION 00100

SECTION 00200 - BID FORM

TO:

Mark Harper
Wintech Window Technology, Inc.
201 Industrial Drive
Monett, Missouri 65708

PROJECT:

Building Addition for:
Wintech Window Technology, Inc.
201 Industrial Drive
Monett, Missouri 65708

DATE:

The undersigned as Bidder, having examined the Bid Documents dated April 29, 2016 for the above referenced project including this Bid Form, project Manual, Drawings, and Addenda Nos____ through____ and having visited the site of the proposed construction and examined the conditions affecting the Work, includes all their provisions in this Bid.

IN SUBMITTING THIS BID, THE BIDDER AGREES:

To hold open the Bid for thirty (30) days from receipt of bids.

To hold open the Alternate Bids for a period of ninety (90) days from the receipt of bids.

To accept and accomplish the Work in accordance with the Contract Documents, including Specifications, Drawings, and Addenda.

To enter into and execute a Contract, if awarded, on the basis of this bid, and to furnish the required Bonds.

To provide a Bid Bond in the amount of five percent (5%) of this bid as stated on the attached form, AIA Document A311.

To comply with all federal statutes, regulations, and directives against discrimination against any person in connection with the contract, on account of race, color, or national origin, and that such discrimination extends to procurement of materials and lease of equipment for use in connection with the contract.

To commence construction of the Work immediately after receipt of the Notice to Proceed and to be completed within____consecutive days or pay liquidated damages as set forth in these Documents.

To furnish a statement of Bidders Qualifications along with this Bid Form.

To complete this Bid Form in its entirety, accepting that failure to do so may result in the rejection of this bid.

To construct the Work of the base bid for the lump sum of:

_____ (\$_____)

The Bidder agrees to include, if accepted by the Owner, work of the following Alternates:

A. Alternate No. 1: Add for solid-plastic polymer resin toilet compartments.

_____ (\$_____)

B. Alternate No. 2: Add for LED type light fixtures per lighting plans.

_____ (\$_____)

Rock excavation in accordance with Section "Earthwork."

Mass Removal \$_____ 1 Cu. Yd.

Trench Removal \$_____ 1 Cu. Yd.

Unsuitable soil removal and replacement:

Removal \$_____ 1 Cu. Yd.

Replacement \$_____ 1 Cu. Yd.

Existing gas pipe fitting to welded connection:

Removal of pipe fitting & welded connection

\$_____ Per each fitting replaced and welded.

Provide itemized bid information below:

Division One General Conditions:

_____ (\$_____)

Division Two Site Work (Excavation for building foundations):

_____ (\$_____)

Division Three Concrete:

_____ (\$_____)

Division Four Masonry:

_____ (\$_____)

Division Five Metals:

_____ (\$ _____)

Division Six Wood & Plastics:

_____ (\$ _____)

Division Seven Thermal & Moisture Protection:

_____ (\$ _____)

Division Eight Doors:

_____ (\$ _____)

Division Nine Finishes:

_____ (\$ _____)

Division Ten Specialties:

_____ (\$ _____)

Division Thirteen:

- Metal Building:

_____ (\$ _____)

- Metal Building Erection:

_____ (\$ _____)

Division Fifteen Plumbing:

_____ (\$ _____)

Division Fifteen Mechanical:

_____ (\$ _____)

Division Sixteen Electrical:

_____ (\$ _____)

BIDDER:

name of firm (individual, partnership, corporation)

SIGNATURE:

name

title

ADDRESS:

street

city

state

zip

SEAL

(if applicable)

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

END OF SECTION 00200

SECTION 00300 - FORM OF AGREEMENT

At the owners discretion the selected general contractor will be required to enter into a contract (American Institute of Architects A101 Standard Form of Agreement between Owner and Contractor latest edition) provided and prepared by the Contractor and shall include AIA Document A311 Performance Bond and Labor and Material Payment Bond.

SECTION 00400 - SUPPLEMENTAL GENERAL CONDITIONS

PART 1 - SUPPLEMENTAL AND AMENDMENTS TO THE AIA GENERAL CONDITIONS

1.1 GENERAL

- A. The Supplemental General Conditions are intended to supplement the AIA General Conditions and are hereinafter supplemented and / or amended, and shall take precedence in cases of conflict.

1.2 THE CONTRACT

- A. The form of the contract shall be AIA standard form A-101-Owner and Contractor Agreement Form - Stipulated Form.
- B. The document will be supplied by the general contractor whom contracts for the work awarded. The contract shall be executed in three (3) original counterparts.

1.3 PERFORMANCE AND PAYMENT BOND

- A. The form of the performance and payment bond to be executed are standard AIA documents A311-Performance Bond and Labor and Material Payment Bond.
- B. Copies of the document are on file in the office of the Architect and will be made available to whom contracts are awarded. The performance / payment bond shall be executed in five (5) original counterparts.
- C. Bidders to whom the contract is awarded will be required to furnish a Performance and Payment Bond to the Owner in an amount equal to one hundred percent (100%) of the contract price.
- D. The bonds shall be executed by a surety company authorized to do business in the State of Missouri and acceptable as Surety to the Owner.
- E. Accompanying bonds shall be a "Power of Attorney" authorizing the attorney-in-fact to bind the Surety Company and certified to include the date of the bonds.
- F. Performance bond and labor and materials bond shall be made payable without condition to the Owner as defined by the Contract.

1.4 INSURANCE

- A. The Contractor shall provide copies of insurance policies or evidence of insurance coverage to the Architect for the following insurance protection in the amounts as shown.
 - 1. Employer's Liability Insurance and Workmen's Compensation: Workmen's Compensation Insurance for all of his employees at the site of the project, and in case any work is sublet, Contractor shall require any and or all subcontractor(s) similarly to provide Workmen's Compensation Insurance for all his employees unless such employees are covered by the protection afforded by Contractor. In case any class of employees engaged in hazardous work under his contract at the site of the project is not covered under the Workmen's Compensation Statue, the Contractor shall provide and shall cause each subcontractor to provide Employer's Liability Insurance. Contractors shall provide coverage under the "Occupation Disease Act: of the State of Missouri, in addition to the above requirements, if the operations of the Contractor or any subcontractor are applicable thereunder. Workmen's Compensation Insurance shall comply in all respects with the requirements of the Statues of the State of Missouri.
 - 2. Comprehensive General Liability - Bodily Injury - \$1,000,000 each person and \$1,000,000

each occurrence.

Property Damage - \$1,000,000 minimum limits

3. Automobile Liability - Bodily Injury - \$1,000,000 each person and \$1,000,000 each occurrence.

Property Damage - \$1,000,000 minimum limits

- B. Contractor shall provide Public Liability and Property Damage Insurance policy or policies providing coverages for special hazards such as operation of material hoists, blasting, or other use of explosives, and damage to underground property.
- C. The Owner will purchase and maintain Builder's Risk or Installation Floater Insurance upon the entire work at the site to the replacement cost of the work or the contract price, whichever is greater. This insurance shall include the interest of the Owner, the Contractor, and Subcontractors and shall insure against the perils of Fire or Extended Coverage, as their interest may appear. The Architect shall be named in the coverage as additional insured. The Contractor shall file a copy of all policies with the Owner before an exposure to loss may occur. The Owner and Contractor waive all rights against each other for damage caused by fire or other perils to the extent covered by insurance provided under this paragraph.

1.5 LIQUIDATED DAMAGES

- A. The Owner may, at their discretion, deduct \$500.00 from any amount other wise due under this contract for every day Contractor fails or refused to prosecute the work or any separable part thereof with such diligence as will insure the completion by the contract time specified, or any extension thereof, or fails to complete the work by such time. Once substantial completion is obtained, this amount will be reduced to \$250.00 per day if contract time is exceeded until completion of uncompleted or unresolved items is achieved.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

END OF SECTION 00400

SECTION 00500 - GENERAL CONDITIONS

At the owners discretion the selected general contractor will be required to enter into a contract (American Institute of Architects A101 Standard Form of Agreement between Owner and Contractor latest edition) provided by the Contractor and shall include AIA Document A201 GENERAL CONDITIONS latest edition.

SECTION 01010 - SUMMARY OF WORK
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 PROJECT DESCRIPTION

- A. The Project consists of a building expansion for the Wintech Window manufacture, 201 Industrial Drive, Monett, Missouri 65708 as shown on the Contract Documents prepared by R. E. Werner Architect, LLC, dated April 29, 2016
 - 1. The Work includes earthwork for foundations, concrete, masonry, structural steel, sectional overhead doors, metal doors and frames, painting, metal building system and including, plumbing, heating, ventilating, electrical, and lighting systems.
 - 2. Note the sub grade elevation for the building addition will be established and ready for building footing excavation, and to accept base rock for floor slabs form a civil bid package that is not part of these documents or this construction contract.

1.3 WORK SEQUENCE

- A. The Work will be conducted in two phases to provide the least possible interference to the activities of the Owner's personnel and its users.
 - 1. Phase One: will be the main building addition of 53,040 square feet to the East to allow the owner to relocate the existing glass line & storage form the existing location in the Northeast corner of the existing building.
 - 2. Phase Two: will be the construction of the Employee Break Room 115 that will occupy the Northeast corner of the existing building where the existing glass line & storage have been relocated into the Building Addition of 53,040 square feet. It is the contractor's option to the extent that the new toilet rooms are constructed either in the Phase One or Phase Two portion of the project.

1.4 CONTRACTOR USE OF PREMISES

- A. General: During the construction period the Contractor shall have use of the premises for construction operations, including use of the site (the exact extent for staging and storing materials will be determined in a pre construction meeting with the general contractor). The Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

1.5 OWNER OCCUPANCY

- A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Obtain a Certificate of Occupancy from local building officials prior to complete Owner occupancy.

1.6 OWNER-FURNISHED ITEMS

- A. See drawings for equipment by the owner that will be furnished and installed by the owner and not part of the construction contract (mainly equipment, and racking).
- B. The sprinkler system for the building addition work Phase One and Phase Two as described above will be furnished and installed by the owner's existing sprinkler contractor and is not part of the construction contract. Contractor will coordinate with the owner's sprinkler contractor for installation of the sprinkler system so the contractor's project schedule can be maintained and not delay the project.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

END OF SECTION 01010

SECTION 01026 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for unit prices.
1. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
 2. Unit prices include all necessary material, overhead, profit and applicable taxes.
 3. Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- B. Schedule: A "Unit Price Schedule" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.
1. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 UNIT PRICE SCHEDULE

- A. Item No. 1 - Rock Excavation:
1.
 - a. Mass Removal \$ _____ 1 CU. YD.
 - b. Trench Removal \$ _____ 1 CU. YD.
- B. Item No. 2 - Unsuitable soil removal and replacement:
1.
 - a. Removal \$ _____ 1 CU. YD.
 - b. Replacement \$ _____ 1 CU. YD.

END OF SECTION 01026

SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. This Section specifies administrative and procedural requirements governing each prime Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
- C. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

1.3 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- B. Each prime Contractor shall coordinate preparation of its Schedule of Values for its part of the Work with preparation of the Contractors' Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's construction schedule.
 - b. Application for Payment form.
 - c. List of subcontractors.
 - d. Schedule of allowances.
 - e. Schedule of alternates.
 - f. List of products.
 - g. List of principal suppliers and fabricators.
 - h. Schedule of submittals.
 - 2. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.
 - 3. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

C. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - a. Generic name.
 - b. Related Specification Section.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that have affected value.
 - g. Dollar value.
 - h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Unit Cost Allowances: Show line item value of unit cost allowances as a product of unit cost times measured quantity as estimated from the best indication in the Contract Documents.
7. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.
 - a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in- place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
8. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT:

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.
- C. Payment Application Times: The date for each progress payment is the 15th day of each month. The period of construction Work covered by each Application for Payment is the period ending 15 days prior to the date for each progress payment and starting the day following the end of the preceding period.
- D. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.
- E. Payment Application Forms: Use forms provided by the Owner for Applications for Payment; sample copies are included at the end of this Section.
- F. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- G. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.
 - 1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- H. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.
- I. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontractors or sub- subcontractors and suppliers for the construction period covered by the previous application.
 - 1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit final or full waivers.
 - 3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.
 - a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.
 - 5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

- J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary if not final).
 5. Schedule of principal products.
 6. Schedule of unit prices.
 7. Submittal Schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits
 11. Copies of authorizations and licenses from governing authorities for performance of the Work.
 12. Initial progress report.
 13. Report of pre-construction meeting.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds (if required).
 16. Data needed to acquire Owner's insurance.
 17. Initial settlement survey and damage report, if required.
- K. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- L. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
 2. Warranties (guarantees) and maintenance agreements.
 3. Test/adjust/balance records.
 4. Maintenance instructions.
 5. Meter readings;.
 6. Start-up performance reports.
 7. Change-over information related to Owner's occupancy, use, operation and maintenance.
 8. Final cleaning.
 9. Application for reduction of retainage, and consent of surety.
 10. Advice on shifting insurance coverages.
 11. Final progress photographs.
 12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

- M. Final Payment Application: Administrative actions and submittals, which must precede or coincide with submittal of the final payment Application for Payment, include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Assurance that unsettled claims will be settled.
 4. Assurance that Work not complete and accepted will be completed without undue delay.
 5. Transmittal of required Project construction records to Owner.
 6. Certified property survey.
 7. Proof that taxes, fees and similar obligations have been paid.
 8. Removal of temporary facilities and services.
 9. Removal of surplus materials, rubbish and similar elements.
 10. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01030 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for Alternates.
- B. Definition: An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.
- C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
- D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
- E. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.
 - 1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Solid plastic – polymer resin toilet compartments in lieu of metal toilet compartments.
- END OF SECTION 01030

SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades.
 - 2. Excavating and backfilling.
 - 3. Drainage course for slabs-on-grade.
 - 4. Subbase course for concrete walks and pavements.

