

Specifications

ASTON ROW TOWNHOUSES

Dennison Avenue at First Alley North Of Starr Ave.  
Columbus, Ohio



SULLIVAN BRUCK  
ARCHITECTS

309 South Fourth Street  
Columbus, Ohio 43215

PROJECT # 12014.00  
Bid Set  
January 18, 2013

The Table of Contents  
Technical Specifications  
Aston Row Townhouses  
Snyder Barker Investments  
Dennison Avenue & First Alley North of Starr Ave  
Columbus, Ohio

DIVISION 011 - GENERAL REQUIREMENTS

- 01 11 00 Summary of Work
- 01 23 00 Alternates
- 01 25 10 Product Options & Substitutions
- 01 33 21 Shop Drawings, Product Data & Samples
- 01 71 00 Acceptance Of Conditions
- 01 73 20 Cutting & Patching

DIVISION 02 - EXISTING CONDITIONS

- 02 13 10 Building Foundation Earthwork
- 02 16 21 Foundation Drain System

DIVISION 03 - CONCRETE

- 03 30 00 Cast-in-Place Concrete
- 03 48 11 Precast Concrete Parking Blocks

DIVISION 04 - MASONRY

- 04 05 00 Unit Masonry
- 04 17 55 Wall Cavity Drainage System
- 04 72 01 Cast Stone Caps

DIVISION 05 - METALS

- 05 12 00 Structural Steel
- 05 50 17 Steel Masonry Lintels
- 05 52 51 Pipe Bollards

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

- 06 10 00 Rough Carpentry
- 06 10 50 Miscellaneous Rough Carpentry
- 06 10 63 Exterior Rough Carpentry
- 06 16 00 Sheathing
- 06160 Gypsum Sheathing
- 06 17 53 Shop-Fabricated Wood Trusses
- 06 20 00 Finish Carpentry & Millwork

DIVISION 07 - THERMAL & MOISTURE PROTECTION

- 07 14 51 Spray-Applied Waterproofing
- 07 20 10 Perimeter Insulation
- 07 21 36 Thermal Batt Insulation & Vapor Membrane
- 07 27 15 Air Barrier Underlayment
- 07 46 70 Fiber Cement Panel Siding
- 07 53 21 Adhered EPDM Membrane Roof
- 07 63 00 Roof Sheet Metal Work
- 07 63 21 Gutters & Downspouts
- 07 84 00 Firestopping

07 87 10 Draftstopping  
07 92 00 Joint Sealers

**DIVISION 08 - OPENINGS**

08 14 55 Molded Panel Wood Door  
08 31 00 Access Doors & Panels  
08 36 41 Steel Sectional Overhead Doors  
08 60 00 Polyvinyl Chloride (PVC) Windows  
08 71 15 Overhead Door Operators  
08 83 15 Custom Size Mirrors  
08 95 20 Dryer Vents

**DIVISION 09 - FINISHES**

09 29 00 Gypsum Board  
09 31 00 Mortar Thin Set Tile  
09 68 21 Sheet Carpet  
09 92 00 Paint & Transparent Finishes

**DIVISION 10 - SPECIALTIES**

10 28 11 Toilet Accessories  
10 57 30 Wire Closet Shelving

**DIVISION 11- EQUIPMENT**

11 31 00 Residential Appliances

**DIVISION 12- FURNISHINGS**

12 21 12 Horizontal PVC Slat Louver Blinds  
12 36 40 Stone Countertops

**DIVISION 13- SPECIAL CONSTRUCTION**

Not Used

**DIVISION 14- CONVEYING EQUIPMENT**

Not Used

End of Table of Contents

SECTION 01 11 10

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Project Description: Work consists of construction of a three story townhouse building over individual basements including individual attached garages, and associated site development. The work specified in these specifications covers:
1. Sitework for sidewalks and paving.
  2. Footers and foundation concrete.
  3. Wood structural framing.
  4. Masonry foundation walls and elevator and stair shaft enclosures.
  5. Roofing, brick veneer, insulation and sheathing for enclosing the building.
  6. Window and patio door glazing systems.
  7. Interior and exterior doors and hardware.
  8. Drywall partitions and ceilings.
  9. Finish painting and coatings.
  10. Fixtures and furnishings.
- B. The following work is not covered by these specifications.
1. Site clearing and earthwork (refer to soils report).
  2. Site sanitary sewers, water service and gas service.
  3. Building Mechanical Systems:
    - a. Fire Protection.
    - b. Heating Ventilating and Air conditioning systems.
    - c. Plumbing systems.
  4. Electrical systems:
    - a. New service drop, panels and distribution.
    - b. Interior lighting.
    - c. Exterior lighting.
  5. Storm drainage from parking lots and building to existing storm sewers.
  6. Lawns and landscaping.
  7. Exterior terrace, floor finishes, fixtures and furnishings.

1.2 CONDUCT OF THE WORK

- A. Provide all supervision, labor, services, materials, systems construction, and equipment and do all work necessary to accomplish this end. All materials specified under the various Divisions of the specifications and/or shown on the drawings shall be incorporated in the construction as directed.
- B. Existing Conditions: Notify Owner's Representative of existing conditions differing from those indicated on the drawings. Do not remove or alter structural components without prior written approval.
- C. Codes: Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communications to the Architect and Owner's Representative.

- D. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.
- E. Safety Procedures: Conduct all work in accordance with Requirements of the Occupational Safety and Health Administration (OSHA) that apply to work places and to building construction.
  - 1. Do not use flame cutting or other flame tools without Owner's Representative's written permission. Submit requests for use of open flames not less than 24 hours prior to the required work.
  - 2. If permitted provide and maintain fire extinguishing equipment as required.

### 1.3 OWNER OCCUPANCY

- A. Owner reserves the right to occupy, place and install equipment or furnishings in completed areas of the building before Substantial Completion, provided that such actions do not interfere with completion of the Work. Such actions shall not constitute acceptance of the Work or any part thereof.

### 1.4 SPECIFICATIONS AND DRAWINGS

- A. Intent: Drawings and specifications are intended to provide the basis for proper completion of work suitable for intended use of the Owner. Anything not expressly set forth but which is reasonable implied or necessary for proper performance of the project shall be included.
- B. The terms "Architect" or "Owner's Representative" as used herein, shall be interpreted to mean, the authorized representative of the Owner, acting within powers entrusted to them by the Owner.
- C. Definitions for terms used in 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.
- D. The Heading "SUBSEQUENT OPERATIONS" in Part 3 of the specifications, shall be understood to mean operations performed at any time, or times, subsequent to the initial installation that may be required by the Architect or Owner for acceptance of the work for initial or final payment.
- E. 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.'

SECTION 01 23 00  
ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for alternates.

1.2 DEFINITIONS

- A. An Alternate is a particular portion of work, which, at the Owner's discretion, may be added to, deducted from, or performed in lieu of a portion of the Work of the Project. Work not specifically identified or reasonably inferable as being part of an Alternate shall be considered as being in the base scope of the project.
- B. Alternates may be described, illustrated, or otherwise indicated on the Drawings, in the Specifications, on the Bid Form, in this section, or any combination of those documents.
- C. An Alternate is not to be considered part of the Contract Documents unless it is accepted by the Owner and incorporated by reference into the Agreement. If any Alternates are accepted the Contract Sum will reflect the net effect of the accepted Alternates on the base bid amount.

1.3 COORDINATION

- A. The Contractor shall fully investigate each proposed Alternate and understand each Alternate's effect on the overall Work. Work which, by virtue of acceptance of the Alternate, will be necessary in order to provide a complete and proper installation shall be considered as being part of that Alternate, whether indicated or not. Like wise, work, which is made unnecessary by acceptance of the Alternate, shall be considered as being deducted from the base Work, even if not specifically indicated as such.
- B. Unless otherwise indicated, each Alternate shall be considered to include all costs necessitated by its acceptance, including, but not limited to labor, material, delivery, storage, handling, supervision, tools, equipment, taxes, compliance with Division 1 General Requirements, and construction facilities and administration associated with the Alternate.

1.4 PROCEDURES

- A. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate #1: Brick Masonry Veneer: Glen-Gery Brick Medalia Collection, "Cedar Lake" Modular in lieu of Hanson Brick Co. "Westport" Modular
- B. Alternate #2: Cast Stone Masonry Veneer: Custom Cast Stone 7 5/8" x 23 5/8" x 3 5/8" Rock Face Stretchers, color: Natural White; in lieu of Rockcast Cast Stone 7 5/8" x 23 5/8" x 3 5/8" Chiseled Face Stretchers, color: Arctic White.
- C. Alternate #3: Windows: Kolbe & Kolbe Latitude Extruded PVC windows in lieu of Paradigm Extruded PVC windows. Match specifications given for Paradigm Windows herein and on drawings.

SECTION 01 25 10

PRODUCT OPTIONS & SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for selection of materials and procedures for substitutions.

1.2 PRODUCTS

- A. Provide products specified unless otherwise approved as equal by the Architect.
- B. Provide products from one manufacturer for each type or kind as applicable. Provide secondary materials as recommended by manufacturers of primary materials.

1.3 SUBSTITUTION PROPOSALS

- A. Substitution will be considered provided extensive revisions to contract documents are not required, proposed changes are in keeping with the intent of the contract documents, and requests are timely, fully documented and properly submitted. However, the Architect shall not be required to accept any substitution not in the interest of the Owner.
- B. Products submitted for substitution shall be submitted with acceptable documentation, and include costs of substitution including related work.
- C. Contractor shall ascertain that products upon which he chooses to propose conforms to the following:
  - 1. Has the specific features enumerated in the specifications.
  - 2. Will properly fit the adjacent work.
  - 3. Material is acceptable to authorities having jurisdiction.
  - 4. Substantial advantage is offered Owner in terms of cost, time, or other valuable consideration.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. Basis of Design: When two or more products or manufacturers are named in addition to a product designated as Basis of Design, the products named, or products of the manufacturer named, may be proposed as a substitutions upon consideration that only the product named as the Basis of Design was used in development of the specifications and drawing details, and that the Architect does not warrant that other products or manufacturers named have all required features necessary to fit the work or meet specific features required by the drawings or specifications.
- B. Or Equal: The words "Or Equal" following specified products permit the Contractor to propose like material generally considered to be equal to the specified product. However, bids shall be based on the specifications whether or not the term "Or Equal" is used.

PART 3 - EXECUTION

3.1 SUBSTITUTION APPROVAL

- A. Additional costs, including cost of work by others, involved in completing work with substituted products, and responsibility for its fitting and operating as a part of the system rests solely with the Contractor.
- B. Acceptance of shop drawings, product data or samples does not constitute an accepted substitution, nor approval thereof. Substitutions must be approved by Change Order.
- C. For accepted substitutions, the agreed change in contract price includes all necessary changes in work of all trades which may be required by reason of acceptance, including work by others. No extra compensation will be allowed for additional work, labor or materials of any kind.
- D. Acceptance of a substitution is solely for the substitution stated in the Contractor's proposal, or as agreed to subsequently in writing. An acceptance does not constitute acceptance of variations of drawings or specifications requirements, unless each such variation has been clearly and accurately documented by the accepted proposal.

SECTION 01 33 21

SHOP DRAWINGS, PRODUCT DATA & SAMPLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative procedures for submittal of shop drawings, product data and samples.
- B. Specified in Other Sections: Items to be submitted.

1.2 QUALITY CONTROL

- A. Contractor's Certification: Before submitting, carefully review and coordinate all aspects of each item and certify by signature that it conforms with the Contract Documents. If Contractors submits shop drawings without having reviewed and signed them they will be returned to the Contractor without comment for checking and resubmittal.
- B. Manufacturer's Certifications: For major construction components and for major items of equipment, provide separate and specific certification on company letterhead stating the item, its location in the Work, quantities, date of delivery.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. Submit within fourteen calendar days of award of Contract a complete list of all submittals with anticipated timing and type for each item. Upon Architect's approval, this schedule becomes a part of the Contract Documents, and the Contractor shall adhere to the schedule.
- B. Coordinate this schedule with the necessary subcontractors and material suppliers to ensure their understanding of its importance, and their ability to adhere to it.

2.2 SHOP DRAWINGS

- A. Submit Digital (portable digital format) set of accurate and detailed drawings at scale large enough to show accurately all pertinent aspects of the item and its method of connection to the Work.
- B. Include fabricator's name, scale of drawing, dimensions, assembly methods, finishes, materials and date.

2.3 MANUFACTURER'S PRODUCT DATA

- A. Submit Digital (portable digital format) set of submitted data will be retained by the Architect. Submit such quantity of additional sets as are needed for the Architect and Contractor's purposes.
- B. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly mark which portion(s) are applicable for the review.

## Aston Place Apartments

- C. Include test information and color/material data.

### 2.4 SAMPLES

- A. Provide samples identical to the exact item proposed to be provided. Identify each sample with a tag or label securely affixed to the sample.
- B. Unless a particular color and texture or pattern is specifically called out in the Contract Documents, submit color and texture samples. Photographic representatives are not acceptable.

## PART 3 - EXECUTION

### 3.1 IDENTIFICATION OF SUBMITTALS

- A. Accompany each submittal with letter of transmittal indicating each item included. Contractor shall indicate quantity of sets that Contractor needs to be returned. For re-submittals, reference the original submittals transmittal letter by date and number.
- B. Contractor shall maintain an accurate log of all submittals for the duration of the Work, showing the status of all submittals at all times.

### 3.2 COORDINATION

- A. Prior to submittal, review and coordinate all material for interface conditions, catalog numbers, and similar data. Indicate deviations from the Contract on all submittal sets.
- B. Group submission of associated items to assure that information necessary for checking is available.

### 3.3 TIMING

- A. Submit far enough in advance of scheduled installation time to allow adequate time for review, revision and resubmission, procurement and delivery.
- B. In scheduling, allow at least ten working days for review by the Architect following his receipt of submittal, or resubmittal.

### 3.4 ARCHITECT'S REVIEWS

- A. The Architect reviews only general methods of construction and detailing. The Architect's review does not obviate the Contractor's responsibility for errors.
- B. Notations:
  - 1. "Reviewed" or "Furnish as Corrected" authorize the Contractor to proceed with the work for the item, subject to notations on the submittal.
  - 2. Notations of any other kind indicate that Contractor is not to proceed, but must resubmit the item.
- C. Revisions or approval of submittals containing information not conforming to the Contract does not constitute acceptance of such changes. Notify Architect of revisions that could be considered a change in scope of the Work.

3.5 LOCATION OF SUBMITTALS

- A. Deliver all submittals to: Sullivan Bruck Architects 309 South Fourth Street Columbus, Ohio 43215 Attn: Jon Stephens.

SECTION 01 71 00

ACCEPTANCE OF CONDITIONS

PART 1 - GENERAL

1.1 DESCRIPTIONS

- A. For the purpose of this Section the term "existing conditions" refers to work in place prior to commencement of work under these specifications or work performed prior to any operation of any specific work required by a trade or subcontractor.
- B. Prior to initiating any operation the Contractor shall examine the Contract Documents and investigate at the site all conditions existing and the difficulties likely to be encountered in the construction of the work.
  - 1. Should the work have been performed by others operating under the terms of these specifications correct all such conditions that would be detrimental to timely and proper completion of Work. Do not proceed until unsatisfactory conditions are corrected.
  - 2. If discrepancies or differences exist between and drawings, specifications, and any preexisting construction site conditions the Contractor shall promptly notify Architect for resolution. Pending receipt of directive from Architect, rearrange schedule as necessary to continue overall job progress without undue delay.
- C. Starting of any installation operation constitutes acknowledgment by the Contractor that the conditions existing prior to initiating the operation were suitable for performance of the work.

1.2 MEASUREMENTS

- A. If the Contractor's work is required to fit or match up with other work already in place, the Contractor shall examine the project site and compare them to his drawings or specifications.
- B. The Contractor shall obtain and verify all the necessary measurements on the premises, either preexisting conditions or performed by others performing work at the site, so that his work may fit the other work.

1.3 UTILITIES

- A. Should Contract Documents show information regarding pipes, conduits, and other structures which exist in the general area of the proposed work below the surface of the ground or recessed in the walls, this information is shown only for the convenience of the Contractor. The Contractor must verify to his own satisfaction the location of any such utilities prior to commencing any work.
- B. Locate all existing utilities in areas of work. Examine all drawings of existing conditions to determine if the proposed work will affect any known utilities either exterior or interior, and notify the Architect in the event that the work will interfere with utilities prior to proceeding.
  - 1. Underground Utilities: Contact utility companies in advance of starting any excavation and proceed only after the utility company/companies have located and marked utilities in the field, or have certified that none exist in the excavated area.

- C. Should uncharted or incorrectly charted piping or other utilities be encountered consult with the Architect immediately for directions as to procedure. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair utilities damaged by operations under these specifications, to satisfaction of utility owner.
  - 1. Do not interrupt existing utilities serving facilities occupied and used by Owner except when permitted in writing and then only after acceptable temporary utility services have been arranged.
  - 2. Do not remove utilities that must be removed with excavations until they have been properly disconnected and capped.

#### 1.4 INSITU CONSTRUCTION

- A. Prior to installation verify that all necessary conditions exist to provide proper completion of the work. Verify the following, for in place work and existing construction, as applicable to the required operation.
  - 1. Dimensions are within allowable tolerances, plumb, and level.
  - 2. Construction provides solid anchoring surface.
  - 3. Substrates are firm, dry, clean, free from oil, wax, or other contamination, and constructed to specified tolerances.
  - 4. Any required grounds, anchors, plugs, recessed frames, bucks, electrical work, mechanical work, and similar items that must be in place before proceeding with installation have been installed.

SECTION 01 73 20

CUTTING & PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements and limitations for cutting and patching of existing construction for other Work, including fitting and patching to restore surfaces to original condition before cutting.
- B. Specified in Other Sections:
  - 1. Requirements of this Section apply to Mechanical and Electrical work.

1.2 DESCRIPTIONS

- A. Cutting, fitting, and patching, to complete the Work and to:
  - 1. Fit 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.
  - 6. Perform alterations and modifications.
- B. Responsibility:
  - 1. Each Contractor is responsible for cutting needed for its own work to minimize extent of cutting.
  - 2. Employ original installer to perform all cutting and patching.

1.3 SUBMITTALS

- A. Submit written requests to Architect minimum 14 days in advance of cutting or altering Work which affects:
  - 1. Structural components.
  - 2. Visual qualities of factory and shop finished components.
  - 3. Weather-resistive or moisture protective construction.
  - 4. Work of Owner or separate Contractor.
  - 5. Piping, ductwork, vessels, and equipment.
  - 6. Primary operational systems and equipment.
  - 7. Specific finished materials:
- B. Include the following information with cutting requests:
  - 1. Reason for request and any possible options.
  - 2. Location and description of affected Work.
  - 3. Description of proposed cutting and patching, including identification of who will perform cutting and patching, materials used, dates when Work is scheduled to be performed.
  - 4. Where cutting and patching of structural Work involves the addition of reinforcement, submit details and engineering calculations to show how such reinforcement is integrated with original structure to satisfy requirements.

5. Written permission of affected separate Contractors.

#### 1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut or patch structural Work in a manner that would result in reduction of load-carrying capacity or of load-deflection ratio. Do not cut structural Work without prior permission of Architect.
- B. Operational and Safety Limitations: Do not cut or patch operational elements or safety related components in manner that would result in reduction of required performances. including energy usage, or that would result in increased maintenance, decreased operational life, or decreased safety.
- C. Warranty Coverage: Do not cut or patch Work in manner that would adversely affect warranty terms.
- D. Visual Requirements: Do not cut or patch exposed Work in manner that would impair esthetics qualities Do not cut or patch Work in manner that would, in the Architect's opinion, affect the building's esthetics qualities or result in visual evidence of patching. Remove and replace patching Work judged by Architect to be visually unsatisfactory.
- E. Approval to proceed with cutting and patching Work does not waive the right to later require complete removal and replacement of Work found to be cut and patched in an unsatisfactory manner.

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

- A. New Work: Comply with requirements for original installation.

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Notify Architect of conditions that would hinder proper or timely execution, or adversely affect performance of finished Work.

##### 3.2 PREPARATION

- A. Provide temporary support of Work to be cut as needed to prevent failure, including displacement, deflection, or deformation.
- B. Protect other Work during cutting and patching to prevent damage. Provide protection from adverse environmental conditions.
- C. Take precautions to avoid cutting concealed piping, conduit, and ductwork.
- D. Maintain excavations free of water.

