Project Manual for:

# The 27 on Elm

A Hunter Renaissance Development
**Redmond, Oregon**

**Owner:**
Hunter Renaissance
Development, LLC
2001
Chicago, Illinois

**Developer:**
Hunter Renaissance Development, LLC
2001
Chicago, Illinois

**Architect:**
think Architecture, pllc
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1529 Columbia Park Trail #B312
Richland, Washington 99352

Book # _____ Issue Date: Nov. 8, 2016

# SECTION 00100 - GENERAL CONDITIONS

1. See enclosed Contract forms for General Conditions.

2. AMERICAN INSTITUTE OF ARCHITECTS DOCUMENT A201

   A. General Conditions of the Contract for Construction, 2007 edition, 14 Articles, which form the General Conditions of this Contract, is hereby made a part of the Contract Documents to the same extent as if herein written out in full except as amended by Section 00800 - Supplementary Conditions.

   B. The above-stipulated general conditions as amended by the supplementary conditions apply to work executed in each of the Specification Divisions 1 through 16.

END OF SECTION

# THE 27 ON ELM
A DEVELOPMENT BY HUNTER RENAISSANCE
**REDMOND, OREGON**

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# SECTION 00200 - SUPPLEMENTARY CONDITIONS

## 1. GENERAL

A. The Supplementary Conditions modify, amplify, delete, and/or add to the General Conditions. Where any article, paragraph, sub-paragraph or part in the General Conditions amended by the Supplementary Conditions, the provisions of such articles, paragraphs, subparagraphs or parts not so amended shall remain in effect.

B. Table of Articles of Supplementary Conditions:

| Article | Title | General Conditions Reference Article |
|---|---|---|
| 15 | Contract Documents | 1 |
| 16 | Architect | 2 |
| 17 | Owner | 3 |
| 18 | Contractor | 4 |
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| 20 | Separate Contracts | 6 |
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## 2. ARTICLES OF SUPPLEMENTARY CONDITION

A. Article 15 - Contract Documents

1. Article 1 - No amendment is made.

B. Article 16 - Architect

1. Article 2 - No amendment is made.

C. Article 17 - Owner

1. Article 3 amended as follows:

Add to 3.3: A delay penalty of $1,000 per day will be charged against the contract for each calendar day past the contract completion date plus any extensions granted by change order.

2. Article 3 amended as follows:

Modify 3.3 by replacing 30 days with 300 days.

D. Article 18 - Contractor

1. Article 4 is amended as follows:

4.4 Add:

4.4.3 Substitutions: Materials, products or methods specified by name of manufacturer brand, model, trade name or catalog reference shall be furnished under the Contract unless changed as hereinafter provided. Where two or more materials, products or methods are named, the choice of these shall be optional with the Contractor. Any requests for approvals of substitutions and equal materials, products or methods, shall be submitted as an alternate at the time of bidding. If a substitution is approved, it shall be used in accordance with the terms of the Alternate, Change Order, Field Order, or other written order. If a substitution is approved, furnish required submittals before execution of contract, etc.

4.12 Add:

4.12.9 Wherever manufacturer's printed specifications or instructions are by reference made a part of this specification, the Contractor upon demand shall furnish copies of such specifications or instructions to the Architect and the Construction Manager.

E. Article 19 - Subcontractors

1. Article 5 is amended as follows:

5.3 Add:

5.3.2 Nothing in any subcontract agreement shall create any contractual relationship between the Owner or the Architect and any Subcontractor or Sub-subcontractor.

F. Article 20 - Separate Contracts

1. Article 6 - No amendment is made.

G. Article 21 - Miscellaneous Provisions

1. Article 7 - No amendment is made.

H. Article 22 - Time

1. Article 8 - No amendment is made.

I. Article 23 - Payments and Completion

1. Article 9 - No amendment is made.

J. Article 24 - Protection of Persons and Property

1. Article 10 - No amendment is made.

K. Article 25 - Insurance

1. Article 11 is amended as follows:

11.1. 2 Delete in entirety and substitute therefore:

11.1.2 The insurance required by subparagraph 11.1.1 shall be written for not less than any limits of liability specified below or required by law, whichever is greater, and shall include contractual liability by

law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under paragraph 4.18. The Contractors minimum limits of liability which he shall also require from his Subcontractors unless he shall insure their operations under this policy shall be as follows:

1. Workmen's Compensation Statutory Limit
   Employer's Liability $100,000.00
   (These shall include "universal" or "all states" endorsement.)

2a. Comprehensive General Liability:
   Bodily Injury and Property Damage $1,000,000.00 each occurrence.
   $2,000,000.00 aggregate
   Personal Injury $2,000,000.00 aggregate
   Comprehensive Automobile Liability
   Bodily Injury and Property Damage Combined $1,000,000.00 each occurrence.
   $2,000,000.00 aggregate.

   or
   (in lieu of items in 2a above)

2b. Single Limit Policy $5,000,000.00 each occurrence

3. Policy exclusions for explosion, collapse and underground property damage (XCU) shall be removed from all policies.

11.1 Add:

11.1.5 Contractor's liability insurance shall be written by a company or companies acceptable to the Owner on broad form comprehensive general liability format with all the coverage indicated. Coverage shall be on an "occurrence" basis and not an "accident" basis. Insurance specified therein shall be considered as minimum requirements and the Contractor is responsible for providing any additional insurance deemed necessary to protect his interests from other hazards or claims in excess of the minimum coverage.

11.1.6 Approval of the insurance by the Owner or Architect shall not relieve or decrease the liability of the Contractor hereunder. It is understood that the Owner and the Architect do not in any way represent the insurance or the limits of insurance specified in these articles are sufficient or adequate to protect the Contractor's interests but are merely minimums.

11.1.6 Where special or unusual hazards peculiar to this project are foreseeable, the Contractor shall take such steps as are necessary to insure himself, the Owner and the Architect against the hazards and shall be responsible for any damage, including water, which results from the occurrence of such hazards in connection with this project.

11.3.1 Property insurance is to be carried by the contractor in accordance with the terms and conditions of Article 11.3.

11.3.6 Add:

11.3.6.1 The Owner, the Architect, the Engineers, all Contractors, and all sub-subcontractors waive all rights against each other for damages caused by fire or other peril, to the extent that the fire or other peril is covered by insurance obtained pursuant to this Paragraph 11.3 or any other property insurance applicable to the Work, for claims arising during construction and guarantee periods required by this

contract, except such rights as they may have to the proceeds of this insurance.

11.3.6.2 Should the Owner upon termination of the Builders' Risk Insurance neglect, fail, or refuse to effect and maintain permanent Property Insurance on this Project, the Owner hereby waives any claim against the Architect, the Engineers, all Contractors, all subcontractors and all sub-subcontractors for damage to his properties from the perils covered under such terminated Builders' Risk Insurance.

L. Article 26 - Changes in the Work

1. Article 12 - No amendment is made.

M. Article 27 - Uncovering and Correction of Work

1. Article 13 is amended as follows:

13.2.2 Add: The guarantee period required by this sub-paragraph for those items remaining to be completed, corrected or adjusted after the date of Substantial Completion shall begin on the date of Final Completion.

N. Article 28 - Termination of the Contract

1. Article 14 - No amendment is made.

END OF SECTION

# SECTION 01000 - SUMMARY OF WORK

## 1.01 SUMMARY

Project identification:

Project summary:

1. New construction of 36 units of wood frame, 2-story apartment buildings consisting of nine buildings with a unit mix of 18 two bedroom/two bath, 18 three bedroom/two bath as shown on the floor plans. All apartments in both the one bedroom and two bedroom designs are to be constructed in accordance with Federal Fair Housing Guidelines and the Americans with Disabilities Act for accessibility. The bidding Contractor is responsible for and with submission of a bid acknowledges full familiarity with both laws as they apply to this project and the construction of affordable housing. Exterior applications include energy efficient vinyl windows, brick façade, pressed board siding, asphalt shingles, and metal soffit. All units contain all kitchen convenience appliances, heating, air conditioning, and wiring for cable TV service.

2. Construction type: V-B and R Occupancy, Multi-family, or as noted by the local inspecting jurisdiction.

Particular project requirements:

1. All work to be completed within the contract schedule.

2. Owner reserves the right to begin leasing activities prior to the completion of the entire project and to begin moving tenants into completed building units prior to completion of all units as allowed by the local authorities.

3. Permits: Apply for, obtain, and pay for permits, including but not limited to, Grading, Foundation, Building, Electrical, Plumbing and Mechanical, required to perform the work. Cost of permits to be included in the bid.

4. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communications to Owner.

5. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.

6. Existing Conditions: Notify Owner of existing conditions differing from those indicated on the drawings. Do not remove or alter structural components without prior written approval.

Definitions for terms used in the specifications:

1. Provide: Furnish and install, complete with all necessary accessories, ready for intended use. Pay for all related costs.

2. Approved: Acceptance of item submitted for approval. Not a limitation or release for compliance with the Contract Documents or regulatory requirements. Refer to limitations of 'Approved' in General and Supplementary Conditions.

3. Match Existing: Match existing as acceptable to the Owner.

4. Substantial completion is defined as all units and common areas complete, clean, accepted by Owner as “move-in” ready with all punch list work completed and approved.

5. Intent: Drawings and specifications are intended to provide the basis for proper completion of the work suitable for the intended use of the Owner. Anything not expressly set forth but which is reasonably implied or necessary for proper performance of the project shall be included.

6. Writing style: Specifications are written in the imperative mode. Except where specifically intended otherwise, the subject of all imperative statements is the Contractor. For example, 'Provide tile' means 'Contractor shall provide tile.'

END OF SECTION

SECTION 01001

BASIC REQUIREMENTS

1 GENERAL

1.1 SECTION INCLUDES: The following listing offers a convenient checklist of subjects addressed in this Section.

*SUMMARY:*
1.2 Contract Description

*PRICE AND PAYMENT PROCEDURES:*
1.3 Schedule of Values
1.4 Applications For Payment
1.5 Change Procedures
1.6 Alternates

*ADMINISTRATIVE REQUIREMENTS:*
1.7 Coordination
1.8 Field Engineering
1.9 Preconstruction Meetings
1.10 Progress Meetings
1.11 Equipment Electrical Characteristics and Components
1.12 Cutting and Patching

*SUBMITTALS:*
1.13 Submittal Procedures
1.14 Construction progress schedules.
1.15 Proposed Products List
1.16 Product Data
1.17 Shop Drawings
1.18 Samples
1.19 Manufacturer's Instructions
1.20 Manufacturer's Certificates

*QUALITY REQUIREMENTS:*
1.21 Quality Control
1.22 Tolerances
1.23 References
1.24 Testing and Inspection Laboratory Services
1.25 Manufacturer's Field Services and Reports.
1.26 Examination
1.27 Preparation

*TEMPORARY FACILITIES AND CONTROLS:*
1.28 Temporary Electricity
1.29 Temporary Lighting for Construction Purposes
1.30 Temporary Heating and Cooling
1.31 Temporary Ventilation
1.32 Telephone and Facsimile Service

1.33 Temporary Water Service
1.34 Temporary Sanitary Facilities
1.35 Field Offices and Sheds
1.36 Access Roads
1.37 Parking
1.38 Progress Cleaning and Waste Removal
1.39 Project Identification
1.40 Barriers and Fencing
1.41 Protection of Installed Work
1.42 Security
1.43 Water Control
1.44 Pollution and Environmental Control
1.45 Removal of Utilities, Facilities, and Controls

*PRODUCT REQUIREMENTS:*
1.46 Products
1.47 Delivery, Handling, Storage, and Protection.
1.48 Product Options
1.49 Substitutions

*EXECUTION REQUIREMENTS:*
1.50 Closeout Procedures
1.51 Final Cleaning
1.52 Starting of Systems
1.53 Demonstration and Instructions
1.54 Testing, Adjusting and Balancing
1.55 Protecting Installed Construction
1.56 Project Record Documents
1.57 Operation and Maintenance Data
1.58 Spare Parts and Maintenance Materials
1.59 Warranties

## 1.2 CONTRACT DESCRIPTION

A. Work of the Project includes construction of a new 3-story apartment building located in Caldwell, Idaho.

B. Perform Work of Contract under a stipulated sum contract with Owner in accordance with Conditions of Contract.

## 1.3 SCHEDULE OF VALUES

A. Submit schedule on AIA Form G703. Contractor's standard form or electronic media printout will be considered.

B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement established in Notice to Proceed.

1.4 APPLICATIONS FOR PAYMENT

A. Submit three copies of each application on AIA Form G702 and G703.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

1.5 1.6 CHANGE PROCEDURES

A. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's fixed price quotation.

B. Change Order Forms: AIA G701.

1.6 COORDINATION

A. Coordinate scheduling, submittals, and Work of various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirement characteristics of operating equipment are compatible with building utilities.

C. Coordinate space requirements and installation of mechanical and electrical work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable

D. In finished areas, conceal pipes, ducts, and wiring within construction.

E. Provide Project manager site visits. Jobsites should be visited by the contractors project manager no less than every three weeks on average.

1.7 FIELD ENGINEERING

A. Owner will employ experienced instrument technician to locate reference datum and protect survey control and reference points.

B. Establish elevations, lines, and levels and certify elevations and locations of the Work conform with Contract Documents.

C. Verify field measurements are as indicated on shop drawings or as instructed by manufacturer.

1.8 PRECONSTRUCTION MEETINGS

A. Architect will schedule preconstruction meeting after Notice of Award for affected parties.

D. When required in individual specification section, convene preinstallation meeting at Project site prior to commencing work of section.

1.9 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Contractor shall preside at meetings, record minutes, and distribute copies within two days to those affected by decisions made.

1.10 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Motors: NEMA MG1 Type; specific motor type is specified in individual specification sections.