1.2 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- K. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.3 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.
- I. Detectable Warning Tape: Polyethylene film warning tape encasing a metallic core, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, freezing temperatures or frost, and other hazards created by earthwork operations. Provide protective insulating materials as necessary.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

- C. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

3.2 EXCAVATION

- A. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Excavate for structures, pavements, and walks to indicated elevations and dimensions. Extend excavations for placing and removing concrete formwork, for installing services and other construction, and for inspections. Trim bottoms to required lines and grades to leave solid base to receive other work.
- C. Excavate utility trenches to indicated gradients, lines, depths, and invert elevations of uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit.
 - 1. Excavate trenches deeper than bottom of pipe elevation, 6 inches deeper in rock, 4 inches deeper elsewhere, to allow for bedding course. Hand excavate for bell of pipe.
- D. Proof roll subgrades, before filling or placing aggregate courses, with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.
- F. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.
- G. Stockpile borrow materials and satisfactory soil materials, without intermixing, in shaped, graded, drained, and covered stockpiles. Stockpile soil materials away from edge of excavations and outside drip line of remaining trees.

3.3 BACKFILLS AND FILLS

- A. Utility Trench Backfill: Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations.
 - 1. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final subgrade.

2. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- B. Fill: Place and compact fill material in layers to required elevations.
- C. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 1. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
- D. Compaction: Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- E. Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557 698:
 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.
- F. Grading: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Grade lawns, walks, and unpaved subgrades to tolerances of plus or minus 1 inch and pavements and areas within building lines to plus or minus 1/2 inch.
- G. Subbase and Base Courses: Under pavements and walks, place subbase course on prepared subgrade. Place base course material over subbase. Compact to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
- H. Under slabs-on-grade, place drainage course on prepared subgrade. Compact to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: The contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
- B. Allow testing agency to test and inspect subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.5 PROTECTION AND DISPOSAL

- A. Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
- D. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02361 - TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes soil treatment for termite control.

1.2 SUBMITTALS

- A. Product Data: For each product indicated, including EPA-Registered Label.
- B. Product certificates.
- C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes, and rates of application used.
 - 6. Areas of application.
 - 7. Water source for application.

1.3 QUALITY ASSURANCE

- A. Applicator Qualifications: A pest control operator who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located.
- B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.4 WARRANTY

- A. Soil Termiticide Special Warranty: Manufacturer's standard form, signed by applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered within five years from date of Substantial Completion, re-treat soil and repair or replace damage caused by termite infestation.

PART 2 - PRODUCTS

2.1 TERMITE CONTROL

- A. Soil Treatment: EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent. Use only soil treatment solutions that are not harmful to plants.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. AgrEvo Environmental Health, Inc.; a company of Hoechst and Schering, Berlin.
 - b. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
 - c. Bayer Corp.; Garden & Professional Care.
 - d. DowElanco.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

3.2 SOIL TREATMENT APPLICATION

- A. Apply soil treatment at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
 - 1. Mix termiticide solution to a uniform consistency.
 - 2. Apply to produce a continuous horizontal and vertical termiticidal barrier or treated zone around and under building construction. Distribute the treatment evenly.
 - 3. Slabs-on-Grade: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
 - 4. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
 - 5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 02361

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Miscellaneous steel framing and supports.
 - 2. Pipe bollards.
 - 3. See structural drawings for framing steel, steel decking, and masonry lintels.

1.2 SUBMITTALS

- A. Product Data: For the following:
 - 1. Grout.
- B. Shop Drawings: Include plans, elevations, sections, details of installation, and attachments to other Work.

PART 2 - PRODUCTS

2.1 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces without blemishes.
- B. Ferrous Metals:
 - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
 - 2. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
 - 3. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.
 - 4. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
 - 5. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

2.2 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664 and compatible with finish paint systems indicated.
- B. Galvanizing Repair Paint: SSPC-Paint 20, high-zinc-dust-content paint for regalvanizing welds in steel.

2.3 MISCELLANEOUS MATERIALS

- A. Fasteners: Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls, of type, grade, and class required by application indicated.
- B. Nonshrink, Nonmetallic Grout: ASTM C 1107, factory-packaged, nonstaining, noncorrosive, nongaseous grout.
- C. Concrete Fill: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

2.4 FABRICATION

- A. Connections, General: Use connections that maintain structural value of joined pieces.
 - 1. Shear and punch metals cleanly and accurately. Remove burrs.
 - 2. Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately. Finish exposed welds smooth and blended.
 - 3. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes.
 - 4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
- B. Miscellaneous Framing and Supports: Fabricate steel framing and supports that are not a part of structural-steel framework as necessary to complete the Work from structural steel of welded construction. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Where indicated to be cast into concrete or built into masonry, equip with integrally welded anchors at 24 inches o.c.
 - 2. Fabricate steel girders for wood frame construction from continuous steel shapes. Where wood nailers are attached to girders with bolts or lag screws, drill holes at 24 inches o.c.
 - 3. Fabricate steel pipe columns for supporting wood frame construction with steel baseplates and top plates welded to pipe with fillet welds the same size as pipe wall thickness.
- C. Miscellaneous Steel Trim: Fabricate units with continuously welded joints and smooth exposed edges. Miter corners and use concealed splices where possible. Fabricate cutouts, fittings, and anchorages; coordinate assembly and installation with other work.
- D. Pipe Bollards: Fabricate from Schedule 40 steel pipe.
 - 1. Cap bollards with 1/4-inch- minimum steel plate.
 - 2. Cast steel bollards into concrete foundations per the drawings.

2.5 FINISHES

- A. Finish metal fabrications after assembly. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Shop prime ferrous-metal items not indicated to be galvanized.

1. Hot-dip galvanize items indicated to be galvanized to comply with ASTM A 123 or ASTM A 153/A 153M as applicable.
2. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
3. Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Provide anchorage devices and fasteners for securing metal fabrications to in-place construction. Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, with edges and surfaces level, plumb, and true.
 1. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
 2. Fit exposed connections accurately together. Weld connections, unless otherwise indicated. Do not weld, cut, or abrade galvanized surfaces.
- B. Set bearing and leveling plates on cleaned surfaces using wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts and pack with nonshrink, nonmetallic grout.
- C. Bollards:
 1. Anchor in concrete with pipe sleeves preset and anchored into concrete. Fill space between bollard and sleeve solidly with nonshrink, nonmetallic grout.
 2. Anchor in place with concrete footings. Support and brace bollards in position in footing excavations until concrete has been placed and cured.
 3. Anchor to existing construction with postinstalled anchors and bolts. Provide four 3/4-inch anchors at each bollard, embedded at least 4 inches in existing concrete.
 4. Fill bollards solidly with concrete, mounding top surface.
- D. Touch up surfaces and finishes after erection.
 1. Painted Surfaces: Clean field welds, bolted connections, and abraded areas and touch up paint with the same material as used for shop painting.
 2. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05500

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood framing.
2. Wood supports.
3. Wood blocking.
4. Wood cants.
5. Wood nailers.
6. Wood furring.
7. Wood grounds.
8. Wood sheathing.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product indicated.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that materials comply with requirements.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses.

C. Research/Evaluation Reports: For the following:

1. Treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.
5. Metal framing anchors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive stained or natural finish, mark grade stamp on end or back of each piece.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.
 - 4. Provide dry lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
- B. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - 1. Allowable Design Stresses: Meet or exceed those indicated per manufacturer's published values determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- C. Wood Structural Panels:
 - 1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
 - 2. Oriented Strand Board: DOC PS 2.
 - 3. Comply with "Code Plus" provisions in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial."

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWP C2 (lumber) and AWP C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWP C31 with inorganic boron (SBX).
- B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
- C. Mark each treated item with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing members less than 18 inches above grade.
 - 4. Wood floor plates that are installed over concrete slabs directly in contact with earth.

2.4 DIMENSION LUMBER

- A. General: Of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated.

- B. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 2 grade and any of the following species:
 - 1. Mixed southern pine; SPIB.
 - 2. Eastern softwoods; NELMA.
 - 3. Northern species; NLGA.
 - 4. Western woods; WCLIB or WWP.
- C. Framing Other Than Non-Load-Bearing Partitions: Construction or No. 2 grade and any of the following species:
 - 1. Douglas fir-larch, Douglas fir-larch (north), or Douglas fir-south; NLGA, WCLIB, or WWP.
 - 2. Hem-fir or Hem-fir (north); NLGA, WCLIB, or WWP.
 - 3. Southern pine; SPIB.
 - 4. Spruce-pine-fir (south) or Spruce-pine-fir; NELMA, NLGA, WCLIB, or WWP.
- D. Exposed Framing: Hand select material for uniformity of appearance and freedom from characteristics that would impair finish appearance.
 - 1. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 MISCELLANEOUS LUMBER

- A. Provide miscellaneous lumber for support or attachment of other construction, including the following:
 - 1. Rooftop equipment bases and support curbs.
 - 2. Blocking.
 - 3. Cants.
 - 4. Nailers.
 - 5. Furring.
 - 6. Grounds.
- B. For items of dimension lumber size, provide Construction, Stud, or No. 15 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Eastern softwoods, No. 2 Common grade; NELMA.
 - 3. Northern species, No. 2 Common grade; NLGA.
 - 4. Western woods, Construction or No. 2 Common grade; WCLIB or WWP.

2.6 SHEATHING

- A. Plywood Wall Sheathing: Exterior Exposure 1, Structural I sheathing.
- B. Oriented-Strand-Board Wall Sheathing: Exposure 1, Structural I sheathing.
- C. Fiberboard Wall Sheathing: AHA A194.1, Type IV, Class 1 (regular density) cellulosic fiberboard sheathing with square edges, 1/2 inch thick.

- D. Extruded-Polystyrene-Foam Wall Sheathing: ASTM C 578, Type IV, in manufacturer's standard lengths and widths with tongue-and-groove or shiplap long edges as standard with manufacturer.

1. Manufacturers:

- a. DiversiFoam Products.
- b. Dow Chemical Company (The).
- c. Owens Corning.
- d. Tenneco Building Products.

- E. Polyisocyanurate-Foam Wall Sheathing: Aluminum-foil-faced, glass-fiber-reinforced, rigid, cellular, polyisocyanurate thermal insulation complying with ASTM C 1289, Type I, Class 2. Foam-plastic core and facings shall have a flame-spread index of 25 or less when tested individually.

1. Manufacturers:

- a. Apache Products Company.
- b. Celotex Corporation (The); Building Products Division.
- c. Rmax, Inc.

- F. Plywood Roof Sheathing: Exposure 1, Structural I.

- G. Oriented-Strand-Board Roof Sheathing: Exposure 1, Structural I sheathing.

2.7 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch thick.

2.8 MISCELLANEOUS MATERIALS

A. Fasteners:

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
2. Power-Driven Fasteners: CABO NER-272.
3. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

- B. Metal Framing Anchors: Made from hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Manufacturers:

- a. Alpine Engineered Products, Inc.
- b. Cleveland Steel Specialty Co.
- c. Harlen Metal Products, Inc.
- d. KC Metals Products, Inc.
- e. Silver Metal Products, Inc.
- f. Simpson Strong-Tie Company, Inc.

- g. Southeastern Metals Manufacturing Co., Inc.
 - h. United Steel Products Company, Inc.
2. Research/Evaluation Reports: Provide products acceptable to authorities having jurisdiction and for which model code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with building code in effect for Project.
 3. Allowable Design Loads: Meet or exceed those indicated per manufacturer's published values determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- C. Sheathing Tape: Pressure-sensitive plastic tape for sealing joints and penetrations in sheathing and recommended by sheathing manufacturer for use with type of sheathing required.
 - D. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated.
 - E. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Apply field treatment complying with AWPAC M4 to cut surfaces of preservative-treated lumber and plywood.
- C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. Published requirements of metal framing anchor manufacturer.
 2. Table 2305.2, "Fastening Schedule," in the BOCA National Building Code.
- D. Use finishing nails for exposed work, unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
- E. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- F. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- G. Comply with applicable recommendations contained in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.

- H. Fastening Methods:
 - 1. Sheathing: Nail to wood framing.
 - 2. Plywood Backing Panels: Nail or screw to supports.
- I. Apply sheathing tape to joints between sheathing panels and at items penetrating sheathing.
Apply at upstanding flashing to overlap both flashing and sheathing.

END OF SECTION 06100

SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes interior woodwork including for the following applications:
 - 1. Plastic-laminate cabinets.
 - 2. Plastic-laminate countertops.
 - 3. Plastic laminate window sills.

1.2 SUBMITTALS

- A. Product Data: For the following:
 - 1. Cabinet hardware and accessories.
- B. Shop Drawings: Include location of each item, plans and elevations, large-scale details, attachment devices, and other components.
- C. Samples:
 - 1. Plastic-laminate-clad panel products, for each type, color, pattern, and surface finish.

1.3 QUALITY ASSURANCE

- A. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.
 - 1. Provide AWI certification labels or compliance certificate indicating that woodwork complies with requirements of grades specified.

1.4 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood for Opaque Finish:
 - 1. Species: Any closed-grain hardwood Eastern white pine, sugar pine, or western white pine.

- B. Wood Products:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD-Exterior Glue.
 - 3. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
 - 4. Softwood Plywood: DOC PS 1, Medium Density Overlay.
 - 5. Hardwood Plywood and Face Veneers: HPVA HP-1.
- C. High-Pressure Decorative Laminate: NEMA LD 3.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Formica Corporation.
 - b. Laminart.
 - c. Wilsonart International; Div. of Premark International, Inc.