## Aston Place Apartments

### 3.3 CUTTING

- A. Use methods that will not damage surrounding uncut Work.
- B. Cut holes and slots neatly to size required with minimum disturbance of adjacent Work.
- C. Cut or drill from exposed or finish side into concealed surfaces
- D. Perform cutting by sawing, drilling, or grinding--not by hammering or chopping.
- E. Cut and drill concrete or masonry with masonry saw or core drill.
- F. Comply with requirements of applicable sections of Division 2 where cutting and patching requires excavation and backfilling.
- G. Identify existing hazardous substances or conditions exposed during cutting to Architect for decision or remedy before proceeding with further cutting.

### 3.4 PATCHING

- A. Patch Work with seams which are durable and as invisible as possible. Comply with tolerances required for new Work.
- B. Extend finish restoration into retained adjoining Work where necessary to eliminate evidence of patching and refinishing.
  - 1. For continuous surfaces, refinish to nearest joint or change in plane.
  - 2. Where patch occurs in smooth painted surface, extend final paint coat over entire unbroken surface containing patch after patched area has received prime and base coat.
  - 3. For an assembly, refinish entire unit.
- C. Fit Work airtight and, on exterior, watertight to penetrations.
- D. Maintain integrity of wall, ceiling, and floor construction; completely seal voids.
- E. At penetrations of fire rated construction, firestop voids to maintain integrity of rating and protection.

SECTION 02 13 10

BUILDING FOUNDATION EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation and backfilling for foundations.
  - a. Compacted granular fill.
2. Earthwork for slabs on grade.
  - a. Proofrolling subgrades to uncover softspots.
  - b. Subbase materials, granular fill, and common fill materials.

B. Specified in Other Sections:

1. Foundation Drains.
2. Trenching for mechanical and electrical work.

C. Specified by Others:

1. Earthwork for structural requirements is specified in the foundation report.

1.2 SOILS REPORT

A. Earthwork shall conform to the requirements specified in the foundation recommendations of the Soils Report.

B. Bidders are urged to examine the Soils Investigation Data and to make any additional investigation of the site before bidding.

C. The Owner, Owner's Representative and Architect disclaim any responsibility for the accuracy, true location and extent of the Soils Investigation that has been prepared by others. They further disclaim responsibility for interpretation of that data by bidders, as in projecting soil-bearing values, profiles, soil stability and the presence, level and extent of underground water.

1.3 SUBMITTALS

A. Test Reports:

1. Submit gradation report for materials specified herein to conform to gradation requirements.
2. Submit soil density reports of testing agency.

1.4 DEFINITIONS

A. Densities: Standard Proctor ASTM D 698; Method A or D as applicable with moisture content  $\pm 3.0\%$  of moisture content as determined by a laboratory.

B. Soil Classifications: Unified Soil Classification System; ASTM D 2487.

1.5 QUALITY ASSURANCE

A. Perform earthwork in compliance with applicable requirements of governing authorities having

jurisdiction, including safety and environmental regulations.

- B. Soil Testing and Inspection: Owner will hire and pay for services of a soil testing agency to perform soil inspections and fill density testing required by this Section to assure required capacities.
  - 1. If earthwork operations indicates unsatisfactory or questionable soil conditions the Owner reserves the right to hire and pay for services of a Geotechnical Engineer to perform inspections on the Owner's behalf.

#### 1.6 JOB CONDITIONS

- A. Examine drawings of existing conditions to determine if underground utilities are present. Notify Owner's Representative of all underground interferences.
  - 1. Contact utility companies in advance of starting excavation and proceed only after utility companies have located and marked utilities in the field, or have certified that utilities exist in excavated area.
- B. Maintain stability of excavations. Provide shoring and bracing as where required by authorities having jurisdiction. Stockpile satisfactory materials for reuse, allow for proper drainage and do not stockpile materials within drip line of trees to remain.

### PART 2 - PRODUCTS

#### 2.1 FILL AND BACKFILL

- A. Satisfactory Soil: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.
- B. Use materials approved by Geotechnical Engineer for fill, backfill and insitu subgrades. Where hand or mechanical tamper compaction is used, use graded aggregate material for backfill.
- C. Provide suitable fill from offsite if on-site quantities are insufficient or unacceptable.
- D. Do not use the following material for fill or backfill.
  - 1. Material containing rocks for stones larger than 6" in major dimension, nor 2" in major dimension when used in the top 8" of fill.
  - 2. Material containing shale limestone, debris, waste or deleterious material.
  - 3. Material classified as ML, OL, OH or Pt.
  - 4. Frozen materials.

#### 2.2 GRADED AGGREGATE

- A. Slab-on-Grade Subbase: Clean crushed stone or gravel, Size No. 57.

- B. Gravel Backfill: Clean crushed stone or gravel, 100% passing the 1" sieve, 90% passing the 3/4" sieve and not more than 10% passing the No. 4 sieve.
- C. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D 448, Size 57, with 100 percent passing a 1-1/2" sieve and not more than 5 percent passing a No. 8 sieve.

## PART 3 - EXECUTION

### 3.1 EXCAVATION

- A. Temporary Drainage Provisions: Remove water in excavations before it damages subgrades and foundations. Use pumps, sumps, suction and discharge lines, and other dewatering system components to convey water from excavations.
- B. Removal of Unsatisfactory Soil Materials:
  - 1. Proof-roll subgrades below buildings with a heavy steel wheeled roller. Undercut any soft or yielding areas as directed by the Geotechnical Engineer.
  - 2. Excavate unsatisfactory soil materials encountered that extend below required elevations, to additional depth directed by the Geotechnical Engineer.
- C. Excavation for Structures:
  - 1. Conform to elevations and dimensions shown and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction required, and for inspection.
  - 2. When excavating for foundations take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete is placed.
  - 3. Shallow vertical cuts may be executed for spread footing to avoid necessity for footing forms when soil conditions permit.

### 3.2 FILL

- A. Place fill materials in layers not more than 8" in loose depth. Before compaction, moisten or aerate each layer as necessary to provide required moisture content. Compact each layer of controlled fill to density required by the Soil's Report. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- B. Backfill: Place materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift.
  - 1. Place acceptable materials in layers not more than 6" loose depth for materials compacted by heavy equipment and not more than 4" loose depth for materials compacted by hand equipment.

### 3.3 GRADING

- A. Grading for slab on grade bases: After grading or excavating, compact subgrade to a depth of 12 inches and density required by the Soil's Report at a moisture content  $\pm$  3% of optimum.
- B. Provide graded aggregate base course layer over subgrade surface to support slabs on grade.

## Aston Place Apartments

Compact base course to relative density of 98% density.

1. Grade to within 1/2" above or below required subgrade and within a tolerance of 1/2" in ten feet.

### 3.4 MATERIAL DISPOSITION

- A. Temporarily stockpile excavated material to be reused in locations directed by the Owner's Representative. Promptly remove material placed in unauthorized areas.
- B. Dispose of excess soil material and waste materials off site.
- C. Dispose of excess suitable and unsuitable material including unsatisfactory soil, trash and debris, off the Owner's property.

SECTION 02 16 21

FOUNDATION DRAIN SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Drainage system around full perimeter of building and at elevator pit retaining walls.
  - 1. Backfill to top of footing with coarse aggregate.
  - 2. Backfill to within 1'-0" of grade with bankrun gravel.
  - 3. Connections to storm drainage system.
- B. Specified in Other Sections:
  - 1. Earthwork for Foundations.

1.2 DESCRIPTION

- A. System to include perforated pipe coarse aggregate bedding and backfill to 1'- 0" of top of pipe wrapped in filter fabric.

1.3 SUBMITTALS

- A. Submit manufacturers' product data:
  - 1. Piping material. Filter fabric.

1.4 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

1.5 COORDINATION

- A. Coordinate pipe laying with the wrapping of filter fabric under the waterproofing material.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Soil Material
  - 1. Suitable material for support of bedding material will be determined by the Architect.
  - 2. Bank Run Gravel: Natural Gravel, 100% passing 2" sieve, 70 percent retained on a #8 sieve, and not more than 5% passing a #200 sieve.
  - 3. Coarse Aggregate: ASTM C 33 Size #7 or #8.
- B. Perforated type with perforations facing down:
  - 1. Perforated PVC pipe: ASTM D 2729.
- C. Geotextile drainage fabric.
  - 1. Material: Non-woven needle punched polypropylene.

## Aston Place Apartments

2. Weight: 4.5 oz. per square yard, minimum.
3. Acceptable Products:
  - a. Carthage Mills FX 35HS.                      Mirafi 140 NSL                      Terratex NO4.

### PART 3 - EXECUTION

#### 3.1 FILTER FABRIC

- A. Install filter fabric in bottom of excavation in accordance with manufacturer's instructions.
- B. Leave sufficient material to wrap over top of coarse aggregate fill.

#### 3.2 BEDDING

- A. Backfill to elevation above bottom quadrant of pipe with coarse aggregate and power tamp to compact.
- B. During pipe placing round pipe bed and excavate at joints if necessary so that pipe is uniformly supported for its entire length.

#### 3.3 PIPE LAYING

- A. Lay pipe to uniform grade or slight pitch so that pipe drains to outlet. Use transit and levels to insure slope to drain. Set each length to line and grade before making joints.
- B. Place perforations with holes in bottom quadrant.
- C. Close open ends of piping to prevent earth from entering during construction. Close stub ends permanently.

#### 3.4 BACKFILL

- A. Backfill to one foot above top of pipe with coarse aggregate. Power tamp lifts of not more than 4" loose thicknesses.
- B. Backfill to within 1'-0" of grade with bank-run gravel.

#### 3.5 SUBSEQUENT OPERATIONS

- A. Test for proper operation. Clean system out and protect work from damage.

SECTION 03 30 00  
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

- A. Basic specification: Perform work of this Section according to ACI 301-05, "Specifications for Structural Concrete for Buildings", except as specifically modified herein. Numbers in parentheses (0.00) indicate a related paragraph of ACI 301.
- B. Work included: All cast-in-place concrete work shown on the Drawings and required by these Specifications. Allow for the installation of cast-in items furnished under other Sections. Install anchor bolts for structural steel. Provide and install grout under steel column base plates and beam bearing areas.
- C. Provide concrete pads, piers, curbs, and bases required for equipment of all trades. Coordinate dimensions and details with requirements of equipment being supplied, prior to placing concrete.
- D. Cooperate with other trades who will provide and install items of work (sleeves, piping, conduit, inserts, etc.) to be cast in the concrete. Place no concrete until all such items are in place.
- E. Inspection and testing services required by this Section to establish mix designs are to be performed by an agency retained by the Contractor (1.6.3). Inspection and testing services required by this Section for all field sampling and testing required are to be performed by an agency retained by the Owner (1.6.4).
  - 1. Related work specified elsewhere: The general provisions of the Contract apply to the work of this Section, as though reproduced herein. Carefully examine all other Sections and all Drawings for related work.

1.03 QUALITY ASSURANCE

- A. Reference standards:
  - 1. ACI 318, Building Code Requirements for Reinforced Concrete.
  - 2. ACI 315R, Details and Detailing Reinforced Concrete Structures.
  - 3. ACI 347R, Guide to Formwork for Concrete.
  - 4. ACI 302.1R, Guide for Concrete Floor and Slab Construction.
  - 5. "Placing Reinforcing Bars", CRSI & WCRSI Recommended Practices.

#### 1.04 SUBMITTALS

- A. Submit for approval the name of the agency proposed for the required inspection and testing services. If some or all of the required testing is to be performed by personnel not employed by the proposed agency, submit letter from the agency stating that those personnel are qualified to perform the tests.
- B. Submit a mix design for each class of concrete required (1.6.3). Concrete proportions shall be established on the basis of previous field experience or trial mixtures (4.2.3).
- C. Submit shop drawings for all reinforcing. Indicate strength, size, and details of all bar reinforcing, and style and specification of all welded wire fabric (3.1.1).
- D. Submit product literature for admixtures and curing compounds proposed for use.
- E. Submit reports of all required testing and inspection.

#### 1.05 FIELD REFERENCE MANUALS

- A. Provide at least one copy of the ACI Field Reference Manual, SP-15 (1.3.3), and one copy of CRSI's "Placing Reinforcing Bars", in the field office at all times.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Cement (4.2.1.1): Portland Cement, ASTM C150, Type I or Type II or ASTM C1157, Type LH or GU. All cement to be from the same mill.
  - 1. All cement materials shall be extracted, processed, and manufactured within a radius of 500 miles from the project site.
- B. Water: Potable.
- C. Aggregates:
  - 1. ASTM C33, (4.2.1.2). Use size no. 8 for coarse aggregate for fill on stair pans. For all other classes, use size no. 57.
  - 2. Conform to ASTM C33 (normal weight) or ASTM C330 (light weight) (4.2.1.2).
- D. Admixtures (where required or permitted):
  - 1. Water-Reducing: ASTM C494, Type A or D (4.2.1.4).
  - 2. Mid-Range Water-Reducing admixture: ASTM C494, Type A (4.2.1.4).
  - 3. Air-entraining: ASTM C260 (4.2.1.4).
  - 4. High-Range Water-Reducing admixture (Superplasticizer): ASTM C494, Type F or G (4.2.1.4).
  - 5. Non-Chloride, Non-Corrosive accelerator: ASTM C494, Type C or E (4.2.1.4).
  - 6. Fly Ash: ASTM C618, Type C or F (4.2.1.1.d).

7. Ground Granulated Blast-Furnace Slag, GGBF Slab: ASTM C989 (4.2.1.1.e).
  8. Fly Ash and GGBF Slab materials shall be extracted, processed, and manufactured within a radius of 500 miles from the project site.
  9. Calcium Chloride and admixtures containing more than 0.05% chloride ions are NOT permitted (4.2.2.6).
  10. Use of admixtures other than those listed will be permitted only when approved prior to bid.
- E. Reinforcing (3.2.1):
1. Deformed bars: ASTM A615 or A706. Minimum yield strength to be 60 ksi.
  2. Welded Wire Fabric:
    - a. Plain welded wire reinforcement: ASTM A185. Provide in sheet form for all uses other than slabs-on-grade.
- F. Premolded expansion joint filler: ASTM D1751, (2.2.1.4).
- G. Curing and Sealing Compound (VOC Compliant, 350g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type complying with ASTM C1315, Type I, Class B, 25% solids content minimum. Moisture loss shall be not more than 0.40 Kg/m<sup>2</sup> when applied at 300 sq. ft./gal. Manufacturers certification is required. Subject to project requirements, provide one of the following products:
1. Super Diamond Clear VOX by The Euclid Chemical Co.
  2. Super Rrez SealVOX by The Euclid Chemical Co.
  3. MasterKure 100W by BASF The Chemical Co.
- H. Grout for masonry core fill: ASTM C476, coarse type.
- I. Grout under steel base plates and bearing plates: Non-shrinking, non-metallic, with minimum 28 - day strength of 5,000 psi, when mixed to a fluid consistency. The following are acceptable:
1. Embeco 636 by BASF The Chemical Co.
  2. Ferrolith G by Sonneborn
  3. Crystex by L & M Construction Chemicals.
- J. Vapor Retarder:
1. Conform to ASTM E1745, Class A, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
  2. Minimum thickness of vapor retarder shall be 15 mils. Include manufacturer's recommended adhesive or pressure sensitive tape.
- K. Granular Fill below slabs on grade: ODOT 304 or approved equal.

## 2.02 MIXES

A. The following classes of concrete are required (4.2.2.9):

Type	F'c at 28 days	Minimum Cementitious Content	Maximum Water Cementitious Ratio	Air Content
Class I footings, and all other below grade concrete	3,000 PSI	470	--	optional
Class II interior slabs on grade unless noted otherwise, fill on metal stair pans	3,500 PSI	517	0.50	optional
Class IIA – Lightweight concrete Metal deck	3,500 PSI	517 (Maximum dry unit weight 116 pcf)	0.50	optional
Class III garage slabs on grade	4,000 PSI	540	0.45	5 to 7%
Class IV exterior flat work, and any concrete exposed to weather	5,000 PSI	685	0.40	5 to 7%
Class V lean concrete, mud slabs	1,500 PSI	375	--	optional

- (1) Use No. 8 coarse aggregate for concrete topping on metal stair pans, Class II.
- (2) Slump: Maximum 5" for all members. If a superplasticizer is used, initial slump to be 3", increased to 8" maximum after addition (at the job site) of the superplasticizer.
- (3) Fly ash is permitted in all classes, but shall not exceed 20% of cement weight indicated above and can be included in the water-to-cementitious ratio.
- (4) Ground granulated blast-furnace slag is permitted in all classes but shall not exceed 35% of the cement weight indicated above and can be included in the water-to-cementitious ratio.
- (5) Mixes to be pumped are to be so identified on the mix design submittal. All pumped mixes are to have a mid-range or high-range water reducer.
- (6) All admixtures (other than superplasticizer) are to be added at the batch plant. Superplasticizers, designed for addition to the mix at the plant, may be added at the batch

plant with verification from the Structural Engineer and verification that the water-to-cement ratio has not been exceeded.

## PART 3 - EXECUTION

### 3.01 SURFACE CONDITIONS

- A. Verify that excavations are free of water and ice, are of the required dimensions, and have been approved by the Soils Engineer, prior to placing concrete (5.3.1).
- B. Determine field conditions by actual measurement.
- C. Notify Architect not less than 24 hours in advance of placing concrete, unless this requirement is specifically waived.

### 3.02 FORMWORK AND REINFORCING

- A. Footings may be cast against earth cuts when soil conditions permit. B.

Removal of forms and shoring:

- 1. Remove no forms within 24 hours after placement.
- 2. Shoring is to remain in place until concrete reaches its design strength. Windsor Penetrometer is to be used to verify in-place strength if forms are removed prior to 28 days after casting concrete.

- C. Reinforcing:
  - 1. Welding of reinforcing is prohibited, except where shown.
  - 2. Use plastic-tipped or stainless steel bar supports for surfaces exposed to view in finished structure.

### 3.03 VAPOR RETARDERS

- A. Vapor retarders are required under all slabs on grade in humidity controlled. Vapor retarders are not required under garage slabs on grade nor under those in non-humidity controlled areas.
- B. Vapor retarder shall be installed in accordance with ASTM E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
- C. Where required, the vapor retarder shall be a minimum of 15 mils thick and placed directly on the granular fill, below the concrete floor slab. Granular fill shall be a well-graded granular material, equivalent to ODOT 304.

## Aston Place Apartments

1. Lap joints a minimum of 6 inches and seal with manufacturer's recommended tape or adhesive.

### 3.04 JOINTING

#### A. Interior slabs on grade:

1. Locate control (contraction) joints as shown on the Drawings. In the absence of information on Drawings, locate at openings, walls, columns, grid lines, and inside corners. The maximum spacing of contraction (control) joints, for reinforced and unreinforced slabs, is to be 30 times the slab thickness (i.e. for a 4 inch slab the maximum spacing is 10 feet). Cut joints  $\frac{1}{4}$  times the slab thickness. The Soff-Cut Saw shall be used immediately after final finishing. A conventional saw shall be used as soon as possible without dislodging aggregate. Schedule slab pours and saw-cutting operations such that sawing is completed prior to onset of shrinkage cracking (5.3.5).
2. Provide isolation joints at columns (1/2 inch thick) and at walls (1/8 inch thick). Where isolation joint will be exposed to view, set top of joint filler below top of slab a distance equal to the filler thickness, to receive sealant. Where not exposed to view, set top of filler flush with top of slab.

#### B. Exterior slabs on grade: Locate joints as shown on Drawings. In the absence of information on Drawings, provide the following (for sidewalks only):

1. Expansion joints: Full depth, with 1/2 inch joint filler, where slabs abut vertical surfaces at intersections of sidewalks, at abrupt changes in width, and at a spacing not exceeding 30 feet.
2. Control joints: Tooled, 1 inch deep, 4'-0" to 6'-0" on center between expansion joints.

### 3.05 FINISHES

#### A. Schedule of finishes on flatwork is as follows:

1. Typical interior floor areas to receive carpet, resilient floor covering, or to remain exposed - troweled finish (5.3.4.2.c).
2. Interior floor areas to receive terrazzo, quarry tile, or ceramic tile - floated finish (5.3.4.2.b).
3. Exterior slabs - broom finish (5.3.4.2.d).

#### B. Surfaces of floor slabs shall be finished to the following tolerances, per ACI 117 (5.3.4.3):

1. Minimum flatness of F (f) 30, and a minimum levelness of F (l) 20, are required for typical slabs on grade. Preceding values are average values to be obtained over a given area. Minimum local values (one-half bay) of F (f) 25 and F (l) 17 shall be obtained.
2. Minimum flatness of F (f) 25 is required for supported slabs. Preceding value is an average value to be obtained over a given area. Minimum local value (one-half bay) of F (f) 18 shall be obtained.