B. Wiring Terminations: Terminal lugs to match branch circuit conductor; size terminal lugs to NFPA 70.

C. Cord and Plug: Minimum 6 foot cord and plug including grounding connector; cord of longer length is specified in individual sections.

1.11 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
1. Fit several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.

D. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

E. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

F. Refinish surfaces to match adjacent finishes.

1.12 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, subcontractor or supplier; and pertinent Contract Document references. Provide five (5) sets of data to Architect for processing.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.

D. Revise and resubmit submittals as required; identify changes made since previous submittal.

1.13 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for Architect/Engineer review.

B. Submit revised schedules with each Application for Payment, identifying changes since previous version. Indicate estimated percentage of completion for each item of Work at each submission. Provide construction photos of the overall site and of each individual building showing the latest construction phases in each area.

C. Submit horizontal bar chart with separate line for each section of Work, identifying first work day of each week.

1.14 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.15 PRODUCT DATA

A. Product Data:
   1. Submitted to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
   2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.

B. Submit number of copies which Contractor requires, plus two copies which will be retained by Architect/Engineer.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer’s standard data to provide information unique to this project.

1.16 SHOP DRAWINGS

A. Shop Drawings:

1. Submit five copies minimum to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.

B. Submit number of opaque reproductions Contractor requires, plus two copies which will be retained by Architect/Engineer (minimum number is five [5] copies).

1.17 SAMPLES

A. Samples for Review:
1. Submitted to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.

B. Samples For Selection:
1. Submitted to Architect for aesthetic, color, or finish selection.
2. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Architect/Engineer selection.
3. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.

C. Submit samples to illustrate functional and aesthetic characteristics of Product.

D. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns for Architect's selection.

1.18 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.19 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification sections, submit certifications by manufacturer to Architect/Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.20 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturer's instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

D. Conduct trade walkthroughs at the end of each scope of work to determine if the work is complete and in conformance with the contract documents. As an example it should be verified that the drywall taping conforms to contract standards prior to pre prime and texture by both the trade foreman and the construction superintendent.

1.21 TOLERANCES

A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply fully with manufacturer's tolerances.

1.22 REFERENCES

A. Conform to reference standards by date of issue current as of date of Contract Documents.

B. When specified reference standard conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

1.23 TESTING AND INSPECTION LABORATORY SERVICES

A. Owner will appoint, employ, and pay for specified services of independent firm to perform testing and inspections that are required by the local Building Department.

B. Cooperate with independent firm; furnish samples as requested.

C. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

D. Inspections are only to be called for as required or if requested in addition to minimum requirements by the owner. Over use of the special inspector will be charged to the contractor.

1.24 MANUFACTURER'S FIELD SERVICES AND REPORTS

A. When specified in individual specification sections, require material or Product suppliers or manufacturers to furnish qualified staff personnel to observe site conditions and to initiate instructions when necessary.

B. Report observations and site decisions or instructions that are supplemental or contrary to manufacturer's written instructions.

1.25 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify utility services are available, of correct characteristics, and in correct location.

1.26 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

1.27 TEMPORARY ELECTRICITY

A. Contractor shall pay cost of electricity used.

B. Provide temporary electricity and power outlets for construction operations, connections, branch wiring, distribution boxes, and flexible power cords as required. Do not disrupt Owner's need for continuous service.

1.28 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain temporary lighting for construction operations.

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

C. Permanent building lighting may not be utilized during construction. Repair, clean, and replace lamps at end of construction.

1.29 TEMPORARY HEATING AND COOLING

A. Contractor shall provide heating and cooling devices and heat and cool as needed to maintain specified conditions for construction operations.

B. Contractor shall pay cost of energy used.

C. Contractor shall provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

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

1.30 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.31 TELEPHONE AND FACSIMILE SERVICE

A. Contractor shall provide, maintain and pay for telephone and telephone facsimile service to field office at time of project mobilization. Allow Architect/Engineer incidental use.

1.32 TEMPORARY WATER SERVICE

A. Contractor shall provide, maintain and pay for suitable quality water service required for construction operations.

1.33 TEMPORARY SANITARY FACILITIES

A. Contractor shall provide and maintain required facilities and enclosures. New facilities may not be used.

B. Maintain in clean and sanitary condition.

1.34 FIELD OFFICES AND SHEDS

A. Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture and drawing display table.

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

1.35 ACCESS ROADS

A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.

1.36 PARKING

A. Provide temporary parking areas to accommodate construction personnel.

1.37 PROGRESS CLEANING AND WASTE REMOVAL

A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

1.38 PROJECT IDENTIFICATION

A. Provide 8 foot wide x 4 foot high project sign of exterior grade plywood and wood frame construction, painted, to Architect/Engineer's design and colors.

B. Erect on site at location established by Architect/Engineer.

1.39 BARRIERS AND FENCING

A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.

B. Construction: Contractor's option.

C. Provide 6' high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.40 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Prohibit traffic or storage upon waterproofed or roofed surfaces.

1.41 SECURITY

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

1.42 WATER CONTROL

A. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Provide erosion control.

1.43 POLLUTION AND ENVIRONMENTAL CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

B. Provide dust control, erosion and sediment control, noise control, pest control and rodent control to allow for proper execution of the Work.

1.44 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

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

B. Remove underground installations to minimum depth of 2 feet. Grade site as indicated on Drawings.

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

D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.45 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Provide interchangeable components of same manufacture for components being replaced.

1.46 DELIVERY, HANDLING, STORAGE, AND PROTECTION

A. Deliver, handle, store, and protect Products in accordance with manufacturer's instructions.

1.47 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for manufacturers not named.

1.48 SUBSTITUTIONS

A. Instructions to Bidders specify time for submitting requests for Substitutions during bidding period to requirements specified in this section.

B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

C. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

1.49 CLOSEOUT PROCEDURES

A. Submit written certification Contract Documents have been reviewed, Work has been inspected, and Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum/Price, previous payments, and amount remaining due.

1.50 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view. Vacuum carpeted and soft surfaces.

C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.

D. Replace filters of operating equipment.

E. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.51 STARTING OF SYSTEMS

A. Provide seven days notification prior to start-up of each item.

B. Ensure each piece of equipment or system is ready for operation.

C. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.

D. Submit written report stating equipment or system has been properly installed and is functioning correctly.

1.52 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.

1.53 TESTING, ADJUSTING, AND BALANCING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.
B. Owner will appoint, employ, and pay for services of independent firm to perform testing, adjusting, and balancing.

C. Reports will be submitted by independent firm to Architect indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with requirements of Contract Documents.

D. Cooperate with independent firm; furnish assistance as requested.

E. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

1.54 PROTECTING INSTALLED CONSTRUCTION

A. Contractor shall provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

C. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

D. Prohibit traffic from landscaped areas.

1.55 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of Contract Documents to be utilized for record documents.

B. Record actual revisions to the Work. Record information concurrent with construction progress.

C. Specifications: Legibly mark and record at each Product section description of actual Products installed.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.

E. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.56 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.

C. Internally subdivide binder contents with permanent page dividers, logically organized, with tab titles legibly printed under reinforced laminated plastic tabs.

D. Contents:
1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system.
3. Part 3: Project documents and certificates.

1.57 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.58 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

END OF SECTION

SECTION 01700

Special Inspections

1. The Owner will contract with a special inspection company.
2. Special inspections will be scheduled by the contractor.
3. Inspection Schedule:
   a. As required by the local jurisdiction or
   b. All structural fill and base shall be inspected as follows: One compaction test for every 10,000 sf of parking lot base, one compaction test for every 100 lf of driveway base and one compaction test for every 100 lf of foundation.
   c. All Structural Concrete will be inspected as follows: Cylinders taken from each truck load tested at 7 and 28 days for compressive strength.
4. All failing tests will be re-inspected until they conform. The costs of re-inspections will be charged against the contract between the owner and contractor.
5. All Inspections requested by the Contractor outside of the above inspection schedule will be charged against the contract between the owner and contractor.
6. The special inspector will not visit the job site without a request from the owner or contractor.
7. All special inspections will be copied to the Contractor, Owner and Building Official.

END OF SECTION

SECTION 02811 – PLANTING IRRIGATION

# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

B. Related Sections
1. Division 2 “Water Distribution”
2. Division 2 “Lawns and Grasses”
3. Division 2 “Exterior Plants”

## 1.2 SUMMARY

A. Work includes:
1. Provide and install a complete and operating automatic irrigation system for all lawns and planting beds.
2. Connect to main water supply at approximate location(s) indicated on drawings.
3. Obtain and pay for all permits and fees for the Work of this Section.
4. Perform the work of this Section, subject to the requirements of the Contract Documents, applicable codes, and good design practice.
5. Install automatic controllers and make all required electrical connections.
6. Winterization of system.

## 1.3 DEFINITIONS

A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.

C. Pressure Piping: Downstream from point of connection to water distribution piping to and including control valves. Piping is under water distribution system pressure.

D. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. FRP: Fiberglass-reinforced plastic.
3. PA: Polyamide (nylon) plastic.
4. PE: Polyethylene plastic.
5. PP: Polypropylene plastic.

6. PTFE: Polytetrafluoroethylene plastic.
7. PVC: Polyvinyl chloride plastic.
8. TFE: Tetrafluoroethylene plastic.

## 1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. Minimum Water Coverage: 100 percent of turf and planting areas.

B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards.

C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties, unless otherwise indicated:

1. Pressure Piping: 50 psig above operating pressure(do not exceed pressure rating for involved materials.

2. Circuit Piping: 50 psig above operating pressure(do not exceed pressure rating for involved materials.

3. Drain Piping: 50 psig above operating pressure(do not exceed pressure rating for involved materials.

## 1.5 SUMMITTALS

A. Product Data: Include pressure rating, rated capacity, settings, and electrical data of selected models for the following:

1. Valves. Include aboveground and underground; general-duty, manual and automatic control, and quick-coupler types.
2. Valve boxes.
3. Sprinklers.
4. Controllers. Include wiring diagrams.

B. As-Built Drawings: Maintain current as-built drawings during construction. Show piping and major system components. Indicate interface and spatial relationship between piping, system components, adjacent utilities, and proximate structures.

1. Submit complete, reproducible copy of As-Built drawings at Project Close-out.

C. Test Reports: As specified in "Field Quality Control" Article in Part 3.

D. Maintenance Data: To include in maintenance manuals specified in Division 1. Include data for the following:
1. Automatic control valves.

2. Sprinklers.
3. Specialties.
4. Controllers.

## 1.6 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of lawn sprinkler piping components and are based on specific types and models indicated. Other manufacturers' products with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

C. Comply with requirements of utility supplying water and authorities having jurisdiction for preventing backflow and back siphonage.

D. Comply with NFPA 70, "National Electrical Code," for electrical connections between wiring and electrically operated devices.

E. Contractor shall be licensed in the State in which this work is being performed.

F. Contractor shall have at least two years prior experience in projects of equal or larger scope.

## 1.7 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves according to the following:

1. Do not remove end protectors unless necessary for inspection; then, reinstall for storage.
2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

D. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

E. Protect flanges, fittings, and specialties from moisture and dirt.

F. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

## 1.8 PROJECT CONDITIONS

A. Perform site survey, research public utility records, and verify existing utility locations.

B. Investigate and determine available water supply water pressure and flow characteristics.

## 1.9 SEQUENCING AND SCHEDULING

A. Maintain uninterrupted water service to building during normal working hours. Arrange for temporary water shutoff with Owner.

B. Coordinate construction scheduling with Owner in order to minimize disruption and maximize use.

C. Take care and preparation in work to avoid conditions which will create hazards. Post signs or barriers as required.

## 1.10 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. Deliver extra materials to Owner.

1. Valve Keys: Furnish total of two tee-handle units of each type of key-operated, control valve installed.
2. Quick-Coupler Hose Swivels: Furnish quantity of units equal to amount of each type of quick coupler installed.
3. Quick-Coupler Operating Keys: Furnish quantity of units equal to amount of each type of quick coupler installed.
4. Sprinkler components: 5% of each type of sprinkler head and type of drip emitter.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

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

1. Bronze Manual Drain Valves for Underground Installation:

    a. Size and type shown on drawings.
    b. Approved equal.

2. Plastic, Automatic Control Valves:

    a. Size and type shown on drawings.
    b. Approved equal

3. Control-Valve Boxes:

    a. American Drainage Products, Inc.
    b. AMETEK; Plymouth Products Div.
    c. Applied Engineering Products.
    d. Carson-Brooks Plastics, Inc.
    e. DFW/HPI.
    f. Morrison Molded Fiber Glass Co.; Quazite Div.
    g. NDS, Inc.
    h. Normandy Products Co.
    i. Orbit Irrigation Products.

4. Quick Couplers:

    a. Size and type shown on drawings.
    b. Approved equal.

5. Sprinklers:

    a. Size and type shown on drawings.
    b. Approved equal.

6. Controllers:

    a. Size and type shown on drawings.
    b. Approved equal.

## 2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" and "Valve Applications" articles for application of pipe and tube materials, joining methods, and valve applications.

2.3 PIPES AND TUBES

A. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedules 40.

B. PVC Pressure-Rated Pipe: ASTM D 2241; PVC 1120 compound; Class 200.

2.4 PIPE AND TUBE FITTINGS (See 3.4 for additional fitting information)

A. PVC Socket Fittings, Schedule 40: ASTM D 2466.

B. PVC Socket Fittings, Schedule 80: ASTM D 2467.

C. PVC Threaded Fittings: ASTM D 2464.

2.5 JOINING MATERIALS

A. Solvent Cements: Manufacturer's standard solvent cements for the following:

1. PVC Plastic Piping: ASTM D 2564. Include primer according to ASTM F 656.

E. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.

2.6 VALVES AND VALVE SPECIALTIES

A. Bronze Globe Valves: MSS SP-80, Class 125, with fitting for key operation and underground application.

1. Size and type shown on drawings.

B. Bronze Diaphragm Valves: Bronze or Bronze and Plastic body, normally closed, with manual flow adjustment, and operated by 24-V, ac solenoid.