2.2 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials for a complete installation of architectural woodwork, except for items specified in Division 8 Section "Door Hardware."
- B. Butt Hinges: 2-3/4-inch, 5-knuckle steel hinges made from 0.095-inch- thick metal
 - 1. Semiconcealed Hinges for Overlay Doors: BHMA A156.9, B01521.
- C. Wire Pulls: Back mounted, 4 inches long, 5/16 inches in diameter.
- D. Catches: Magnetic, BHMA A156.9, B03141.
- E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.
- F. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, BHMA A156.9, B05091, and rated for the following loads:
 - 1. Box Drawer Slides: 75 lbf.
 - 2. File Drawer Slides: 200 lbf.
 - 3. Pencil Drawer Slides: 45 lbf.
- G. Exposed Hardware Finishes: Complying with BHMA A156.18 for BHMA finish number indicated.
 - 1. Verify with the owner.

2.3 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, fire-retardant-treated, kiln-dried to less than 15 percent moisture content.

2.4 FABRICATION

- A. General: Complete fabrication to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
- B. Plastic-Laminate Cabinets:

1. AWI Type of Cabinet Construction: Flush overlay.
2. Laminate Cladding for Exposed Surfaces: High-pressure decorative of grade indicated.
 - a. Horizontal Surfaces Other Than Tops: HGS
 - b. Vertical Surfaces: HGS.
 - c. Edges: HGS.

C. Plastic-Laminate Countertops:

1. High-Pressure Decorative Laminate Grade: HGS.
2. Colors, Patterns, and Finishes: As selected from manufacturer's full range.
3. Edge Treatment: Same as laminate cladding on horizontal surfaces.
4. Core Material at Sinks: Particleboard made with exterior glue.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas and examine and complete work as required, including removal of packing and backpriming before installation.
- B. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in this Section for type of woodwork involved.
- C. Install woodwork level, plumb, true, and straight to a tolerance of 1/8 inch in 96 inches. Shim as required with concealed shims.
- D. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.
- E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.
 1. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking.
- G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Calk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."

END OF SECTION 06402

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Insulation under slabs-on-grade.
 - 2. Foundation wall insulation (supporting backfill).
 - 3. Building wall insulation board.
 - 4. Vapor retarders.
 - 5. See Section 13125 for wall and roof insulation for the metal building structure.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Product test reports.
- C. Research/evaluation reports.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84 for surface-burning characteristics and other methods indicated with product, by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

PART 2 - PRODUCTS

2.1 INSULATING MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards and, for preformed units, in sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Extruded-Polystyrene Drainage Panels: ASTM C 578, Type IV, 1.60 lb/cu. ft. and fabricated with one side having a matrix of drainage and edge channels.
- C. Molded-Polystyrene Board Insulation: ASTM C 578, Type II, 1.35 lb/cu. ft., with maximum flame-spread and smoke-developed indices of 75 and 450, respectively.
- D. Mineral-fiber blanket insulation consisting of fibers manufactured glass for metal building wall and roof. 4" thick for walls, and 6" thick for roof – see section 13.

2.2 VAPOR RETARDERS

- A. Polyethylene Vapor Retarder: ASTM D 4397, 10 mils thick, with maximum permeance rating of 0.13 perm.
- B. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.3 AUXILIARY INSULATING MATERIALS

- A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.
- B. Protection Board: Premolded, semirigid asphalt/fiber composition board, 1/4 inch thick, formed under heat and pressure, of standard sizes.

2.4 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors with Washers: Plate formed from perforated galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square, welded to projecting steel spindle with a diameter of 0.105 inch and length capable of holding insulation of thickness indicated securely in position with 1-1/2- inch- square or diameter self-locking washers complying with the following:
 - 1. Washers formed from 0.016-inch- thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than in place.
 - 2. Where anchors are located in ceiling plenums provide capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.
- B. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain 1-inch air space between face of insulation and substrate to which anchor is attached.
- C. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install insulation to comply with insulation manufacturer's written instructions applicable to products and application indicated. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- B. Install perimeter insulation on vertical surfaces by setting units in adhesive.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.

2. Protect below-grade insulation on vertical surfaces from damage during backfilling by applying protection board set in adhesive.
- C. Protect top surface of perimeter underlab insulation from damage during concrete work by applying protection board.
- D. Installation of General Building Insulation: Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
1. Seal joints between closed-cell (nonbreathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant.
 2. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 - a. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
 3. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
 - a. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions.
 - b. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.
- E. Installation of Vapor Retarders: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
1. Seal overlapping joints in vapor retarders with adhesives or vapor-retarder tape according to vapor-retarder manufacturer's instructions. Seal butt joints and fastener penetrations with vapor-retarder tape. Locate all joints over framing members or other solid substrates.
 2. Firmly attach vapor retarders to substrates with mechanical fasteners or adhesives as recommended by vapor-retarder manufacturer.
 3. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarder.
 4. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarder.

END OF SECTION 07210

SECTION 07901 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes joint sealants for the following locations:
 - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
 - a. Control and expansion joints in unit masonry.
 - b. Joints between different materials.
 - c. Perimeter joints between materials listed above and frames of doors and windows.
 - d. Control and expansion joints in ceiling and overhead surfaces.
 - e. Other joints as indicated.
 - 2. Exterior joints in horizontal traffic surfaces as indicated below:
 - a. Control and expansion joints in brick pavers.
 - b. Control, expansion, and isolation joints in cast-in-place concrete slabs.
 - c. Joints between different materials listed above.
 - d. Other joints as indicated.
 - 3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
 - a. Control and expansion joints on exposed interior surfaces of masonry walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - d. Perimeter joints between interior wall surfaces and frames of interior doors, windows.
 - e. Perimeter joints of toilet fixtures.
 - f. Other joints as indicated.
 - 4. Interior joints in horizontal traffic surfaces as indicated below:
 - a. Control and expansion joints in cast-in-place concrete slabs.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 7 Section "Exterior Insulation and Finish Systems - Class PB" for sealing system joints.
 - 2. Division 7 Section "Flashing and Sheet Metal" for sealing joints related to flashing and sheet metal for roofing.
 - 3. Division 7 Section "Firestopping" for through-penetration firestopping systems.
 - 4. Division 7 Section "Paving Joint Sealants" for sealing joints in portland cement concrete for pavements, walkways, and curbing.
 - 5. Division 8 "Glass and Glazing" for sealants used in glazing.
 - 6. Division 8 Section "Structural Sealant Glazed Curtain Walls" for structural and other glazing sealants.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data from manufacturers for each joint sealant product required.
 - 1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.
- C. Samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- D. Samples for verification purposes of each type and color of joint sealant required. Install joint sealant samples in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- E. Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.
- F. Qualification data complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project names addresses, names of Architects and Owners, plus other information specified.
- G. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.
- H. Product test reports for each type of joint sealants indicated, evidencing compliance with requirements specified.
- I. Preconstruction field test reports indicating which products and joint preparation methods demonstrate acceptable adhesion to joint substrates.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.
- B. Testing Laboratory Qualifications: To qualify for acceptance, an independent testing laboratory must demonstrate to Architect's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying progress of the Work.
- C. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.
- D. Preconstruction Compatibility and Adhesion Testing: Submit to joint sealant manufacturers

samples of materials that will contact or affect joint sealants for compatibility and adhesion testing as indicated below:

1. Use test methods standard with manufacturer to determine if priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - a. Perform tests under normal environmental conditions that will exist during actual installation.
 2. Submit not less than 9 pieces of each type of material, including joint substrates, shims, joint sealant backings, secondary seals, and miscellaneous materials.
 3. Schedule sufficient time for testing and analysis of results to prevent delay in the progress of the Work.
 4. Investigate materials failing compatibility or adhesion tests and obtain joint sealant manufacturer's written recommendations for corrective measures, including use of specially formulated primers.
 5. Testing will not be required when joint sealant manufacturer is able to submit joint preparation data required above that are acceptable to Architect and are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- E. Product Testing: Provide comprehensive test data for each type of joint sealant based on tests conducted by a qualified independent testing laboratory on current product formulations within a 24-month period preceding date of Contractor's submittal of test results to Architect.
1. Test elastomeric sealants for compliance with requirements specified by reference to ASTM C 920. Include test results for hardness, stain resistance, adhesion and cohesion under cyclic movement (per ASTM C 719), low-temperature flexibility, modulus of elasticity at 100 percent strain, effects of heat aging, and effects of accelerated weathering.
 2. Include test results performed on joint sealants after they have cured for 1 year.
- F. Preconstruction Field Testing: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:
1. Locate test joints where indicated or, if not indicated, as directed by Architect.
 2. Conduct field tests for each application indicated below:
 - a. Each type of elastomeric sealant and joint substrate indicated.
 - b. Each type of non-elastomeric sealant and joint substrate indicated.
 3. Notify Architect one week in advance of the dates and times when mock-ups will be erected.
4. Arrange for tests to take place with joint sealant manufacturer's technical representative present.
 5. Test Method: Test joint sealants by hand pull method described below:
 - a. Install joint sealants in 5-foot joint lengths using same materials and methods for joint preparation and joint sealant installation required for completed Work. Allow sealants to cure fully before testing.
 - b. Make knife cuts horizontally from one side of joint to the other followed by 2 vertical cuts approximately 2 inches long at side of joint and meeting horizontal cut at top of 2-inch cuts. Place a mark 1 inch from top of 2-inch piece.
 - c. Use fingers to grasp 2-inch piece of sealant just above 1-inch mark; pull firmly down at a 90-degree angle or more while holding a ruler along side of sealant. Pull sealant out of joint to the distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.
 6. Report whether or not sealant in joint connected to pulled-out portion failed to adhere to

- joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
7. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.
- G. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:
1. Joints in field-constructed mock-ups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants specified in this Section.
- H. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of the Division 1 Section covering this activity.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 2. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4.4 deg C).
 3. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Architect from manufacturer's full range of standard colors for

products of type indicated.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920 and other requirements indicated on each Elastomeric Joint Sealant Data Sheet at end of this Section, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.
 - 1. Additional Movement Capability: Where additional movement capability is specified in Elastomeric Joint Sealant Data Sheet, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements of ASTM C 920 for Uses indicated.
- B. Available Products: Subject to compliance with requirements, elastomeric sealants that may be incorporated in the Work include, but are not limited to, the products specified in each Elastomeric Sealant Data Sheet.
- C. Products: Subject to compliance with requirements, provide one of the products specified in each Elastomeric Joint Sealant Data Sheet.

2.3 SOLVENT-RELEASE-CURING JOINT SEALANTS

- A. Acrylic Sealant: Manufacturer's standard one-part, nonsag, solvent-release-curing acrylic terpolymer sealant complying with AAMA 808.3 or FS TT-S-00230 or both, with capability when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the following percentage change in joint width existing at time of application and remain adhered to joint substrates indicated for Project without failing cohesively:
 - 1. 7-1/2 percent movement in both extension and compression for a total of 15 percent.
- 2. 12-1/2 percent movement in both extension and compression for a total of 25 percent.
- B. Butyl Sealant: Manufacturer's standard one-part, nonsag, solvent-release-curing, polymerized butyl sealant complying with ASTM C 1085 and formulated with minimum of 75 percent solids to be nonstaining, paintable, and have a tack-free time of 24 hours or less.
- C. Pigmented Narrow Joint Sealant: Manufacturer's standard, solvent-release-curing, pigmented synthetic rubber sealant complying with AAMA 803.3 and formulated for sealing joints 3/16 inch or smaller in width.
- D. Available Products: Subject to compliance with requirements, solvent-release-curing joint sealants that may be incorporated in the Work include, but are not limited to, the following:
- E. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acrylic Sealant:
 - a. "60+Unicrylic," Pecora Corp.
 - b. "PTI 738," Protective Treatments, Inc.
 - c. "PTI 767," Protective Treatments, Inc.
 - d. "Mono," Tremco, Inc.
 - 2. Butyl Sealant:
 - a. "BC-158," Pecora Corp.
 - b. "PTI 757," Protective Treatments, Inc.
 - c. "Sonneborn Multi-Purpose Sealant," Sonneborn Building Products Div., ChemRex, Inc.
 - d. "Tremco Butyl Sealant," Tremco, Inc.
 - 3. Pigmented Narrow Joint Sealant:

- a. "PTI 200," Protective Treatments, Inc.

2.4 LATEX JOINT SEALANTS

- A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable latex sealant of formulation indicated that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively.
- B. Acrylic-Emulsion Sealant: Provide product complying with ASTM C 834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.
- C. Silicone Emulsion Sealant: Provide product complying with ASTM C 834 and, except for weight loss measured per ASTM C 792, with ASTM C 920 that accommodates joint movement of not more than 25 percent in both extension and compression for a total of 50 percent.
- D. Available Products: Subject to compliance with requirements, latex joint sealants that may be incorporated in the Work include, but are not limited to, the following:
- E. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acrylic-Emulsion Sealant:
 - a. "AC-20," Pecora Corp.
 - b. "Sonolac," Sonneborn Building Products Div., ChemRex, Inc.
 - c. "Tremco Acrylic Latex 834," Tremco, Inc.
 - 2. Silicone-Emulsion Sealant:
 - a. "Trade Mate Paintable Glazing Sealant," Dow Corning Corp.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
 - 1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
 - 2. Product has flame spread and smoke developed ratings of less than 25 per ASTM E 84.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
- C. Available Products: Subject to compliance with requirements, acoustical joint sealants that may be incorporated in the Work include, but are not limited to, the following:
- D. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acoustical Sealant:
 - a. "SHEETROCK Acoustical Sealant," United States Gypsum Co.
 - b. "AC-20 FTR Acoustical and Insulation Sealant," Pecora Corp.
 - 2. Acoustical Sealant for Concealed Joints:
 - a. "BA-98," Pecora Corp.

- b. "Tremco Acoustical Sealant," Tremco, Inc.