#### C. Any bay not conforming to the above flatness and levelness requirements is subject to:

repair, or removal; replacement; and retesting; at no expense to the Owner (1.7.1).

- D. "F Numbers" shall be submitted to the Owner and Architect immediately after they are determined by the testing laboratory.

### 3.06 CURING AND PROTECTION

#### A. Temperature:

1. When air temperature during placement is less than 40 degrees, or will be within 24 hours, temperature of concrete as placed is to be between 50 and 90 degrees (55 and 90 degrees for sections less than 12 inches thick) and a non-chloride accelerator shall be used. Maintain concrete temperature within these limits for the full curing period of 7 days. (4.2.2.8 and 5.3.1.6).
2. When air temperature during placement is greater than 90 degrees, a water-reducing retarder admixture may be required to "normalize" initial setting.

#### B. Curing:

1. Interior slab areas that will receive non-moisture sensitive terrazzo, ceramic tile, quarry tile, or a liquid sealer/densifier, are to be moist-cured for a minimum of 7 days, without the use of a curing compound (5.3.6.4.a through 5.3.6.4.c).
2. Interior slab on grade areas which will receive moisture sensitive floor coverings are to be cured with plastic sheeting, conforming to ASTM C171, for 3 to 7 days (5.3.6.4.d). Edges and joints are to be sealed. Rewetting of the slab at anytime during construction should be avoided.
3. All other slab areas which will receive non-moisture sensitive floor coverings may be either moist-cured or receive an application of curing compound (5.3.6.4.e), except that when concrete above grade is placed in the open, and the air temperature exceeds 60 degrees, the concrete is to be moist-cured for the first 24 hours.
4. Whichever curing method is used, it is to commence immediately after placement (5.3.6.1). Do not allow curing to be delayed overnight.
5. Prevent excessive moisture loss from formed surfaces (5.3.6.3). If forms are removed before 7 days have elapsed, cure the formed surfaces by moist-curing or application of curing compound for the remainder of the curing period.

### 3.07 FIELD QUALITY CONTROL

- A. Obtain concrete for required tests at point of placement. If concrete is pumped, obtain concrete for tests at discharge end (1.6.4.3).
- B. For each concrete class, other than lean concrete, perform one strength test for each 50 yards, or fraction thereof, for one day placement of up to 300 yards (1.6.4.2.d). Perform one strength test for each 100 yards or fraction thereof, for one day placements of greater than 300 yards.
- C. Determine slump for each strength test (1.6.4.2.f).

Aston Place Apartments

- D. Determine air content for each strength test of Class V concrete (1.6.4.2.h). E.  
Determine concrete temperature for each strength test (1.6.4.2.g).
- F. Do not place concrete when water content, slump, air content, or temperature vary from allowable (1.6.8).
- G. Determination of the flatness and levelness of a concrete slab shall be made on the day following placement of the first concrete pour. Tests shall be made in accordance with ASTM E1155. After it is established that proper procedures are being utilized to obtain the desired results, flatness/levelness test shall be performed only as directed by the Owner.
- H. Maintain records of all tests, indicating exact location of the structure represented by each test.
- I. Test cylinders shall be stored at the jobsite for the first 20 hours, plus or minus 4 hours, in a protected location, with the temperature maintained between 60 and 80 degrees, or the results of the strength tests shall be considered unacceptable.
- J. All field testing and inspections shall be performed by an ACI Concrete Field Testing Technician Grade 1, or equivalent (1.6.2).

END OF SECTION

SECTION 03 48 11

PRECAST CONCRETE PARKING BLOCKS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section Includes: Precast concrete parking blocks
  1. Steel stakes set into concrete paving during placing or after with chemical anchors.
  2. Adhered to concrete slabs.
  3. Steel stakes set into asphalt paving.
  
- B. Specified in Other Sections:
  1. Concrete Paving.
  2. Asphalt Paving.
  3. Pavement Markings.

1.2 DESCRIPTION

- A. Size:
  1. Height - 5"
  2. Width - 7"
  3. Length - 6'-0".

1.3 SUBMITTALS

- A. Submit manufacturers standard product data sheets.

1.4 QUALITY ASSURANCE

- A. Parking blocks to conform to local street department standards for shape and construction.

PART 2 - PRODUCTS

2.1 PRECAST BLOCKS

- A. Concrete: Materials and proportion to conform to ACI 301:
  1. Minimum compressive strength 3,000 psi.
  2. Minimum 4% to 8% entrained air.
  
- B. Parking blocks to be fabricated in smooth steel forms.
  1. Taper ends for spaced curbs.

## Aston Place Apartments

- C. For each block provide reinforcing as required for handling without cracking but not less than 3-#4 deformed ASTM A 615 bars lengthwise or an equivalent steel reinforcing.

### 2.2 ATTACHMENT MATERIAL

- A. For each block provide two 3/4" minimum diameter steel pins of length to extend 12" into paving.
- B. Capsule Chemical Anchors:
  - 1. Basis of Design: Hilti HVA Anchors.
  - 2. Other Acceptable Products:
    - a. Ramset "Chemset Anchors".
    - b. Use Diamond "Sup-R-Resin".
- C. Epoxy Bonding Materials:
  - 1. Structural Bonding Adhesive: 100 percent solids product suitable for use on damp or dry surfaces.
  - 2. Grout - Bonding agent filled with mineral filler 100 percent passing No. 100 sieve in ratio that does not impair bond or reaction.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Position blocks after paving stalls have been marked. Do not place blocks that are cracked or otherwise damaged.

### 3.2 DRILLING IN EXISTING PAVING

- A. Drill holes in existing paving of size 1/8 inch larger in diameter than the dowel using power-driven drill and tungsten-carbide tipped bit ground to insure against oversize hole.
- B. Clean out holes with air.
- C. Install capsule and dowel in accordance with manufacturer's instructions.
- D. Wipe off excess grout and let set for not less than 5 hours at temperature above 32°F.

### 3.3 EPOXY BONDED INSTALLATION

- A. Mixing:
  - 1. Mix components of epoxy bond to form adhesive bond coat.
  - 2. Adjust percentage of accelerator so set will occur in not less than 2 hours nor more than 3 hours after application to surfaces.
    - a. If air temperature is above 70°F and rising, adjust resin-accelerator proportions appropriately.
  - 3. For grout add mineral filler to form a base coat.

Aston Place Apartments

- B. Apply 40 to 60 mil thickness coat of epoxy bond with a roller. While bond coat is tacky trowel apply a minimum 3/8" thick epoxy grout to fill voids between parking block and deck.
- C. Place parking block on grout coat while epoxy is tacky with sufficient pressure to form firm bed. remove excess grout and clean surface with solvent to remove stains.

SECTION 04 05 00

UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Brick veneer on wood stud backup.
    - a. Sills, sign and trim units.
  - 2. Concrete unit masonry foundation wall, and veneer support walls.
    - a. Reinforced masonry construction.
- B. Specified in Other Sections:
  - 1. Joint Sealers.
  - 2. Steel Lintels.
  - 3. Weep and flashing for wall drainage system.
  - 4. Cavity Insulation.
  - 5. Alternate provisions for brick masonry veneer.

1.2 DESCRIPTIONS

- A. Lintels: Provide lintels at all masonry openings:
  - 1. Bond beam or precast concrete lintels for concrete unit masonry.
    - a. Provide one horizontal reinforcing #5 bar for each 4" of wall thickness of size-number not less than the number of feet opening width. Provide required steel in bottom of lintel except in precast lintels, provide additional set of steel in top of lintel. Reinforcing for lintel carrying concentrated loads or spanning openings over 6'-8" to be reinforced per drawings or as otherwise directed.
    - b. Minimum end bearing: 4" for openings less than 6'-0" wide, and 8" for wider openings.
  - 2. Provide Steel lintels to support brick and elsewhere as indicated.
    - a. Install steel lintels furnished under a separate section.
- B. Control Joints: Provide control joints vertically at brick inside corners and in locations shown on drawings, but not less than a maximum of 24'-0".
- C. Veneer Anchor Spacing: Provide anchors at spacing not exceeding 16" oc horizontally and 16" oc vertically.
  - 1. Provide additional anchors within 12" of openings and space at 24" o.c. around perimeter.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for all of masonry units and manufactured products including specification compliance certifications including brick efflorescence tests.
- B. Samples:

## Aston Place Apartments

1. Submit one strap of facing brick.
2. Submit decorative CMU and trim samples.

### 1.4 QUALITY ASSURANCE

- A. Testing and Inspection: Owner will obtain and pay for services of Independent Testing Laboratory for field quality control testing of mortar cubes for each type mortar specified for use on project.
- B. Fire Performance Characteristics: Provide materials and construction identical to assembly whose fire endurance has been determined by ASTM E 119 as acceptable to authority having jurisdiction.
- C. Mock-Up (Job Site Sample Panels): Prior to installing unit masonry, construct sample wall panels to verify selections made under sample submittals and to demonstrate aesthetic effects of materials and execution.
  1. Illustrate field pattern of masonry and trim, cutting of units where required, exterior and interior corners, pattern and grouting around perimeter of openings, and color and tooling of joints.
  2. Size and content: 4' x 8' panel of typical exterior face brick wall with decorative CMU.

### 1.5 PRODUCT HANDLING

- A. Deliver materials to job site in unopened containers bearing manufacturer's identification.
- B. Store materials as recommended by the manufacturer. Storage on concrete slabs shall not exceed the structural designed live load.
- C. Handle all facing brick with utmost care in unloading and stacking.

### 1.6 PROJECT CONDITIONS

- A. Do not lay masonry in freezing weather, when temperature is 40° F. and falling, or when temperature is expected to fall below freezing within 24 hours, unless otherwise approved in writing by the Architect.
- B. Construction requirements while work is progressing within various temperature ranges shall be as recommended by NCMA TEK 16B entitled Cold Weather Concrete Masonry Construction.
- C. Do not use anti-freeze liquid, calcium chloride, salt or other substances to lower mortar freezing point or accelerate setting.
- D. Coordination: Coordinate work with work of other trades. Notify and allow other trades sufficient time to set items required to be built into masonry.

## PART 2 - PRODUCTS

### 2.1 FACING BRICK

- A. Acceptable Product: Refer to drawings for product specification.

## Aston Place Apartments

- B. ASTM C 216, Grade SW.
  - 1. Efflorescence: Not more than "Slightly effloresced" when tested within 90 days prior to purchase.
- C. Coring:
  - 1. Provide solid uncored or cored brick. Do not use cored brick with net cross-sectioned area less than 75% of gross area in same plane or with core holes closer than 3/4" from any edge.
    - a. For rowlocks provide uncored brick at end of rows.
  - 2. Provide hollow units for grouting in place where indicated.
- D. Provide special molded shapes for application requiring brick of form, size and finish on exposed surfaces which cannot be produced from standard brick sizes by sawing.

## 2.2 CONCRETE MASONRY UNITS

- A. Portland Cement: ASTM C 150, Type I except use ASTM C 845 indicated. Supply all cement from a single manufacturer for each type.
- B. Load bearing ASTM C 90 Type 1.
  - 1. Hollow: 2-core units.
  - 2. Solid: where shown as "Solid CMU" or "Solid Block."
  - 3. Minimum required compressive strength f'm at 28 days: 1350 psi.
  - 4. Weight Classification: Normal weight units.
  - 5. Curing: Steam treatment.
  - 6. Block Size: Nominal 16" x 8" face (15-5/8" x 7-5/8") face dimensions, except as otherwise indicated.

## 2.3 REINFORCED MASONRY

- A. Comply with referenced standards and other requirements indicated below applicable to each form of reinforced unit masonry required.
- B. Grout: ASTM C 476, components as follows:
  - 1. Portland Cement: ASTM C 150, Type I or II, Low Alkali.
  - 2. Hydrated Lime: ASTM C 207.
  - 3. Aggregate and Pea Gravel: ASTM C 404.
  - 4. Water: Clean.
- C. Grout Mixes: ASTM C 476.
  - 1. Proportioned as required to provide minimum compressive strength 3,000 psi at 28 days.
  - 2. Adjust slump to fill all spaces without excessive use of water.
- D. Reinforcing:
  - 1. Provide deformed bars complying with ASTM A 615, Grade 60.
  - 2. Shop fabricate reinforcement bars shown to be bent or hooked.

## Aston Place Apartments

### 2.4 MORTAR

- A. Veneer Masonry Cement (brick and cast stone): Standard masonry cement w/ reese sand
- B. Materials:
  - 1. Portland Cement: ASTM C 150, Type I; non-staining type, natural grey.
  - 2. Aggregate: ASTM C 144, natural sand at CMU, reese sand at brick veneer.
  - 3. Masonry Cement: ASTM C 91.
  - 4. Water: Clean, fresh, potable, uncontaminated.
- C. Mixes: ASTM C 270, proportions by volume in accord with Table 2.
  - 1. Non-reinforced Masonry:
    - a. Above grade exterior multi wythe and veneer - Type N.
    - b. Interior CMU walls and partitions - Type S.
    - c. Below Grade masonry - Type S.
    - d. Reinforced Masonry - Type S.

### 2.5 REINFORCEMENT

- A. Reinforcing steel for bond beams, and reinforced masonry construction:
  - 1. ASTM A 615, grade 60 unless otherwise shown on drawings.
- B. Horizontal Joint Reinforcement:
  - 1. Wire: ASTM A 82, galvanized. Side wires and cross wires: Minimum No. 9 wire; connections butt welded in same plane. Provide corners and tees.
  - 2. Single wythe concrete masonry unit wall: Truss design consisting of two or more deformed longitudinal wires, each weld-connected to cross wires maximum 16" o.c.; standard lengths 10 to 20 feet; distance between side wires shall be approximately 2" less than width of wall in which it is placed.

### 2.6 ANCHORS AND TIES

- A. Flexible anchorage device: Minimum 14 gauge, hot dipped galvanized anchor base plate used in conjunction with 3/16" pintle tie providing a minimum 3" masonry embed.
  - 1. Galvanized or cadmium plated screws, minimum 1-1/2" project into stud framing.
  - 2. Acceptable Products:
    - a. "D/A 213" - Dur-0-Wall, Inc.
    - b. "312/258" - Heckman Building Products Inc.
    - c. "345-BT" - Hohmann & Barnard, Inc.
  - 3. Wood Screw: Minimum #10 size cadmium-plated or hot-dipped galvanized. Length to provide 1-1/2" project into stud framing.
- B. Miscellaneous Anchors: Provide straps, plates, shapes, bars, bolts, rods and similar items as detailed or if not detailed, as required to securely anchor masonry work to substrates.
  - 1. Wire Mesh Ties: 16 gauge x 1/2" mesh wire, size 1" less than actual width of masonry unit or wall in which placed and length to cover 1 full masonry unit on each side of joint, but never less than 12"; ASTM A 153, Class B3, hot-dip galvanized finish.

## Aston Place Apartments

2. Tiebar: Steel, 1/4" thick, 1-1/4 wide x 28" long with 2" right angle bends each end. ASTM 153, Class B3, hot dip galvanized finish.
3. Strap Anchors: Flat steel straps, 1/8" by 1-1/2" wide. Bend ends as indicated. Hot dip galvanize after fabrication.

### 2.7 JOINT MATERIALS

- A. Control Joint Keys:
  1. Extruded solid section of natural or synthetic rubber, combination thereof of PVC material resistant to oils and solvents, and remaining flexible at a temperature of -40°F. after exposure for 5 hours. Durometer hardness: ASTM D 2240, not less than 70.
  2. Shape indicated and of dimensions to completely fill and fit without forcing.
  3. Acceptable Products:
    - a. "AA 2000-2001 Blocktite" AA Wire Products
    - b. "Rapid Polyjoint" Dur-O-Wal Inc.
- B. Non-Metallic Expansion Joint Strips: ASTM D 1056, Grade RE41E1, premolded, flexible cellular neoprene rubber filler strips capable of compression up to 35% of width and thickness indicated.
- C. Premolded Control Joint Strips; Either of the following:
  1. Styrene-butadiene rubber compound ASTM D 2000, Designation 2AA-805.
  2. Polyvinyl chloride: ASTM D 2287, General Purpose Grade, Designation PVC-63506.
- D. Bond Breaker Strips: Asphalt-saturated organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Provide and maintain as long as necessary, and remove when no longer needed, safe, adequate scaffolding and other equipment necessary for the proper execution of work.
- B. Protect sills, ledges, adjacent finished work and off sets from mortar drippings and other damage during construction. Immediately remove displaced mortar, grout and cement fill.

## Aston Place Apartments

- C. Protect facing material against staining and keep top of all masonry work covered with non-staining waterproof covering when work is not in progress. When work is resumed, top surface of work shall be cleaned of all loose mortar and in drying weather, thoroughly wetted. Do not build upon frozen materials.

### 3.2 LAYING MASONRY

- A. Layout work in advance for accurate spacing of surface patterns, for uniform joint widths, and to properly locate openings, control and expansion joints, returns and offsets. Avoid use of less-than-half-size masonry units at corners, jambs, and wherever possible at other locations.
- B. Lay masonry plumb and level, true to required line and grade, with completely filled mortar joints and coordinated with other work.
  - 1. Do not wet masonry units before laying.
  - 2. Do not furrow bed joints.
  - 3. All joints in masonry and between masonry wythes, concrete or brick shall be filled solid with mortar as work progresses. Shove head joints tight; slushed head joints will not be accepted.
  - 4. Rock closures into place with head joints thrown against adjacent in-place masonry.
  - 5. Do not disturb units after they are set into position and mortar has started to harden. Where adjustment must be made after mortar has started to harden, remove mortar completely and replace with fresh mortar.
  - 6. Treat exposed masonry as finished areas. Keep masonry clean as work progresses by rubbing face with rough cloth or brushing with stiff bristle brush to prevent mortar stains.
- C. Mortar:
  - 1. Machine mixed mortar for at least 5 minutes. Remix after ret tempering.
  - 2. Do not permit mortar to stand more than 1 hour without remixing.
  - 3. Retemper mortar which has stiffened due to evaporation to restore workability.
  - 4. Discard mortar which has begun to set or is not used within 2-1 /2 hours after initial mixing .
- D. Cutting: All cutting of exposed concrete masonry units shall be done with power saws to provide true and even edges.
- E. Joining of Work:
  - 1. Where fresh masonry joins masonry that is partially set or totally set, clean the exposed surface of the set masonry and wet it lightly so as to obtain the best possible bond with new work.
  - 2. Joints: Tool joints smooth and dense with round, non-staining type jointer
    - a. Make uniform, nominal 3/8" wide to provide slightly concave joints.
    - b. After becoming "thumb-print" hard, tool joints of all exterior facing brick with a jointer that is slightly larger than the width of the mortar joint. Close all cracks and crevices.
  - 3. Exterior joints above grade: Tool concave except for Shouldice Designer Stone banding Where visible above grade
    - a. 3/8" bevel to occur on top and bottom edges only. Mortar joint on vertical joints to be flush.
  - 4. Remove all loose masonry and mortar. If it is necessary to "stop off" horizontal run of masonry,

## Aston Place Apartments

by racking back one-half brick length in each course. Tothing will not be permitted.

- F. Bond Pattern: Running Bond, unless otherwise shown.
- G. Cleaning: Clean surfaces as work progresses. Final cleaning is specified hereinafter.

### 3.3 SINGLE AND MULTI WYTHE MASONRY

- A. Construct walls with single or multiple wythe masonry to full thickness using masonry units of nominal thickness shown on drawings.
- B. Where masonry concealed by other construction or wall finish and not exposed to view in finished work, repair all irregular surfaces, holes, etc and strike joints flush and smooth. Do not tool.
- C. Coordinate with other trades the required openings on any element that is to be located in masonry.
- D. Horizontal Joint Reinforcement:
  - 1. Install continuous horizontal joint reinforcing in the first joint 8" above floor or support and 16" o.c. vertically thereafter. Provide additional joint reinforcing first two courses above all openings and extending 24" beyond each jamb.
  - 2. Lap side rods 6" minimum at splices.
  - 3. Install corners and tees. Locate in same joints as horizontal reinforcing. Lap 6 minimum.
  - 4. Cover reinforcing with mortar.
- E. Composite Construction: Install horizontal reinforcement in the first joint 8" above grade and 16" o.c. vertically thereafter. Lay backup and face units as the wall is being built. Set reinforcing in bed joint, projecting onto face unit.
- F. Anchors, Ties and Reinforcing: Reinforcement shall be continuous except it shall not pass through vertical masonry control joints. Place, lap and bend as required.
  - 1. Space Ties and anchors as recommended by tie manufacturer, except not less than 16" x 24" on centers.