1. Size and type shown on drawings.

C. Plastic Diaphragm Valves: Molded-plastic body, normally closed, with manual flow adjustment, and operated by 24-V, ac solenoid.

1. Size and type shown on drawings.

D. Quick-Couplers: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

1. Size and type shown on drawings.

E. Control-Valve Boxes: PE, ABS, fiberglass, polymer concrete, or precast concrete box and cover, with open bottom, openings for piping, and designed for installing flush with grade. Include size as required for valves and service.

1. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3 inches (75 mm) maximum to 3/4 inch (19 mm) minimum.

## 2.7 SPRINKLERS

A. Description: Manufacturer's standard sprinklers designed for uniform coverage over entire spray area indicated, at available water pressure.

B. Components: Brass or plastic housing and corrosion-resistant interior parts.

C. Pop-up, Spray Sprinklers: Fixed pattern, with screw-type flow adjustment and stainless-steel retraction spring.

D. Pop-up, Rotary, Spray Sprinklers: Gear drive, full-circle and adjustable part-circle types.

## 2.8 AUTOMATIC CONTROL SYSTEM

A. Interior Control Enclosures: NEMA 250, Type 12 drip proof construction with locking cover and two matching keys.

1. Material: Enameled-steel, sheet metal.
2. Mounting: Surface type for wall mounting.
3. Size and type shown on drawings.

B. Wiring: UL 493, Type UF, solid-copper-conductor, insulated cable, suitable for direct burial.

1. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
2. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves and color-coded different than feeder-circuit-cable jacket color and with jackets of different colors for multiple-cable installation in same trench.
3. Splicing Materials: Pressure-sensitive, thermoplastic tape; waterproof sealing packets; or other waterproof connectors.

PART 3 - EXECUTION

3.1 PREPARATION

A. Set stakes to identify proposed lawn sprinkler locations. Obtain Architect's approval before excavation.

3.2 TRENCHING AND BACKFILLING

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically.

1. Clearance: As indicated in details.

C. Trench Bottoms: Excavate and shape bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Place and compact final backfill of satisfactory soil material to final sub-grade.

E. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. 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.

F. Under lawn or unpaved areas, use water to settle entire trench. Place backfill materials in layers not more than 8 inches in loose depth, fill trench with water and allow to settle for minimum 4 hours. Repeat process until final grade is achieved.

G. Compact soil to not less than the following percentages of maximum dry unit weight:

1. Under pavements, scarify and recompact top 12 inches of existing sub-grade and each layer of backfill or fill material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below sub-grade and compact each layer of backfill or fill material at 92 percent.

H. 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.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

I. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish sub-grades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas. Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus ½ inch.

J. Cut and repair Asphalt Pavement to original or better condition.

K. Cut and repair Concrete Paving to original or better condition.

L. Install piping and wiring in sleeves under sidewalks, roadways, parking lots, and railroads.

M. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 3/8 to 3/4 inch minimum, to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.

N. Provide minimum cover over top of underground piping according to the following:

1. Pressure Piping: Depth of minimum 18 inches below finished grade.
2. Circuit Piping: 12 inches.
3. Drain Piping: 12 inches.
4. Drip Piping: 2 inches
5. Sleeves: Depths equal to interior pipe, 18 inches minimum for Pressure Piping and 12 inches minimum for Circuit Piping.

## 3.3 PIPING APPLICATIONS

A. Install components having pressure rating equal to or greater than system operating pressure.

B. Underground, Pressure Piping: Use the following:

1. 4-Inch NPS and Larger: SDR 21 PVC pressure-rated pipe with bell ends and elastomeric seal.

C. Circuit Piping: Use the following:

1. 4-inch NPS and Smaller: Schedule 40 PVC pipe, Schedule 40 PVC socket fittings, and solvent-cemented joints.

D. Underground Branches and Offsets at Sprinklers and Devices: As shown on drawings.

E. Drain Piping: Schedule 40 PVC pipe, Schedule 40 PVC socket fittings, and solvent-cemented joints.

F. Sleeves: Schedule 40 PVC pipe, Schedule 40 PVC socket fittings, and solvent-cemented joints.

## 3.4 VALVE APPLICATIONS

A. Control Valves: Use the following:

1. 2-Inch NPS (DN50) and Smaller: Plastic diaphragm valve.
2. 2-1/2- and 3-Inch NPS (DN65 and DN80): Bronze diaphragm valve.

B. Drain Valves: Use the following:

1. Bronze globe valve with control-valve service box and valve key as shown on drawings.

## 3.5 JOINT CONSTRUCTION

A. Fittings shall be Schedule 40 PVC socket fittings, and solvent-cemented joints, except:

PIPING INSTALLATION

B. Locations and Arrangements: Drawings indicate location and arrangement of piping systems, which were used to size pipe and calculate friction loss, and other design considerations. Install piping as indicated, unless deviations are approved on Coordination Drawings.

C. Install piping at uniform slope of 0.5 percent minimum, down toward drain valves.

D. Install piping free of sags and bends.

E. Install groups of pipes parallel to each other, spaced to permit valve servicing.

F. Install fittings for changes in direction and branch connections.

G. Install unions adjacent to valves and final connections to other components with 3-inch NPS or smaller pipe connection.

H. Install flanges adjacent to valves and final connections to other components with 4-inch NPS or larger pipe connection.

I. Install dielectric fittings to connect piping of dissimilar metals.

J. Lay piping on solid subbase, uniformly sloped without humps or depressions.

K. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperature above 40 deg F before testing, unless otherwise recommended by manufacturer.

## 3.6 VALVE INSTALLATION

A. Control Valves: Install in control-valve service box and as shown on drawings.

B. Drain Valves: Install in control-valve box and as shown on drawings.

## 3.7 SPRINKLER AND DRIP INSTALLATION

A. Flush circuit piping with full head of water and install sprinklers after hydrostatic test is completed.

B. Install lawn sprinklers at manufacturer's recommended heights.

C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries, unless otherwise indicated.

## 3.8 AUTOMATIC CONTROL SYSTEM INSTALLATION

A. Install controllers according to manufacturer's written instructions in location shown on plan.

B. Comply with all pertinent codes and ordinances in installing controller and control wiring.

C. Install control wiring in same trench with piping. Install wiring with loops at control valves and controllers, at intervals not greater than 100 feet, and changes in direction to allow for expansion. Bundle wiring in same trench at 10-foot intervals.

## 3.9 CONNECTIONS

A. Connect piping to valves, sprinklers, and specialties.

B. Connect water supplies to lawn sprinkler piping with backflow preventers at connections to potable-water supplies.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

D. Ground electric-powered controllers, valves, and devices.

1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

## 3.10 FIELD QUALITY CONTROL

A. Testing: Hydrostatically test piping and valves before backfilling trenches. Piping may be tested in sections. Perform tests in presence of Owner. Allow 24 hours advance notice of testing.

1. Cap and test piping with static water pressure of 50 psig above system operating pressure and without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for one hour.
2. Repair leaks and defects with new materials and retest system or portion thereof until pressure is maintained with less than 10% loss over test period.

## 3.11 CLEANING AND ADJUSTING

A. Flush dirt and debris from piping before installing sprinklers and other devices.

B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

C. Carefully adjust lawn sprinklers so they will be flush with, or not more than 1/2 inch below, finish grade.

D. Adjust settings of controllers and automatic control valves. Contact Landscape Architect for recommended settings.

## 3.12 COMMISSIONING

A. Starting Procedures: Follow manufacturer's written procedures. If no procedures are prescribed by manufacturers, proceed as follows:

1. Verify that specialty valves and their accessories are installed and operate correctly.
2. Verify that specified tests of piping are complete.
3. Verify that sprinklers and devices are correct type.
4. Verify that damaged sprinklers and devices are replaced with new materials.
5. Verify that potable-water supply connections have backflow preventers.
6. Energize circuits to electrical equipment and devices.
7. Adjust operating controls.

B. Operational Tests: Measure and record water flow rate and area coverage at each sprinkler. Adjust to achieve indicated values.

1. After all adjustments are complete, demonstrate area coverage to Architect. Provide 48 hours notice of demonstration.

## 3.13 DEMONSTRATION

A. Demonstrate to Owner's maintenance personnel operation of equipment, sprinklers, specialties, and accessories. Review maintenance information.

B. Provide seven days' advance written notice of demonstration.

END OF SECTION 02811

# SECTION 02920 - EXTERIOR PLANTS

## PART 1 - GENERAL

### RELATED DOCUMENTS

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

### SUMMARY

This Section includes the following:

1. Trees.
2. Shrubs.
3. Ground cover.
4. Plants.
5. Edgings.

Related Sections include the following:

1. Division 2 Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
2. Division 2 Section "Earthwork" for excavation, filling, and rough grading and for subsurface aggregate drainage and drainage backfill materials.
3. Division 2 Section "Subdrainage" for below-grade drainage of landscaped areas, paved areas, and wall perimeters.
4. Division 2 Section “Lawns and Grasses” for landscape areas
5. Division 2 Section “Plant Irrigation” for irrigation

### DEFINITIONS

Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than sizes indicated wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.

Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

Finish Grade: Elevation of finished surface of planting soil.

Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

SUBMITTALS

Product Data: For each type of product indicated.

Samples for Verification: For each of the following:

1. Edging materials and accessories, of manufacturer's standard size, to verify color selected.

Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:

1. Manufacturer's certified analysis for standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

Qualification Data: For landscape Installer.

Material Test Reports: For imported topsoil.

Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

QUALITY ASSURANCE

Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.

1 Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.

Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1 Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."

Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches (150 mm) above ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300

mm) above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1 Notify Architect of sources of planting materials seven days in advance of delivery to site.

## DELIVERY, STORAGE, AND HANDLING

Do not prune trees and shrubs before delivery, except as approved by Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.

Handle planting stock by root ball.

Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.

1 Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2 Do not remove container-grown stock from containers before time of planting.
3. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

## COORDINATION

Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Architect.

1 When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

## WARRANTY

Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.

1 Warranty Period for Trees and Shrubs: One year from date of Substantial Completion.
2 Warranty Period for Ground Cover and Plants: Six months from date of Substantial Completion.
3 Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
4 Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
5 A limit of one replacement of each exterior plant will be required, except for losses or replacements due to failure to comply with requirements.

PRODUCTS

TREE AND SHRUB MATERIAL

General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

TOPSOIL

Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 2 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.

i. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources, if necessary. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

ORGANIC SOIL AMENDMENTS

Compost: "Nu-Earth" or equal. Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch (13-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

MULCHES

Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

Type: Ground bark.

STAKES AND GUYS

Upright and Guy Stakes: Per detail on landscape drawings.

LANDSCAPE EDGINGS

Steel Edging: Standard commercial-steel edging, rolled edge, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.

1. Edging Size: 3/16 inch (4.8 mm) wide by 4 inches (100 mm) deep.
2. Stakes: Tapered steel, a minimum of 12 inches (300 mm long.
3. Accessories: Standard tapered ends, corners, and splicers.
4. Finish: Standard paint.
5. Paint Color: Green.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

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

Steel Edging:

A Collier Metal Specialties, Inc.
Russell, J. D. Company (The).
Ryerson Tull, Inc.
Sure-loc Aluminum Edging Corporation.

MISCELLANEOUS PRODUCTS

Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4-inch-(100-mm-) wide minimum, with stretch factor of 33 percent.

Execution

EXAMINATION

Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

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.

Lay out exterior plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

PLANTING BED ESTABLISHMENT

Loosen subgrade of planting beds to a minimum depth of 4 inches (100 mm). Remove stones larger than 1 inch (25 mm in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1 Spread topsoil, apply soil amendments, and thoroughly blend planting soil mix.

2 Spread planting soil mix to a depth of 12 inches (300 mm) in lawn areas and 18 inches (450 mm) in planter areas but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

## TREE AND SHRUB EXCAVATION

Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.

1 Excavate approximately three times as wide as ball diameter for balled and burlapped stock.

Subsoil removed from excavations may not be used as backfill.

Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

## TREE AND SHRUB PLANTING

Set balled and burlapped stock plumb and in center of pit or trench with top of root ball 1 inch (25 mm) above adjacent finish grades.

1 Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.

2 Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

Set container-grown stock plumb and in center of pit or trench with top of root ball 1 inch (25 mm) above adjacent finish grades.

Carefully remove root ball from container without damaging root ball or plant.
Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids aair pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

Organic Mulching: Apply 3-inch (75-mm) average thickness of organic mulch. Do not place mulch within 3 inches (75 mm of trunks or stems.

Wrap trees of 2-inch (50-mm) caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely

attach without causing girdling. Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping.

## TREE AND SHRUB PRUNING

Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

## GUYING AND STAKING

Upright Staking and Tying: Stake trees of 2- through 5-inch (50- through 125-mm) caliper. Stake trees of less than 2-inch (50-mm) caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches (450 mm) below bottom of backfilled excavation and to extend at least 72 inches (1830 mm) above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees per detail on landscape plan.

## PLANTING BED MULCHING

Organic Mulch: Apply 3-inch (75-mm) average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

## EDGING INSTALLATION

Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches (760 mm) apart, driven below top elevation of edging.

Aluminum Edging: Install aluminum edging where indicated according to manufacturer's written instructions.

## CLEANUP AND PROTECTION

During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.

Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

DISPOSAL

Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02920

# SECTION 02930 - LAWNS AND GRASSES

## PART 1 - GENERAL

### RELATED DOCUMENTS

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

### SUMMARY

This Section includes the following:

1. Seeding.
2. Sodding.

Related Sections include the following:

1. Division 2 Section "Site Clearing" for topsoil stripping and stockpiling.
2. Division 2 Section "Earthwork" for excavation, filling and backfilling, and rough grading.
3. Division 2 Section "Subdrainage" for subsurface drainage.
4. Division 2 Section “Planting Irrigation”
5. Division 2 Section “Exterior Plants”

### DEFINITIONS

Finish Grade: Elevation of finished surface of planting soil.

Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

### SUBMITTALS

Product Data: For each type of product indicated.

Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and

percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

6. Certification of each seed mixture for turfgrass sod, identifying source, including name and telephone number of supplier.

Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

Qualification Data: For landscape Installer.

Material Test Reports: For existing surface soil and imported topsoil.

Planting Schedule: Indicating anticipated planting dates for each type of planting.

Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns and seeded meadow grass during a calendar year. Submit before expiration of required maintenance periods.

## QUALITY ASSURANCE

Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn and meadow establishment.

7. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

8. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

## DELIVERY, STORAGE, AND HANDLING

Seed: Deliver seed in original sealed, labeled, and undamaged containers.

Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

SCHEDULING

Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

LAWN MAINTENANCE

Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

9. Seeded Lawns: 90 days from date of Substantial Completion.

    a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

10. Sodded Lawns: 30 days from date of Substantial Completion.

Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.

11. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).

12. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
13. Water lawn at a minimum rate of 1 inch (25 mm) per week.

Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

14. Mow grass 1-1/2 to 2 inches (38 to 50 mm) high.

Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.

15. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to lawn area.

MEADOW MAINTENANCE

Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than 60 days from date of Substantial Completion.

Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch.

Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep meadow uniformly moist.

16. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
17. Water meadow at a minimum rate of 1/2 inch a week for 8 weeks after planting.

## PART 2 - PRODUCTS

### SEED

Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

Seed Species: State-certified seed of grass species, as follows:

Seed Species: Seed of grass species as follows, with not less than [95] <Insert number> percent germination, not less than [85] <Insert number> percent pure seed, and not more than [0.5] <Insert number> percent weed seed:

1. Full Sun: 100 percent chewings red fescue (Festuca rubra variety).

### TURFGRASS SOD

Turfgrass Sod: Approved, complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

Turfgrass Species: Turf type tall fescue.

### TOPSOIL

a. Topsoil: See topsoil as defined in Section 02920 – Exterior Plants.

### ORGANIC SOIL AMENDMENTS

Organic Soil Amendments: See definition in Section 02920 – Exterior Plants.

PLANTING ACCESSORIES

Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

FERTILIZER

2. Fertilizer: See definition in Section 02920 – Exterior Plants.

MULCHES

Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

3. Organic Matter Content: 50 to 60 percent of dry weight.
4. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

PART 3 - EXECUTION

EXAMINATION

Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from hydroseeding overspray.

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.

LAWN PREPARATION

Limit lawn subgrade preparation to areas to be planted.

Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (100 mm) Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

2. Apply superphosphate fertilizer directly to subgrade before loosening.
3. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

    a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
    b. Mix lime with dry soil before mixing fertilizer.

Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

Restore areas if eroded or otherwise disturbed after finish grading and before planting.

SEEDING

Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

4. Do not use wet seed or seed that is moldy or otherwise damaged.

Sow seed at the rate of 3 to 4 lb/1000 sq. ft. (1.4 to 1.8 kg/92.9 sq. m.

Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.

Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

SODDING

Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

5. Lay sod across angle of slopes exceeding 1:3.
6. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

Saturate sod with fine water spray within two hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.

## SATISFACTORY LAWNS

Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

Satisfactory Plugged Lawn: At end of maintenance period, the required number of plugs has been established as well-rooted, viable patches of grass; and areas between plugs are free of weeds and other undesirable vegetation.

Satisfactory Sprigged Lawn: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants; and areas between sprigs are free of weeds and other undesirable vegetation.

Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

## CLEANUP AND PROTECTION

Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

Remove erosion-control measures after grass establishment period.

END OF SECTION 02930

SECTION 06200

FINISH CARPENTRY

1 GENERAL

1.1 SUMMARY

A. Section includes finish carpentry items, other than shop prefabricated casework; hardware and attachment accessories.

1.2 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, finishes, and accessories.

B. Samples: Submit two, 4x4 inch size samples illustrating wood grain and specified finish.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with AWI Quality Standards, Custom Grade.

B. Maintain one copy of each document on site.

2 PRODUCTS

2.1 COMPONENTS

A. Softwood Lumber: PS 20; Graded in accordance with AWI Custom; Hemlock species, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

B. Hardwood Lumber: Graded in accordance with AWI Custom; oak species, maximum moisture content of 6 percent; with vertical grain of quality suitable for transparent finish.

C. Hardwood Plywood: HPVA HP-1 Graded in accordance with AWI Custom veneer core, type of glue recommended for application.

D. Wood Particleboard: ANSI A208.1 Type 1; standard, composed of wood chips of medium density, made with high waterproof resin binders; of grade to suit application; sanded faces.

E. Plastic Laminate: NEMA LD 3; 0.040 inch Post Forming 0.050 inch General Purpose quality; color, pattern, and gloss matte surface texture as selected.

2.2 ACCESSORIES

A. Fasteners: Size and type to suit application; Electro galvanized steel for exterior, high humidity and treated wood locations, plain finish elsewhere.

B. Contact Adhesives: Water Base type.

C. Primer: Alkyd primer sealer type.

D. Hardware:
1. Hardware: BHMA A156.9 Manufactured by Stanley, as follows:
a. Hinges: 331.
b. Pulls: 4483.
c. Latches: SP41.

E. Cultured Marble window sills: 3/8" thick, cut to fit with eased edges and corners.

2.3 FABRICATION

A. Fabricate to AWI Custom standards.

2.4 SHOP FINISHING

A. Stain and varnish exposed to view surfaces. Brush apply only.

B. Seal internal surfaces and semi-concealed surfaces. Brush apply only.

C. Seal surfaces in contact with cementitious materials.

3 EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Prime paint surfaces of items or assemblies in contact with cementitious materials, before installation.

3.3 INSTALLATION

A. Install work in accordance with AWI Custom quality standard.

B. Set and secure materials and components in place, plumb and level.

C. Install trim nails.

D. Cover exposed edges of shelving with 3/8 inch thick hardwood edging.

E. Apply plastic laminate finishes with adhesive over entire surface. Apply laminate backing sheet on reverse side of plastic laminate finished surfaces.

F. Install cultured marble sills with adhesive and sealant.

G. Install hardware supplied by Section 08710.

H. Site Applied Wood Treatment:
1. Brush apply one coats of preservative treatment on wood in contact with cementitious materials, roofing and related metal flashings and. Treat site-sawn cuts.
2. Allow preservative to dry prior to erecting members.

I. Preparation For Finish:
1. Sand work smooth and set exposed fasteners. Apply wood filler in exposed fastener indentations.
2. Site Finishing: Refer to Section 09900.

END OF SECTION

SECTION 07110

DAMPPROOFING

1 GENERAL

1.1 SUMMARY

A. Section includes cold applied bitumen dampproofing with protective covering.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with National Roofing Contractors Association (NRCA) - Waterproofing Manual.

B. Maintain one copy of each document on site.

C. Applicator: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperatures above 40 degrees F for 24 hours before application and continuously until dampproofing has cured.

2 PRODUCTS

2.1 BITUMINOUS DAMPPROOFING

A. Manufacturers:
1. Euclid Chemical Co.
2. Karnak Corp.
3. W.R. Meadows
4. Substitutions: Approved Equal.

2.2 COMPONENTS

A. Cold Asphaltic Materials:
1. Asphalt Emulsion: Conforming to ASTM D3747.
2. Asphalt Primer: ASTM D41, compatible with substrate.

2.3 ACCESSORIES

A. Flexible Flashings: butyl.

3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces are solid, free of matter detrimental to adhesion of dampproofing.

3.2 PREPARATION

A. Do not apply dampproofing to damp, frozen, dirty, dusty, or deck surfaces.

3.3 APPLICATION

A. Apply Work in accordance with NRCA - Waterproofing Manual.

B. Prime surfaces and permit to dry.

C. Apply cold bitumen in one coat, with mop.

D. Apply from 2 inches below finish grade elevation to top of footings.

E. Seal protrusions to and penetrations through dampproofing with mastic and flexible flashing. Seal watertight.

F. Protect finished dampproofing from damage during backfill operations by adhering protection board with mastic over treated surfaces.

G. Scribe boards around penetrations and projections.

END OF SECTION

SECTION 07210

BUILDING INSULATION

1 GENERAL

1.1 SUMMARY

A. Section includes batt thermal insulation and vapor retarder in exterior wall and roof construction.

1.2 SYSTEM DESCRIPTION

A. System performance to provide continuity of thermal barrier and vapor retarder at building enclosure elements in conjunction with air barrier materials in Sections 07260.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data including thermal performance of materials.

2 PRODUCTS

2.1 BUILDING INSULATION

A. Manufacturers:
1. Certain Teed - Glass Fiber Insulation.
2. Johns Manville, Insulation Group - Glass Fiber Insulation.
3. Knauf Fiber Glass Gmbh - Glass Fiber Insulation.
4. Owens-Corning Fiberglas - Glass Fiber Insulation.
5. Substitutions: Approved Equal.

2.2 COMPONENTS

A. Batt Insulation: ASTM C665, preformed glass fiber , conforming to the following:
1. Thermal Resistance: As indicated on Drawings.
2. Batt Size: 16 inch.
3. Facing: Unfaced.
4. Flame/Smoke Properties: in accordance with ASTM E84.

2.3 ACCESSORIES

A. Adhesive: Type recommended by insulation manufacturer for application

B. Sheet Vapor Retarder: As specified in Section 07260. Clear polyethylene film, 6 mil.

C. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 wide.

D. Protective Boards: Wood fiberboard, 1/4 inch thick.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

### 3.2 INSTALLATION

A. Batt Insulation:
   1. Install in exterior walls, roof and ceiling spaces without gaps or voids.
   2. Fit insulation tight in spaces. Leave no gaps or voids.
   3. Install friction fit insulation tight to framing members, completely filling prepared spaces.
   4. Place vapor retarder in accordance with Section 07260.

END OF SECTION

SECTION 07212

BOARD INSULATION

1 GENERAL

1.1 SUMMARY

A. Section includes board insulation and integral vapor retarder at perimeter foundation wall.

B. Related Sections:
1. Section 07260 - Vapor Retarders: Vapor retarder materials to adjacent insulation.
2. Section 07210 - Building Insulation.

1.2 REFERENCES

A. ASTM C208 - Cellulosic Fiber Insulating Board.

B. ASTM C240 - Testing Cellular Glass Insulation Block.

C. ASTM C552 - Cellular Glass Thermal Insulation.

D. ASTM C578 - Preformed, Cellular Polystyrene Thermal Insulation.

E. ASTM C612 - Mineral Fiber Block and Board Thermal Insulation Board.

F. ASTM C1013 - Faced Rigid Cellular Polyisocyanurate Roof Insulation.

G. ASTM D2842 - Test Method for Water Absorption of Rigid Cellular Plastics.

H. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

I. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.

J. NFPA 255 (National Fire Protection Association) - Test of Surface Burning Characteristics of Building Materials.

K. UL 723 (Underwriters Laboratories, Inc.) - Tests for Surface Burning Characteristics of Building Materials.

1.3 SYSTEM DESCRIPTION

A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements in conjunction with thermal insulating materials in Section 07210.

1.4 SUBMITTALS

A. Section 01001 – Basic Requirements: Submittal procedures.

B. Product Data: Submit data on product characteristics, performance criteria, limitations, and adhesives.

C. Manufacturer's Installation Instructions: Submit special environmental conditions required for installation, and installation techniques.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01001 - Product Requirements.

B. Do not install adhesives when temperature or weather conditions are detrimental to successful installation.

1.6 SEQUENCING

A. Section 01001 – Basic Requirements: Work sequence.

1.7 COORDINATION

A. Section 01001 – Basic Requirements: Coordination and project conditions.

2 PRODUCTS

2.1 BOARD INSULATION

A. Manufacturers:
   1. Celotex - Polyisocyanurate Insulation.
   2. NRG Barriers/Johns Manville - Polyisocyanurate Insulation.
   3. Rmax - Polyisocyanurate Insulation.
   4. Substitutions: Section 01001 - Basic Requirements.

2.2 COMPONENTS

A. Polyisocyanurate Insulation: ASTM C1013, rigid board, glass fiber reinforced type, conforming to the following:
   1. Board Size: 48 x 96 inch.
   2. Board Thickness: 2 inches.
   3. Facing: Unfaced.
   4. Thermal Resistance: Aged R of 10.
   5. Board Edges: square.
   6. Water Absorption: In accordance with ASTM D2842 less than 1-1/2 percent by volume maximum.
   7. Flame/Smoke Properties: In accordance with ASTM E84, UL 723, NFPA 255.

2.3 ACCESSORIES

A. Adhesive Type 1: Type recommended by insulation manufacturer for application.

B. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.

C. Protective Boards: Cementitious, 1/4 inch thick, containing no asbestos.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Section 01001 - Basic Requirements: Coordination and project conditions.

B. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

C. Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials or substances affecting adhesive bond.

### 3.2 INSTALLATION - FOUNDATION PERIMETER

A. Adhere 12 inch wide strip of polyethylene sheet over construction joints with double beads of Type 1 adhesive each side of joint.
   1. Tape seal joints.
   2. Extend sheet full height of joint.

B. Apply Type T adhesive in three continuous beads per board length to full bed 1/8 inch thick.

C. Install boards on foundation wall grade beam perimeter, horizontally.
   1. Place boards in method to maximize contact bedding.
   2. Stagger side, end joints.
   3. Butt edges and ends tight to adjacent board and to protrusions.

D. Extend boards over control expansion joints, unbonded to foundation 6 inches on one side of joint.

E. Cut and fit insulation tight to protrusions or interruptions to insulation plane.

F. Immediately following application of board insulation, place protective boards over exposed insulation surfaces, apply Type 1 adhesive in five continuous beads per board length.
   1. Install boards horizontally from base of foundation to top of insulation.
   2. Butt board joints tight; stagger from insulation joints.