2.6 TAPE SEALANTS

- A. Tape Sealant: Manufacturer's standard, solvent-free, butyl-based tape sealant with a solids content of 100 percent formulated to be nonstaining, paintable, and nonmigrating in contact with nonporous surfaces with or without reinforcement thread to prevent stretch and packaged on rolls with a release paper on one side.
- B. Available Products: Subject to compliance with requirements, tape sealants that may be incorporated in the Work include, but are not limited to, the following:
- C. Products: Subject to compliance with requirements, provide one of the following:
 - 1. "Extru-Seal Tape," Pecora Corp.
 - 2. "Shim-Seal Tape," Pecora Corp.
 - 3. "PTI 606," Protective Treatments, Inc.
 - 4. "Tremco 440 Tape," Tremco, Inc.
 - 5. "MBT-35," Tremco, Inc.

2.7 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Open-cell polyurethane foam.
 - 2. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
 - 3. Proprietary, reticulated, closed-cell polymeric foam, nonoutgassing, with a density of 2.5 pcf and tensile strength of 35 psi per ASTM D 1623, and with water absorption less than 0.02 gms/cc per ASTM C 1083.
 - 4. Any material indicated above.
- C. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 deg F (-32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote

optimum adhesion of sealants with joint substrates.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean concrete, masonry, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form release agents from concrete.
 - 4. Clean metal, glass, porcelain enamel, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

- D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 4. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.
 - a. Use masking tape to protect adjacent surfaces of recessed tooled joints.
 5. Provide recessed joint configuration, per Figure 5C in ASTM C 1193, of recess depth and at locations indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 07901

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes steel doors and frames.

1.2 SUBMITTALS

- A. Product Data: For each product indicated. Include door designation, type, level and model, material description, label compliance, fire-resistance ratings, and finishes.
- B. Door Schedule. Use same reference designations indicated on Drawings.

1.3 QUALITY ASSURANCE

- A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Amweld Building Products, Inc.
 - 2. Benchmark Commercial Doors; a division of General Products Co., Inc.
 - 3. Ceco Door Products; a United Dominion Company.
 - 4. Copco Door Co.
 - 5. Curries Company.
 - 6. Deansteel Manufacturing, Inc.
 - 7. Kewanee Corporation (The).
 - 8. Mesker Door, Inc.
 - 9. Pioneer Industries Inc.
 - 10. Republic Builders Products.
 - 11. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets: ASTM A 569/A 569M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheets: ASTM A 366/A 366M, Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

- C. Metallic-Coated Steel Sheets: ASTM A 653/A 653M, Commercial Steel (CS), Type B, with an A40 zinc-iron-alloy (galvannealed) coating; stretcher-leveled standard of flatness.
- D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized; suitable for unexposed applications; stretcher-leveled standard of flatness where used for face sheets.

2.3 DOORS

- A. Interior Doors: Complying with ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level indicated.
 - 1. Level 2 and Physical Performance Level A, 18 gauge, Model 1 (Full Flush).
- B. Exterior Doors: Complying with ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level indicated.
 - 1. Level 3 and Physical Performance Level A, 16 gauge, Model 1 (Full Flush).

2.4 FRAMES

- A. General: ANSI A250.8; conceal fastenings, unless otherwise indicated.
- B. Frame Steel Sheet Thickness:
 - 1. 0.053-inch-16 gauge for steel doors and wood doors, unless otherwise indicated. 12 gauge frames and door for break room.
 - 2. 0.053-inch- for openings wider than 48 inches level 1 steel wood doors, unless otherwise indicated.
- C. Door Silencers: Three silencers on single-door frames and two silencers on double-door frames.
- D. Plaster Guards: 0.016-inch- thick, steel sheet plaster guards or mortar boxes to close off interior of openings.
- E. Supports and Anchors: Not less than 0.042-inch- thick zinc-coated steel sheet.
- F. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Zinc-coat items that are to be built into exterior walls according to ASTM A 153/A 153M, Class C or D as applicable.

2.5 FABRICATION

- A. General: Fabricate steel door and frame units to comply with ANSI A250.8 free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant.
- B. Exterior Doors: Fabricate doors, panels, and frames from metallic-coated steel sheet. Close top and bottom edges of doors flush as an integral part of door construction or by addition of 0.053-inch- thick, metallic-coated steel channels with channel webs placed even with top and bottom edges.
- C. Interior Door Faces: Fabricate exposed faces of doors and panels from cold-rolled steel sheet.

- D. Core Construction: Manufacturer's standard core construction that produces a door complying with SDI standards.
- E. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between pairs of doors. Not more than 3/4 inch at bottom.
- F. Door-Edge Profile: Beveled edge.
- G. Tolerances: Comply with SDI 117.
- H. Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements in ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.
- I. Frame Construction:
 - 1. Fabricate frames with mitered or coped and continuously welded corners and seamless face joints. Provide temporary spreader bars.
 - 2. Provide terminated stops where indicated.
- J. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- K. Locate hardware as indicated or, if not indicated, according to ANSI A250.8.
- L. Glazing Stops: Manufacturer's standard, formed from 0.032-inch- thick steel sheet.
 - 1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 - 2. Provide screw-applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.
- M. Astragals: As required by NFPA 80 to provide fire ratings indicated.

2.6 FINISHES

- A. Prime Finish: Manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - 1. Wall Anchors: Provide at least three anchors per jamb appropriate for the wall construction. For openings 90 inches or more in height, install an additional anchor at hinge and strike jambs.

- B. Door Installation: Comply with ANSI A250.8. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
- C. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer.

END OF SECTION 08110

SECTION 08361 - SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes steel sectional overhead doors.
- B. See Division 8 Section "Door Hardware" for lock cylinders and keying.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of components:
 - 1. Wind Load: Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward.
 - 2. Operational Life: Design components to operate for not less than 100,000 cycles.
 - a. Operation Cycle: One complete cycle begins with door in closed position. Door is then moved to open position and back to closed position.

1.3 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details of installation, wiring diagrams, and attachments to other Work.
 - 1. Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.
- C. Samples: For each exposed finish.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Amarr Garage Doors.
2. Arm-R-Lite Door Manufacturing Co., Inc.
3. Clopay Building Products Co.
4. Fimble Door Corporation.
5. General American Door Co.
6. Haas Door Co.
7. McKee Door, Inc.; a United Dominion Company.
8. Overhead Door Corporation.
9. Raynor Garage Doors.
10. Roll-Lite Door Corp.; Div. of Clopay Building Products Co.
11. Wayne-Dalton Corp.
12. Windsor Door; a United Dominion Company.

2.2 STEEL DOOR SECTIONS

- A. General: Fabricated from galvanized, structural-quality commercial steel with minimum yield strength of 33,000 psi and complying with ASTM A 653/A 653M, G60 zinc coating.
 1. Steel Sheet Thickness: Exterior face 24 gage, Interior face 26 gage.
 2. Exterior Section Face: Flat flush panels.
- B. Door Panels: Fabricated from a single sheet with sections not more than 24 inches high and nominally 2 inches deep. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weathertight seal, with a reinforcing flange return.
 1. Insulated Doors with continuous thermal-break construction separating faces of door.
- C. Door Sections: Enclose open section with not less than 0.064-inch galvanized steel channel end stiles welded in place. Fabricate with not less than 0.064-inch galvanized intermediate stiles, cut to door section profile, spaced at not more than 48 inches o.c., and welded in place.
 1. Reinforce bottom section with a continuous channel or angle complying with bottom section profile and allowing installation of astragal.
 2. Reinforce sections with continuous horizontal and diagonal reinforcement of galvanized steel bars, struts, trusses or strip steel, formed to depth and bolted or welded in place.
 3. Reinforce for hardware attachment.
 4. Insulation: Insulate inner core of steel sections with rigid cellular polystyrene or polyurethane thermal insulation, with maximum flame-spread and smoke-developed indices of 75 and 450, respectively, according to ASTM E 84; or with fiberglass thermal insulation. Enclose insulation completely, with no exposed insulation material evident.
 - a. Installation: Foam in place to completely fill inner core.
 - b. Steel Sheet Inside Face: 26 gage thick.
- D. Fabricate sections so finished door assembly is rigid and aligned, with tight hairline joints, and free of warp, twist, and deformation.
- E. Finish: Manufacturer's standard finish.

2.3 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Galvanized steel track system complying with ASTM A 653/A 653M, G60 zinc coating, sized for door size and weight, designed for lift type indicated.

1. Provide complete track assembly including brackets, bracing, and reinforcement for rigid support of ball-bearing roller guides for required door type and size.
 2. Slot vertical sections of track at 2 inches o.c. for door-drop safety device.
 3. Slope tracks at proper angle from vertical or otherwise design to ensure tight closure at jambs when door unit is closed.
 4. Weld or bolt to track supports.
- B. Track Reinforcement and Supports: Galvanized steel and support members, complying with ASTM A 36/A 36M and ASTM A 123. Secure, reinforce, and support tracks as required for door size and weight to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.
- C. Support and attach tracks to opening jambs with continuous angle welded to tracks and attached to wall. Support horizontal (ceiling) tracks with continuous angle welded to track and supported by laterally braced attachments to overhead structural members at curve and end of tracks.
- D. Weatherseals: Replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and at top of overhead door.
1. Jamb Seals: Continuous flexible seals at door jambs for weathertight installation.
- E. Windows: (No windows this project) With removable stops of same material as door section frames.
1. Metal-Framed Doors: Set glazing in vinyl, rubber, or neoprene glazing channel.
 2. Size: Manufacturer's standard panel for type of glazing indicated.
 3. Clear Acrylic Plastic: 3-mm clear, transparent acrylic, smooth or polished, formulated with UV absorber.

2.4 HARDWARE

- A. General: Heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Heavy-duty galvanized steel hinges, of not less than 0.0747-inch- thick uncoated steel, at each end stile and at each intermediate stile, per manufacturer's written recommendations for door size.
1. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is not possible.
 2. Use double-end hinges, where required, for doors exceeding 16 feet in width, unless otherwise recommended by door manufacturer.
- C. Rollers: Heavy-duty rollers, with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track.
1. Double Hinges: Extend roller shaft through both hinges.
 2. Roller Tires: 3-inch- diameter roller tires for 3-inch track; 2-inch- diameter roller tires for 2-inch track.
- D. Locking Device: Fabricate assembly with lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bar to engage through slots in tracks.

1. Locking Bars: Full-disc Cremone type, both jamb sides.
 - a. Operation: From inside only.

2.5 COUNTERBALANCING MECHANISM

- A. Extension Spring: Counterbalance mechanism with extension spring and aircraft-type steel cable over ball-bearing sheaves. Provide oil-tempered wired springs with internal safety rods. Combine operation with a spring bumper in each horizontal track to cushion door at end of opening operation.
- B. Torsion Spring: Operation by counterbalance mechanism with adjustable-tension torsion springs, fabricated from oil-tempered-steel wire complying with ASTM A 229/A 229M, Class II, mounted on cross-header tube or steel shaft. Connect to door with galvanized aircraft-type lift cables with cable safety factor of at least 5 to 1. Calibrate springs for 100,000 cycles minimum.
- C. Cable Drums: Cast-aluminum or gray-iron castings grooved to receive cable. Mount counterbalance mechanism with ball-bearing brackets at each end of shaft.
 1. Include one additional midpoint bracket for shafts up to 16 feet long.
 2. Include two additional brackets at 1/3 points to support shafts more than 16 feet long, unless closer spacing is recommended by door manufacturer.
- D. Cable Safety Device: Spring-loaded, steel or bronze cam mounted to bottom door roller assembly on each side, designed to automatically stop door if either cable breaks.
- E. Bracket: Anchor support bracket, as required to connect stationary end of spring to the wall, to level shaft and prevent sag.
- F. Spring Bumper: Include at each horizontal track to cushion door at end of opening operation.

2.6 ELECTRIC DOOR OPERATORS

- A. Electric Door Operator, General: Type, size, and capacity recommended and provided by door manufacturer for door and operational life specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, disconnect device, emergency auxiliary operator, and accessories required for proper operation.
 1. Comply with NFPA 70. Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency auxiliary operator.
- B. Electric Motors: Polyphase, medium-induction type with high-starting torque, reversible, continuous-duty, Class A insulated, electric motors, complying with NEMA MG 1; with overload protection, sized to start, accelerate, and operate door in either direction, from any position, at not less than 2/3 fps (0.2 m/s) or more than 1 fps (0.3 m/s), without exceeding nameplate ratings or considering service factor. Coordinate wiring requirements and electric characteristics of motors with building electrical system.
 1. Provide open dripproof-type motor, and controller with NEMA ICS 6, Type 1 enclosure.

- C. Control Equipment: NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V ac or dc. Provide momentary-contact, three-button control station.
 - 1. Interior Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
 - 2. Exterior Units: Full-guarded, standard-duty, surface-mounted, weatherproof-type, NEMA ICS 6, Type 4 enclosure, key operated.
- D. Obstruction Detection Device: Provide each motorized door with self-monitoring, four-wire-configured-type, electrically actuated, external automatic safety sensor able to protect full width of door opening. Activation of sensor immediately stops and reverses downward door travel.
- E. Adjustable Limit Switches: Interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install door, track, and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports.
- B. Fasten vertical track assembly to framing at not less than 24 inches o.c. Hang horizontal track from structural overhead framing with angle or channel hangers welded and bolt fastened in place. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- C. Lubricate bearings and sliding parts; adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain doors. Refer to Division 1 Section "Closeout Procedures."

END OF SECTION 08361

SECTION 09653 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:

- 1. Wall base.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches long, of each resilient product color, texture, and pattern required.

1.3 PROJECT CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F , in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below 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 for every 400 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 COLORS AND PATTERNS

- A. Colors and Patterns: As selected from manufacturer's full range.