### 3.4 REINFORCED UNIT MASONRY

- A. Comply with the requirements of ACI 530 and ACI 530.1 for laying of Masonry Units, placing of reinforcing and mixing and placing of grout.
- B. Temporary Formwork: Provide formwork and shores as required for temporary support of reinforced masonry elements. Construct formwork to prevent leakage of mortar, or grout.
  - 1. Do not remove formwork until masonry can carry loads, but not less than 10 days.

### 3.5 MASONRY VENEER SYSTEMS

- A. Screw-attach veneer anchor to stud face; ensure full contact of veneer anchor legs with stud face.
  - 1. Ties: Comply with codes; space ties not more than 24" o.c. vertically and 16" o.c. horizontally.
  - 2. Locate anchors so that ties are near ends of vertical anchor slot. In no case shall ties occur within

## Aston Place Apartments

the middle one half of vertical anchor slot.

3. Fasten anchor through sheathing into wood with Wood Screw.
4. Completely embed in mortar portion of anchors extending into masonry providing not less than 5/8" cover on tie.

### 3.6 GROUTED COMPONENTS

- A. Remove wastes, loose mortar particles, and other substances from spaces that are to receive grout.
- B. Fill spaces with grout and consolidate to form full contact interface with reinforcement and masonry free of air bubbles and other voids. Place and consolidate grout without displacing reinforcing.

### 3.7 BUILT-IN WORK

- A. As work progresses, build in frame for windows, doors, borrowed lights and miscellaneous items such as louvers, vents, piping, conduit, anchors, bolts, nailing blocks, inserts, flashing receivers, flashings, joint reinforcements, wall ties, bearing plates and steel lintels as shown on drawings, specified in various other specification sections and required for completion of project.
  1. Build-in items plumb and true at location shown on drawings and securely anchor in place.
  2. When building in electric outlet boxes, pipe sleeves and other similar items, make cuts so face texture will not be damaged beyond face of cover plate or escutcheon; exposed patching will not be accepted.
  3. Coordinate with trades if any elements are to be laid before masonry.
  4. Bed hollow metal frame anchors in mortar joints, and fill head and jambs of frame solid with mortar.
    - a. At exterior frames insert 3/4" insulation around perimeter of frame to act as a thermal break between frame and masonry.

### 3.8 LINTELS

- A. Provide lintels for openings more than 1'-0" wide. Provide lintels as directed on the drawings.
- B. Minimum end bearing: 4" for openings less than 6'-0" wide, and 8" for wider openings.

### 3.9 CONTROL AND EXPANSION JOINTS

- A. Provide vertical expansion, control and isolation joints in masonry where shown for brick and at 16'-0" o.c. for concrete masonry units where not shown. Build in related masonry accessory items as the masonry work progresses.
- B. Control Joints: Provide control joint keys in all control joints. Rake joints full depth and seal with sealant.
- C. Vertical brick expansion joints 3/8" width and be filled fully with compressible materials.
  1. Provide uniform joints of proper depth for back rods and sealant.

### 3.10 FIELD QUALITY CONTROL

## Aston Place Apartments

- A. Coordinate work of this section and provide requested information to testing laboratory as necessary.
- B. Replace deficient work and allow retesting or inspection as required at no cost to Owner.

### 3.11 CONSTRUCTION TOLERANCES

#### A. Plumb:

- 1. Vertical lines and surfaces: 1/4" in 10 ft., or 3/8" in a story height not to exceed 20 ft., nor 1/2" in 40 ft. or more.
- 2. External corners, expansion joints, control joints and other conspicuous lines: 1/4" in any story or 20 ft. maximum, nor 1/2" in 40 ft. or more.

#### B. Level (horizontal lines):

- 1. 1/4" in any bay or 20 ft. maximum.
- 2. 3/4" in 40 ft. or more.

#### C. Linear Building Line (position shown in plan):

- 1. 1/2" in any bay or 20 ft. maximum.
- 2. 3/4" in 40 ft. or more.

#### D. Cross-Sectional dimensions (columns and thickness of walls): Minus 1/4", plus 1/2".

### 3.12 PROTECTION OF WORK

- A. Cover tops of walls with strong, non-staining type waterproof membrane when work is not in progress. Extend membrane 24" down each side of wall and hold securely in place without damage to completed work.
- B. Prevent mortar from staining masonry faces to be left exposed or painted.
  - 1. Immediately remove mortar in contact with exposed masonry faces.
  - 2. Protect sills, ledges, any adjacent finished work and projections from mortar droppings.

### 3.13 POINTING AND CLEANING

- A. Cut out defective mortar joints, refill solidly with mortar and tool as specified to match adjacent joints. Remove all nails from exposed masonry and point all holes.
- B. Remove mortar splashed or smeared on finish surfaces with wire brush or carbordum stone.
- C. Remove and replace loose, chipped, broken, stained or otherwise damaged unit masonry to match adjoining work. Point to eliminate evidence of replacement.
- D. Clean exposed brick masonry surfaces from top down with solution of non-staining masonry cleaning material approved by manufacturer and clean water, using procedure recommended by manufacturer. Wet walls before applying solution and protect metal, stone and other work. Rinse surfaces with clean water immediately after cleaning. Do not use metal scrapers.

Aston Place Apartments

3.14 CLEAN UP

- A. Remove periodically from site the accumulated debris from masonry work, particularly from areas within building and in vicinity of cutting operations.
- B. At completion, remove from premises all scaffolding, equipment, excess materials, debris, rubbish, packaging, which result from work specified in this Section.

SECTION 04 17 55

WALL CAVITY DRAINAGE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Weeps and flashing for wall drainage system for masonry veneer on wood stud back-up.
  - 1. Through wall flexible membrane flashing with sheet metal drip edge.
  - 2. Weep and vent holes.
- B. Specified in Other Sections:
  - 1. Unit Masonry Assemblies.
  - 2. Exposed Sheet metal reglet flashing.

1.2 DESCRIPTIONS

- A. Provide flashing at, or above, all shelf angles, lintels, ledges and other obstructions with mortar nets to allow downward flow of water to weeps that divert water to the exterior.
- B. Install mortar net continuous in bottom of wall and above all shelf angles.
- C. Provide weeps at maximum 24" o.c., immediately above base. above grade and above all through wall flashing locations.
- D. Provide area vent at top of wall and 4' below each ledge angle spaced at approximately 4 foot centers.

1.3 SUBMITTALS

- A. Product Data: Include descriptive data, product attributes, and performance characteristics.
- B. Samples. Submit two samples masonry mat, 6 x 6 inches.

1.4 PRODUCT HANDLING

- A. Store materials in clean, dry, sheltered area, off ground, until used.

PART 2 - PRODUCTS

2.1 FLASHING

- A. Concealed Flexible Membrane Flashing: Composite Laminated copper/fabric Flashings - Two Layers of dense glass fabric encapsulated minimum 3 oz. per sq. ft. copper.
  - 1. Advanced Building Products

## Aston Place Apartments

2. Afco Products.
3. York Manufacturing.

B. Flashing Adhesive: Cold-setting plastic adhesive compatible with the membrane.

### 2.2 WEEP HOLES/VENT

A. Head Joint Type: Williams-Goodco brick vent.

1. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches.
2. Plastic Weep Hole/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, designed to fill head joint with outside face held back 1/8 inch from exterior face of masonry, in color selected from manufacturer's standard.

### 2.3 CAVITY PROTECTION MATERIAL

A. Mortar Traps: Polyethylene or nylon reticulated, nonabsorbent mesh, and shaped to maintain drainage at weep holes without being clogged by mortar droppings.

1. 1 inch thick
2. Acceptable Products:
  - a. "Mortar Net" Hohmann & Bernard or Mortar Net.
  - b. "Mortar Break" Advanced Building Products.
  - c. "CavClear Masonry Mat" Archovations Inc.

## PART 3 - EXECUTION

### 3.1 FLASHING

A. Place flexible thru-wall flashing on bed of mortar and cover the mortar. Seal penetrations in flashing with mastic before covering with mortar.

1. Seal laps and penetrations in fabrications in accordance with manufacturer's instructions.
2. Form end dams in flashings above lintels.
3. Terminate flashing at gypsum sheathing with continuous termination bar and sealant.

B. Copper laminate fabric:

1. Extend flashing from a line 1/2" in from exterior face of masonry, through the outer wythe and turn flashing up a minimum of 4" at the sheathing.
2. Extend flashing over openings and under sills at least 8" beyond each side of opening. Install continuous thru-wall flashing at the bottom of cavity walls.
3. Apply membrane flashings without wrinkles or buckles. Properly fit and lap all corners to make continuous waterproofed courses.
4. Seal laps and penetrations in flashings in accordance with manufacturer's instructions.

### 3.2 MORTAR TRAPS

A. Place masonry mat continuously continuous in bottom of wall and above all shelf angles to construction of exterior wythe; follow manufacturer's installation instructions.

1. Install horizontally between wall ties. Stagger end joints in adjacent rows.
2. Butt adjacent pieces to moderate contact. Fit to perimeter construction and penetrations without

Aston Place Apartments

voids.

- B. Provide cavity mesh horizontally with weeps at all flashing locations.
  - 1. Install mesh as recommended by manufacturer so that mortar droppings are broken up and deflected away from the weep.
  - 2. Maintain air space free from mortar and prevent bridging of air space.

3.3 WEEP HOLES

- A. Provide weepholes in head joints of same course of masonry bedded in flashing mortar in first course above flashing. Exercise care so that mortar does not dam water between weeps.

SECTION 04 72 00

CAST STONE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Custom cast stone.

1.2 SPECIFIED IN OTHER SECTIONS:

- A. Masonry Mortar.
- B. Masonry Grout.
- C. Unit Masonry.
- D. Unit Masonry Assemblies.
- E. Joint Protection.

1.3 REFERENCES

- A. ASTM A 615/A 615M - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A767/A767M - Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- C. ASTM C 33 - Concrete Aggregates.
- D. ASTM C 150 - Portland Cement.

## Aston Place Apartments

- E. ASTM C 173 - Air Content of Freshly Mixed Concrete by the Volume Method
- F. ASTM C 231 - Air Content of Freshly Mixed Concrete by the Pressure Method
- G. ASTM C 260 - Specification for Air Entrained Admixtures for Concrete
- H. ASTM C 270 - Mortar for Unit Masonry.
- I. ASTM C 426 - Linear Drying Shrinkage of Concrete Masonry Units.
- J. ASTM C 494 - Chemical Admixtures for Concrete.
- K. ASTM C 618 - Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete
- L. ASTM C 666 - Resistance of Concrete to Rapid Freezing and Thawing.
- M. ASTM C 979 - Pigments for Integrally Colored Concrete.
- N. ASTM C 989 - Ground Granulated Blast- Furnace Slag for use in Concrete
- O. ASTM C 1194 - Compressive Strength of Architectural Cast Stone.
- P. ASTM C 1195 - Absorption of Architectural Cast Stone.
- Q. ASTM C 1364 - Architectural Cast Stone.
- R. Cast Stone Institute Technical Manual (Current Edition).
- S. ACI 530 "Building Code Requirements for Masonry Structures"

## 1.4 DEFINITIONS

Cast Stone: An architectural stone unit manufactured to copy fine grain texture and color of natural cut stone used in unit masonry applications. Meets ASTM C 1364 requirements.

1. Dry Cast Concrete Products: Manufactured from zero-slump concrete.
  - a. Vibrant Dry Hand Tamp Casting Method: Vibratory compaction by hand tamp of earth-moist, zero-slump concrete against rigid mold until it is densely compacted.
2. Wet Cast Concrete Products: Manufactured from measurable slump concrete.
  - a. Wet Casting Method: Manufactured from measurable slump concrete and consolidated into a mold.

## 1.5 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.

## Aston Place Apartments

- B. Product Data: Submit manufacturer's product data.
- C. Shop Drawings: Submit manufacturer's shop drawings, including profiles, cross sections, modular unit lengths, reinforcement (if required), exposed faces, anchors and anchoring method recommendations (if required), and annotation of cast stone types and location.
- D. Samples: Submit pieces of manufacturer's cast stone units that represent general range of texture and color proposed to be furnished for project.
- E. Test Results:
  - 1. Submit manufacturer's test results from cast stone units previously made by manufacturer using materials from same sources proposed for use in project.
- F. Manufacturer's Project References: Submit list of projects similar in scope, including project name and location, name of architect, and type and quantity of cast stone installed.
- G. Warranty: Submit manufacturer's standard warranty.

### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Sufficient plant facilities to provide quality, shapes, quantities, and sizes of cast stone units required without delaying progress of the Work.
  - 2. Minimum of 10 years experience in producing masonry units or cast stone.
  - 3. Fabricating plant shall be certified by the Architectural Precast Association (APA), Cast Stone Institute, or equivalent certification program.
  - 4. Manufacturer shall have an internal Quality Assurance Testing Program with certified laboratory technician(s).
  - 5. Custom Cast Stone Series and Architectural Masonry Veneer Series are to be manufactured from a similar mix design to match color and texture.
- B. Mock-Ups: Provide full-size cast stone units for use in construction of mock-ups. Approved mock-ups shall become the standard for appearance and workmanship for project.
  - 1. Mock-ups shall remain as part of the completed Work.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
  - 1. Deliver cast stone units secured to shipping pallets and protected from damage and discoloration.
  - 2. Provide itemized shipping list.
  - 3. Number each piece individually, as required, to match shop drawings and schedules.
- B. Storage:
  - 1. Store cast stone units and installation materials in accordance with manufacturer's instructions.
  - 2. Store cast stone units on pallets with nonstaining, waterproof covers.

## Aston Place Apartments

3. Do not double stack pallets.
4. Ventilate units under covers to prevent condensation.
5. Prevent contact with dirt and splashing.

### C. Handling:

1. Protect cast stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
2. Handle long units at center and both ends simultaneously to prevent cracking.
3. Do not use pry bars or other equipment in a manner that could damage units.

## PART 2 PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS:

- A. Reading Rock, Inc., 4600 Devitt Drive, Cincinnati, Ohio 45246  
Phone (800) 482-6466 Fax (513) 874-2361  
Web Site [www.readingrock.com](http://www.readingrock.com) E-Mail [info@readingrock.com](mailto:info@readingrock.com)
- B. Custom Cast Stone, Inc., 734 East 169<sup>th</sup> St, Westfield Indiana 46074  
Phone (888) 776-9960 Fax (888) 776-9965  
Webssite [www.customcaststone.com](http://www.customcaststone.com) E-mail [info@customcaststone.com](mailto:info@customcaststone.com)

### 2.3 CAST STONE

- A. Custom Cast Stone Units: RockCast's Custom Cast Stone Series.
- B. Compliance: ASTM C 1364.
- C. Casting Method: Vibrant dry hand tamp or wet cast as specified and/or required.
- D. Texture: Smooth [As specified].
- E. Color: As indicated on the drawings.
- F. Units: As indicated on the drawings.
- G. Profiles: As indicated on the drawings.
- H. Test Results:
  1. Compressive Strength, ASTM C 1194: Minimum 6,500 psi at 28 days.
  2. Absorption, ASTM C 1195: Maximum 6 percent, by the cold water method, at 28 days.
  3. Linear Shrinkage, ASTM C 426: Less than .065 percent.
  4. Density, ASTM C 140: Greater than 120 pounds per cubic foot.
  5. Freeze-Thaw, ASTM C 666: Less than 5 percent cumulative mass loss after 300 cycles.
  6. Air Content: ASTM C 173 or C 231 for wet cast product shall be 4-8% for units exposed to freeze-thaw environments; air entrainment is not required for VDT products.

## Aston Place Apartments

- I. Curing: Cure in enclosed chamber at 100 percent relative humidity and minimum 90 degrees F for up to 16 hours and yard cure for a minimum of 3 days.

### 2.4 CAST STONE MATERIALS

- A. Portland Cement: ASTM C 150, Type I or III. White and/or gray as required to match specified color.
- B. Coarse Aggregates: ASTM C 33, except for gradation. Granite, quartz, or limestone.
- C. Fine Aggregates: ASTM C 33, except for gradation. Manufactured or natural sands.
- D. Pigments: ASTM C 979, except do not use carbon black pigments. Inorganic iron oxide pigments.
- E. Admixtures:
  1. Water Reducing, Retarding, and Accelerating Admixtures: ASTM C 494.
  2. ASTM C 260 for air-entraining admixtures
  3. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
  4. ASTM C 618 for mineral admixtures
  5. ASTM C 989 for ground granulated blast-furnace slag
- F. Water: Potable.
- G. Reinforcing Bars: ASTM A 615, deformed steel bars. Epoxy coated or galvanized when covered with less than 1-1/2 inches of material.
  1. Galvanized Coating: ASTM A 767.

### 2.5 TEXTURE AND COLOR

- A. General: As indicated on the drawings.
- B. Texture of Surfaces Exposed to View:
  1. Fine-grained texture similar to natural stone.
  2. Approximately equal to approved sample when viewed in direct daylight at 10 feet.
- C. Surface Air Voids:
  1. Size: Maximum 1/32 inch.
  2. Density: Less than 3 occurrences per any 1 square inch.
  3. Viewing Conditions: Not obvious under direct daylight at 10 feet.
- D. Finish:
  1. Minor chipping resulting from shipping and delivery shall not be grounds for rejection of units.
  2. Minor chips shall not be obvious under direct daylight at 20 feet, as determined by Architect.
  3. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.

## Aston Place Apartments

### E. Color Variation:

1. Viewing Conditions: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.
2. Total Color Difference: ASTM C 1364, 6 units
3. Hue Difference: ASTM C 1364, 2 units

## 2.6 MORTAR

- A. Mortar: As specified in Section 04 05 00.
- B. Mortar Materials: As specified in Section 04 05 00.

## 2.7 ACCESSORIES

- A. Anchors: As specified in Section 04 05 00.
- B. Sealant: As specified in Section 07 92 00.
- C. Cleaner: Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean 600 Detergent, or Prosoco Sure Klean Vana Trol.

## 2.8 FABRICATION

- A. Shapes: Unless otherwise indicated on drawings, provide:
  1. Suitable wash on exterior sills, copings, projecting courses, and units with exposed top surfaces.
  2. Drips on projecting units, wherever possible.

## 2.9 TOLERANCES

- A. General: Manufacture cast stone and concrete masonry veneer units within tolerances in accordance with Cast Stone Institute Technical Manual, unless otherwise specified.
- B. Cross Section Dimensions: Do not deviate by more than plus or minus 1/8 inch from approved dimensions.
- C. Length of Units: Do not deviate by more than length/360 or plus or minus 1/8 inch, whichever is greater, not to exceed plus or minus 1/4 inch.
- D. Warp, Bow, or Twist: Do not exceed length/360 or plus or minus 1/8 inch, whichever is greater.

## 2.10 PRODUCTION QUALITY CONTROL

- A. Mix Designs: Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing cast stone units.

Aston Place Apartments

- B. Plant Production Testing: Test compressive strength and absorption from specimens selected at random from plant production. Tests to be conducted by certified laboratory testing technicians.
  - 1. Custom Cast Stone Units: Test in accordance with ASTM C 1194 and C 1195.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine construction to receive cast stone units. Notify Architect if construction is not acceptable. Do not begin installation until unacceptable conditions have been corrected.
- B. Examine cast stone units before installation. Do not install unacceptable units.
  - 1. All RockCast products are shipped on a pallet and have one unfinished side. Textured units are to be set with the texture face forward and smooth units are stacked “face up” on the pallet.
  - 2. RockCast’s Custom Cast Stone Series units do not have returns or finished ends unless otherwise ordered and noted on the shop drawings.

3.2 INSTALLATION

- A. Install units in conjunction with masonry, as specified in Section 04810.
- B. Pull units from multiple cubes during installation to minimize variation in color and help with natural blending.
- C. Cut units using motor-driven masonry saws. Finished ends should be turned to the visible side and the saw cut turned to the inside of the mortar joint to hide exposed aggregates and saw marks.