### 3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01001 - Basic Requirements: Protecting installed construction.

B. Do not permit work to be damaged prior to covering insulation.

END OF SECTION

# SECTION 07260
# VAPOR RETARDERS

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes sheet and sealant materials for controlling vapor diffusion; materials to continue vapor retarder from wall to roof construction; and materials to continue vapor retarder from wall to window and door.

### 1.2 SYSTEM DESCRIPTION

A. Materials and installation methods to provide continuity of vapor retarder:
   1. In conjunction with materials described in Section 07210 and 07900.
   2. To seal gaps between enclosure components and opening frames.

### 1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data including performance of vapor retarder.

## 2 PRODUCTS

### 2.1 COMPONENTS

A. Sheet Retarder (under slab): Black polyethylene film reinforced with glass fiber square mesh, 10 mil thick.
B. Sheet Retarder: Clear polyethylene film, 6 mil thick.

### 2.2 ACCESSORIES

A. Sealant: Type specified in Section 07900.

B. Primer and Backer Rods: Recommended by sealant manufacturer to suit application.

C. Cleaner: Non-corrosive type; recommended by sealant manufacturer; compatible with joint forming materials.

D. Mastic Adhesive: ASTM D491 asphalt type; compatible with sheet barrier and substrate; thick mastic of uniform consistency.

E. Tape: Bright aluminum self-adhering type; mesh reinforced; 2 inch wide, compatible with sheet material.

F. Attachments: Galvanized steel bars and anchors.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify substrate materials are dry and clean. Remove loose or foreign matter impairing adhesion.

3.2 PREPARATION

A. Coordinate with Work of other affected sections.

B. Clean and prime substrate surfaces to receive adhesive and sealants.

3.3 INSTALLATION

A. Secure sheet retarder to wall vapor retarder with tape.

B. Lap sheet retarder to roof vapor retarder and seal with sealant.

C. Install sheet retarder between window and door frames and adjacent wall vapor retarder and seal with sealant.

D. Caulk with sealant to ensure complete seal.

END OF SECTION

# SECTION 07311
# ASPHALT SHINGLES

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes granular surfaced asphalt shingle roofing, underlayment, eave, valley, and ridge protection, and metal flashings.

### 1.2 SUBMITTALS

A. Product Data: Submit data indicating material characteristics, and limitations.

B. Samples: Submit two roof shingles illustrating shape, color range, and finish texture/pattern; for color selection.

### 1.3 QUALITY ASSURANCE

A. Perform Work in accordance with NRCA Steep Roofing Manual.

### 1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not install eave protection and shingles when surface, ambient air, or wind chill temperatures are below 45 degrees.

### 1.5 WARRANTY

A. Furnish thirty year manufacturer warranty for asphalt shingles.

## 2 PRODUCTS

### 2.1 ASPHALT SHINGLES

A. Manufacturers:
1. Celotex Corporation.
2. Certain Teed Corporation.
3. GAF Building Materials Corporation.
4. Owens Corning Fiberglas Corp.
5. Substitutions: Approved Equal.

B. Product Description: Asphalt shingles conforming to ASTM D228, Type I uniform or non-uniform thickness; UL Rating of C and Wind Resistance Label, fiberglass mat core, mineral granule surfaced type; 95 lb/100 sq ft weight; self-sealing type; color and texture as selected, 30 year wear, architectural style/texture, ridge shingles.

### 2.2 COMPONENTS

A. Eave (Ice Dam) and valley Protection: Grace Fire and Ice Underlayment.

### 2.3 ACCESSORIES

A. Nails: Standard round wire shingle type hot dipped zinc coated steel type, of sufficient length to penetrate through roof sheathing. 3/4 inch into roof sheathing.

B. Hip and Ridge shingles: As provided by the manufacturer.

C. Plastic Cement: ASTM D4586, Asphalt type with mineral fiber components, free of toxic solvents, capable of setting within 24 hours at temperatures of 75 degrees F and 50 percent RH.

D. Lap Cement: Fibrated cutback asphalt type, recommended for use in application of underlayment, free of toxic solvents.

E. Flashing Materials:
1. Sheet Flashings and Ridge Vents: ASTM A653/A653M, G90 (Z275); 24 gage thick precoated galvanized steel; precoating of PVC, color as selected.

F. Bituminous Paint: Acid and alkali resistant type; black color.

G. Nails: Standard round wire roofing type, hot dipped zinc coated steel; of sufficient length to penetrate through roof sheathing. ½ inch into wood substrate.

2.4 FABRICATION

A. Form flashings to profiles indicated on Drawings, and to protect roofing materials from physical damage and shed water.

B. Form flashing sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

C. Hem exposed edges of flashings minimum 1/4 inch on underside.

D. Apply bituminous paint on concealed surfaces of flashings.

3 EXECUTION

3.1 EXAMINATION

A. Verify roof penetrations and plumbing stacks are in place and flashed to deck surface.

B. Verify roof openings are correctly framed.

C. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.2 PREPARATION

A. Fill knot holes and surface cracks with latex filler at areas of bonded eave protection. Cover knot holes with sheet metal.

B. Sweep clean deck surfaces under eave protection and underlayment.

## 3.3 INSTALLATION

A. Protective Underlayment Installation:
   1. Place one 15 pound layer of underlayment over area not protected by eave protection, with ends and edges weather lapped minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place.
   2. Install protective underlayment perpendicular to slope of roof and weather lap minimum 4 inches over eave protection.
   3. Weather lap and seal watertight with plastic cement items projecting through or mounted on roof.

B. Eave and Valley Protection Installation:
   1. Grace Fire and Ice Underlayment.

C. Metal Flashing and Accessories Installation:
   1. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
   2. Secure in place with nails. Conceal fastenings.
   3. Flash and seal work weather tight, projecting through or mounted on roofing with plastic cement.

D. Asphalt Shingles Installation:
   1. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area. Install double course of shingles at eaves.
   2. Project first course of shingles 3/4 inch beyond fascia boards.
   3. Extend shingles ½ inch beyond face of gable edge fascia boards.
   4. Extend shingles on both slopes across valley in weave pattern and fasten. Extend shingles minimum of 12 inches beyond valley center line to achieve woven valley, concealing valley protection.
   5. Cap hips and ridges with individual shingles, maintaining 5 inch weather exposure. Place to avoid exposed nails.
   6. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of Counter flashings.
   7. Complete installation to provide weather tight service.

END OF SECTION

# SECTION 07460 - SIDING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes the following:

1. Fiber-cement siding.
2. Fiber-cement soffit.

### 1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: Full-size units of each type of siding soffit and trim in each color, texture, and pattern required.

C. Research/Evaluation Reports: For each type of siding required.

## PART 2 - PRODUCTS

### 2.1 SIDING

A. Fiber-Cement Siding: Siding made from fiber-cement board that complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. James Hardie Inc.; Hardi panel Smooth.

3. Pattern: As shown on Drawings.
4. Factory Priming: Manufacturer's standard acrylic primer.

### 2.2 SOFFIT

A. Fiber-Cement Soffit: Panels with smooth texture, made from fiber-cement board that complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.

2.3 ACCESSORIES

A. Siding Accessories: Provide starter strips, edge trim, corner cap, and other items as recommended by siding manufacturer for building configuration.

1. Provide accessories made from same material as siding, unless otherwise indicated.
2. Provide accessories matching color and texture of siding, unless otherwise indicated.

B. Fasteners: Use stainless-steel fasteners.

1. Where fasteners will be exposed to view, use prefinished aluminum fasteners in color to match item being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

B. Comply with siding manufacturer's written installation instructions unless more stringent requirements apply.

END OF SECTION 07460

# SECTION 07620
# SHEET METAL FLASHING AND TRIM

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes flashings and counterflashings, gutters and downspouts, roof fascia and eave soffits.
   1. Provide precast concrete splash pads.

### 1.2 SYSTEM DESCRIPTION

A. Sheet Metal System: Conform to criteria of SMACNA "Architectural Sheet Metal Manual." Copper Development Association "Copper in Architecture - Handbook."
   1. Gutters: SMACNA.
   2. Downspouts: SMACNA.
   3. Flashings: SMACNA.

B. Gutters and Downspouts: Provide gutters at all eaves. Size components for rainfall intensity determined by storm occurrence of 1 in 5 years in accordance with SMACNA recommendations.

### 1.3 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, termination, and installation details.

B. Samples: Submit two samples, 12 x 12 inch in size of each type of formed metal flashing illustrating typical seam, external corner, internal corner, material, color, and finish.

### 1.4 WARRANTY

A. Furnish five year manufacturer warranty for finishes.

## 2 PRODUCTS

### 2.1 SHEET METAL FLASHING AND TRIM

A. Product Description: Flashing and sheet metal; unfinished or prefinished, including roof fascia and eave soffits, gutters, downspouts, splash pads, and accessories.

### 2.2 COMPONENTS

A. Pre-Finished Galvanized Steel Sheet: ASTM A924/A924M, Grade A, or ASTM A653/A653M, G90 (Z275) zinc coating; 0.02 inch 24 gage core steel, shop pre-coated with PVDF (polyvinylidene fluoride) coating; color as selected from manufacturer's standard.

### 2.3 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Gutter and Downspout Anchorage Devices: In accordance with SMACNA requirements.

C. Gutter Supports: Brackets.

D. Downspout Supports: Brackets.

E. Underlayment: No. 15 asphalt saturated roofing felt.

F. Protective Backing Paint: Zinc molybdate alkyd.

G. Slip Sheet: Rosin sized building paper.

H. Sealant: Exterior metal lap joint butyl or polyisobutylene sealant as specified in Section 07900.

I. Plastic Cement: ASTM D4586, Type I.

J. Reglets: Recessed galvanized steel face and ends covered with plastic tape.

K. Primer and Solvent for Polyvinyl Chloride (PVC): As recommended by manufacturer.

2.4 FABRICATION

A. Gutter Accessories: Profiled to suit gutters and downspouts.

B. Perforated metal soffits: Galvanized sheet steel zinc coating, 20 gage PVDF coating.

C. Connectors: Furnish required connector pieces for PVC (Polyvinyl Chloride) components.

D. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

E. Downspout Boots: Steel.

F. Form components to shape indicated on Drawings, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.

G. Fabricate cleats and starter strips of same material as sheet, to interlock with sheet.

H. Hem exposed edges on underside ½ inch ; miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

I. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

J. Form material with standing seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

K. Fabricate corners in one piece, 18 inch long legs; seam for rigidity, seal with sealant.

L. Form sheet metal pans with upstand, and flanges.

2.5 SHOP FINISHING

A. PVDF (Polyvinylidene Fluoride) Coating: High Performance Organic Finish, AAMA 605.2; multiple coat, thermally cured fluoropolymer finish system.

3 EXECUTION

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION

A. Install starter and edge strips, and cleats.
B. Install surface mounted reglets. Seal top of reglets with sealant. Insert flashings to form tight fit. Seal flashings into reglets with sealant.
C. Secure flashings, gutters and downspouts in place using concealed fasteners.
D. Apply plastic cement compound between metal work and felt flashings.
E. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
F. Install sheet metal pans surrounding roof penetrations. Fill pans watertight with plastic cement.
G. Slope gutters 1/4 inch per foot minimum.
H. Connect downspouts to downspout boots system. Seal connection watertight.
I. Set splash pads under downspouts.
J. Seal joints watertight.

END OF SECTION

# SECTION 07840
# FIRESTOPPING

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes firestopping and through-penetration protection systems materials and accessories.

### 1.2 SYSTEM DESCRIPTION

A. Firestopping Materials: ASTM E119 to achieve fire rating as noted on Drawings.

B. Surface Burning: ASTM E84 with maximum flame spread/smoke developed rating of 25/450.

C. Firestop interruptions to fire rated assemblies, materials, and components.

### 1.3 SUBMITTALS

A. Product Data: Submit data on product characteristics, performance and limitation criteria.

B. Design Data: Provide schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

### 1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when temperature of substrate material and ambient air is below 60 degrees F.

B. Maintain this minimum temperature before, during, and minimum 3 days after installation of materials.

C. Provide ventilation in areas to receive solvent cured materials.

## 2 PRODUCTS

### 2.1 FIRESTOPPING

A. Manufacturers:
1. A/D Fire Protection Systems, Inc.
2. Dow Corning Corp.
3. Fire Trak Corp.
4. Hilti Corp.
5. 3M fire Protection Products.
6. Nelson Firestop Products.
7. Pecora Corporation.
8. Premier Refractories & Chemicals Inc.

9. United States Gypsum Co.
10. Substitutions: Permitted.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.

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

2.2 ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

B. Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

3 EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive work of this section.

3.2 PREPARATION

A. Clean substrate surfaces of matter effecting bond of firestopping material.

B. Install backing materials to arrest liquid material leakage.

3.3 APPLICATION

A. Apply primer where recommended by manufacturer for specific material and substrate.

B. Apply firestopping material in sufficient thickness to achieve required fire rating, to uniform density and texture.

C. Install material at walls or partition openings containing penetrating sleeves, piping, duct work, conduit and other items, requiring firestopping.

D. Remove dam material after firestopping material has cured. Dam material to remain.

END OF SECTION

# SECTION 07900
# JOINT SEALERS

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes sealants and joint backing.

### 1.2 SUBMITTALS

A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

### 1.3 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

## 2 PRODUCTS

### 2.1 JOINT SEALERS

A. Manufacturers:
1. Dow Corning Corp.
2. GE Silicones.
3. Mameco International Inc.
4. Pecora Corp.
5. Sika Corp.
6. Substitutions: Permitted

B. Product Description:
1. General Purpose Exterior (Nontraffic) Sealant. Acrylic, solvent release curing; ASTM C920, Grade NS, Class 12-1/2, Uses M, G, and A; single component.
   a. Color: Standard colors matching finished surfaces.
   b. Applications: Use for:
      1) Control, expansion, and soft joints in masonry.
      2) Joints between concrete and other materials.
      3) Joints between metal frames and other materials.
      4) Other exterior nontraffic joints for which no other sealant is indicated.