2.3 RESILIENT WALL BASE

- A. Wall Base: ASTM F 1861.
 - 1. Armstrong World Industries, Inc.;
 - 2. Azrock Commercial Flooring, DOMCO;
 - 3. Burke Mercer Flooring Products;
 - 4. Johnsonite;
 - 5. Marley Flexco (USA), Inc.;
 - 6. Pirelli Rubber Flooring
 - 7. Roppe Corporation,.
 - 8. Stoler Industries;
 - 9. VPI, LLC, Floor Products Division;
- B. Type (Material Requirement): TV (vinyl)
- C. Group (Manufacturing Method): I (solid, homogeneous) or II (layered).
- D. Style: Cove (with top-set toe).
- E. Minimum Thickness: 0.125 inch.
- F. Height: 4 inches.
- G. Lengths: Coils in manufacturer's standard length.
- H. Outside Corners: Premolded.
- I. Inside Corners: Premolded.
- J. Surface: Smooth.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturers for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
- C. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- D. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Do not install resilient products until they are the same temperature as the space where they are to be installed.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Do not stretch wall base during installation.
- E. Premolded Corners: Install premolded corners before installing straight pieces.

3.3 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - a. Do not wash surfaces until after time period recommended by manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

END OF SECTION 09653

SECTION 09912 - PAINTING (PROFESSIONAL LINE PRODUCTS)

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Samples: For each type of finish-coat material indicated.

1.3 QUALITY ASSURANCE

- A. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5.
 - 1. Wall Surfaces: Provide samples on at least 100 sq. ft.
 - 2. Small Areas and Items: Architect will designate items or areas required.
 - 3. Final approval of colors will be from benchmark samples.

1.4 PROJECT CONDITIONS

- A. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
- B. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
- C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.
- D. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.5 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
 - 1. Quantity: **3** percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Benjamin Moore & Co. (Benjamin Moore).
 - 2. Coronado Paint Company (Coronado).
 - 3. ICI Dulux Paint Centers (ICI Dulux Paints).
 - 4. Kelly-Moore Paint Co. (Kelly-Moore).
 - 5. M. A. Bruder & Sons, Inc. (M. A. B. Paint).
 - 6. PPG Industries, Inc. (Pittsburgh Paints).
 - 7. Sherwin-Williams Co. (Sherwin-Williams).

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: See finish plans.

2.3 PREPARATORY COATS

- A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
- B. Exterior Primer: Exterior alkyd or latex-based primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
 - 1. Ferrous-Metal and Aluminum Substrates: Rust-inhibitive metal primer.
 - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
 - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.
- C. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
 - 1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.
 - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
 - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

2.4 EXTERIOR FINISH COATS

A. Exterior Flat Acrylic Paint:

1. Benjamin Moore; Moorcraft Super Spec Flat Latex House Paint No. 171.
2. Coronado; 8-Line Supreme Acrylic Latex Flat.
3. ICI Dulux Paints; 2200-XXXX Dulux Professional Exterior 100 Percent Acrylic Flat Finish.
4. Kelly-Moore; 1205 Color Shield Exterior Flat Acrylic House Paint.
5. M. A. B. Paint; Fresh Kote Latex House Paint 409 Line.
6. Pittsburgh Paints; 6-600 Series SpeedHide Exterior House Paint Flat Latex.
7. Sherwin-Williams; A-100 Exterior Latex Flat House & Trim Paint A6 Series.

B. Exterior Low-Luster Acrylic Paint:

1. Benjamin Moore; Moorcraft Super Spec Low Lustre Latex House Paint No. 185.
2. Coronado; 408-Line Supreme Acrylic Satin Exterior.
3. ICI Dulux Paints; 2402-XXXX Dulux Professional Exterior 100 Percent Acrylic Satin Finish.
4. Kelly-Moore; 1245 Acry-Velvet Exterior Low Sheen Acrylic Finish.
5. M. A. B. Paint; Fresh Kote Latex Eggshell 405 Line.
6. Pittsburgh Paints; 6-2000 Series SpeedHide Exterior House & Trim Satin--Acrylic Latex.
7. Pittsburgh Paints; 90-400 Series Pitt-Tech One Pack High Performance Waterborne Satin DTM Industrial Enamels.
8. Sherwin-Williams; A-100 Exterior Latex Satin House & Trim Paint A82 Series.

C. Exterior Semigloss Acrylic Enamel:

1. Benjamin Moore; Moorcraft Super Spec Latex House & Trim Paint No. 170.
2. Coronado; 12-Line Supreme Acrylic Semi-Gloss.
3. ICI Dulux Paints; 2406-XXXX Dulux Professional Exterior 100 Percent Acrylic Semi-Gloss Finish.
4. Kelly-Moore; 1250 Acry-Lustre Exterior Semi-Gloss Acrylic Finish.
5. M. A. B. Paint; Sea Shore/Four Seasons Acrylic Latex Trim Enamel 024 Line.
6. Pittsburgh Paints; 6-900 Series SpeedHide Exterior House & Trim Semi-Gloss Acrylic Latex Paint.
7. Sherwin-Williams; A-100 Latex Gloss A8 Series.

D. Exterior Full-Gloss Acrylic Enamel for Concrete, Masonry, and Wood:

1. Benjamin Moore; Moore's IMC Acrylic Gloss Enamel M28.
2. Coronado; 414 Super Kote 5000 Acrylic Gloss Enamel.
3. ICI Dulux Paints; 3028-XXXX Dulux Interior/Exterior Acrylic Gloss Finish.
4. Kelly-Moore; 1780 Kel-Guard Acrylic Gloss Enamel.
5. M. A. B. Paint; Rust-O-Lastic Gloss Acrylic (DTM) Maintenance Finish 043 Line.
6. Pittsburgh Paints; 90 Line Pitt-Tech One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamels.
7. Sherwin-Williams; DTM Acrylic Coating Gloss (Waterborne) B66W100 Series.
8. Sherwin-Williams; SuperPaint Exterior High Gloss Latex Enamel A85 Series.

E. Exterior Full-Gloss Acrylic Enamel for Ferrous and Other Metals:

1. Benjamin Moore; Moore's IMC Acrylic Gloss Enamel M28.
2. Coronado; 80 Line Rust Scat Acrylic Latex High Gloss Enamel.
3. ICI Dulux Paints; 3028-XXXX Dulux Interior/Exterior Acrylic Gloss Finish.
4. Kelly-Moore; 5780 DTM Acrylic Gloss Enamel.

5. M. A. B. Paint; Rust-O-Lastic Gloss Acrylic (DTM) Maintenance Finish 043 Line.
6. Pittsburgh Paints; 90-300 Series Pitt-Tech One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamels.
7. Sherwin-Williams; DTM Acrylic Coating Gloss (Waterborne) B66W100 Series.

F. Exterior Full-Gloss Alkyd Enamel:

1. Benjamin Moore; Moore's IMC Urethane Alkyd Enamel M22.
2. Coronado; 123 Line Super Kote 5000 High Gloss Alkyd Enamel.
3. ICI Dulux Paints; 4308-XXXX Devguard Alkyd Industrial Gloss Enamel.
4. Kelly-Moore; 1700 Kel-Guard Gloss Alkyd Rust Inhibitive Enamel.
5. M. A. B. Paint; Rust-O-Lastic Finish Coating 074 Line.
6. Pittsburgh Paints; 7-814 Pittsburgh Paints Industrial Gloss-Oil Interior/Exterior Enamel.
7. Sherwin-Williams; Industrial Enamel B-54 Series.

2.5 INTERIOR FINISH COATS

A. Interior Flat Acrylic Paint:

1. Benjamin Moore; Moorecraft Super Spec Latex Flat No. 275.
2. Coronado; 28 Line Super Kote 5000 Latex Flat Paint.
3. ICI Dulux Paints; 1200-XXXX Dulux Professional Velvet Matte Interior Flat Latex Wall & Trim Finish.
4. Kelly-Moore; 450 Pro-Wall Interior Flat Latex Wall Paint.
5. M. A. B. Paint; Fresh Kote Latex Flat 402 Line.
6. Pittsburgh Paints; 6-70 Line SpeedHide Interior Wall Flat-Latex Paint.
7. Sherwin-Williams; ProMar 200 Interior Latex Flat Wall Paint B30W200 Series.

B. Interior Flat Latex-Emulsion Size:

1. Benjamin Moore; Moorecraft Super Spec Latex Flat No. 275.
2. Coronado; 28 Line Super Kote 5000 Vinyl Latex Flat Wall.
3. ICI Dulux Paints; 1200-XXXX Dulux Professional Velvet Matte Interior Flat Latex Wall & Trim Finish.
4. Kelly-Moore; 450 Pro-Wall Interior Flat Latex Wall Paint.
5. M. A. B. Paint; Fresh Kote Latex Flat 402 Line.
6. Pittsburgh Paints; 6-70 Line SpeedHide Interior Wall Flat-Latex Paint.
7. Sherwin-Williams; ProMar 200 Interior Latex Flat Wall Paint B30W200 Series.

C. Interior Low-Luster Acrylic Enamel:

1. Benjamin Moore; Moorecraft Super Spec Latex Eggshell Enamel No. 274.
2. Coronado; 30-Line Super Kote 5000 Latex Eggshell Enamel.
3. ICI Dulux Paints; 1402-XXXX Dulux Professional Acrylic Eggshell Interior Wall & Trim Enamel.
4. Kelly-Moore; 1610 Sat-N-Sheen Interior Latex Low Sheen Wall and Trim Finish.
5. Kelly-Moore; 1686 Dura-Poxy Eggshell Acrylic Enamel.
6. M. A. B. Paint; Fresh Kote Latex Satin Eggshell Enamel 405 Line.
7. Pittsburgh Paints; 6-400 Series SpeedHide Eggshell Acrylic Latex Enamel.
8. Sherwin-Williams; ProMar 200 Interior Latex Egg-Shell Enamel B20W200 Series.

D. Interior Semigloss Acrylic Enamel:

1. Benjamin Moore; Moorecraft Super Spec Latex Semi-Gloss Enamel No. 276.

2. Coronado; 32-Line Super Kote 5000 Latex Semi-Gloss Enamel.
3. ICI Dulux Paints; 1406-XXXX Dulux Professional Acrylic Semi-Gloss Interior Wall & Trim Enamel.
4. Kelly-Moore; 1649 Acrylic-Latex Semi-Gloss Enamel.
5. Kelly-Moore; 1685 Dura-Poxy Semi-Gloss Acrylic Enamel.
6. M. A. B. Paint; Fresh Kote Latex Semi-Gloss 410 Line.
7. Pittsburgh Paints; 6-500 Series SpeedHide Interior Semi-Gloss Latex.
8. Sherwin-Williams; ProMar 200 Interior Latex Semi-Gloss Enamel B31W200 Series.

E. Interior Full-Gloss Acrylic Enamel:

1. Benjamin Moore; Moore's IMC Acrylic Gloss Enamel No. M28.
2. Coronado; 414 Line Super Kote 5000 Acrylic High Gloss Enamel.
3. ICI Dulux Paints; 3028-XXXX Dulux Interior/Exterior Acrylic Gloss Finish.
4. Kelly-Moore; 1680 Dura-Poxy Gloss Acrylic Enamel.
5. M. A. B. Paint; Rich Lux Architectural High Gloss Latex Enamel 022-127 Line.
6. Pittsburgh Paints; 6-8534 SpeedHide Interior Latex 100 Percent Acrylic Gloss Enamels.
7. Pittsburgh Paints; 90-374 Pitt-Tech One Pack Interior/Exterior High Performance Waterborne High Gloss DTM Industrial Enamel.
8. Sherwin-Williams; ProMar 200 Interior Latex Gloss Enamel B21W201.

F. Interior Semigloss Alkyd Enamel:

1. Benjamin Moore; Moorcraft Super Spec Alkyd Semi-Gloss Enamel No. 271.
2. Coronado; 27-Line Super Kote 5000 Alkyd Semi-Gloss Enamel.
3. ICI Dulux Paints; 1516-XXXX Ultra-Hide Alkyd Semi-Gloss Interior Wall & Trim Enamel.
4. Kelly-Moore; 1630--Kel-Cote Interior Alkyd Semi-Gloss Enamel.
5. M. A. B. Paint; Fresh Kote Semi-Gloss 403 Line.
6. Pittsburgh Paints; 6-1110 Series SpeedHide Interior Enamel Wall & Trim Semi-Gloss Oil.
7. Sherwin-Williams; ProMar 200 Interior Alkyd Semi-Gloss Enamel B34W200 Series.

G. Interior Full-Gloss Alkyd Enamel for Gypsum Board and Plaster:

1. Benjamin Moore; Moore's IMC Urethane Alkyd Enamel No. M22.
2. Coronado; 123 Line Super Kote 5000 High Gloss Alkyd Enamel.
3. ICI Dulux Paints; 4308-XXXX Devguard Alkyd Industrial Gloss Enamel.
4. Kelly-Moore; 1700 Kel-Guard Gloss Alkyd Rust Inhibitive Enamel.
5. M. A. B. Paint; Rich Lux Architectural Bright White Enamel 026-127 Line.
6. Pittsburgh Paints; 7-814 Series Pittsburgh Paints Industrial Gloss-Oil Interior/Exterior Enamel.
7. Sherwin-Williams; ProMar 200 Alkyd Gloss Enamel B35W200 Series.

H. Interior Full-Gloss Alkyd Enamel for Wood and Metal Surfaces:

1. Benjamin Moore; Moore's IMC Urethane Alkyd Enamel No. M22.
2. Coronado; 123 Line Super Kote 5000 High Gloss Alkyd Enamel.
3. ICI Dulux Paints; 4308-XXXX Devguard Alkyd Industrial Gloss Enamel.
4. Kelly-Moore; 1630--Kel-Cote Interior Alkyd Semi-Gloss Enamel.
5. M. A. B. Paint; Rich Lux Architectural Bright White Enamel 026-127 Line.
6. Pittsburgh Paints; 7-814 Series Pittsburgh Paints Industrial Gloss-Oil Interior/Exterior Enamel.
7. Sherwin-Williams; ProMar 200 Alkyd Gloss Enamel B35W200 Series.