## Aston Place Apartments

- D. Do not use pry bars or other equipment in a manner that could damage units.
- E. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- F. Use Type N mortar (ASTM C 270), unless specified otherwise.
- G. Per ACI 530.1, it is not necessary, nor recommended, to wet the units prior to installation.
- H. Set units in full bed of mortar, unless otherwise indicated on the drawings. It is not necessary to rake joints for later tuckpointing. Standard full mortar application with tooling is all that is necessary.
- I. Fill vertical joints with mortar.
- J. Leave head joints in copings and similar components open for sealant.
- K. Make joints 3/8 inch, unless otherwise indicated on the drawings.
- L. Mortar joints should have a slight concave profile (unless specified otherwise).
- M. Remove excess mortar immediately.
- N. Remove mortar fins and smears before tooling joints.
- O. Cover wainscot for protection and bond separation with plastic, felt paper or other approved products.
- P. Cover freshly installed masonry products as required to assist with the curing process.
- Q. Sealant Joints:
  - 1. As specified in Section 07 92 00.
  - 2. Prime ends of units, insert properly sized backing rod, and install sealant.
  - 3. Provide sealant joints at following locations:
    - a. Copings and cast stone units with exposed tops.
    - b. Joints at relieving angles.
    - c. Control and expansion joints.
    - d. As indicated on the drawings.

### 3.3 TOLERANCES

- A. Installation Tolerances:
  - 1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
  - 2. Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
  - 3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.

## Aston Place Apartments

4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8-inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

### 3.4 CLEANING

54

- A. Clean exposed units after mortar is thoroughly set and cured.
- B. Perform test of cleaner on small area of 4' x 4' on each type and color and receive approval by Architect before full cleaning. Let test area dry 4 to 5 days before inspection. Keep test area for future comparison.
- C. Clean units by wetting down the surface first, before using the specified cleaner (as specified in Section 2.7.C). Brush on cleaner, let dwell for 2 to 3 minutes. Reapply cleaner, scrub surface with masonry brush and rinse off thoroughly. Areas with heavy soiling use a wood block or non-metallic scraper.
- D. Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- E. Do not use the following to clean units:
  1. Muriatic acid.
  2. Power washing
  3. Sandblasting.
  4. Harsh cleaning materials or methods that would damage or discolor surfaces.

### 3.5 REPAIR

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
- B. Repair with touchup materials provided by manufacturer in accordance with manufacturer's instructions.
- C. Repair methods and results to be approved by Architect.

### 3.6 INSPECTION AND ACCEPTANCE

- A. Inspect completed installation in accordance with Cast Stone Institute Technical Manual.

### 3.7 WATER REPELLANT

- A. Sealer: Prosoco Sure Klean Weather Seal Siloxane WB or PD or Hydrozo Enviroseal 7 according to manufacturer's recommendations. Apply water repellant for weatherproofing in accordance with water repellant manufacturer's instructions.
- B. Apply water repellant after installation, cleaning, repair, inspection, and acceptance of units are completed.

Aston Place Apartments

3.8 PROTECTION

- A. Protect installed units from splashing, stains, mortar, and other damage.

SECTION 05 12 00  
STRUCTURAL  
STEEL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provision of the Contract, including General and Supplementary Conditions and Division 01 Specifications, apply to this Section.

1.02 DESCRIPTION

- A. Work included: All labor and materials required to furnish and install the structural steel work shown on the Drawings and required by these Specifications, including that shown on mechanical or electrical Drawings, or required in their specification Sections.
  - 1. Related works specified elsewhere: The general provisions of the Contract apply to the work of this Section, as though reproduced herein. Carefully examine all other Sections and all Drawings for related work.
- B. Work furnished but installed under other Sections: Anchor bolts, loose bearing and base plates, loose lintels, and connection hardware to be cast into concrete.
- C. Work affected by others: Mechanical framing, loads, openings, and structure in any way related to mechanical requirements is shown for bidding purposes only. Responsibility for coordinating the work of this Section with these requirements is solely that of the Contractor. Contractor's review of shop drawings will be taken to indicate that this coordination has been accomplished.
- D. Inspection and testing required by this Section to be at Owner's expense.

1.03 QUALITY ASSURANCE

- A. Reference standards:
  - 1. By the American Institute of Steel Construction (AISC):
    - a. Specification for Structural Steel Buildings.
    - b. Specification for Structural Joints Using ASTM A325 or A490 bolts.
    - c. Code of Standard Practice for Steel Buildings and Bridges.
    - d. Seismic Provisions for Structural Steel Buildings and Supplement No.2.
  - 2. By the American Welding Society (ANSI/AWS):
    - a. Structural Welding Code-Steel (D1.1).
    - b. Symbols for Welding and Non-Destructive Testing (A2.4).

## Aston Place Apartments

- B. Fabricator's qualifications:
  - 1. Minimum five years' continuous experience in the fabrication of steel for projects of similar quality and scope.
  - 2. Membership in the American Institute of Steel Construction, or approval of the Architect at least ten days prior to bid.
- C. Erector's qualifications: Minimum five years' continuous experience in similar steel erection.
- D. Welders' qualifications: Personnel and procedures are to be qualified in accordance with ANSI/AWS D1.1.
- E. Inspection agency's qualifications: Minimum three years' experience in similar steel inspection, and approval of the Architect.

### 1.04 SUBMITTALS

- A. Certification of experience: Submit, on request only, written description of personnel, projects, and equipment which document the experience and qualifications required of the fabricator, erector, welders, and inspection agency.
- B. Shop drawings: Provide dimensioned erection plans with appropriate sections and details, including member piece details that include the following:
  - 1. Indicate all shop and erection details, including cuts, copes, cambers, connections, holes, threaded fastener types, sizes and lengths, washers, and weld types, sizes and lengths.
  - 2. Include embedment layout drawings.
  - 3. Indicate material specifications and finishes.
  - 4. Indicate shop and field welds with symbols per ANSI/AWS A2.4.
  - 5. Submit designs and details of connections with engineer's seal.
- C. Proof of compliance for materials: Submit, on request only, the following:
  - 1. Mill reports for properly identified material.
  - 2. Certificates of compliance for:
    - a. Structural steel shapes.
    - b. Shear studs.
    - c. High strength threaded fasteners.
- D. Inspection reports: Submit reports for the inspection specified.

### 1.05 PRODUCT DELIVERY AND

#### STORAGE A. Delivery:

- 1. Comply with ASTM A6. Non-compliance will be cause for rejection.

Aston Place Apartments

2. Deliver anchor bolts and other items to be embedded in cast-in-place concrete or masonry prior to the start of that work. Provide setting drawings, templates, or instructions required for the installation of such items.
- B. Storage:
1. Store steel at site above ground on platforms, skids, or other supports.
  2. Protect steel from corrosion.
  3. Store packaged materials in their original unbroken packages.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Structural steel wide flange shapes:
1.  $F_y=50$  ksi steel: ASTM A992 or ASTM A572.
- B. Structural steel M, S, HP shapes, channels, angles, plates, bars, etc.:
1.  $F_y=36$  ksi steel: ASTM A36.
- C. Structural steel tubing:
1.  $F_y=35$  ksi round steel tubing: ASTM A53, Type E or S, Grade B.
  2.  $F_y=46$  ksi square and rectangular HSS: ASTM A500, Grade B.
- D. Anchor Bolts, standard bolts and nuts: ASTM A307. Provide heavy washers for anchor bolts.
- E. High strength threaded fasteners: ASTM A325 or A490.
1. Provide hot-dip zinc coating for exterior exposed fasteners: ASTM A153.
- F. High strength twist-off-type tension-control bolts: ASTM F1852, Type 1 with round or heavy hex head.
- G. Expansion Anchors:
1. Wedge anchors shall have a one-piece anchor body with an expansion mechanism of interlocking wedges. Carbon steel components shall be zinc plated according to ASTM B633, galvanized according to ASTM B695, or stainless steel conforming to ASTM A276 or ASTM A493 of material meeting AISI 304 or 316. The following are acceptable:
    - a. Kwik Bolt III by Hilti Fastening Systems
    - b. Wedge-All by Simpson Strong-Tie Anchors
    - c. Rawl-Stud by Rawlplug Company
  2. Sleeve anchors shall be flush or shell type which meet Federal Specification FF-S-325, Group II, and Type 3. Carbon steel components shall be zinc plated

## Aston Place Apartments

according to ASTM B633, galvanized according to ASTM B695, or stainless steel conforming to ASTM A276 or ASTM A493 of material meeting AISI 304 or 316. The following are acceptable:

- a. Sleeve Anchor by Hilti Fastening Systems
  - b. Sleeve-All by Simpson Strong-Tie Anchors
  - c. Lok/Bolt by Rawlplug Company
3. Install expansion anchors in holes drilled with carbide tipped drill bits and in accordance with the manufacturers recommendations.
- H. Welding electrodes: Conform to requirements of ANSI/AWS D.1, using Series E70 electrodes, appropriate for the materials being welded.
- I. Headed stud shear connectors: Conform to the requirements of ANSI/AWS D1.1, Chapter 7, Type B, and ASTM A108, minimum 60 ksi.
- J. Shop paint primer:
1. Interior exposure: SSPC Paint 25, or Federal Specification TT-P-636c, or TT-P-31c.
  2. Exterior exposure and Architecturally Exposed Structural Steel: Federal Specification TT-P-86, types II or III, TT-P-57, Type II.
  3. Primer is to be compatible with finish paint.
- K. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing field welds and repairs containing not less than 93 percent zinc dust by weight: SSPC Paint 20.

## 2.02 FABRICATION

- A. Conform to applicable provisions of the reference standards listed in Part 1 of this Section, as modified herein.
- B. Connection design:
1. Design connections per AISC standards for forces and moments given on the Drawings. Where none are given design for the following:
    - a. For non-composite members use 1/2 of the Allowable Uniform Load on pages 3-33 through 3-95 of the Thirteenth Edition of the AISC Steel Construction Manual.
    - b. For composite members use 1/2 of the Allowable Uniform Load on pages 3-33 through 3-95 of the Thirteenth Edition of the AISC Steel Construction Manual times a factor of 1.40.
    - c. Connections are to be designed and submitted by a registered Professional Engineer in the State the project is located. Calculations are to be submitted with an engineer's seal.
  2. Connection type is to be:
    - a. Snug-tight unless noted otherwise.

Aston Place Apartments

3. Connection details on Drawings are to illustrate location, type, the general arrangement only, and to establish minimum requirements.
  4. Shop connections may be welded or bolted, unless shown otherwise.
  5. Field connections shall be bolted, unless shown otherwise.
  6. Standard bolts and nuts are permitted only for connections of secondary members, unless noted otherwise. High strength threaded fasteners are required for all other bolted connections.
- C. Camber: Provide camber in beams as indicated on the drawings except that beams longer than 42 feet are to have minimum camber as follows: 42-52 feet, 1 inch; 52-65 feet, 2 inches; 65-85 feet, 3 inches; unless noted otherwise.
- D. Finishing: Ends of members in direct contact bearing, such as columns at their bases and splices, are to be “finished”, as defined in the Code of Standard Practice.
- E. Bearing and base plates: Column base plates are to be shop attached. Beam bearing plates may be attached or loose.
- F. Shear connectors for composite construction: Connectors on top flanges of beams and girders must be field welded; connectors in other locations may be shop welded.
- G. Holes: Drill or punch holes in members as required for passage of conduit and piping, and attachment of joists, nailers, etc. Burning such holes is not permitted. If opening is not shown on structural drawings, obtain prior approval.
- H. Cleaning:
1. Remove oil, dirt, loose mill scale, or other material that would impair welding, performance of friction-type connections, or adherence of concrete or sprayed-on fireproofing.
  2. For steel that is to be painted, cleaning techniques are to be as required by the appropriate SSPC paint specification.
- I. Shop painting: Steel not exposed to view in the finished structure need not be painted. Steel exposed to view, except that to be galvanized, is to be painted as follows:
1. Exterior exposure and Architecturally Exposed Structural Steel: Apply shop coat(s) in accordance with SSPC-PS 2.01, 2.02, 2.03, or 2.04.
  2. Other interior exposure: Apply one-coat shop paint system in accordance with SSPC-PS 7.01. Apply two coats to surfaces inaccessible after assembly.
  3. Do not paint surfaces to be encased in concrete or to receive sprayed-on fireproofing, or contact surfaces in friction-type connections, or surfaces to be field welded.
- J. Galvanizing: Where required, galvanizing is to conform to ASTM A153. Except for bolts, nuts, and anchors, all galvanizing is to be done after fabrication.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Prior to beginning work of this Section, verify that the installed work of other trades is complete and correct to the extent necessary for the proper execution of the work of this Section. This includes locations of anchor bolts, and lines and grades of bearing areas.
- B. In the event of discrepancies, immediately notify the Architect. Do not proceed with work affected by the discrepancies until they have been resolved.

### 3.02 ERECTION

- A. Conform to the applicable provisions of the reference standards listed in Part 1 of this Section, as modified herein.
- B. This structure is designed to be self-supporting and stable after the building is fully completed. It is solely the Contractor's responsibility to determine erection procedure and sequence; and to ensure the stability of the building and its component parts, and of the adequacy of temporary or incomplete connections, during erection. This includes the addition or whatever temporary bracing, guys, or tie-downs that might be necessary. Such material is not shown on the Drawings. If applied, they shall be removed as conditions permit, and shall remain the Contractor's property.
- C. Safety: It is solely the Contractor's responsibility to follow all applicable safety codes and regulations governing this work.
- D. Clean bearing surfaces and other surfaces in permanent contact, prior to assembly. E.  
  
Splices are permitted only where indicated.
- F. Tolerances: Per AISC Code of Standard Practice. Note special requirements therein for Section 10 "Architecturally Exposed Structural Steel."
- G. Field corrections of fabrication errors by gas cutting is not permitted in major members without prior approval of the Architect.
- H. Welds that are subject to foot traffic or are exposed to view in the finished structure are to be ground smooth and flush with adjacent surfaces.
- I. Touch-up painting: After erection, touch-up field connections and abrasions in the shop coat with same paint used for shop coat. Do not paint welds until they have been cleaned in accordance with AWS D1.1.

### 3.03 FIELD QUALITY CONTROL

- A. Inspection agency shall perform the following:
  - 1. Review qualifications of welders, operators, and welding procedures submitted by the Contractor.
  - 2. Review materials' proofs of compliance, if such are required.
  - 3. Inspect bolted connections, including pre-installation verification testing when required, per the requirements of the AISC Specification for Structural Joints.
  - 4. Inspect welded connections per the requirements of ANSI/AWS D1.1, Chapter 6. All fillet welds that the visual inspection has deemed suspect and all full penetration field welds are to be non-destructive tested. Additional welds that

Aston Place Apartments

require non-destructive tests are indicated on the Drawings. Testing agency, at their option, is to use one of the following inspection procedures:

- a. Liquid Penetrant Inspection: ASTM E165.
  - b. Magnetic Particle Inspection: ASTM E709.
  - c. Radiographic Inspection: ASTM E94 and ASTM E142.
  - d. Ultra Sonic Inspection: ASTM E164.
5. Inspect installation of stud welding, per the requirements of ANSI/AWS D1.1, Chapter 7.
  6. Inspect connections of steel joists.
  7. Visually inspect connections using twist-off tension-control bolts to verify that ends of bolts have been properly twisted-off. Verify gaps of direct tension indicators comply with ASTM F959, Table 2.
- B. Inspection agency shall be directly responsible to the Architect.

**END OF SECTION**

SECTION 05 50 17

STEEL MASONRY LINTELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Loose lintels in masonry walls.
  - 1. Galvanized lintels in exterior walls.
- B. Specified in Other Sections:
  - 1. Steel frame construction.

1.2 SUBMITTALS

- A. Submit shop drawings for all fabricated items.

1.3 QUALITY ASSURANCE

- A. Comply with governing codes and regulations.

1.4 COORDINATION

- A. Field measure for fabrications set in walls and other construction prior to preparation of shop drawings and fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel plates, shapes, and bars: ASTM A 36.

2.2 FABRICATION & FINISHING

- A. Minimum end bearing: Provide length required for minimum bearing at each end of 4" for openings less than 6'-0" wide and 8" for wider openings.
- B. Exterior lintel finish: Shop prime steel with SSPC Paint 15. Field touch-up as required.
- C. Interior lintel finish: Shop prime steel with SSPC Paint 13. Field touch-up as required.

PART 3 - EXECUTION

3.1 INSTALLATION

Aston Place Apartments

- A. Fill space between lintel and masonry solidly with mortar.
  - 1. Where bearing on cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- B. Install work plumb and level
- C. Touch-up damaged coatings with shop primer and galvanize repair paint.

SECTION 05 52 51

PIPE BOLLARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Grout filled pipe Bollards.
  - 1. Earthwork and concrete for foundation installation.
- B. Specified in Other Sections:
  - 1. Finish Painting.

1.2 DESCRIPTIONS

- A. Steel Pipe/Tube:
  - 1. Length: 36" above finish grade and 30" below grade.
  - 2. Diameter: 6 inches
  - 3. Wall thickness: Schedule 40.
- B. Foundation:
  - 1. Diameter: Not less than pipe diameter plus 3" on all sides.
  - 2. Depth: not less than 4" below bottom of pipe.

1.3 SUBMITTALS

- A. Product Data: Submit mill certificates signed by manufacturers certifying that products furnished comply with requirements.

1.4 QUALITY ASSURANCE

- A. Standards:
  - 1. AISC "Specifications for Design, Fabrication and Erection of Structural Steel for Buildings".
  - 2. American Hot Dip Galvanizers Association, Inc. (AHDGA): Publication, "Inspection Manual for Hot Dip Galvanized Products."

PART 2 - PRODUCTS

2.1 STEEL

- A. Galvanized Steel Pipe: ASTM A 53, Type E or S, Grade B.

2.2 CONCRETE

## Aston Place Apartments

- A. Ready mix conforming to ASTM C 94 or prepackaged concrete. Proportion mix:
  - 1. Minimum cement content 600#/cu. yd.
  - 2. Maximum aggregate sizes:
    - a. Foundation: 1".
    - b. Pipe Fill: 1/2".
  - 3. Maximum slump: 6".

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Excavate for bollard foundation to a minimum 6" below pipe bottom. Provide formwork in excavation if necessary.
- B. Set accurately to lines and elevations indicated. Level and plumb individual members within AISC tolerances.
- C. Place bollard in foundation forms to prevent dislocation during concrete placement. Do not place after pouring of concrete. Adjust for plumb after vibration of concrete.

#### 3.2 GROUT FILL

- A. After foundation has set or bolts are placed fill bollard to top with concrete fill, neatly forming dome at top.

#### 3.3 SUBSEQUENT OPERATIONS

- A. Touch-up damaged coatings with shop primer and galvanize repair paint.

SECTION 06 10 00

ROUGH  
CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Rooftop equipment bases and support curbs.
4. Wood blocking and nailers.
5. Wood furring.
6. Wood sleepers.
7. Plywood backing panels.

1.2 SUBMITTALS

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

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

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.

C. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Power-driven fasteners.
5. Powder-actuated fasteners.
6. Expansion anchors.
7. Metal framing anchors.

## PART 2 - PRODUCTS

### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

### 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWA C2.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

## Aston Place Apartments

2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood floor plates that are installed over concrete slabs-on-grade.

### 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood).
  1. Use Exterior type for exterior locations and where indicated.
  2. Use Interior Type A, High Temperature (HT) for enclosed roof framing, framing in attic spaces, and where indicated.
  3. Use Interior Type A, unless otherwise indicated.
- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Application: As noted on architectural plans and details.

### 2.4 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: 19 percent.
- B. Non-Load-Bearing Interior Partitions: Construction or No.2 grade of any species.
- C. Framing Other Than Non-Load-Bearing Interior Partitions:
  1. Beams, headers, joists, and rafters:
    - a. Spruce-pine-fir No.1/No.#2 or better (NLGA).
  2. Studs:
    - a. Spruce-pine-fir stud grade or better (NLGA).
    - b. Spruce-pine-fir No.1/No.2, where noted on the Contract Documents (NLGA).

### 2.5 ENGINEERED WOOD PRODUCTS

- A. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

## Aston Place Apartments

1. Extreme Fiber Stress in Bending, Edgewise: 2600 psi.
  2. Modulus of Elasticity, Edgewise: 1,900,000 psi.
- B. Rim Boards: Product designed to be used as a load-bearing member and to brace wood joists at bearing ends.
1. Material: Product made from any combination solid lumber, wood strands and veneers. Provide rim boards made without urea formaldehyde.
  2. Thickness: 1-1/8, 1-1/4, 1-1/2 inches where noted on the construction documents.
  3. Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

### 2.6 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
  4. Cants.
  5. Furring.
  6. Grounds.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
1. Eastern softwoods, No. 3 Common grade; NeLMA.
  2. Southern species, No. 2 Common grade; WWPA or WCLIB.
  3. Western woods, Standard or No. 3 Common grade; WCLIB or WWPA.