2. Exterior Metal Lap Joint Sealant. Butyl or polyisobutylene, non-drying, non-skinning, non-curing.

3. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
   a. Color: Colors as selected.
   b. Applications: Use for interior wall and ceiling control joints, joints between door and window frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.:

4. Bathtub/Tile Sealant: White silicone; ASTM C920, Uses M and A; single component, mildew resistant.
   a. Applications: Use for joints between plumbing fixtures and floor and wall surfaces, and joints between kitchen and bathroom counter tops and wall surfaces.

5. Acoustical Sealant: Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
   a. Applications: Use for concealed locations only at acoustically rated construction.
      1) Provide sealant bead between top stud runner and structure and between bottom stud track and floor.

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

3 EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.

B. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter impairing adhesion of sealant.

B. Clean and prime joints.

C. Perform preparation in accordance with ASTM C1193.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Perform acoustical sealant application work in accordance with ASTM C919.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer , except where specific dimensions are indicated.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

END OF SECTION

SECTION 08210
WOOD DOORS

1 GENERAL

1.1 SUMMARY

A. Section includes pre-hung wood doors, fire rated and non-rated.

1.2 SUBMITTALS

A. Shop Drawings: Indicate door elevations, cutouts for glazing and hardware preparation.

B. Samples: Submit two of door veneer, 12x12 inch in size illustrating wood grain, color, and finish.

1.3 QUALITY ASSURANCE

A. Perform work in accordance with the following:
   1. NWWDA I.S.1.
   2. Fire Door Construction: Conform to ASTM E152.
   3. Installed Door Assembly: Conform to NFPA 80 for fire rated class as indicated on Drawings.

B. Maintain one copy of each document on site.

1.4 WARRANTY

A. Furnish five year manufacturer warranty to include delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

2 PRODUCTS

2.1 WOOD DOORS

A. Manufacturers:
   1. Weyerhaeuser.
   2. Jeld-wen.
   3. Substitutions: Approved equal.

B. Product Description: Solid and hollow core wood doors, fire rated , non-rated; flush design; wood veneer; site finished.
   1. Flush Interior Doors: 1-3/8 inches thick; solid/hollow core construction; fire rated as indicated on Drawings.

2.2 COMPONENTS

A. Core:
   1. Core (Solid, Non-Rated): NWWDA, Type: Solid particleboard mat formed core.
   2. Core (Hollow): NWWDA, ladder core including lock blocks, vertical edge bands, and top and bottom rails.

B. Flush Door Facing:

1. 5 panel Masonite.
2. Adhesive: NWWDA, Type I - waterproof.

2.3 FABRICATION

A. Fabricate non-rated doors in accordance with NWWDA I.S.1 requirements.

B. Fabricate fire rated doors in accordance with NWWDA I.S.1 and to UL requirements. Attach fire rating label to door edge.

C. Fabricate doors with hardware reinforcement blocking in place.

D. Factory machine doors for finish hardware.

2.4 FINISH

A. Factory finish doors in accordance with approved sample.

B. Seal door top edge with sealer to match door facing.

3 EXECUTION

3.1 INSTALLATION

A. Install doors in accordance with NWWDA I.S.1 requirements, and NFPA 80 requirements for fire rating label.
B. Install door louvers plumb and level.
C. Coordinate installation of doors with installation of metal frames specified in Section 08110 and hardware specified in Section 08710.
D. Adjust door for smooth and balanced door movement.
E. Tolerances:
   1. Maximum Diagonal Distortion: 1/4 inch measured with straight edge, corner to corner.

3.2 SCHEDULE

A. Refer to Door and Frame Schedule in drawings.

END OF SECTION

SECTION 08560

PLASTIC WINDOWS AND PATIO SLIDERS

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes factory fabricated tubular extruded plastic windows and patio sliders with fixed and operating sash, glass, and framed insect screens.

### 1.2 SYSTEM DESCRIPTION

A. Windows and Doors: Extruded tubular plastic sections, factory fabricated, vision glass, related flashings, anchorage and attachment devices.

B. Performance Requirements For Windows: Meet performance criteria for ANSI/AAMA 101 Designation R15 Residential or better.

C. System Design: Performance to provide for expansion and contraction within system components caused by temperature cycling. Design and size members to withstand loads caused by pressure and suction of wind in accordance with applicable code.

D. Air Infiltration: Limit air leakage through assembly to 0.3 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283.

E. Water Leakage: None, when measured in accordance with ASTM E331.

F. System Internal Drainage: Drain water entering framing system, to exterior.

G. Thermal Movement: Design sections to permit thermal expansion and contraction of plastic as compared to glass, infill, and perimeter opening construction.

H. Patio Slider door opening to be 32” clear minimum.

### 1.3 SUBMITTALS

A. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work; and installation requirements.

B. Product Data: Submit component dimensions, anchorage and fasteners, glass, and internal drainage details.

### 1.4 WARRANTY

A. Furnish five year manufacturer warranty for insulated glass units.

## 2 PRODUCTS

### 2.1 TUBULAR PLASTIC WINDOWS AND PATIO SLIDERS

A. Manufacturers:
   1. Winterseal.
   2. Georgia Pacific Corp.
   3. Insulate.
   4. Millgard.
   5. Alside,
   6. AMSCO.
   7. Substitutions: Approved equal.

B. Product Description:
   1. Unit Frame and Intermediate Mullions: Extruded tubular plastic with spigoted corner construction to be 33 STC (Sound Transmission Coefficient) rated minimum.
   2. Windows: Conform with ANSI/AAMA 101 Designations for windows required for Project; DH-double hung and HS-horizontal sliding sash.

2.2 COMPONENTS

A. Extruded PVC: AAMA 303 hollow, multi-chambered sections of extruded polyvinyl chloride (PVC), with integral ultra-violet degradation resistance.

B. Glass and Glazing Materials: Conform with requirements in Section 08800.
   1. Insulating Glass: SIGMA sealed double pane clear float glass with low emissivity coating on inner surface; total thickness 3/4 inch for windows and 1" for doors.
   2. Glazing Materials: Manufacturer's standard conforming with requirements specified in Section 08800 - Glazing.

C. Hardware: Manufacturer's standard window and door hardware based on following requirements.
   1. Horizontal Sliding Sash: Extruded PVC interfacing tracks, limit stops in head and sill track.
   2. Double Hung Sash: Metal and nylon spiral friction slide cylinder, each sash, each jamb.

D. Sills, Stools, and Aprons: Tubular plastic; slope sills for positive wash; extend 1/2 inch beyond wall face; one piece full width of opening.

E. Insect Screens: PVC frame of rectangular sections with ASTM D3656, Class 2, 18 by 14 mesh set into frame and secured. Fit frames with adjustable roller hardware.

F. Weather Stripping: Roll formed flexible plastic, configured for flexible fit.

G. Fasteners: Stainless steel.

H. Anchor Devices: Stainless steel.

I. Sealant and Backing Materials: Specified in Section 07900.

J. Fresh Air Ventilators: Provide manufacturer's standard integral fresh air ventilator with a minimum 4 square inches free area per window.

K. Clear Opening: Patio Doors to be provided with 32" clear opening at operable door leaf.

2.3 FABRICATION

A. Fabricate framing, mullions and sash members with fusion welded corners and joints, in rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.

B. Form snap in glass stops, closure molds, weather stops, and flashings of extruded PVC for tight fit into window frame section. Form weather stop flange to perimeter of unit.

C. Install glass and panels in accordance with Section 08800, using exterior combination method of glazing.

D. Fit insect screen frames with four spring loaded pin retainers.

E. Double weatherstrip operable units.

2.4 SHOP FINISHING

A. Exterior Surfaces: Manufacturer's standard white.

B. Interior Surfaces: Manufacturer's standard white.

C. Screens: White frames with light screening.

D. Operators: White with aluminum brackets.

3 EXECUTION

3.1 EXAMINATION

A. Verify rough openings are correctly sized and located.

3.2 PREPARATION

A. Prepare opening to permit correct installation of frame and achieve continuity of air and vapor barrier seal.

3.3 INSTALLATION

A. Use anchorage devices to securely attach frames to structure.

B. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

C. Coordinate attachment and seal of air and vapor barrier materials. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

D. Coordinate installation of perimeter sealants and backing materials with Section 07900.

END OF SECTION

SECTION 08710

DOOR HARDWARE

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 items known commercially as finish or door hardware that are required for swing, sliding and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This section includes the following:
1. Hinges.
2. Pivots.
3. Spring hinges.
4. Lock cylinders and keys.
5. Lock and latch sets.
6. Bolts.
7. Exit devices.
8. Push/pull units
9. Closers.
10. Overhead holders.
11. Miscellaneous door control devices.
12. Door trip units.
13. Protection plates
14. Weatherstripping for exterior doors
15. Sound stripping for interior doors.
16. Astragals or meeting seals on pairs of doors.
17. Thresholds.

C. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 06200 “Finish Carpentry” for cabinet hardware.
2. Section 08110 “Steel Doors and Frames” for silencers integral with hollow metal frames.
3. Section 08210 “Wood Doors” for factory prefitting and factory premachining of doors for door hardware.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.

B. Product data including manufacturers’ technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish and other information necessary to show compliance with requirements.

C. Final hardware schedule coordination with doors, frames and related work to ensure proper size, thickness, hand, function and finish of door hardware.

1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
   a. Type, style, function, size, and finish of each hardware item.
   b. Name and manufacturer of each item
   c. Fastenings and other pertinent information
   d. Location of each hardware set cross referenced to indication on Drawings both on floor plans and in door and frame schedule.
   e. Explanation of all abbreviation, symbols, and codes contained in schedule.
   f. Mounting locations for hardware.
   g. Door and frame sizes and materials.
2. Submittal Sequence: Submit initial draft of final schedule along with essential product data in order to facilitate the fabrication of other work that is critical in the Project construction schedule. Submit final schedule after samples, product data, coordination with shop drawings of other work, delivery schedules and similar information has been completed and accepted.

D. Templates for doors, frames and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provision s are made for locating and installing door hardware to comply with indicated requirements.

## 1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) From a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities that has a record of successful in-service performance for supplying door hardware similar in quality type and quality to that indicated for this Project and that employs an experienced hardware consultant who is available to Owner, Architect, and Contractor at reasonable time during the course of the Work, for consultation .
   1. Require supplier to take instruction from Owner to finalize keying requirements and to obtain final instructions in writing.

C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirement of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in the compliance with requirements of fire-rated door and door frame labels.

## 1.5 PRODUCT HANDLING

A. Tag each item or packaging separately with identification related to final hardware schedule and include basic installation instructions with each item or package.

B. Packaging of door hardware is responsibility of supplier. As materials is received by hardware supplier from various manufacturer, sort and repackage in containers clearly marked with appropriate hardware set number to match set of number of approved hardware schedule. Two or more identical sets may be packaged in same containers.

C. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

D. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.6 MAINTENANCE

A. Maintenance tools and instruction: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Butts and Hinges: Hager, Mont, Hard, Stanley (Shall use BB1279 hinges at all rated doors, all solid core doors, and all metal doors. Contractor may use 1279 hinges at all hollow core wood doors.)
2. Lock and laches: Corbin Russwin, Titan, Commonwealth, Kwikset knobs.
3. Keyed Cylinders: Corbin Russwin, Titan, Commonwealth
4. Bolts: Hager, Ives, Stanley
5. Exit/Panic Devices: Corbin Russwin, Precision, Von Duprin
6. Push/Pull Units: Baldwin, Brookline, Hager
7. Door Control Devices: Baldwin, Brookline, Hager
8. Kick, Mop and Armor Plates: Baldwin, Brookline, Hager
9. Door Stripping, seals, and Thresholds: Hager, National Guard, Zero
10. Closers: Norton.
11. Substitutions: Approved equal.

2.2 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size and other distinctive qualitites of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this section.

2.3 MATERIALS AND FABRICATION

A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
1. Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Base Metals: Produce units of base metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

C. Fasteners: Provide hardware manufacture to conform ro published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-taping sheet metal screws, except for when specifically indicated.

D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any conditions) screws to match hardware finish or, if exposed surfaces of other work to match finish of this other as closely as possible including "prepared for paint" surfaces to receive painted finish.

E. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard unity of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

## 2.4 HINGES, BUTTS, AND PIVOTS

A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

B. Screws: Provide Phillips flat-head complying with the following requirements:
1. For metal doors and frames install machine screws into drilling and tapped holes.
2. For wood doors and frames install wood screws.
3. For fire-rated wood doors install #12 x 1-1/4 inch, threaded-to-the-head steel wood screws
4. Finish screw heads to match surface of hinges or pivots.

C. Hinge Pins: Except as other wise indicated, provide hinge pins as follows:
1. Out-Swing Exterior Doors: Nonremovable pins.
2. Out-Swing Corridor Doors: Nonremovable pins.
3. Interior Doors: Nonrising pins.
4. Tips: Flat button and matching plug, finish to match leaves, except where hospital tip (HT) indicated
5. Size of Hinges: Provide hinges minimum 4 ½ inch tall, width as required to clear projecting trim.

D. Number of Hinges: Provide number of hinges indicated but no less than 3 hinges per door leaf for doors 90 inches or less in height and one additional hinges for each 30 inches of additional height.
1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches or less in height with same rule for additional hinges.

## 2.5 LOCK CYLINDERS AND KEYING

A. Equip lock with S. Parker-pin tumbler interchangeable core cylinders. Locksets and cores must be of the same manufacturers to maintain complete lockset warranty.
1. Furnish final cores and keys for installation by Owner.
2. Provide construction cores and keys during the construction period.