2.6 INTERIOR WOOD STAINS AND VARNISHES

A. Open-Grain Wood Filler:

1. Benjamin Moore; Benwood Paste Wood Filler No. 238.
2. Coronado; none required.
3. ICI Dulux Paints; none required.
4. Kelly-Moore; none required.
5. M. A. B. Paint; Paste Wood Filler.
6. Pittsburgh Paints; none required.
7. Sherwin-Williams; Sher-Wood Fast-Dry Filler.
8. Sherwin-Williams; none recommended.

B. Interior Wood Stain: Alkyd based.

1. Benjamin Moore; Benwood Penetrating Stain No. 234.
2. Coronado; 3601-Line Quick-Seal Alkyd Stain.
3. ICI Dulux Paints; 1700-XXX WoodPride Interior Solventborne Wood Finishing Stain.
4. Kelly-Moore; McCloskey Stain.
5. M. A. B. Paint; Wood Stain 062 Line.
6. Pittsburgh Paints; 77-560 Rez Interior Semi-Transparent Oil Stain.
7. Sherwin-Williams; Wood Classics Interior Oil Stain A-48 Series.

C. Clear Sanding Sealer: Fast-drying alkyd based.

1. Benjamin Moore; Moore's Interior Wood Finishes Quick-Dry Sanding Sealer No. 413.
2. Coronado; 81-10 Dual Seal.
3. ICI Dulux Paints; 1902-0000 WoodPride Interior Satin Polyurethane Varnish.
4. Kelly-Moore; 2164 E Z Sand Alkyd Q. D. Sealer.
5. M. A. B. Paint; Minit Dri Sanding Sealer 037-005 Line.
6. Pittsburgh Paints; 6-10 SpeedHide Quick-Drying Interior Sanding Wood Sealer and Finish.
7. Sherwin-Williams; Wood Classics Fast Dry Sanding Sealer B26V43.

D. Interior Alkyd- or Polyurethane-Based Clear Satin Varnish:

1. Benjamin Moore; Benwood Interior Wood Finishes Polyurethane Finishes Low Lustre No. 435.
2. Coronado; 67-100 Polyurethane Liquid Plastic Satin Varnish.
3. ICI Dulux Paints; 1902-0000 WoodPride Interior Satin Polyurethane Varnish.
4. Kelly-Moore; 2050 Kel--Aqua Stain Base.
5. M. A. B. Paint; Rich Lux Water Based Satin Polyurethane.
6. Pittsburgh Paints; 77-7 Rez Varnish, Interior Satin Oil Clear.
7. Sherwin-Williams; Wood Classics Fast Dry Oil Varnish, Satin A66-300 Series.

E. Interior Waterborne Clear Satin Varnish: Acrylic-based polyurethane.

1. Benjamin Moore; Stays Clear Acrylic Polyurethane No. 423, Satin.
2. Coronado; 70-10 Aqua-Plastic Urethane Clear Satin.
3. ICI Dulux Paints; 1802-0000 WoodPride Interior Waterborne Aquacrylic Satin Varnish.
4. Kelly-Moore; 2097 Kel-Thane II Clear Acrylic Urethane--Satin.
5. M. A. B. Paint; Rich Lux Water Based Satin Polyurethane 088-900s.
6. Pittsburgh Paints; 77-49 Rez Satin Acrylic Clear Polyurethane.
7. Sherwin-Williams; Wood Classics Waterborne Polyurethane Satin, A68 Series.

F. Interior Waterborne Clear Gloss Varnish: Acrylic-based polyurethane.

1. Benjamin Moore; Benwood Interior Wood Finishes Polyurethane Finishes High Gloss No. 428.
2. Coronado; 70-10 Aqua-Plastic Urethane Clear Gloss.
3. ICI Dulux Paints; 1808-0000 WoodPride Interior Waterborne Aquacrylic Gloss Varnish.
4. Kelly-Moore; 2096 Kel-Thane II Clear Acrylic Urethane--Gloss.
5. M. A. B. Paint; Rich Lux Water Based Gloss Polyurethane 088-899 Line.
6. Pittsburgh Paints; 77-45 Rez Full-Gloss Acrylic Clear Polyurethane.
7. Sherwin-Williams; Wood Classics Waterborne Polyurethane Gloss, A68 Series.

G. Paste Wax: As recommended by manufacturer.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 1. Provide barrier coats over incompatible primers or remove and reprime.
 2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
 - c. If transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- E. Material Preparation:
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
- F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 4. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 5. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
- G. Sand lightly between each succeeding enamel or varnish coat.
- H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Omit primer over metal surfaces that have been shop primed and touchup painted.
 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
- I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- K. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

- L. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- M. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- N. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- O. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
- P. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

3.2 CLEANING AND PROTECTING

- A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.3 EXTERIOR PAINT SCHEDULE

- A. Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry):
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Exterior concrete and masonry primer.
 - b. Finish Coats: See finish plans.
- B. Concrete Unit Masonry:
 - 1. Acrylic Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete unit masonry block filler.
 - b. Finish Coats: See finish plans.
- C. Exterior Gypsum Soffit Board:

1. Acrylic Finish: Two finish coats over an exterior alkyd- or alkali-resistant primer.
 - a. Primer: Exterior gypsum soffit board primer.
 - b. Finish Coats: Exterior See finish plans.

D. Ferrous Metal:

1. Acrylic Finish: Two finish coats over a rust-inhibitive primer.
 - a. Primer: Exterior ferrous-metal primer (not required on shop-primed items).
 - b. Finish Coats: Exterior See finish plans.

E. Zinc-Coated Metal:

1. Acrylic Finish: Two finish coats over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior See finish plans.

F. Aluminum:

1. Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior aluminum primer under acrylic finishes.
 - b. Finish Coats: Exterior See finish plans.

3.4 INTERIOR PAINT SCHEDULE

A. Concrete and Masonry (Other Than Concrete Unit Masonry):

1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior See finish plans.

B. Concrete Unit Masonry:

1. Acrylic Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete unit masonry block filler.
 - b. Finish Coats: Interior See finish plans.

C. Gypsum Board:

1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior See finish plans.

D. Wood and Hardboard:

1. Acrylic-Enamel Finish: Two finish coats over a primer.

- a. Primer: Interior wood primer for acrylic-enamel and semigloss alkyd-enamel finishes.
 - b. Finish Coats: Interior See finish plans.
- E. Ferrous Metal:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior See finish plans.
- F. Zinc-Coated Metal:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior See finish plans.
- G. All-Service Jacket over Insulation:
 - 1. Acrylic Finish: Two finish coats. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coats: Interior flat latex-emulsion size.

3.5 INTERIOR STAIN AND NATURAL-FINISH WOODWORK SCHEDULE

- A. Stain-Varnish Finish: Two finish coats of varnish over a sealer coat and interior wood stain. Wipe wood filler before applying stain.
 - 1. Filler Coat: Open-grain wood filler.
 - 2. Stain Coat: Interior wood stain.
 - 3. Sealer Coat: Clear sanding sealer.
 - 4. Finish Coats: Interior alkyd- or polyurethane-based clear satin varnish.
- B. Natural-Varnish Finish: Two finish coats of varnish over a sealer coat and a filler coat.
 - 1. Filler Coat: Open-grain wood filler.
 - 2. Sealer Coat: Clear sanding sealer.
 - 3. Finish Coats: Interior alkyd- or polyurethane-based clear satin varnish.
- C. Wax-Polished Finish: Three finish coats of paste wax over a sealer coat and alkyd-based interior wood stain.
 - 1. Stain Coat: Interior wood stain.
 - 2. Sealer Coat: Clear sanding sealer.
 - 3. Finish Coats: Paste wax.

END OF SECTION 09912

SECTION 10155 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes toilet compartments and screens as follows:
 - 1. Type: Steel, color-coated finish.
 - 2. Type: Solid-plastic, polymer resin. (Alternate One)
 - 3. Compartment Style: Overhead braced and floor anchored.
 - 4. Screen Style: Wall hung end overhead braced and floor anchored.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details of installation, and attachments to other Work, and color selection based on manufacture's standard color offerings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Accurate Partitions Corporation.
 - 2. All American Metal Corp.
 - 3. Ampco Products, Inc.
 - 4. Bobrick Washroom Equipment, Inc.
 - 5. Capitol Partitions, Inc.
 - 6. Commercial and Architectural Products, Inc.; Marlite.
 - 7. Compression Polymers Group; Comtec Industries.
 - 8. Crane Plumbing; Sanymetal.
 - 9. General Partitions Mfg. Corp.
 - 10. Global Steel Products Corp.
 - 11. Hadrian Inc.
 - 12. Knickerbocker Partition Corporation.
 - 13. Lambaton/Universal.
 - 14. MASCO; Flush-Metal Partition Corp.
 - 15. Metpar Corp.
 - 16. Mills Company (The).
 - 17. Partition Systems, Inc.; Columbia Partitions.
 - 18. Santana Products, Inc.
 - 19. Tex-Lam Manufacturing, Inc.
 - 20. Turan Partition Corporation.
 - 21. Weis/Robart Partitions, Inc.

22. Young Sales Corp.; DesignRite.

2.2 MATERIALS

A. Panel, Pilaster, and Door Material:

1. Steel Sheets with Color-Coated Finish: Mill-phosphatized, corrosion-resistant steel sheet; stretcher-leveled flatness, ASTM A 591/A 591M, Class C, or ASTM A 653/A 653M; with manufacturer's standard baked finish.

a. Color: As selected from manufacturer's full range colors.

B. Core Material for Metal-Faced Units: Sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch minimum for doors, panels, and screens and 1-1/4 inches minimum for pilasters.

C. Solid-Plastic, Polymer Resin: (Alternate Number 7) High-density polyethylene (HDPE) with homogenous color throughout. Provide material not less than 1 inch thick with seamless construction and eased edges.

a. Color: As selected from manufacturer's full range colors.

D. Pilaster Shoes and Sleeves (Caps): Stainless steel, not less than 3 inches high.

E. Stirrup Brackets: Stainless steel.

F. Continuous Brackets: Clear-anodized aluminum.

2.3 FABRICATION

A. Toilet Compartments: Overhead braced and floor anchored.

B. Urinal Screens: Wall hung end braced with vertical post braced overhead.

C. Metal Units: Internally reinforce metal panels for hardware, accessories, and grab bars.

D. Doors: Unless otherwise indicated, 24-inch- wide in-swinging doors for standard toilet compartments and 36-inch- wide out-swinging doors with a minimum 32-inch- wide clear opening for compartments indicated to be accessible to people with disabilities.

E. Door Hardware: Chrome-plated brass. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be accessible to people with disabilities.

1. Hinges: Self-closing type, adjustable to hold door open at any angle up to 90 degrees.
2. Latches and Keepers: Recessed unit designed for emergency access and with combination rubber-faced door strike and keeper.
3. Coat Hook: Combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.
4. Door Bumper: Rubber-tipped bumpers at out-swinging doors or entrance screen doors.
5. Door Pull: Provide at out-swinging doors. Provide units on both sides of doors at compartments indicated to be accessible to people with disabilities.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units rigid, straight, level, and plumb, with not more than 1/2 inch between pilasters and panels and not more than 1 inch between panels and walls. Provide brackets, pilaster shoes, bracing, and other components required for a complete installation. Use theft-resistant exposed fasteners finished to match hardware. Use sex-type bolts for through-bolt applications.
 - 1. Stirrup Brackets: Align brackets at pilasters with brackets at walls. Locate wall brackets so holes for wall anchors occur in masonry or tile joints.
 - 2. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and swing doors in entrance screens to return to fully closed position.

END OF SECTION 10155

SECTION 10431 - SIGNS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:

1. Panel signs.
2. Signage accessories.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
1. Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
 2. Provide message list for each sign, including large-scale details of wording, lettering, and braille layout.
- C. Samples: For each sign material indicated that involves color selection.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 PANEL SIGNS

- A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Manufacturers:

1. Allenite Signs; Allen Marking Products, Inc.
2. American Graphics Inc.
3. Andco Industries Corp.
4. APCO Graphics, Inc.
5. ASI Sign Systems, Inc.
6. Best Manufacturing Co.
7. Grimco, Inc.
8. Innerface Sign Systems, Inc.
9. Kaltech Industries Group, Inc.
10. Mills Manufacturing, Inc.
11. Mohawk Sign Systems.
12. Seton Identification Products.
13. Signature Signs, Inc.
14. Supersine Company (The).

- C. Plastic Laminate: Provide high-pressure laminate engraving stock with face and core plies in contrasting colors as selected from manufacturer's full range.
- D. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished to comply with the following requirements:
 1. Edge Condition: Beveled.
 2. Corner Condition: Square.
- E. Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit panel sign construction and mounting conditions indicated. Factory-paint brackets in color matching background color of panel sign.
- F. Graphic Content and Style: Provide sign copy that complies with requirements indicated on Drawings for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.
- G. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 1. Panel Material: Opaque acrylic sheet.
 2. Raised-Copy Thickness: Not less than 1/32 inch.
- H. Subsurface Copy: Apply minimum 4-mil- thick vinyl copy to back face of clear acrylic sheet forming panel face to produce precisely formed opaque image. Image shall be free from rough edges.
- I. Subsurface Engraved Acrylic Sheet: Reverse-engrave back face of clear acrylic sheet. Fill resulting copy with enamel. Apply opaque background color coating over enamel-filled copy.

2.3 ACCESSORIES

- A. Vinyl Film: Provide opaque nonreflective vinyl film, 0.0035-inch minimum thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.
- B. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

- C. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
- D. Note Holders: Manufacturer's standard aluminum paper sheet holders.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
 - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
 - 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:
 - 1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.