### 2.7 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C- D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 5/8-inch nominal thickness.

### 2.8 FASTENERS

## Aston Place Apartments

- A. General: Provide fasteners of size and type indicated that comply with requirements specified.
  - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

### 2.9 METAL FRAMING ANCHORS

- A. 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:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Products: Subject to compliance with requirements, provide products by Simpson Strong –Tie Co., Inc., or comparable products by an approved alternate manufacturer.
- D. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

### 2.10 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch: selected from manufacturer's standard widths to suit width of sill members indicated.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

## Aston Place Apartments

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- D. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- E. Do not splice structural members between supports, unless otherwise indicated.
- F. Comply with AWPAM4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

### 3.2 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 06 10 50

MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Nailers, blocking, furring, and sleepers.
- B. Specified in Other Sections:
  - 1. Structural wood framing and plywood.
  - 2. Gypsum wallboard.

1.2 DESCRIPTIONS

- A. Wood Treatment:
  - 1. Preservative treat wood in contact with concrete or the ground or exposed to weather.
  - 2. Fire retardant treat wood and plywood where indicated or required by code.

1.3 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Standards:
  - 1. Plywood Products: PS-1 (ANSI A199.1) and Engineered Wood Products Association "APA" Performance Standards.
  - 2. Treated Plywood and Lumber: American Wood Preservers' Association.

1.4 PRODUCT HANDLING

- A. Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Store and panels on blocking 6" above ground and for air circulation within stacks. Do not store in damp areas.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Nailers, blocking, furring and sleepers:
  - 1. Lumber:
    - a. Construction grade, finished 4 sides, 19% maximum moisture content.
  - 2. Plywood, APA C-D.

## Aston Place Apartments

### 2.2 TREATMENTS

- A. Pressure preservative treat items in contact with flashing, masonry, or concrete.
- B. Preservative treatment: Pressure-treated with waterborne preservatives, to comply with AWPB LP-2 for above-ground items LP-22 for ground contact items.
  - 1. Kiln dry lumber and plywood to a maximum moisture content, respectively, of 19% and 15%.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Provide nailers, blocking and grounds where required. Set work plumb, level and accurately cut.
- B. Attach carpentry work rigidly and securely to substrate. Make tight connections between members.
  - 1. Fasten without splitting wood; predrill as needed. Countersink bolts and nuts flush with surfaces.
  - 2. Provide washers under bolt heads and nuts in contact with wood. Countersink fasteners to avoid interference with other work.
  - 3. Use common wire nails, except where other types of nails required by specified standards. Fasten to light gauge metal with self-drilling/self-tapping metal screws.

SECTION 06 10 63

EXTERIOR ROUGH  
CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Elevated decks including wood decking, railings, and support framing members.

1.2 SUBMITTALS

A. Product Data: For preservative-treated wood products and metal framing anchors.

B. Material Certificates:

1. For lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by ALSC's Board of Review.
2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

A. Lumber: Comply with DOC PS 20 and with applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by ALSC's Board of Review.

Provide lumber graded by an agency certified by ALSC's Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each item with grade stamp of grading agency.

## Aston Place Apartments

2. For items that are exposed to view in the completed Work, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Provide dressed lumber, S4S, unless otherwise indicated.

### 2.2 DIMENSION LUMBER

- A. Maximum Moisture Content: 19 percent.
- B. Deck Framing: No. 2 grade of the following species:
  1. Southern pine; SPIB.
- C. Dimension Lumber Posts: No. 2 grade of the following species:
  1. Mixed southern pine; SPIB.

### 2.3 BOARDS

- A. Maximum Moisture Content: 19 percent.
- B. Board Decking: 1-1/4-inch thick radius-edged decking of the following species and grades:
  1. Southern pine, Premium , SPIB.
- C. Railing Boards:[ Any of the following species and grades:]
  1. Southern pine, B & B finish; SPIB.

### 2.4 PRESERVATIVE TREATMENT

- A. Pressure treat boards and dimension lumber with waterborne preservative according to AWPA C2.
- B. Pressure treat timber with waterborne preservative according to AWPA C15 requirements for "sawn building poles and posts as structural members."
  1. Treatment with CCA shall include post-treatment fixation process. C.

Preservative Chemicals: Acceptable to authorities having jurisdiction.

1. Do not use chemicals containing arsenic or chromium.

- D. Use process that includes water-repellent treatment.
- E. Use process that does not include water repellents or other substances that might interfere with application of indicated finishes.
- F. After treatment, redry all lumber to 19 percent maximum moisture content.
- G. Mark treated wood with treatment quality mark of an inspection agency approved by ALSC's Board of Review.
  - 1. For items indicated to receive a stained or natural finish, mark each piece on surface that will not be exposed or omit marking and provide certificates of treatment compliance issued by inspection agency.

## 2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
  - 1. Use fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or ASTM F 2329 unless otherwise indicated.

## 2.6 METAL FRAMING ANCHORS

- A. Basis-of-Design Products: Subject to compliance with requirements, provide products manufactured by Simpson Strong Tie Co., or comparable products by an approved alterbate manufacturer.
- B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set exterior rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit exterior rough carpentry to other construction; scribe and cope as needed for accurate fit.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction" unless otherwise indicated.
- C. Install wood decking with crown up (bark side down).
- D. Install metal framing anchors to comply with manufacturer's written instructions. E. Do not splice structural members between supports unless otherwise indicated.
- F. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Securely attach exterior rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- H. Railings: Secure wall rails with metal brackets. Fasten freestanding railings to newel posts and to trim at walls with countersunk-head wood screws or rail bolts and glue.

END OF SECTION 061063

SECTION 06 16 00a

SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wall sheathing.
2. Roof sheathing.
3. Subflooring.

1.2 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

B. Research/Evaluation Reports: For the following:

1. Fire-retardant-treated plywood.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

Aston Place Apartments

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack plywood and other panels flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS,

- GENERAL A. Plywood: DOC PS 1.
- B. Oriented Strand Board: DOC PS 2.

2.2 FIRE-RETARDANT-TREATED PLYWOOD

- A. General: Comply with performance requirements in AWWA C27.
  - 1. Use Interior Type A, High Temperature (HT) for roof sheathing and where indicated.
- B. Kiln-dry material after treatment to a maximum moisture content of 15 percent.
- C. Identify fire-retardant-treated plywood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Application: Treat plywood indicated on the Architectural Drawings.

2.3 WALL SHEATHING

- A. Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing.

2.4 ROOF SHEATHING

- A. Oriented-Strand-Board Roof Sheathing: Exposure 1 sheathing.
- B. Oriented-Strand-Board Subflooring: Exposure 1, single-floor panels or sheathing. APA rated sturdy-floor.
- C. Plywood Underlayment for Resilient Flooring: DOC PS 1, Exterior, C-C Plugged Exposure 1 Underlayment with fully sanded face.
- D. Plywood Underlayment for Ceramic Tile: DOC PS 1, Exterior, C-C Plugged, not less than 5/8-inch (15.9-mm) nominal thickness, for ceramic tile set in adhesive.

Aston Place Apartments

- E. Hardboard Underlayment: AHA A135.4, Class 4 (Service), Surface S1S; with back side sanded.

## 2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated.
  - 1. For wall and roof sheathing panels, provide fasteners with corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- B. Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that exclude exterior moisture.
- C. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

### 3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial."
  - 1. Comply with "Code Plus" installation provisions in guide referenced in paragraph above.
- B. Fastening Methods: Fasten panels as indicated below:
  - 1. Combination Subfloor-Underlayment:
    - a. Glue and nail to wood framing.
  - 2. Subflooring:

Aston Place Apartments

- a. Glue and nail to wood framing.
3. Wall and Roof Sheathing:
- a. Nail to wood framing.

END OF SECTION 061600

SECTION 06160b  
GYPSUM SHEATHING

GENERAL

1.01 SUMMARY

a. This Section includes the following:

- 1) Wall Sheathing.
- 2) Weather-Resistant Sheathing Barriers.
- 3) Sheathing Joint and Penetration Treatment.

b. Related Sections include the following:

- 1) Section 01352 – LEED Requirements.
- 2) Section 05400 – Cold-Formed Metal Framing.
- 3) Section 06100 – Rough Carpentry.

1.02 REFERENCES

A. American Society for Testing and Materials:

1. ASTM C 79: Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board.
2. ASTM C 954: Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch to 0.110 inch in Thickness.
3. ASTM C 1002: Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
4. ASTM C 1280: Standard Specification for Application of Gypsum Sheathing.
5. ASTM C 1396: Standard Specification for Gypsum Board.
6. ASTM D 226: Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
7. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E 119: Test Method for Fire Tests of Building Construction and Materials.
9. ASTM E 1677: Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.

B. Gypsum Association:

## Aston Place Apartments

1. GA 253: Recommended Specification for the Application of Gypsum Sheathing.

### 1.03 SUBMITTALS

- A. General: Submit in accordance with Section 01330
- B. Product Data: Submit manufacturer's current technical literature for product specified.

### 1.04 QUALITY ASSURANCE

- A. Fire Resistance Rated Assembly Characteristics: Provide materials and construction identical to those tested in accordance to ASTM E 119 by an independent testing and inspection agency acceptable to authorities having jurisdiction.
  1. Fire Resistance Ratings: Indicated by design designations from UL "Fire Resistance Directory.

### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. **WARNING:** Store all SHEETROCK Brand Gypsum Sheathing flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.

## PRODUCTS

### 2.01 WALL SHEATHING

- a. Paper-Surfaced Gypsum Sheathing: ASTM C 79 or ASTM C 1396, gypsum sheathing; with water-resistant-treated core and with water-repellent paper bonded to core's face, back, and long edges.
  - 1) Product: Subject to compliance with requirements, provide SHEETROCK Brand Gypsum Sheathing by United States Gypsum Company OR Approved Equal to comply with U.L. Assembly No. U305.
  - 2) Type and Thickness: **Type X, 5/8 inch** thick.
  - 3) Edge and End Configuration: **Square**.
  - 4) Size: **48 by 96 inches for vertical** installation.

### 2.02 FASTENERS

- a. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

## Aston Place Apartments

- b. Nails: 6d cement-coated nails, 1 7/8" long, .0915 in shank diam. And 15/64 inch diam. heads

### 2.03 WEATHER-RESISTANT SHEATHING BARRIERS – NOT USED

### 2.04 SHEATHING JOINT AND PENETRATION TREATMENT MATERIALS

- a. Sealant for Paper-Surfaced Gypsum Sheathing Board: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturer for application indicated, and complying with requirements for elastomeric sealants specified in Section 07920 – Joint Sealants.

### 2.05 MISCELLANEOUS MATERIALS

- a. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film.
- b. Primer for Flexible Flashing: Product recommended by manufacturer of flexible flashing for substrate.

## EXECUTION

### 3.01 INSTALLATION, GENERAL

- a. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- b. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction, unless otherwise indicated.
- c. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- d. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

### 3.03 GYPSUM SHEATHING INSTALLATION

- a. Comply with ASTM C 1280, GA-253 and manufacturer's written instructions.
  - 1) Fasten sheathing to wood framing with **nails**.
  - 2) Fasten sheathing to cold-formed metal framing with screws.
  - 3) Install boards with a **3/8-inch** gap where non-load-bearing construction abuts structural elements.

## Aston Place Apartments

4) Install boards with a **1/4-inch** gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

b. Apply fasteners so heads bear tightly against face of sheathing boards but do not cut into facing.

c. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.

1) Space fasteners approximately **8 inches** o.c. and set back a minimum of **3/8 inch** from edges and ends of boards.

2) For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

d. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.

1) Space fasteners approximately **8 inches** o.c. and set back a minimum of **3/8 inch** from edges and ends of boards.

2) For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

### 3.04 WEATHER-RESISTANT SHEATHING BARRIER INSTALLATION

a. General: Cover sheathing with weather-resistant sheathing paper as follows:

1) Cut back barrier **1/2 inch** on each side of the break in supporting members at expansion- or control-joint locations.

2) Apply barrier to cover vertical flashing with a minimum **4-inch** overlap, unless otherwise indicated.

b. Building Paper: Apply horizontally with a **2-inch** overlap and a **6-inch** end lap; fasten to sheathing with galvanized staples or roofing nails.

c. Building Wrap: Comply with manufacturer's written instructions.

1) Seal seams, edges, fasteners, and penetrations with tape.

2) Extend into jambs of openings and seal corners with tape.

### 3.05 SHEATHING JOINT-AND-PENETRATION TREATMENT

A. Apply elastomeric sealant to joints and fasteners. Seal all penetrations and openings.

## Aston Place Apartments

### 3.06 FLEXIBLE FLASHING INSTALLATION

a. Apply flexible flashing where indicated to comply with manufacturers written instructions.

- 1) Prime substrates as recommended by flashing manufacturer.
- 2) Lap seams and junctures with other materials at least **4 inches**, except that at flashing flanges of other construction, laps need not exceed flange width.
- 3) Lap flashing over weather-resistant building paper at bottom and sides of openings.
- 4) Lap weather-resistant building paper over flashing at heads of openings.
- 5) After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

### 3.07 PROTECTION

a. Paper-Surfaced Gypsum Sheathing: When applied to a structure, sheathing must not be left exposed to the elements for more than one month unless all gaps resulting from cuts, corners, joints and machine-end cuts of the sheathing are filled with an elastomeric sealant at the time of erection to protect the sheathing from water intrusion. This treatment will extend exposure time to six months. Protect sheathing by covering exposed exterior surface of sheathing with weather-resistant sheathing barrier securely fastened to framing. Apply covering immediately after sheathing is installed.

SECTION 061753

SHOP-FABRICATED WOOD  
TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Wood roof trusses.
2. Wood floor trusses.
3. Wood truss bracing.
4. Metal truss accessories.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1.

1.3 SUBMITTALS

A. Product Data: For metal-plate connectors, metal truss accessories, and fasteners.

B. Shop Drawings: Show fabrication and installation details for trusses.

1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
2. Indicate sizes, stress grades, and species of lumber.
3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
4. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
5. Show splice details and bearing details.



6. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation, registered in the state of Florida.

#### 1.4 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
  1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Comply with applicable requirements and recommendations of the following publications:
  1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
  2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
  3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."
- D. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

### PART 2 - PRODUCTS

#### 2.1 DIMENSION LUMBER

- A. Lumber: DOC PS 20. Provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Grade and Species: For truss chord and web members, provide dimension lumber of any species, graded visually or mechanically, and capable of supporting required loads without exceeding allowable design values according to AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."
- C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Division 06 Section Rough Carpentry.

## 2.2 METAL PRODUCTS

- A. Connector Plates: Fabricate connector plates to comply with TPI 1 from hot-dip galvanized steel sheet complying with ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.
  1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Alpine Engineered Products, Inc.
    - b. Cherokee Metal Products, Inc.; Masengill Machinery Company. c. CompuTrus, Inc.
    - d. Eagle Metal Products.
    - e. Jager Building Systems, Inc.
    - f. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.
    - g. Robbins Engineering, Inc.
    - h. TEE-LOK Corporation; a subsidiary of Berkshire Hathaway Inc. i. Truswal Systems Corporation.
- B. Metal Truss Accessories: Provide truss accessories made from hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
  1. Basis-of-Design Products: Subject to compliance with requirements, provide products by Simpson Strong Tie Co., or by an approved alternate manufacturer.
  2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those[of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

## 2.3 FABRICATION

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of- plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in truss accessories according to manufacturer's fastening schedules and written instructions.
- F. Securely connect each truss ply required for forming built-up girder trusses.
- G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
  - 1. Install bracing to comply with Division 06 Section Rough Carpentry. H.  
Install wood trusses within installation tolerances in TPI 1.
- I. Do not cut or remove truss members.
- J. Replace wood trusses that are damaged or do not meet requirements. END

OF SECTION 061753

SECTION 06 20 00

FINISH CARPENTRY & MILLWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Standing and running wood trim inside and outside building.
  - 1. Interior miscellaneous ornamental items.
  - 2. Wood base.
  - 3. Casings for windows and doors.
  - 4. Wood door frames.
- B. Specified in Other Sections:
  - 1. Fiber-cement exterior trim / siding
  - 2. Rough Carpentry.
  - 3. Field finishing of trim.

1.2 SUBMITTALS

- A. Submit shop drawings for shop fabricated plastic laminate work showing locations, dimensioned plans, details, and anchors.
- B. Product woodwork manufacturer certificates; certifying products comply with specified requirements.

1.3 QUALITY ASSURANCE

- A. Standards:
  - 1. Woodwork: Architectural Woodwork Standards: Edition 1 of Woodwork Standards as published by the Architectural Woodwork Institute, the Architectural Woodwork Manufacturer Association of Canada, and the Woodwork Institute.
    - a. Lumber: AWI Section 3.
  - 2. Hardware: ANSI/BHMA A156.9 "American National Standard for Cabinet Hardware".
- B. Optimum Moisture Content: Kiln-dry woodwork to an average moisture content within following ranges:
  - 1. Interior woodwork - 6 to 11 percent.

1.4 PRODUCT HANDLING

- A. Deliver woodwork, after painting, wet work, grinding and other work which could damage, soil or deteriorate woodwork. Store in area having conditions equal to installation area.

1.5 PROJECT CONDITIONS

- A. Maintain temperature and humidity where woodwork is installed so moisture content of installed woodwork is within 1.0% of optimum.

- B. Before fabricating woodwork fitted to other construction, obtain and verify dimensions for accurate fit.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE PRODUCTS

- A. Fiber-reinforced cement trim board as noted on drawings: James Harie Hardi-Trim.

### 2.2 MATERIALS

#### A. Interior Trim:

- 1. Opaque Finish:
  - a. Lumber: Poplar.
  - b. Grade: Economy (Finger jointed acceptable)

#### B. Adhesive:

- 1. Laminate Type recommended by AWI to suit application.
- 2. Solvent release, cartridge type, compatible with wall substrate, capable of achieving durable bond.

#### C. Fasteners:

- 1. Screws: Select material, type, size, and finish required for each use. Comply with FS FF-S-111 for applicable requirements.
- 2. Anchors: Select material, type, size, and finish required by each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

### 2.3 FABRICATION

#### A. AWI Standards; Grade - Custom.

- 1. Standing and Running Trim: AWI Section 300.

#### B. Prefabricate woodwork to dimensions, profiles and details. Rout or groove back of flat trim members, kerf backs of other wide flat members and ease edges to the following radius

- 1. Corners and edges of solid wood (lumber) members less than 1" in nominal thickness: 1/16".
- 2. Edges of rails and similar members more than 1" in nominal thickness: 1/8 inch.

#### C. Assemble casings in plant except where limitations of access to place of installation require field assembly. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site provide ample allowance for scribing, trimming, and fitting.

#### D. Ease edges to radius indicated for the following:

- 1. Edges of solid wood (lumber) members less than 1 inch in nominal thickness: 1/16 inch.
- 2. Edges of rails and similar members 1 inch or more in nominal thickness: 1/8 inch.

#### E. All joints to be concealed dowels or spline or half lapped and glued.

- F. Backout or groove backs of flat trim members, kerf backs of other wide flat members, except for members with ends exposed in finished work.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for same grade specified in Part 2 of this section for type of woodwork involved.
- B. Install work true and straight without distortion and to tolerance of 1/8-inch in 8'-0" for plumb and level, 1/16" maximum offset in flush adjoining surfaces 1/8" maximum offsets in revealed adjoining surfaces.
  - 1. Shim using concealed shims.
- C. Field cut to fit unless specified to be shop fabricated or shop cut to exact size.
  - 1. Where woodwork abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.
- E. Distribute defects allowed in the quality grade specified to the best overall advantage when installing job assembled woodwork items.
- F. Standing and Running Trim:
  - 1. Trim and Moldings: Install in single, unjointed lengths for openings and for runs less than 10 feet. For longer runs use only one piece less than 10 feet in any straight run. Stagger joints in adjacent members. At returns and corners cope or miter for accurate fit.
  - 2. Attach securely in place with uniform joints providing for thermal and building movements.
  - 3. Nailing: Blind nail where possible. Use fine finishing nails where exposed. Set exposed nail heads for filling.
  - 4. Anchoring: Secure woodwork to anchors or blocking built-in or directly attached to substrates.