B. Metals: Construction lock cylinders parts from brass or bronze, stainless steel or nickel silver.

C. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock is not designed to be keyed alike with a group of related locks.

D. Key Materials: provide keys of nickel silver only.

E. Key Quantity.
   1. Construction Keying: Furnish 6 each Construction Masterkeys.
   2. Final Keying: Furnish 2 each Change keys per keyed core and 2 each control keys.

F. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms 3-way visible card index temporary markers, permanent markers and standard metal cabinets all as recommended by system manufacturer, with capacity for 300% of the number of locks required for the project.

## 2.6 LOCKS, LATCHES AND BOLTS

A. Strikes: Provide manufacturer's standard wrought box strike for each latch or kick bolt with curved lip extended to protect frame, finish to match hardware set, unless otherwise indicated.

B. Lock Throw: Provide 5/8 inch minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
   1. Provide ½ inch minimum throw of latch for other bored and preassembled types of locks and 3/4 inch minimum throw of latch for mortise locks. Provide 1 inch minimum throw for all dead bolts.

C. Flush Bolt Heads: Minimum of ½ inch diameter rods of brass, bronze or stainless steel with minimum ½ inch long rod for doors up to 84 inches in height. Provide longer rods as necessary for doors exceeding 84 inches in height.

D. Exit Device Dogging: Except on fire-rated doors where closers are provided on doors equipped with exit devices, equip the units with keyed dogging devices to keep the latch bolt retracted when engaged.

E. Lock Style: Provide Lever style handsets on all doors on the ground level and all unit entry doors; provide knobs on all other doors.

## 2.7 PUSH/PULL UNITS

A. Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation, thru-bolted for matched pairs but nor for single units.

## 2.8 CLOSERS

A. Provide spring shock absorber stop arm closer, with delayed action: Norton UNI-7500; or non-handed, packaged for regular or parallel arm mount, with delayed action: Norton 8501. Provide closers as scheduled at end of this section.

## 2.9 DOOR TRIM UNITS

A. Fasteners: Provide manufacturers standard exposed fasteners for door trim units consisting of either machine screws of self-tapping screws.

B. Fabricated edge trim of stainless steel to fit door thickness in standard lengths or to match height of protecting plates.

C. Fabricate protection plates not more than 1 ½ inches less than door width on hinges side and not more then ½ inch less then door width on pull side by height indicated.
1. Metal Plates: Stainless steel, 0.050 inches (US 18 gauge).

2.10 WEATHERSTRIPPING AND SEALS

A. General: provide continuous weatherstripping on exterior door and smoke, light or sound seals on interior doors where indicated on scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

B. Replaceable Seal Strips: Provide only those units where resilient or flexible leal strips is easily replaceable and readily available from stocks maintained by manufacturer.

C. Weatherstripping at Jambs and Heads: Provide bumper-type resilient insert and metal retainer strips, surface applied unless shown as mortised or semimortised.

2.11 THRESHOLDS

A. General: Except as otherwise indicated, provide standard metal threshold unity of type, size and profile as shown or scheduled.

B. Exterior Hinged or Pivoted Doors: Provide units not less than 4 inches wide, formed to accommodate changes in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames.

2.12 HARDWARE FINISHES

A. Hardware finish to be Standard Brass Finish unless noted otherwise in hardware schedule.

B. The designations used in schedule and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 “Materials and Finishes” including coordination with the traditional US finishes shown by certain manufacturers for their products.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
1. “Recommendation Locations for Builders Hardware for Standard Steel Doors and Frames” by the Door and Hardware institute.
2. NWWDA industry Standard 1.5.1.7, “Hardware Locations for Wood Flush Doors.”

B. Install each hardware item in compliance with the manufacturer’s instructions and recommendations. Were cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage and reinstallation or applications of surface protection with finishing work specified in the

Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units that re not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set threshold for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."

F. Weatherstripping and Seals: comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

## 3.2 ADJUSTING, CLEANING AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Adjust door closer spring tension, back-check, latch speed and sweep speed, following manufacturer's instructions. Replace units that cannot be adjusted to operate freely and smoothly or was intended for the applications made.
   1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or are, return to the installation during the week prior to acceptance or occupancy and make the final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust all door control devices to compensate for final operation of heating and ventilating equipment.

B. Clean adjacent surfaces soiled by hardware installation.

C. Instruct Owner personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

D. Six-Month Adjustment: approximately six months after the date of Substantial Completion, the Installer shall return to the Project to perform the following work
   1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
   2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
   3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.
   4. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

## 5.3 HARDWARE SCHEDULE

A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware" set numbers indicated in door schedule, and in the schedule of hardware sets.

END OF SECTION

SECTION 08800

GLAZING

1 GENERAL

1.1 SUMMARY

A. Section includes glass glazing for metal frames, doors, and windows.
   1. Glass and window glazing materials and installation requirements are included in this section for other sections referencing this section.

1.2 SYSTEM DESCRIPTION

A. System performance to achieve continuity of building enclosure air barrier and vapor retarder with glass and glazing materials of this section.

B. Design Tolerances: Size glass to withstand dead loads and positive and negative wind loads acting normal to plane of glass.

1.3 SUBMITTALS

A. Product Data on Glass Types Specified: Submit physical and environmental characteristics, size limitations, and special installation requirements.

B. Product Data on Glazing Compounds: Submit chemical characteristics, limitations, special application requirements. Identify available colors.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual for glazing installation methods.

B. Maintain one copy of each document on site.

1.5 WARRANTY

A. Furnish five year manufacturer warranty including coverage for sealed glass units from seal failure, interpane dusting, misting, and replacement of defective glass.

B. Furnish two year warranty to include coverage for delamination of laminated glass and replacement of defective glass.

2 PRODUCTS

2.1 GLAZING

A. Manufacturers:
   1. Libbey-Owens-Ford, Inc.
   2. Viracon.
   3. Substitutions: Approved equal.

2.2 COMPONENTS

A. Low E Clear Float Glass (Type FG-EC): Clear float glass Type FG-CF, with low emissivity coating on inner surface.

B. Clear Tempered Glass (Type SG-CT): ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select; with horizontal tempering.

2.3 ACCESSORIES

A. Elastomeric Glazing Sealants: Materials compatible with adjacent materials including glass, laminated glass core, insulating glass seals, and glazing channels.
   1. Silicone Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25.
      a. Color: As selected.
      b. Structural Silicone: Furnish high-modulus structural silicone glazing materials where sealant bonds glass to substrate.

B. Setting Blocks: ASTM C864 Option I, Neoprene Shore A durometer hardness.

C. Spacer Shims: ASTM C864 Option I, Neoprene, 50 to 60 Shore A durometer hardness.

D. Glazing Clips: Manufacturer's standard type.

3 EXECUTION

3.1 EXAMINATION

A. Verify openings for glazing are correctly sized, within tolerance, and glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 PREPARATION

A. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

B. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

A. Perform installation in accordance with GANA Glazing Manual.
   1. Glazing Sealants: Comply with ASTM C1193.
   2. Fire Rated Openings: Comply with NFPA 80
   3. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with compatible butyl sealant.
   4. Place setting blocks at 1/4 points.
   5. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
   6. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
   7. Trim protruding tape edge.

B. Exterior Wet/Dry Method (Preformed Tape and Sealant) Installation:

1. Cut glazing tape to length and set against permanent stops. Seal corners by butting tape and dabbing with compatible butyl sealant.
2. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapor seal.
3. Place setting blocks at 1/4 points.
4. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.
5. Fill gap between glazing and stop with elastomeric glazing sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
6. Apply cap bead of elastomeric glazing sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

## 3.4 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

1 GENERAL

1.1 SUMMARY

A. Section includes gypsum board with joint treatment.

1.2 SYSTEM DESCRIPTION

A. Conform to applicable code for fire rated assemblies as follows:
   1. Fire Rated Partitions: Listed assembly by UL.
   2. Fire Rated Ceilings and Soffits: Listed assembly by UL.
   3. Fire Rated Structural Column Framing: Listed assembly by UL.
   4. Fire Rated Structural Beam Framing: Listed assembly by UL.
   5. Fire Rated Shaft Wall Requirements: 1 hour in accordance with UL.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840; GA-201 - Gypsum Board for Walls and Ceilings; GA-214 - Recommended Specification: Levels of Gypsum Board Finish; GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board; GA-600 - Fire Resistance Design Manual.

B. Maintain one copy of each document on site.

2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Manufacturers:
   1. Celotex Building Products.
   2. G-P Gypsum Corp.
   3. National Gypsum Co.
   4. United States Gypsum Co.
   5. Substitutions: Permitted.

2.2 COMPONENTS

A. Gypsum Board Types: 5/8 inch thick, maximum available length in place; ends square cut, unless noted otherwise as follows:
   1. Standard Type: ASTM C36.
   2. Fire Rated Type: ASTM C36, fire resistive, moisture resistant, UL rated.
   3. Moisture Resistant Type: ASTM C630.
   4. Exterior Gypsum Soffit Board: ASTM C931/C931M.
   5. Foil Faced Gypsum Board: ASTM C36.

2.3 ACCESSORIES

A. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

B. Corner Beads: Metal.

C. Edge Trim: GA-216, Type LC bead.

D. Joint Materials: ASTM C475, reinforcing tape, joint compound, adhesive, and water.

E. Fasteners: ASTM C1002 Type S12 hardened screws.

F. Adhesive: ASTM C557.

G. Textured Finish Materials: Latex based texturing material.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify site conditions are ready to receive work.

### 3.2 INSTALLATION

A. Gypsum Board:
1. Install gypsum board in accordance with GA-216 and GA-600.
2. Fasten gypsum board to furring or framing with screws. Staples may only be used when securing first layer of double layer applications.
3. Place control joints consistent with lines of building spaces as directed by Architect/Engineer.
4. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
5. Seal cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

B. Joint Treatment:
1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
2. Feather coats onto adjoining surfaces so camber is maximum 1/32 inch

.

C. Tolerances: Maximum Variation from Flat Surface: 1/8 inch in 10 feet in any direction.

D. Texture: Medium Orange Peel applied after pva primer

END OF SECTION

SECTION 09650

RESILIENT FLOORING

1 GENERAL

1.1 SUMMARY

A. Section includes resilient sheet and tile flooring and base and resilient stair nosings, treads, risers, and skirting.

1.2 SYSTEM DESCRIPTION

A. Resilient Flooring: Conform to applicable code for flame/smoke rating requirements of 75/450 in accordance with ASTM E84 and critical radiant flux (CRF) of 0.45 in accordance with ASTM E648.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.

B. Samples:
1. Submit manufacturer's complete set of color samples for initial selection.
2. Submit two samples, 2x2 inch in size illustrating color and pattern for each resilient flooring product specified.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance instruction and data.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience , and with service facilities with 100 miles of Project.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

2 PRODUCTS

2.1 RESILIENT FLOORING

A. Manufacturers:
1. Amtico International.

2. Armstrong World Industries, Initiator with Tuff-Guard
3. Mannington, Tough Guard, Initiator
4. Nora Rubber Flooring.
5. Roppe Corp.
6. VPI Floor Products
7. Substitutions: Approved equal.

2.2 COMPONENTS

A. Homogeneous Vinyl Sheet: Meet performance requirements of ATM F1303, Type II, Grade 1, Class B, color and pattern through total thickness:
1. Total Thickness: 0.060 inch nominal.
2. Sheet Width: 72 inch minimum.
3. Static Load Limit: 125 psi minimum.
4. Heat welded seams.

B. Base: FS SS-W-40 Rubber; top set coved:
1. Height: 4 inch.
2. Thickness: 0.080 inch thick.
3. Finish: Matte.
4. Length: 4 foot sections.

2.3 ACCESSORIES

A. Subfloor Filler: type recommended by floor material manufacturer.

B. Primers and Adhesives: Waterproof, types recommended by floor material manufacturer.

C. Moldings and Edge Strips: Same material as flooring.

D. Sheet Flooring Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.

E. Feature Strips: Same material as flooring.

F. Sealer and Wax: Types recommended by floor material manufacturer.

3 EXECUTION

3.1 EXAMINATION

A. Verify concrete floors are dry to maximum moisture content of 95 percent as recommended by manufacturer, and exhibit negative alkalinity, carbonization, and dusting.

3.2 PREPARATION

A. Clean substrate.

B. Fill minor low spots and other defects with sub-floor filler.

C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.

## 3.3 INSTALLATION

A. Spread adhesive and set flooring in place. Press sheet flooring with 150 pound roller to attain full adhesion.

B. Install sheet flooring with joints and seams parallel to length of room. Do not rotate sheet flooring from one area to another. Provide minimum of 1/3 full roll width. Double cut sheet and heat weld seams.

C. Scribe flooring to produce tight joints at items penetrating flooring.

D. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Secure resilient strips by adhesive.

F. Adhere base tight to wall and floor surfaces.

G. Fit joints tightly and make vertical. Miter internal corners. At external corners, use premolded units.

## 3.4 CLEANING

A. Remove excess adhesive from surfaces without damage.

END OF SECTION

SECTION 09680

CARPET

1 GENERAL

1.1 SUMMARY

A. Section includes carpet stretched-in with cushion underlay.

1.2 SUBMITTALS

A. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile and pattern, location of edge moldings and edge bindings.

B. Samples: Submit two samples 12 x 12 inch in size illustrating color and pattern for each carpet material specified.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance and cleaning instructions.

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store materials in area of installation of 48 hours prior to installation.