END OF SECTION 10431

SECTION 10520 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Portable fire extinguishers.
 - 2. Fire-protection cabinets. No cabinets this project all fire extinguishes wall surface mounted on brackets.
 - 3. Mounting brackets for fire extinguishers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Fire Extinguishers: Include rating and classification.
 - 2. Fire-Protection Cabinets: Include door hardware, cabinet type, trim style, panel style, and details of installation.
- B. Samples: For each exposed cabinet finish.
- C. Maintenance data.

1.3 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1.4 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Apply decals on fire-protection cabinets.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 1. Sheet: ASTM B 209.
 2. Extruded Shapes: ASTM B 221.
- C. Stainless-Steel Sheet: ASTM A 666, Type 304.
- D. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick.

2.3 PORTABLE FIRE EXTINGUISHERS

- A. Available Manufacturers:
 1. Amerex Corporation.
 2. Ansul Incorporated.
 3. Badger Fire Protection.
 4. Buckeye Fire Equipment Company.
 5. Fire End & Croker Corporation.
 6. General Fire Extinguisher Corporation.
 7. JL Industries, Inc.
 8. Kidde Fynetics.
 9. Larsen's Manufacturing Company.
 10. Modern Metal Products; Div. of Technico.
 11. Moon American.
 12. Potter Roemer; Div. of Smith Industries, Inc.
 13. Watrous; Div. of American Specialties, Inc.
- B. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
 1. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire extinguisher location, inspections, maintenance, and recharging.

- C. Multipurpose Dry-Chemical Type in Steel Container : UL-rated 2-A:10-B:C, or type "K" as indicated on the drawings, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.4 FIRE-PROTECTION CABINET

A. Available Manufacturers:

1. Fire End & Croker Corporation.
2. General Accessory Mfg. Co.
3. JL Industries, Inc.
4. Kidde Fynetics.
5. Larsen's Manufacturing Company.
6. Modern Metal Products; Div. of Technico.
7. Moon American.
8. Potter Roemer; Div. of Smith Industries, Inc.
9. Watrous; Div. of American Specialties, Inc.

B. Cabinet Type: Suitable for fire extinguisher]

C. Cabinet Material and Shelf: Enameled-steel sheet.

D. Semirecessed or Surface Mounted Cabinet as indicated on the floor plans: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) unless noted otherwise on the drawings as surface mounted.

1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
2. Locations shown on floor plans.

E. Door Material: Steel.

F. Door Style: Center glass panel with frame.

G. Door Glazing: Tempered break glass.

H. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide manufacturer's standard.
2. Provide manufacturer's standard hinge permitting door to open 180 degrees.

I. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, with plated or baked-enamel finish.
2. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
3. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
4. Door Lock: Cylinder lock, keyed alike to other cabinets.
5. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

- a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied to cabinet door.
 - 2) Application Process: Decals.
 - 3) Lettering Color: Red .
 - 4) Orientation: Vertical.

J. Finishes:

- 1. Manufacturer's standard baked-enamel paint for the following:
 - a. Exterior of cabinet door, except for those surfaces indicated to receive another finish.
 - b. Interior of cabinet and door.
- 2. Steel: Baked enamel, with minimum dry film thickness of 2 mils.
 - a. Color and Texture: As selected by Architect from manufacturer's full range.

2.5 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth.
 - 1. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 - 2. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Examine fire extinguishers for proper charging and tagging. Remove and replace damaged, defective, or undercharged units.
- B. Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
- C. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
 - 1. Provide inside latch and lock for break-glass panels.
 - 2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

- D. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair.

END OF SECTION 10520

SECTION 10801 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Toilet accessories.
 - 2. Under lavatory Guard.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use room designations indicated on Drawings.

1.3 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace mirrors that develop visible silver spoilage defects within 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Toilet Accessories:
 - a. A & J Washroom Accessories, Inc.
 - b. American Specialties, Inc.
 - c. Bobrick Washroom Equipment, Inc.
 - d. Bradley Corporation.
 - e. General Accessory Manufacturing Co. (GAMCO).
 - f. McKinney/Parker Washroom Accessories Corp.

2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, No. 4 finish (satin), 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19, ASTM B 16, or ASTM B 30 castings.

- C. Steel Sheet: ASTM A 366/A 366M, 0.0359-inch minimum nominal thickness.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, G60.
- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- F. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- G. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.
- H. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- I. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.
- J. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six (6) keys to Owner's representative.

2.3 TOILET AND BATH ACCESSORIES

- A. Toilet Tissue Dispenser: Furnished by the owner and installed by the contractor.
- B. Liquid-Soap Dispenser: Furnished by the owner installed by the contractor.
 - 1. Mounting: Surface Mounted Vertical Provide @ each lavatory, install over lavatory so that any spillage will fall into lavatory.
- C. Grab Bar :
 - 1. Material: Stainless steel, 0.05 inch thick.
 - 2. Mounting: Concealed. Provide at all locations indicated on the floor plans. Each ADA toilet stall and each single toilet room
 - 3. Gripping Surfaces: Slip-resistant texture.
 - 4. Outside Diameter: 1-1/2 inches for heavy-duty applications.
- D. Vendor:
 - 1. Type: Sanitary napkin and tampon.
 - 2. Mounting: Fully recessed, designed for 4-inch wall depth.
 - 3. Capacity: Manufactures standard.
 - 4. Operation: Single coin (25 cents).
- E. Sanitary Napkin Disposal Unit:
 - 1. Mounting: Fully recessed.
 - 2. Material: Stainless steel.
 - 3. Door or Cover: Self-closing.
 - 4. Receptacle: Removable and reusable.
- F. Mirror Unit:
 - 1. Basis-of-Design Product: Bradley Model 781 provide @ Lavatory
 - 2. Frame: Stainless-steel channel.
- G. lavatory Guard :

1. Insulating Piping Coverings: White, antimicrobial, molded-vinyl covering for supply and drain piping assemblies intended for use at accessible lavatories to prevent direct contact with and burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 1. Install grab bars to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
- B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 10801

SECTION 13125 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Structural framing.
 - 2. Roof panels.
 - 3. Wall panels and liners.
 - 4. Insulation.
 - 5. Building components.
 - 6. Accessories and trim.
- B. See structural drawings for concrete foundations and anchor-bolt installation.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide a complete, integrated set of metal building system manufacturer's standard mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior. Include primary and secondary framing, roof and wall panels, and accessories complying with requirements indicated.
- B. Structural Performance: Provide metal building systems capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 - 1. Engineer metal building systems according to procedures in MBMA's "Low Rise Building Systems Manual."
 - 2. Design Loads: As indicated.
- C. Seismic Performance: Design and engineer metal building systems capable of withstanding the effects of earthquake motions determined according to the building code in effect for this Project or ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads," whichever is more stringent.
- D. Thermal Movements: Provide metal building roof and wall panel systems that allow for thermal movements resulting from maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1.3 SUBMITTALS

- A. Product Data: For each type of metal building system component indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, structural framing, roof and wall panel layout, and attachments to other Work.

1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Anchor-Bolt Plans: Include location, diameter, and projection of anchor bolts required to attach metal building to foundation. Indicate column reactions at each location.
3. Personnel Door Schedule: Provide schedule of doors and frames, using the same reference numbers as indicated on Drawings. Include details of reinforcement and installation requirements for finish hardware.

C. Samples: For the following, in the profile and style indicated:

1. Roof panels.
2. Wall panels.
3. Trim and closures.
4. Vapor retarders.
5. Accessories.

D. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions, including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design loads and load combinations.
9. Building-use category.
10. AISC Certification for Category MB: Include statement that metal building system and components were designed and produced in an AISC-Certified Facility by an AISC-Certified Manufacturer.

E. Welding certificates.

F. Erector Certificates: Signed by manufacturer certifying that erectors comply with requirements.

G. Manufacturer certificate.

1.4 QUALITY ASSURANCE

A. Erector Qualifications: An experienced erector who has specialized in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

B. Manufacturer Qualifications: A firm experienced in manufacturing metal building systems similar to those indicated for this Project and with a record of successful in-service performance.

1. Member of MBMA.
2. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components in an AISC-Certified Facility.
3. Engineering Responsibility: Preparation of Shop Drawings, testing program development, test result interpretation, and comprehensive engineering analysis by a qualified professional engineer.

- C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. Regulatory Requirements: Fabricate and label structural framing to comply with special inspection requirements at point of fabrication for welding and other connections required by authorities having jurisdiction.
- E. Structural Steel: Comply with AISC S335, "Specification for Structural Steel Buildings--Allowable Stress Design, Plastic Design," or AISC S342, "Load and Resistance Factor Design Specification for Structural Steel Buildings," for design requirements and allowable stresses.
- F. Cold-Formed Steel: Comply with AISI SG-671, "Specification for the Design of Cold-Formed Steel Structural Members," and AISI SG-911, "Load and Resistance Facet Design Specification for Steel Structural Members," for design requirements and allowable stresses.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store roof and wall panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

1.6 COORDINATION

- A. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations, which are specified in Division 7 Section "Roof Accessories."

1.7 WARRANTY :

- A. Special Warranty on roof and wall 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 20 years from date of Substantial Completion. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.
- B. Special Warranty on Standing-Seam Roof Panel Weathertightness: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam roof panel assemblies that fail to remain weathertight within 20 years from date of Substantial Completion.

1.8 QUALITY ASSURANCE:

- A. Erector Qualifications: An experienced erector with a minimum of 5 years of experience who specializes in erecting and installing work similar in material, design, and extent to that indicated for this project.
- B. Welding Qualifications: Personnel performing welding on this project shall be certified according to the following standards:

1. AWS D1.1/D1.1M, "Structural Welding Code – Steel"
2. AWS D1.3, "Structural Welding Code – Sheet Steel"

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. American Buildings Company.
 2. Butler Manufacturing Company.
 3. Varco-Pruden Buildings; a United Dominion Company.
 4. Ultimate Steel Buildings, Mexico, Missouri

2.2 STRUCTURAL-FRAMING MATERIALS

- A. Structural-Steel Shapes: ASTM A 36/A 36M or ASTM A 529/A 529M.
- B. Steel Plate, Bar, or Strip: ASTM A 529/A 529M, ASTM A 570/A 570M, or ASTM A 572/A 572M; 50,000-psi minimum yield strength.
- C. Steel Tubing or Pipe: ASTM A 500, Grade B; ASTM A 501; or ASTM A 53, Grade B.
- D. Structural-Steel Sheet: Hot-rolled, ASTM A 570/A 570M, Grade 50 or Grade 55; hot-rolled, ASTM 568/A 568M; or cold-rolled, ASTM A 611, structural-quality, matte (dull) finish.
- E. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 50, with G60 coating designation; mill phosphatized.
- F. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
 2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating, Grade 40; structural quality.
- G. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A; carbon-steel, hex-head bolts; carbon-steel nuts; and flat, unhardened steel washers.
1. Finish: Plain, uncoated
- H. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers.
1. Finish: Plain, uncoated.
- I. Anchor Rods, Bolts, Nuts, and Washers:
1. Unheaded Rods: ASTM A 36/A 36M.
 2. Unheaded Bolts: ASTM A 687, high strength.

3. Headed Bolts: ASTM A 307, Grade A; carbon-steel, hex-head bolts; and ASTM A 325, Type 1, heavy hex steel structural bolts and heavy hex carbon-steel nuts.
4. Washers: ASTM A 36/A 36M.

J. Primers: As selected by manufacturer for resistance to normal atmospheric corrosion, compatibility with finish paint systems, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

1. Primer: Manufacturer's standard, lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

2.3 PANEL MATERIALS

A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.
2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating, Grade 40; structural quality.
3. Surface: Smooth, flat, mill finish.

B. Panel Sealants:

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane, polysulfide, or silicone-rubber sealant; of type, grade, class, and use classifications required to seal joints in panels and remain weathertight; and as recommended by metal building system manufacturer.

2.4 INSULATION MATERIALS

A. Glass-Fiber-Blanket Insulation: ASTM C 991, Type I, or NAIMA 202 thermal insulation of 0.5-lb/cu. ft. density, thickness as indicated, with a flame-spread index of 25 or less, and with 2-inch-wide, continuous, vapor-tight edge tabs. Roof 6" thick, walls 4 "thick.

B. Vapor-Retarder Facing: ASTM C 1136.

1. Composition: Vinyl-faced, scrim-reinforced polyester.
2. Permeance: Not greater than 0.02 perm when tested according to ASTM E 96, Desiccant Method.

C. Retainer Strips: 0.019-inch-thick, formed, galvanized steel or PVC retainer clips colored to match insulation facing.

2.5 DOOR AND FRAME MATERIALS

A. Cold-Rolled Carbon-Steel Sheet: ASTM A 366/A 366M or ASTM A 568/A 568M, matte finish, suitable for exposed applications, and stretcher leveled or roller leveled to stretcher-leveled flatness.

- B. Hot-Rolled Carbon-Steel Sheet: ASTM A 568/A 568M or ASTM A 569/A 569M.
- C. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, with G60 coating designation; mill phosphatized.

2.6 MISCELLANEOUS MATERIALS

- A. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities, and formulated for 15-mil dry film thickness per coat.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107 premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, of consistency suitable for application, and with a 30-minute working time.
- C. Shop Primer for Galvanized Metal Surfaces: FS TT-P-641 zinc dust, zinc-oxide primer selected by manufacturer for compatibility with substrate.
- D. Finish Painting: Refer to Division 9 Sections.