### 3.2 ERECTION TOLERANCES

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

### 3.3 SUBSEQUENT OPERATIONS

- A. Preparation for Finish: Clean woodwork and fill nail holes in preparation for finishes specified under painting sections of these Specifications.
- B. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and

Aston Place Apartments

visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

- C. Clean woodwork on exposed and semi-exposed surfaces.
- D. Protection and maintained conditions necessary to ensure that work will not be damaged or deteriorate until acceptance.

SECTION 07 14 51

SPRAY-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: 2-part urethane-based waterproofing spray applied polymer foundation waterproofing,
  - 1. Protection board.
- B. Specified in Other Sections:
  - 1. Elevator Pit.
  - 2. Excavation and backfill.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's installation instructions for each waterproofing material required. Data to substantiate materials comply with requirements.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A firm which has specialized in installation of types of waterproofing required for project for not less than 3 years and which is acceptable to manufacturer(s) of primary materials.
- B. Pre-Application Conference: Two weeks prior to installation, meet at project site with installers Architect, and waterproofing material manufacturer's representative. Review methods and procedures related to work.

1.4 JOB CONDITIONS

- A. Substrate: Proceed with work of this section only after substrate construction and penetrating work have been completed.
- B. Weather: Proceed with work of this section only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. Basis of Design: Rub-R-Wall sprayed-on membrane system.
- B. Other Acceptable Products:

## Aston Place Apartments

1. Sure-Seal Liquiseal; Carlisle Tire & Rubber Co.
2. Urethane Polymers International BG 7011 - 60 mil.

### 2.2 MATERIALS

- A. Rubber-based liquid membrane material, self-bonding to normal substrates, compounded specifically for application method to be used (by hand or spray) and for slope of substrate indicated.
- B. Mastic for minor patching: Mastic compatible with the membrane.
- C. Reinforcing Sheets:
  1. For nonmoving cracks use non-directional spun polyester material (Spun Mate) supplied in rolls per membrane manufacturer's standards.
  2. Heavy weight rubber reinforcing sheet: Stretch Sheet supplied in uncut rolls and meeting manufacturer's standards.
  3. Standard weight stretch sheet: Manufacturer's rubber reinforcement sheet in uncut rolls.
- D. Protection Board: 1/8" asphalt impregnated hardboard.
  1. Protect-Tite by Niagara Fiberboard, Inc. or equal recommended by waterproofing manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION OF SUBSTRATE

- A. Clean substrate of projections and substances detrimental to work; comply with instructions of prime materials manufacturer.
  1. Surface to be waterproofed must be free of moisture, dampness, frost, loose materials, laitance, oil, curing compound or other foreign substances which may affect the performance of the membrane. Remove curing compounds from surfaces.
- B. Fill voids, seal joints, and apply bond breakers as recommended by prime materials manufacturer, with particular attention at joints.
  1. Rough areas must be filled or ground prior to waterproofing.
  2. Fill honey-combed areas or snap-tie holes with Rubber Mastic or patched with an approved non-shrinking cementitious patching compound acceptable to the waterproofing manufacturer.
- C. Prime substrate as recommended by prime materials manufacturer.
- D. Prevent spillage or overspray of liquid materials outside membrane area.
- E. Inspect surface to be waterproofed and report any conditions which would have an adverse effect on the waterproofing.

### 3.2 REINFORCING

- A. Spray 14" detail coat over cracks exceeding 1/16" and are less than 1/4", and to all locations which require reinforcing. Apply detail coats at a rate of 35-40 square feet per U.S. gallon.

- B. Reinforce cracks by imbedding following reinforcing sheets into detail coat. Center reinforcing sheets on the crack.
  - 1. Non-moving shrinkage cracks less than 1/8" wide: 6" wide reinforcing polyester sheet.
  - 2. Non-moving shrinkage cracks more than 1/8" wide: 6" wide standard weight reinforcing rubber sheet.
  - 3. Moving cracks less than 1/8" wide: 8" wide standard weight rubber sheet reinforcing.
  - 4. Moving cracks greater than 1/8" wide and less than 1/4" wide: 8" wide heavy weight rubber sheet reinforcing.
  
- C. For expansion joints greater than 1/2" wide with design movement of less than 50% provide formed rubber expansion joint.
  - 1. Apply detail coat to each side of expansion joint.
  - 2. Embed ethylfoam foam on each side of joint.
  - 3. Apply rubber reinforcing sheeting over joint imbedded a minimum of 4" on each side of the ethylfoam form.
  
- D. Reinforce construction joints by imbedding standard weight rubber reinforcing sheeting a minimum of 4" each side of joint.

### 3.3 MEMBRANE SPRAYING

- A. Once all reinforcing sheeting has been imbedded, spray membrane coat to cover all areas requiring waterproofing including as detailed and reinforced areas.
- B. Apply membrane at rate of 25-35 square feet per U.S. gallon.

### 3.4 PROTECTION COURSE

- A. Install protection course on cured membrane without delay, so that period of membrane exposure will be minimized.
- B. Comply with waterproofing manufacturer's recommendations for adhesion of protection course to membrane.
- C. Take necessary precautions to prevent damage to the membrane during backfilling and subsequent construction.

SECTION 07 20 10

PERIMETER INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Rigid extruded polystyrene insulation around perimeter of building.
  - 1. Place insulation vertically along all walls that are part of the conditioned envelope.
- B. Specified in Other Sections:
  - 1. Excavation and Backfill.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each component and condition of use. Submit samples of each insulation material to be used in the work. Submit manufacturer's certification indicating the insulation materials, to be used in the work, meet or exceed specifications.

1.3 QUALITY ASSURANCE

- A. Codes: Comply with requirements of governing codes.

1.4 PRODUCT HANDLING

- A. Deliver insulation to job site in manufacturer's standard packaging, with labels intact and legible.
- B. Store off ground at locations protected from weather and damage.

1.5 COORDINATION

- A. Coordinate the work of this section with backfill and vapor barrier with work of other trades in order to ensure the timely installation of insulation work.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. Owens Corning, Formular
- B. Dow Chemical Company Styrofoam
- C. Pactiv Green Guard.

2.2 EXTRUDED POLYSTYRENE INSULATION

- A. Rigid, closed cell extruded polystyrene board insulation, formed from polystyrene base resin by an extrusion process using hydrochlorofluorocarbons as blowing agents to comply with ASTM C

578.

1. Type IV, 1.60 pounds/cu.ft. minimum density.
2. 24" x 96" with butt joints.

### 2.3 MISCELLANEOUS MATERIALS

- A. Use adhesive for bonding insulation of type recommended by insulation manufacturer.

## PART 3 - EXECUTION

### 3.1 VERTICAL PLACEMENT

- A. Install insulation in accordance with the manufacturer's instructions.
- B. Place insulation strip on inside of exterior foundation walls. Set slabs with staggered joints. Cement slabs to wall and seal joints with special adhesive recommended by manufacturer of insulation.
- C. Fit insulation tight around mechanical and electrical service penetrating insulation. Leave no gaps or voids.
- D. Take all necessary measures to avoid injury to insulation in placing of fill.

SECTION 07 21 36

THERMAL BATT INSULATION & VAPOR MEMBRANE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Paper-faced glass fiber insulation for exterior walls.
  - 1. Cover with vapor barrier placed to interior side of the insulation.
- B. Specified in Other Sections:
  - 1. Insulation above garage ceiling.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with requirements of governing Building Code.
- B. Thermal Resistivity: R-values represent temperature difference in degrees F between exposed faces required to cause one BTU to flow through one square foot per hour at mean temperature of 75°F.

1.4 PRODUCT HANDLING

- A. Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Thermafiber, Inc.
- B. Other Acceptable Manufacturer's:
  - 1. Certain-Teed Products Corporation.
  - 2. Owens-Corning Fiberglas Corp.
  - 3. Knauf Fiber Glass.
  - 4. Manville.

2.2 GLASS FIBER BATT INSULATION

- A. Inorganic glass fibers formed with binders into resilient flexible blankets or semi-rigid batts; manufacturer's standard lengths and widths required to coordinate with spaces to be insulated. ASTM C 665 types as follows:
  - 1. Kraft faced Type II, Class C.

- a. ASTM E 96 Vapor Retarder Perm Rating: Perms Maximum 1.00
- b. ASTM E 84 Surface Burning Characteristics:
  - 1) Maximum flame spread: Not Rated
  - 2) Maximum smoke Developed: Not Rated

- B. Form:
  - 1. Between wall framing, provide friction fit form.

- C. Dimensional Stability: Linear shrinkage less than 0.1%

### 2.3 AUXILIARY INSULATING MATERIALS

- A. Polyethylene Vapor Retarder 4-mil film with vapor transmission rating of 0.2 perms.
- B. Adhesives used for bonding to comply with Manufacturers Requirements.

## PART 3 - EXECUTION

### 3.1 INSULATION

- A. Extend insulation full thickness over areas to be insulated. Cut and fit tightly to perimeter and around obstructions and fill all voids. Maintain continuity of insulation from roof deck to grade.

### 3.2 BATT AND BLANKET INSULATION

- A. Fit tightly to perimeter and around obstructions and fill all voids. Provide mechanical fasteners as required to prevent shifting. Stuff loose glass fiber insulation into miscellaneous voids and cavity spaces. Compact to approximately 40 percent of normal maximum volume.
- B. Extend insulation full thickness over entire area to be insulated. Cut and fit tightly around obstructions.
- C. Adhesive Fastening: Apply insulation with adhesives. Follow adhesive manufacturer's recommendations for surface preparation and adhesive pattern.
- D. Between Metal Studs: Friction fit insulation between studs after cover material has been installed on one side of the cavity. When unfaced insulation is used, and in applications without a cover material or where the stud depth is larger than the insulation thickness, use wire or metal straps to hold insulation in place. When faced insulation is used, the attachment flanges may be taped to the face of metal stud prior to applying the interior finish.
  - 1. Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.

### 3.3 VAPOR RETARDERS

- A. Set vapor barrier faced units with vapor barrier to warm side of construction, except as otherwise shown. Do not obstruct ventilation spaces, except for firestopping.
- B. Extend vapor retarders to extremities of areas to be protected. Secure in place. Extend vapor barriers to cover miscellaneous voids in insulated substrates.

C. Repair punctures and tears in vapor retarders before concealment by other work

3.4 SUBSEQUENT OPERATIONS

A. Protect insulation from damage and from becoming wet during and after installation.

SECTION 07 27 15

AIR BARRIER UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Breathable polypropylene membrane behind exterior wall panels, masonry veneers and siding.
  - 1. Flashing paper.
  - 2. Semirigid Jamb Flashing.
- B. Specified in Other Sections:
  - 1. Gypsum Sheathing.
  - 2. Plywood Sheathing.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's written instructions, technical data, and tested physical and performance properties of breathable membrane and standard details showing details of membrane at:
  - 1. Framing or blocking members.
  - 2. Thermal Insulation.
  - 3. Sheathing.
  - 4. Exterior cladding corner conditions.
  - 5. Door or window frames.
  - 6. Sill pans.
  - 7. Through-Wall Metal Flashing.

1.3 QUALITY ASSURANCE

- A. Standards: ICC: International Code Council, ICC Certificate #ESR-1916 (Approved).

1.4 PRODUCT HANDLING

- A. Deliver materials to project site in original containers with seals unbroken, wrapped in a polyethylene sleeve, labeled with manufacturer's name, and product brand name.
- B. Store rolls under cover, on a clean, level surface, either flat or upright.

PART 2 - PRODUCTS

2.1 AIR BARRIER

- A. Basis of Design: VaproShield LLC, WrapShield

## Aston Place Apartments

- B. Other Acceptable Products:
  - 1. "TYVEK" - DuPont Company.
  - 2. "Barricade Building Wrap" - Simplex Products Division.
  - 3. "Rufco-Wrap" - Raven Industries.
- C. High density Polyethylene Fiber: ASTM E 1677; made from polyolefins; permeable to water vapor but not liquid water; maximum flame spread rating of 25 per ASTM E 84. Acceptable Products:
  - 1. DuPont Company "TYVEK".
  - 2. Simplex Products "Barricade Building Wrap"
  - 3. Raven Industries "Rufco-Wrap".
  - 4. Greenguard.

### 2.2 MISCELLANEOUS MATERIALS

- A. Semi-Rigid Jamb Flashing: Extruded polypropylene.
  - 1. "Jamflash" - Lennel Specialties 1-781-344-9794.
- B. Flashing Paper: Air Barrier manufacturer's recommended kraft papers.
- C. Joint Tape: Double or single sided adhesive coated polyethylene or butyl rubber tapes.
- D. Fasteners, Caulks and Sealant: As approved and recommended by Air Barrier membrane manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements and other conditions affecting performance.
- B. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean and dry substrate for breathable membrane application.
- C. Pipes and Conduit: Install manufactured penetration sleeves sized for the penetration and installed as recommended by the manufacturer.

### 3.2 FLASHING

- A. At all internal and external building corners and saddle over top of parapets and walls.
  - 1. Install flashing paper in 18" wide strip over building paper.
  - 2. Weatherlap ends 6" minimum.
  - 3. Staple flashing paper in place.
- B. At window and door openings: Install flashing paper in 9" wide strip, folded in 90-degree angle,
  - 1. At the head of openings, the folded paper shall form an inverted "U" covering the head and portion of the jamb; the building paper laps over the flashing paper.
  - 2. At jamb and sill the folded paper laps over the building paper.
  - 3. Always fold and lap flashing paper to prevent water from migrating behind the building paper.

4. Staple flashing paper in place.

C. Install Jamb flashing at curtainwall, window and door openings.

1. Flashing shall laps under the air barrier.
2. At stud framing install flashing with self tapping screws at 12" centers on both legs of flashing.

### 3.3 AIR BARRIER UNDERLAYMENT

A. Install air barrier on all exterior walls and parapets before installation of windows and doors. Follow manufacturer's printed recommendations for installation.

1. Install horizontally in shingle fashion, weather lapping minimum of 6" for horizontal joints and minimum 12" for vertical joints.
2. Unroll barrier over openings for windows and doors and secure around opening. "X" cut barrier within opening and pull toward interior and secure.
3. Securely staple paper to substrate at each vertical framing member.
4. Stagger vertical joints.

B. After exterior storefront, windows and doors have been installed, pull barrier over windows and doors, secure in place at perimeter of units and remove excess barrier or fold back and secure. Allow sufficient material to cover storefronts, window and door frames.

SECTION 07 46 70

SIDING

GENERAL

5.1 SECTION INCLUDES

- A. Fiber cement panels, trim, James Hardie HZ5 Engineered for Climate Siding.

5.2 REFERENCES

- A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets
- B. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- C. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

5.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.
- D. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

5.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years experience with installation of similar products.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.

5.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

- B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 5.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 5.7 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
  - 1. HardiPanel HZ5 vertical siding for 30 years.
  - 2. HardieSoffit HZ5 panels for 30 years.
- B. Product Warranty: Limited, product warranty.
  - 1. HardieTrim HZ and HZ5 boards for 15 years.

## PRODUCTS

### 6.1 MANUFACTURERS

- A. Acceptable Manufacturer: James Hardie Building Products, Inc., which is located at: 26300 La Alameda Suite 400 ; Mission Viejo, CA 92691; Toll Free Tel: 866-274-3464; Tel: 949-367-4980; Email: [request info \(info@jameshardie.com\)](mailto:info@jameshardie.com); Web: [www.jameshardiecommercial.com](http://www.jameshardiecommercial.com)
- B. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 01 25 10

### 6.2 SIDING

- A. HardiPanel HZ5 vertical siding, HardieSoffit HZ5 panels siding requirement for Materials:
  - 1. Fiber-cement Siding - complies with ASTM C 1186 Type A Grade II.
  - 2. Fiber-cement Siding - complies with ASTM E 136 as a noncombustible material.
  - 3. Fiber-cement Siding - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.
  - 4. CAL-FIRE, Fire Engineering Division Building Materials Listing - Wildland Urban Interface (WUI) Listed Product.
  - 5. National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI, IBC, IRC).
- B. Vertical Siding: HardiePanel HZ5 siding as manufactured by James Hardie Building Products, Inc. Size as required to meet joint layout indicated on the drawings.
  - 1. Type: Smooth Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
  - 2. Type: Smooth Vertical siding panel 4 feet by 9 feet (1219 mm by 2743 mm).
  - 3. Type: Smooth Vertical siding panel 4 feet by 10 feet (1219 mm by 3048 mm).
- C. Trim:
  - 1. HardieTrim HZ5 boards and HardieTrim HZ boards as manufactured by James Hardie Building Products, Inc.

### 6.3 FASTENERS

- A. Wood Framing Fasteners:
  - 1. Wood Framing: 4d common corrosion resistant nails.
  - 2. Wood Framing: 6d common corrosion resistant nails.
  - 3. Wood Framing: 8d box ring common corrosion resistant nails.
  - 4. Wood Framing: 0.089 inch (2.2 mm) shank by 0.221 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
  - 5. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2 inches (51 mm) corrosion resistant siding nails.
  - 6. Wood Framing: 0.093 inch (2.4 mm) shank by 0.222 inch (5.6 mm) head by 2-1/2 inches (64 mm) corrosion resistant siding nails.
  - 7. Wood Framing: 0.091 inch (2.3 mm) shank by 0.221 inch (5.6 mm) head by 1-1/2 inches (38 mm) corrosion resistant siding nails.
  - 8. Wood Framing: 0.091 inch (2.3 mm) shank by 0.225 inch (5.7 mm) head by 1-1/2 inches (38 mm) corrosion resistant siding nails.
  - 9. Wood Framing: 0.121 inch (3 mm) shank by 0.371 inch (9.4 mm) head by 1-1/4 inches (32 mm) corrosion resistant roofing nails.
  - 10. Wood Framing: No. 11 gauge 1-1/4 inches (32 mm) corrosion resistant roofing nails.
  - 11. Wood Framing: No. 11 gauge 1-1/2 inches (38 mm) corrosion resistant roofing nails.
  - 12. Wood Framing: No. 11 gauge 1-3/4 inches (44 mm) corrosion resistant roofing nails.

### 6.4 FINISHES

- A. Factory Primer: Provide factory applied universal primer.
  - 1. Primer: Factory primed by James Hardie.
  - 2. Topcoat: Refer to Section 09 92 00 and Exterior Finish Schedule.

## EXECUTION

### 7.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 4 inch (51 mm by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
  - 1. Install water-resistive barriers and claddings to dry surfaces.
  - 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
  - 3. Protect siding from other trades.

### 7.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install a water-resistive barrier is required in accordance with local building code requirements.
- D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
- E. Install approved weather barrier in accordance with local building code requirements.
- F. Use HardieWrap™ (or equal) Seam Tape and joint and laps.
- G. Install HardieWrap™ (or equal) flashing, and HardieWrap™ Flex Flashing

7.3 INSTALLATION - HARDIEPLANK HZ5 LAP SIDING – Not Used

7.4 INSTALLATION - HARDIEPANEL HZ5 VERTICAL SIDING

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Block framing between studs where HardiePanel siding horizontal joints occur.
- C. Install metal Z flashing and provide a 1/4 inch (6 mm) gap at horizontal panel joints.
- D. Place fasteners no closer than 3/8 inch (9.5 mm) from panel edges and 2 inches (51 mm) from panel corners.
- E. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- F. Maintain clearance between siding and adjacent finished grade.
- G. Specific framing and fastener requirements refer to Tables 2 and 3 in National Evaluation Service Report No. NER-405.

7.5 INSTALLATION - HARDIETRIM HZ5 BOARDS

- A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.
- B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
- C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.
- D. Maintain clearance between trim and adjacent finished grade.
- E. Trim inside corner with a single board trim both side of corner.
- F. Allow 1/8 inch gap between trim and siding.

## Aston Place Apartments

- G. Seal gap with high quality, paint-able caulk.
- H. Shim frieze board as required to align with corner trim..
- I. Fasten through overlapping boards. Do not nail between lap joints.
- J. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten HardieTrim boards to HardieTrim boards.
- K. Shim frieze board as required to align with corner trim.

### 7.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

SECTION 07 53 21

ADHERED EPDM MEMBRANE ROOF

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: EPDM membrane roofing and insulation.
  - 1. Fully adhered membrane
  - 2. Polyiso insulation with tapered insulation where indicated.
  - 3. Premoulded pipe seals (boots) for single pipes penetrating roof.
- B. Specified in Other Sections:
  - 1. Wood nailers.
  - 2. Sheet metal work.
  - 3. Metal Roof Deck.