B. Maintain minimum 70 degrees F ambient temperature one (1) day prior to, during and 24 hours after installation.

C. Ventilate installation area during installation and for 3 days after installation.

1.6 WARRANTY

A. Furnish five year manufacturer warranty for carpet integrity, wear, and color fastness.

1.7 EXTRA MATERIALS

A. Furnish 50 sq ft of carpeting of each type, color, and pattern specified.

2 PRODUCTS

2.1 CARPET

A. Manufacturers:
   1. Mohawk Industries, Inc.
   2. Shaw Contract
   3. Philadelphia Thunderbolt II

4. Substitutions: Approved equal.

2.2 COMPONENTS

A. Building Units - Carpet: Mohawk Industries - Mainstream II.
   1. Pad: 7/16" thick with 6 pound per cubic foot of density.
B. Community Building - Carpet: Shaw Contract - Momentum III or approved Equal

2.3 ACCESSORIES

A. Sub-Floor Filler: Type recommended by flooring material manufacturer.

B. Moldings and Edge Strips: Rubber, color as selected.

C. Seam Adhesive: Recommended by manufacturer.

3 EXECUTION

3.1 EXAMINATION

A. Verify floor surfaces are smooth and flat within tolerances specified and are ready to receive work.

3.2 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

3.3 INSTALLATION

A. Install carpet in accordance with Standard for Installation of Commercial Textile Floor Covering Materials.

B. Verify carpet match before cutting to ensure minimal variation between dye lots.

C. Lay out carpet and locate seams in accordance with shop drawings:
   1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
   2. Do not locate seams perpendicular through door openings.
   3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
   4. Locate change of color or pattern between rooms under door centerline.
   5. Provide monolithic color, pattern, and texture match within each contiguous area.

D. Install carpet. Join seams using hot adhesive tape. Form seams straight, not overlapped or peaked, and free of gaps.

E. Complete installation of edge strips, concealing exposed edges. Bind cut edges where not concealed by edge strips.

F. Cleaning:
1. Remove excess adhesive from floor, base, and wall surfaces without damage.
2. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09900

PAINTS AND COATINGS

1 GENERAL

1.1 SUMMARY

A. Section includes surface preparation and field application of paints stains, varnishes, and other coatings.

1.2 SUBMITTALS

A. Product Data: Submit data on finishing products.

B. Samples: Submit two paper chip samples, 4x4 inch in size illustrating range of colors available for each surface finishing product scheduled.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit maintenance and cleaning instructions.

1.4 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience,and with service facilities within 100 miles of Project.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Store and apply materials in environmental conditions required by manufacturer's instructions.

2 PRODUCTS

2.1 PAINTS AND COATINGS

A. Manufacturers:
   1. Sherwin Williams
   2. Columbia.
   3. Approved Equal

2.2 COMPONENTS

A. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve finishes specified.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify substrate conditions are ready to receive Work.

B. Measure moisture content of porous surfaces using electronic moisture meter. Do not apply finishes unless moisture content is less than 12 percent.

### 3.2 PREPARATION

A. Correct minor defects and clean surfaces affecting work of this section.

B. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or applying finishes.

C. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with solution of tri-sodium phosphate, rinse well and allow to dry.

F. Uncoated Steel and Iron Surfaces: Remove scale by wire brushing, sandblasting, clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Clean surfaces with solvent. Prime bare steel surfaces.

H. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

I. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

J. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior paintable caulking compound after prime coat has been applied.

K. Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.

### 3.3 APPLICATION

A. Sand wood and metal surfaces lightly between coats to achieve required finish.

B. Where clear finishes are required, tint fillers to match wood.

C. Prime concealed surfaces of interior and exterior woodwork with primer paint.

D. Prime concealed surfaces of interior wood surfaces scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with thinner.

E. Finishing Mechanical And Electrical Equipment:
1. Color code items in accordance with requirements indicated. Color band and identify with flow arrows, names, and numbering.
2. Paint shop primed equipment.
3. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convector and baseboard cabinets to match face panels.
4. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
5. Paint interior surfaces of air ducts and convector and baseboard heating cabinets visible through grilles and louvers with one coat of flat black paint to visible surfaces.
6. Paint exposed conduit and electrical equipment occurring in finished areas.
7. Paint both sides and edges of plywood backboards.
8. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

F. Cleaning: As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

## 3.4 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

A. Metal Fabrications Section 05500.

## 3.5 SCHEDULE - EXTERIOR SURFACES

A. Wood - Painted (Opaque):
1. One coat of latex primer sealer.
2. One coat of Cabot O.V.T. solid color stain.

B. Wood - Transparent:
1. One coat of stain.
2. One coat of sealer.

C. Pavement Markings:
1. One coat of paint, yellow.

D. Concrete, Concrete Block, Restored Masonry Cement Plaster:
1. One coat of primer sealer latex.
2. One coat of latex, flat.

E. Gypsum Board Soffits
1. One coat of primer sealer latex.
2. One coat of latex, flat.

F. Steel - Shop Primed:

1. Touch-up with zinc chromate primer.
2. One coat of latex enamel, semi-gloss.

G. Steel - Galvanized:

1. One coat of galvanize primer.
2. One coat of latex enamel, semi-gloss.

H. Steel - Metal Handrails and Bicycle Racks:
1. Powder coating.

I. Steel - Metal-Faced Doors:
1. One coat Valspak primer.
2. Two coats 545 Series Valspak.

## 3.6 SCHEDULE - INTERIOR SURFACES

A. Wood - Painted:
1. One coat of latex primer sealer.
2. One coat of latex enamel, semigloss.

B. Wood - Transparent:
1. Filler coat (for open grained wood only).
2. One coat of stain.
3. One coat of solid-body stain.
4. One coat of varnish, satin.

C. Steel - Unprimed:
1. One coat of alkyd primer.
2. One coat of latex enamel, semi-gloss.

D. Steel - Primed:
1. Touch-up with latex primer.
2. One coat of latex enamel, semi-gloss.

E. Steel – Primed at Elevator Auxiliary Rails:
1. Heat resistant to 300 degrees, spray applied at maximum 5 mils including primer.

F. Plaster, Gypsum Board:
1. One coat of pva primer sealer applied prior to texture, backrolled.
2. One coat of latex enamel, semigloss applied after texture backrolled.

END OF SECTION

# SECTION 10670
# WIRE SHELVING

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes wire shelving for all wardrobe and storage areas.

### 1.2 SUBMITTALS

A. Shop Drawings: Submit layouts of steel rod shelving, as detailed in the drawings, and include material and finish description.

## 2 PRODUCTS

### 2.1 WIRE SHELVING

A. Manufacturers:
   1. Lee/Rowen
   2. Substitutions: Approved equal.

### 2.2 MATERIALS

A. Product Description: Epoxy coated, steel rod shelving.

### 2.3 COMPONENTS

A. Fabricated of heavy gage welded steel rod and covered with an epoxy powder coating which provides a hard, durable finish to provide a continuous protective coating.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify exact location of shelving for installation.

### 3.2 INSTALLATION

A. Install plumb and level, securely and rigidly anchored to substrate.

END OF SECTION

# SECTION 10800
# TOILET AND BATH ACCESSORIES

## 1 GENERAL

### 1.1 SUMMARY

A. Section includes toilet and bath, shower, and washroom accessories.

### 1.2 SUBMITTALS

A. Product Data: Submit data on accessories describing size, finish, details of function, attachment methods.

B. Samples: Submit one sample of each accessory illustrating color and finish.

## 2 PRODUCTS

### 2.1 TOILET AND BATH ACCESSORIES

A. Manufacturers:
1. A & J Washroom Accessories
2. American Specialties, Inc.
3. Bobrick Washroom Accessories
4. Bradley Corp.
5. Builders Brass Works
6. Franklin Brass Manufacturing Co.
7. Substitutions: Approved equal.

### 2.2 MATERIALS

A. General: Fabricate toilet accessory items from the following materials and in accordance with requirements specified for individual accessory items:
1. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage (.034 inch) minimum thickness, unless otherwise indicated.
2. Sheet Steel: Cold rolled, commercial quality ASTM A 366, 20 gage (.040 inch) minimum, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
3. Galvanized Steel Sheet: ASTM A 527, G60.
4. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
5. Mirror Glass: Nominal 6.0 mm (0.23 inch) thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating.
6. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
7. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

## 3 EXECUTION

### 3.1 EXAMINATION

A. Verify exact location of accessories for installation.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site. Provide templates and rough-in measurements.

B. See Section 06100 for installation of blocking, reinforcing plates, concealed anchors in walls and ceilings.

3.3 INSTALLATION

A. Install plumb and level, securely and rigidly anchored to substrate.

B. Mounting Heights and Locations: As required by accessibility regulations, and as indicated on Drawings.

3.4 SCHEDULES

A. Towel Bars:
1. 24" Bars
2. 7 ½" Round

B. Surface-mounted toilet paper dispensers.

A. Recessed medicine cabinets.

B. Mirrors:

1. 36" x 36" at units

END OF SECTION

SECTION 11450

RESIDENTIAL EQUIPMENT

1 GENERAL

1.1 SUMMARY

A. Section includes refrigerators, range, dishwasher and microwave oven and fan.

1.2 SYSTEM DESCRIPTION

A. Equipment: Conform to applicable code for UL approval.

1.3 SUBMITTALS

A. Product Data: Submit data on equipment and accessories.

B. Manufacturer's Installation Instructions: Submit manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit relevant instructions.

2 PRODUCTS

2.1 RESIDENTIAL EQUIPMENT

A. Manufacturers:
   1. General Electric.
   2. Substitutions: Approved equal.

2.2 COMPONENTS

A. Refrigerators:
   1. Model seleted by owner.

A. Range:
   1. Model seleted by owner.

B. Dishwasher:
   1. Model selected by owner.

C. Microwave:
   1. Model seleted by owner.

A. Range Cord: Model compatible with range and electrical system.

B. Spacemaker Washer/Dryer: Model selected by owner.

3 EXECUTION

3.1 EXAMINATION

A. Verify openings and utility services are ready to receive work and opening dimensions are as instructed by manufacturer.

3.2 INSTALLATION

A. Set and adjust units level and plumb.

B. Connect to utilities and make units operational.

C. Activate units to confirm correct operation.

D. Turn refrigerators on to moderate temperature setting and flush water line.

END OF SECTION

SECTION 12355

RESIDENTIAL CASEWORK

1 GENERAL

1.1 SUMMARY

A. Section includes shop fabricated residential cabinet units and counter tops.

1.2 SUBMITTALS

A. Shop Drawings: Indicate casework locations, scale plans, elevations, clearances required.

B. Product Data: Submit data on component profiles, sizes, assembly methods, and schedule of finishes.

C. Samples: Submit two panels, 12 x 12 inch in size illustrating cabinet and counter top finish.

D. Samples: Submit hardware samples.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with KCMA (Kitchen Cabinet Manufacturers Association) - Certification Program.

B. Maintain one copy of each document on site.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Install after interior temperature and humidity are controlled and stabilized.

2 PRODUCTS

2.1 RESIDENTIAL CASEWORK

A. Manufacturers:
   1. Selected by Owner
   2. Substitutions: Approved equal.

2.2 COMPONENTS

A. Hardware: Manufacturer's standard design selected by Owner.

2.3 FACTORY FINISHING

A. Exposed To View Surfaces: Stain, seal and varnish.

B. Interior Surfaces: Plastic Laminate of color and pattern as selected.

3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and location of mechanical and electrical outlets.

3.2 PREPARATION

A. Install supplementary support framing.

3.3 INSTALLATION

A. Set and secure casework in place rigid, plumb, and level.

B. Provide cutouts for plumbing fixtures, appliances, and other fixtures and fittings.

C. Use fixture attachments at concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.

E. Carefully scribe casework against other building materials, leaving gaps of 1/32 inch maximum. Use filler strips not additional overlay trim for this purpose.

F. Secure cabinet and counter bases to floor using appropriate anchorage.

G. Adjust moving or operating parts to function smoothly and correctly.

H. Install backsplashes and end splashes.

END OF SECTION

SECTION 12492

BLINDS AND SHADES

1 GENERAL

1.1 SUMMARY

A. Section includes horizontal vinyl slat louver blinds; roll-up shades; and operating hardware.

1.2 SUBMITTALS

A. Shop Drawings: Indicate method of attachment and anchorage. Indicate locations for operating controls.

B. Product Data: Submit data indicating physical and dimensional characteristics, and operating features.

2 PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS

A. Manufacturers:
1. Graber Window Treatments.
2. Hunter Douglas Window Fashions.
3. Levolor Contract.
4. Springs Windows Fashions.
5. Window Accessory Co., Inc.
6. Substitutions: Approved equal.

2.2 COMPONENTS

A. Blinds: Horizontal slat louvers hung from full-width headrail with full-width bottom rail; manual control of raising and lowering by cord with full range locking; blade angle adjustable by cord.

B. Vinyl Slats: Prefinished Vinyl radiused slat corners, with manufacturing burrs removed; non-perforated.
1. Width: ½ inch.
2. Thickness: 0.011 inch.
3. Color: As selected by Owner

C. Headrail: Pre-finished, formed aluminum box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
1. Color: Same as slats.

D. Bottom Rail: Pre-finished, formed aluminum with top side shaped to match slat curvature; with end caps.
1. Color: Same as headrail.

E. Lift Cord: Braided nylon; continuous loop.
1. Free end weighted, looped through wall mounted spring tensioned pulley.
2. Color: As selected.

F. Headrail Attachment: Wall brackets.

G. Accessory Hardware: Type recommended by blind manufacturer.

2.3 FABRICATION

A. Fabricate blinds to fit within openings with uniform edge clearance of 1/4 inch.

B. At openings requiring multiple blind units, furnish separate blind assemblies with space of 1/4 inch between assemblies, occurring at window mullion centers.

3 EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive the Work.

3.2 INSTALLATION

A. Secure in place with concealed fasteners.

B. Adjust blinds for smooth operation.

4 SCHEDULE

4.1 SCHEDULE

A. Locate at all window openings ***and glass doors.***

END OF SECTION