2.7 FABRICATION, GENERAL

- A. Primary Framing: Shop-fabricate framing components to indicated size and section with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 - 1. Make shop connections by welding or by using high-strength bolts.
 - 2. Join flanges to webs of built-up members by a continuous submerged arc-welding process.
 - 3. Brace compression flange of primary framing by angles connected between frame web and purlin or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 - 4. Weld clips to frames for attaching secondary framing members.
 - 5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary structural members with specified primer after fabrication.
- B. Secondary Framing: Shop-fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
 - 1. Make shop connections by welding or by using non-high-strength bolts.
 - 2. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime secondary structural members after fabrication.
- C. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer immediately after cleaning and pretreating.
 - 1. Prime primary, secondary, and end-wall steel framing members for a minimum dry film thickness of 1 mil.

- a. Prime secondary steel framing formed from metallic-coated steel sheet with red-oxide polyester paint, with a minimum dry film thickness of 0.5 mil on each side.
- 2. Prime galvanized members, after phosphoric acid pretreatment, with manufacturer's standard zinc dust, zinc-oxide primer.
- D. Tolerances: Comply with MBMA's "Low Rise Building Systems Manual": Chapter IV, Section 9, "Fabrication and Erection Tolerances."

2.8 STRUCTURAL FRAMING

- A. Primary Framing: Manufacturer's standard structural primary framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
 - 1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
 - 2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.
 - 3. Frame Configuration: Single gable.
 - 4. Exterior Column Type: Tapered.
 - 5. Rafter Type: Tapered.
- B. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly.
 - 1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.0747 inch.
 - 2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.0598 inch.
- C. Secondary Framing: Manufacturer's standard secondary framing members, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Fabricate framing from cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet prepainted with coil coating, unless otherwise indicated.
 - 1. Purlins: C- or Z-shaped sections; fabricated from minimum 0.0598-inch- thick steel sheet, built-up steel plates, or structural-steel shapes; minimum 2-1/2-inch- wide flanges.
 - a. Depth: As required.
 - 2. Girts: C- or Z-shaped sections; fabricated from minimum 0.0598-inch- thick steel sheet, built-up steel plates, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 45 to 50 deg rees to flange and with minimum 2-1/2-inch- wide flanges.
 - a. Depth: As required.
 - 3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from 0.0598-inch- thick steel sheet, built-up steel plates, or structural-steel shapes; to provide adequate backup for both roof and wall panels.

4. Flange and Sag Bracing: Minimum 1-5/8-by-1-5/8-inch structural-steel angles, with a minimum thickness of 0.0598 inch, to stiffen primary frame flanges.
 5. Base or Sill angles: Minimum 3-by-2-by-0.0747-inch zinc-coated (galvanized) steel sheet.
 6. Purlin and Girt Clips: Minimum 0.0747-inch- thick, zinc-coated (galvanized) steel sheet.
 7. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from minimum 0.0747-inch- thick, zinc-coated (galvanized) steel sheet.
 8. Framing for Openings: Channel shapes; fabricated from minimum 0.0598-inch- thick, cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings, and head, jamb, and sill of other openings.
 9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- D. Bracing: Adjustable wind bracing.
1. Cable: ASTM A 475, 1/4-inch- diameter, extra-high-strength grade, Class B zinc-coated, 7-strand steel; with threaded end anchors.
- E. Bolts: Provide shop-painted bolts unless structural-framing components are in direct contact with roof and wall panels. Provide zinc-plated bolts when structural-framing components are in direct contact with roof and wall panels.

2.9 ROOF PANELS

- A. Standing-Seam, Ribbed Roof Panels: Fabricate from metallic-coated steel sheets prepainted with coil coating, factory formed to provide 24-inch coverage; with 3-inch- high (including seam), raised trapezoidal major ribs at panel edges, and intermediate stiffening ribs symmetrically spaced between major ribs for full length of panel.
1. Material: Zinc-coated (galvanized) steel.
 2. Metal Thickness: 0.0239 inch.
 3. Joint Type: Double-folded, mechanically seamed As standard with manufacturer.
 4. Clip System: Floating to accommodate thermal movement.
- B. Roof Panel Accessories: Provide components required for a complete roof panel assembly including trim, copings, fasciae, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of roof panels, unless otherwise indicated.
1. Clips: Minimum 0.0625-inch- thick, stainless-steel panel clips designed to withstand negative-load requirements.
 2. Cleats: Mechanically seamed cleats formed from minimum 0.0250-inch- thick, stainless-steel or nylon-coated aluminum sheet.
 3. Thermal Spacer Blocks: Where panels attach directly to purlins, provide 1-inch- thick, thermal spacer blocks; fabricated from extruded polystyrene.
 4. Snow/ice guards.
- C. Exterior Finish: Coil coating.
1. Galvaume plus finish.
- D. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored backer finish, consisting of prime coat and wash coat with a total minimum dry film thickness of 0.5 mil.

2.10 WALL PANELS

A.

1. Ribbed Panels: Fabricate from metallic-coated steel sheets prepainted with coil coating, factory formed to provide 36-inch coverage, with raised trapezoidal major ribs at 12 inches o.c., and intermediate stiffening ribs symmetrically spaced between major ribs for full length of panel. Design panels for mechanical attachment to structure using exposed fasteners, lapping major ribs at panel edges.
 - a. Material: Zinc-coated (galvanized) steel.
 - b. Metal Thickness: 26 guage.
 - c. Panel Thickness: 1.250 inches.

B. Wall Panel Accessories: Provide components required for a complete wall panel assembly, including trim, copings, mullions, sills, corner units, clips, seam covers, battens, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

C. Exposed Finish for Exterior Panels: Coil coating.

1. Fluoropolymer System: 2-coat, thermocured system with fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight, with a total minimum dry film thickness of 1 mil and 30 percent reflective gloss when tested according to ASTM D 523.
2. Colors, Textures, and Glosses: As selected from manufacturer's full range.

D. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored backer finish, consisting of prime coat and wash coat with a total minimum dry film thickness of 0.5 mil.

2.11 FASCIA AND SOFFIT PANELS

A. Fascia Panels: Manufacturer's standard panels.

B. Soffit Panels: Manufacturer's standard panels.

C. Finishes:

1. Fascia Panels: Match finish and color of wall panels.
2. Soffit Panels: Match finish and color of wall panels.

D. Service Doors:

1. Sectional Overhead Doors: Refer to Division 8 Section "Sectional Overhead Doors."

2.12 WINDOWS

A. None.

2.13 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer. Provide sheet metal accessories of same material and in same finish as roof and wall panels, unless otherwise indicated.
- B. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of roof or wall sheets by means of plastic caps or factory-applied coating.
 - 1. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 - 2. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
- C. Flashing and Trim: Form from 0.0179-inch- thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent roof or wall panels.
 - 1. Opening Trim: Minimum 0.028-inch- thick steel sheet. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- D. Gutters: Form from 0.0179-inch- thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, sized according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced 36 inches o.c., fabricated from same metal as gutters. Provide bronze, copper, or aluminum wire ball strainers at outlets. Finish gutters to match roof fascia and rake trim.
- E. Downspouts: Form from 0.0179-inch- thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; in 10-foot- long sections, complete with formed elbows and offsets. Finish downspouts to match wall panels.
- F. Roof Curbs: Fabricate curbs from 0.0478-inch- thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; with welded top box and bottom skirt, and integral full-length cricket. Fabricate curb subframing of minimum 0.0598-inch-thick, angle-, C-, or Z-shaped steel sheet. Fabricate curb and subframing to withstand indicated loads, of size and height indicated. Finish roof curbs to match roof panels. Insulate roof curb with 1-inch- thick rigid insulation.
- G. Closures: Closed-cell, laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match roof and wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- H. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

PART 3 - EXECUTION

3.1 ERECTION

- A. Verify compliance with requirements and metal building system manufacturer's tolerances.

- B. Erect metal building system according to manufacturer's written instructions and erection drawings.
- C. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- D. Set structural framing in locations and to elevations indicated and according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- E. Baseplates and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen surfaces before setting baseplates and bearing plates. Clean bottom surface of baseplates and bearing plates.
 - 1. Set baseplates and bearing plates for structural members on wedges, shims, or setting nuts.
 - 2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of baseplate or bearing plate before packing with grout.
 - 3. Pack grout solidly between bearing surfaces and plates so no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
- F. Align and adjust framing members before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact. Make adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
- G. Primary Framing and End Walls: Erect framing true to line, level, plumb, rigid, and secure. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist cure grout for not less than seven days after placement.
 - 1. Make field connections using high-strength bolts. Tighten bolts by turn-of-the-nut method.
- H. Secondary Framing: Erect framing true to line, level, plumb, rigid, and secure. Fasten secondary framing to primary framing using clips with field connections using non-high-strength bolts. Hold rigidly to a straight line by sag rods.
 - 1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 - 2. Locate and space wall girts to suit door and window arrangements and heights.
 - 3. Locate canopy framing as indicated.
 - 4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
 - 1. Tighten rod and cable bracing to avoid sag.
 - 2. Locate interior end bay bracing only where indicated.
- J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to building structural frame.

- K. Structural-Steel Erection Tolerances: Comply with erection tolerance limits in AISC S303, "Code of Standard Practice for Steel Buildings and Bridges."

3.2 ROOF PANEL INSTALLATION

- A. General: Provide roof panels of full length from eave to ridge when possible. Install panels perpendicular to purlins.
1. Rigidly fasten eave end of roof panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels.
 2. Provide weatherseal under ridge cap.
 3. Flash and seal roof panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 4. Use aluminum or stainless-steel fasteners for exterior applications and galvanized fasteners for interior applications.
 5. Locate panel splices over, but not attached to, structural supports. Stagger panel splices to avoid a four-panel lap splice condition.
- B. Standing-Seam Roof Panels: Fasten roof panels to purlins with concealed clips at each standing-seam joint. Install clips over top of insulation at location and spacing determined by manufacturer.
1. Install clips to supports with self-drilling fasteners.
 2. Crimp standing seams with manufacturer-approved motorized seamer tool so clip, panel, and factory-applied side-lap sealant are completely engaged.
 3. At panel splices, nest panels with minimum 6-inch end lap, sealed with butyl sealant and fastened together by interlocking clamping plates.
- C. Lap-Seam Roof Panels: Fasten roof panels to purlins with exposed fasteners at each lapped joint at location and spacing determined by manufacturer.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
 2. Provide sealant tape at lapped joints of roof panels and between panels and protruding equipment, vents, and accessories.
 3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps, and on side laps of nesting-type panels.
 4. At panel splices, nest panels with minimum 6-inch end lap, sealed with butyl sealant and fastened together by interlocking clamping plates.

3.3 WALL PANEL INSTALLATION

- A. General: Provide panels full height of building when possible. Install panels perpendicular to girts.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Install panels with vertical edges plumb. Lap ribbed or fluted sheets one full rib corrugation. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
 2. Unless otherwise indicated, begin panel installation at corners with center of rib lined up with line of framing.
 3. Align bottom of wall panels and fasten with blind rivets, bolts, or self-tapping screws.

4. Fasten flashing and trim around openings and similar elements with self-tapping screws.
 5. When 2 rows of panels are required, lap panels 4 inches minimum. Locate panel splices over structural supports.
 6. When building height requires two rows of panels at gable ends, align lap of gable panels over wall panels at eave height.
 7. Provide weather-resistant escutcheons for pipe and conduit penetrating exterior walls.
 8. Flash and seal wall panels with weather closures under eaves and rakes, along lower panel edges, and at perimeter of all openings.
 9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as necessary for waterproofing. Handle and apply sealant and backup according to sealant manufacturer's written instructions.
 10. Use aluminum or stainless-steel fasteners for exterior applications and galvanized fasteners for interior applications.
- B. Field-Assembled, Insulated Panels: Install wall panels on exterior side of girts. Attach panels to supports with fasteners as recommended by manufacturer. Install insulation as specified below, and cover with liner panels.
- C. Uninsulated Panels: Install wall panels on exterior side of girts. Attach panels to supports with fasteners as recommended by manufacturer.

3.4 FASCIA AND SOFFIT PANEL INSTALLATION

- A. General: Provide panels full width of fasciae and soffits. Install panels perpendicular to support framing.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Install panels with vertical edges plumb. Lap ribbed or fluted panels one full rib corrugation. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
 2. Fasten flashing and trim around openings and similar elements with self-tapping screws.
 3. Use aluminum or stainless-steel fasteners for exterior applications and galvanized fasteners for interior applications.
- B. Fascia Panels: Align bottom of panels and fasten with blind rivets, bolts, or self-tapping screws. Flash and seal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.
- C. Soffit Panels: Flash and seal panels with weather closures where soffit meets walls and at perimeter of all openings.

3.5 INSULATION INSTALLATION

- A. General: Install insulation concurrently with panel installation, according to manufacturer's written instructions.
1. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

- B. Blanket Insulation: Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths with both sets of facing tabs sealed to provide a complete vapor retarder. Comply with the following installation method:
1. Over-Framing Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing members. Hold in place by panels fastened to secondary framing.
 2. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing members. Install layer of filler insulation over first layer to fill space formed by roof panel standoffs. Hold in place by panels fastened to standoffs.
 3. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.6 ACCESSORY INSTALLATION

- A. General: Install gutters, downspouts, and other accessories with positive anchorage to building and weathertight mounting. Coordinate installation with flashings and other components.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection.
 2. Separations: Separate metal from incompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
- C. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 4 feet o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Provide elbow at base of downspout to direct water away from building.
- E. Pipe Flashing: Form flashing around pipe penetration and roof panels. Fasten and seal to roof panel as recommended by manufacturer.

3.7 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspection as indicated on the structural drawings and to submit reports of said inspections.

3.8 CLEANING AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean, prepare, and prime or reprime welds, bolted connections, and abraded surfaces of prime-painted primary and secondary framing, accessories, and bearing plates.
 - 1. Apply compatible primer of same type as shop primer used on adjacent surfaces.
- B. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- C. Roof and Wall Panels: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.
 - 1. Replace panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 13125