1.2 DESCRIPTION

- A. All membrane roof work under Sections 06 10 50, and 07 63 00 is to be subcontracted with this Section.
  - 1. Work specified in other Sections to be warranted by membrane manufacturer under the terms of this Section include:
    - a. Membrane Roof Sheet Metal Work. Section 07 63 00.
  - 2. Work specified in Other Sections and to be warranted by Installer under the terms of this Section include:
    - a. Sheet Metal Work Section 07 63 00.
    - b. Block and Nailers Section 06 10 50.
  - 3. Counterflashing at roof curb openings for hatches and mechanical equipment shall be inspected by the Subcontractor for this section and corrected as necessary for warranty.
- B. Insulation to have a minimum thickness required to provide an average "R" value of not less than 21 at all roof plane locations.
  - 1. R-values represent temperature difference in °F between exposed faces required to cause one BTU to flow through one square foot per hour at mean temperature of 75°F.
  - 2. Provide at least two separate layers of insulation with bottom layer minimum thickness permitted by Membrane Manufacturer, and recommended by the Insulation Manufacturer, to span metal deck flutes.
  - 3. Provide tapered board for sloping for drainage. Fabricate with a taper of 1/4" per foot.

1.3 SUBMITTALS

- A. Submit roof membrane manufacturer's written approval for components that are not produced by him.
- B. Submit Shop Drawings for review prior to ordering or delivering materials showing Manufacturer's standard perimeter and penetration details and Installer prepared special details.

- C. Samples: Submit 12" square of finished roofing sheets, including "T-shaped" side/end-lap seam.
- D. Field Technical Service: Provide manufacturer's field service report on all inspection and tests required by manufacturer to assure issuance of specified warranty.

#### 1.4 QUALITY ASSURANCE

- A. U.L. Listing Standard: Provide labeled materials which have been tested and listed by U.L. in the "Building Materials Directory" for application indicated with assembly ratings and materials for roofs and slopes shown.
- B. Installer: Installer shall be an "Approved Manufacturer's Applicator", skilled and experienced in the type of roofing specified equipped to perform workmanship in accordance with recognized standards, and certified by roofing systems manufacturer.
- C. Field Technical Service: Provide manufacturer's field service for application and stability of roof membrane materials evaluation.
- D. Pre-Roof Conference: Prior to starting any roofing work a job meeting shall be held to include Contractor for General Construction, Roofer and his job foreman, roofing system manufacturer's representative and the Architect to review all roofing materials and procedures. Contractor for General Construction is to record discussion and agreements and provide a copy to each participant.

#### 1.5 WARRANTY

- A. Installer's Roofing Guarantee:
  - 1. Submit "Roofing Guarantee" covering the roofing and associated work indicated therein, signed by Installer and countersigned by the Contractor.
  - 2. Provide 2-year roofing guarantee period, starting on date of Substantial Completion of Project.
- B. Manufacturer's Roofing Guarantee:
  - 1. Submit Manufacturer's standard guarantees for Membrane Roofing.
  - 2. Provide 20 year Roofing System Warranty beginning on the date of Substantial Completion.

#### 1.6 WEATHER CONDITION LIMITATIONS

- A. Proceed with roofing and associated work only when weather conditions will permit unrestricted use of materials and quality control of the work being installed, complying with the requirements and with the recommendations of roofing materials manufacturer.
- B. Do not commence or proceed with insulation or roofing application during inclement weather or at temperatures below 40°F, contact manufacturer.
  - 1. Proceed only when Installer is willing to guarantee the work as required and without additional reservations and restrictions.
  - 2. Record decisions or agreements to proceed with the work under unfavorable weather conditions. State reasons for proceeding and names of persons involved in decisions, along with changes (if any) in other requirements or terms of the Contract.

1.7 COORDINATION

- A. Coordinate installation of roofing materials and associated work to comply with recommendations of manufacturers involved in the work.
- B. Protect other work from spillage of roofing materials. Prevent materials from entering drains and conductors. Replace or restore other work which is soiled or otherwise damaged by the roofing work.

1.8 PROJECT CONDITIONS

- A. Protect sheet goods, liquid materials and accessories against damage and extreme temperatures.
- B. Do not permit storage on roof. Store Liquid materials such as adhesive, thinners and cleaners in areas away from sparks, open flames and excessive heat. Obtain specific approval of Owner prior to on-site storage of flammable materials.
- C. Do not permit construction traffic not required for roofing until roofing is complete.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE SYSTEM

- A. Basis of Design: Carlisle Tire & Rubber Co.,
  - 1. Adhered System: Design "FA" Adhered Membrane System consisting of:
    - a. Membrane: Minimum 0.060" thick non-reinforced black EPDM.
    - 2. Flashings: .060" Sure-Seal Elastoform.
- B. Other Acceptable Products:
  - 1. Firestone "Rubberguard"            Johns Manville "UltraGard"

2.2 ROOF INSULATION

- A. Provide only materials manufactured or recommended by roofing Membrane Manufacturer in accordance with his Specified Standards.
- B. Polyisocyanurate Board Roof Insulation: Rigid, cellular thermal insulation with polyisocyanurate closed-cell foam core complying with FS HH-I-1972 aged R-values as designated at mean temperatures indicated, after conditioning per RIC/TIMA Bulletin #281-1. Provide facing laminated to both sides as follows;
  - 1. Adhered membrane insulation - glass fiber mat
  - 2. Mechanically membrane manufacturer's standard facing laminated to both sides;
  - 3. Surface Burning Characteristics: Maximum flame spread of 25, maximum smoke developed 165.
- C. Acceptable Products:
  - 1. Thermax by Celotex Corporation.
  - 2. Polyisocyanurate I by Carlisle.
  - 3. "ISO 95+" by Firestone Building Products.

### 2.3 MISCELLANEOUS MATERIALS

- A. Provide slip sheets (if required by membrane manufacturer), bonding adhesive, splice cement, lap sealant, water cut-off mastic, Night Seal, pourable sealer, rubber nailing strips (RNS) and fasteners and similar items as required by Membrane manufacturer.
- B. Fasteners: Corrosion resistant HP Fastener or toggle bolts as required to provide pull out capacities for attachment to wood roof deck.
- C. Termination bars: Provide as recommended by membrane manufacturer for location, including fasteners.
- D. Expansion Joint Materials:
  - 1. Fillers: Open or closed-cell joint fillers acceptable to roofing manufacturer, Provide fillers in shapes and sized for 25 to 35 percent compression when installed.
  - 2. Supports: Sure Seal foamed EPDM Expansion Joint Support.
- E. Pipe Seal: EPDM Rubber with flexible aluminum ring for fastening
  - 1. Provide clamps, boots, screws and accessories compatible with roof deck.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Examine surface condition of roofing substrates and ascertain the conditions under which the work will be performed. Notify Architect in writing of unsatisfactory conditions.
- B. Before commencing work, submit written statement signed by Contractor and the Installer stating that roofing substrates have been examined, Architect's drawings and specifications for roofing, flashing and roof insulation have been reviewed with Roofing Membrane manufacturer and that he and they agree that the selected materials are proper, physically and chemically compatible and adequate for the application and exposure shown, and that conditions and details are not in conflict with the roofing manufacturer's roofing and flashing bonds or guarantees. Distribute to Membrane manufacturer copy of statements.
  - 1. Starting of work constitutes acceptance.
- C. Remove sharp protrusions and sweep substrates clean of debris.
- D. When bonding to surfaces, remove contaminants such as, but not limited to, coal tar, oil, grease, paint, scale, cement latencies, curing compounds and similar materials. Clean to bare metal.

### 3.2 INSULATION

- A. Install insulation or membrane underlayment over the wood fiber board substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch.
  - 1. Stagger joints both horizontally and vertically are provided.
- B. Cut and fit around penetrations without voids.
- C. Mechanically fasten as Membrane Manufacturer requires for specified Factory Mutual Class.

1. Minimum: Secure insulation to substrate with fasteners and plates at the minimum rate of 1 per every 4 square feet.

- D. Cover installed insulation with membrane on the same day and with all edges and penetrations temporarily sealed watertight.

### 3.3 MEMBRANE INSTALLATION

- A. Install counter-flashing either by snap-in seal arrangement, or by wedging in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
- B. Comply with membrane manufacturers Standard Specifications for the particular conditions of installation. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding.
  1. Provide adhesive tapes, flashing cement, and sealants at locations as recommended by Membrane Manufacturer.
- C. Extend membranes up parapets and provide counterflashing.
- D. All surfaces to receive the system to be completely dry and free of dew or frost.
  1. Prior to and during application, remove all dirt and dust from surfaces by vacuuming, sweeping, blowing with compressed air.
- E. Initial Weather Resistance:
  1. Roofing and associated work is to be durable in normal weather exposure and not leak water during heavy rain storms.
  2. Repair or replace roofing and associated work as required to eliminate leaks or other inability of roofing to initially withstand normal weather exposure.

### 3.4 ADHERED MEMBRANE

- A. Install membrane by unrolling over prepared substrate, lapping adjoining sheets as recommended by manufacturer. Apply adhesive to surfaces to be bonded and roll membrane into place when adhesive has properly cured. Treat seams with special cement and apply sealant to exposed sheet edges, tapering application as recommended by manufacturer.
- B. Install mechanical fasteners, premoulded pipe seals, flashings and counterflashings, and accessories at location and as recommended by manufacturer.

### 3.5 PROTECTION OF ROOFING

- A. Upon completion of roofing initiate procedures for surveillance and protection of roofing during remainder of construction period. At time when remaining construction work will in no way affect or endanger the roofing make a final inspection of roofing and prepare written report to Contractor with a copy to Architect, General Contractor, and Architect, of deterioration or damage found in the work.
- B. Repair or replace, as required, deteriorated or defective work found at the time of final inspection.

SECTION 07 63 00

ROOF SHEET METAL WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Counter flashing.
  - 2. Copings.
  - 3. Reglets.
  - 4. Sheet metal counter-flashing at roof penetrations and terminations.
  - 5. Sheet metal wrappings.
  
- B. Specified in Other Sections:
  - 1. EPDM roof membrane.
  - 2. Field finish painting of primed steel.
  - 3. Gutters and downspouts.

1.2 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for downspouts and drop tubes showing layout, joining, profiles, and anchorages.
  
- B. Product Data: Submit manufacturer's product data, installation instructions, and general recommendations, as applicable to materials and finish for total system of sheet metal roofing.
  
- C. Submit two samples, 12" square, of each exposed finish material.

1.3 QUALITY ASSURANCE

- A. Sheet Metal Work of this Section to conform to Section 075321 and roofing materials manufacturer recommendations. Use roofers experienced with type of roof being flashed.
  
- B. Standards: Sheet Metal and Air Conditioning Contractors National Association, Inc. "Architectural Sheet Metal Manual" and ANSI SPR ES-1.
  
- C. Fabricate and install flashings at roof edges to comply with recommendations of FM Loss Prevention Data Sheet I-49 for the following wind zone:
  - 1. Wind Zone 1: Wind pressure of 21 to 30 psf.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Exposed Sheet Metal Flashing and Trim:
  - 1. Aluminum Sheet: ASTM B 209, alloy 3003-H14, and minimum thickness 0.040 inch thick.
  - 2. Prefinished aluminum flashing, 24 gauge.
  - 3. Extruded Aluminum: ASTM B 221, 6063-T52, 0.080 inches for primary legs of extrusion.

- B. Unexposed Sheet Metal Flashing: Any of the following:
  - 1. Copper: 16 oz./sq. ft. cold-rolled copper, ASTM B 370.
  - 2. Zinc-Coated Steel: Commercial Quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, mill phosphatized for painting; provide minimum 0.0359" thick (20 gauge) material.
- C. Comply with minimum gauge requirements of SMACNA Manual, except do not provide thicknesses less than specified in above or thickness shown on drawings.
- D. Pipe flashing: Provide FlashCor SP-Series plumbing flashing with counter flashing (FlashCap™ System) for each round vent penetration. Include stainless steel hose clamp and appropriate caulking sealant for each non-vent penetration.
- E. Miscellaneous Materials:
  - 1. Solder: 50-50 tin/lead solder ASTM B 321, with rosin flux.
  - 2. Fasteners: Same metal as sheet metal or other non-corrosive metal.
  - 3. Bituminous Coating: SSPC - Paint 12, solvent type bituminous mastic.
  - 4. Mastic Sealant: Non-hardening, non-skinning, non-drying, non-migrating polyisobutylene.
  - 5. Elastomeric Sealant: Generic type recommended by manufacturer of metal being sealed; comply with FS TT-S-0027 or TT-S-001543.
  - 6. Felts: ASTM D 226, Type II (#30) non-perforated asphalt saturated organic felt.
  - 7. Paper Slip Sheet: 5 lb. rosin-sized building paper.
  - 8. Underlayment: 6 mil carbonated polyethylene film; FS L-P-512.

## 2.2 FABRICATIONS

- A. Shop fabricate work to comply with details shown, and with applicable SMACNA requirements. Fabricate for waterproof performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.
  - 1. Non-moving Seams: Use flat-lock seams. Tin edges to be seamed, form seams, and solder.
  - 2. Expansion Joints: Form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).
  - 3. Non-expansion joints: Form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.
  - 4. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating.
- B. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems.
- C. Sealant Joints: Where moveable type joints are required for proper performance of work, form metal for proper installation of elastomeric sealant, in compliance with industry standards.

## 2.3 FABRICATION DETAILS

- A. Shop fabricate work to comply with the following SMACNA details. Fabricate for waterproof performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.
  - 1. Copings: SMACNA Figure 3-4 , style profile indicated.

2. Gravel Stop Fascia: SMACNA Figure 2-5B.

#### 2.4 EXPOSED SHEET METAL FINISHES

- A. Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations. For components which are assembled or welded in factory, apply finish after fabrication is completed.
- B. Fluoropolymer Coating: 2-coat thermosetting finish containing at least 70 percent Hylar 5000 or Kynar 500 resin in top coat.
  1. Furnish field touch-up materials in same color.
- C. Color: Alside Terratone Bronze or matching.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Allow for expansion. Isolate dissimilar materials with asphalt coating. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof. Make connections to roof drains watertight.
- B. Where sheet metal is installed directly on cementitious or wood substrates, install paper slip sheet and a course of polyethylene underlayment. Bed flanges of work in thick coat of bituminous roofing cement where required for waterproof performance.
- C. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.
  1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 16-inch centers.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with elastomeric sealant.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install plumbing flashing and counterflashing in accordance with flashing manufacturer's recommendations.
  1. Heat weld single-ply flashing to roof in accordance with roofing material manufacturer's instructions.
  2. Counterflashing: Install single-ply counterflashing in accordance with single-ply counterflashing manufacturer's instructions.
    - a. for Vent Pipe: Place counterflashing on top of flashing to fit snugly within pipe and over flashing and spot heat weld into place.
    - b. for Non-Vent Pipe: Install single-ply bonnet or collar when penetration is continuous.
  3. Form single-ply above flashing and hold in place with stainless-steel draw band and

tighten.

4. Flange-out single-ply at top of counterflashing and apply sealant
- F. Exposed Sheetmetal: Install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves and avoidable tool marks, considering the temper and reflectivity of the metal. Provide uniform, neat seams with minimum exposure of solder, welds and sealant. Except as otherwise shown, fold back the sheet metal to form a hem on the concealed side of exposed edges.
1. Conceal fasteners and expansion provisions in exposed work and locate so as to minimize leakage. Cover and seal work as required for a watertight installation.

### 3.2 SUBSEQUENT OPERATIONS

- A. Touch up abraded areas: Zinc coatings 2 mil coating of paint, with a high concentration of zinc dust, complying with Mil-P-21035, specifically intended for repair of zinc coatings on steel.
1. Restore damaged components and finishes. Clean and protect work from damage.

SECTION 07 63 21

GUTTERS & DOWNSPOUTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Aluminum sheet metal gutters, downspouts, and related trim.
- B. Specified in Other Sections:
  - 1. Downspout boots.
  - 2. Counterflashing for Mechanical Equipment.
  - 3. Joint Sealers.
  - 4. Thru masonry flashing.
  - 5. Formed wall flashing.

1.2 DESCRIPTIONS

- A. SMACNA Fabrication Details: Where not otherwise indicated comply with the following details.
  - 1. Downspout: SMACNA Figure 1-32 B Rectangular profile.
    - a. Size: As indicated in the drawings.
    - b. Aluminum minimum thickness 0.025".
  - 2. Exposed Gutters: Figure 1-2, Style F Beveled profile
    - a. Size: As indicated on drawings.
    - b. Comply with SMACNA minimum gauge for size.

1.3 SUBMITTALS

- A. Shop Drawings: Show layouts of sheet metal work including plans and elevations. Identify factory- vs. field-assembled work. Include the following:
  - 1. Details for fastening, joining, supporting, and anchoring manufactured roof specialties including fasteners, clips, cleats, and attachments to adjoining work.
  - 2. Details for expansion and contraction.
- B. Samples for Initial Selection:
  - 1. Finish Samples: For each type of manufactured roof specialty indicated with factory-applied color finishes.
  - 2. Fabrication Samples: Submit 12" lengths of full-size For copings, fascia, and reglets including fasteners, cover joints, accessories, and attachments.

1.4 QUALITY ASSURANCE

- A. Standards:
  - 1. Aluminum Association, Design System for Aluminum Finishes (AA).
  - 2. American Architectural Manufacturers Association (AAMA), standards as referenced herein.
  - 3. Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACNA) Architectural Sheet Metal Manual.
  - 4. Factory Mutual Engineering & Research (FM), Loss Prevention Data 1-49, Perimeter

Flashing.

5. Single Ply Roofing Institute (SPRI), Wind Design Guide for Edge Systems used With Low Slope Roofing Systems. Edition.
6. FMG Listing: Identify materials with FMG markings.

- B. Installer Qualifications: Have installation performed by qualified trained personnel experienced in the installation of metal roofing and employed by the metal roofing contractor.

#### 1.5 JOB CONDITIONS

- A. Coordinate work of this Section with interfacing and adjoining work for proper sequencing.

#### 1.6 PRODUCT HANDLING

- A. Store materials off ground under cover. Protect from damage and deterioration.
- B. Handle materials to prevent damage to surfaces, edges and ends of sheet metal items. Reject and remove damaged material from site .

#### 1.7 COORDINATION

- A. Coordinate installation of manufactured roof specialties with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

#### 1.8 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace manufactured roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
  1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 20 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 SHEET METAL

- A. Aluminum Sheet: ASTM B 209, alloy and temper recommended by manufacturer for use and finish indicated, finished as follows:
  1. Minimum Gauge: Comply with minimum gauge requirements of SMACNA.
  2. Surface: Smooth, flat finish.
  3. Alloy and temper:
    - a. Alloy 3003 or 3004
    - b. Temper: H14 smooth sheets,
  4. Unfinished aluminum flashing to be Alclad.

## 2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Fasteners: Same metal as flashing/sheet metal or, other non-corrosive metal as recommended by sheet manufacturer.
- B. Building Paper:
  - 1. Slip Sheet/Building Paper: Federal Spec: UU-B-790A rosin-surfaced building paper, weighing not less than 5 lbs per 100 sq. ft..
  - 2. Asphalt saturated felt, non-perforated. ASTM D 226, Type 1.
- C. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Metal Accessories: Provide sheet metal furring, clips, cleats, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gauge required for performance.

## 2.3 FABRICATION

- A. Shop fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- B. Fabricate metal for the above specified Provisions for Thermal Movement to provide for expansion and contraction of the component materials without buckling, hole elongation, fastener failure or excess stress loading situations developing at any time during the temperature cycle.
  - 1. Provide clips that resist rotation and avoid shear stress as a result of thermal movements.
- C. Custom fabricate all related flashings by obtaining field dimensions for accurate fit. Keep field cutting to a minimum.
  - 1. Layout so cross seams, in gutters in direction of flow with higher pans overlapping the lower pans.
  - 2. Eaves and transverse seams to be folded and cleated in the shop.
- D. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
  - 1. Lap and pop-riveted seams are acceptable in concealed flat-lock seams.
- E. Sealant Joints: Where moveable type joints are required, form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.

- F. Separate metal from noncompatible metal or corrosive substrates coat surfaces at contact points, with bituminous coating or other permanent separation as recommended by manufacturer.
- G. Provide expansion joints at high spots between downspouts.

## 2.4 FABRICATION DETAILS

- A. Gutters and Downspouts: Fabricate gutters and outlet tubes with watertight soldered seams. Provide expansion joints in gutters at midpoints between downspouts. Allow for expansion at gutter ends where gutters abut other construction.
- B. Provide the following special fabrications:
  - 1. Downspout
    - a. Elbows.
    - b. Straps: Minimum two per downspout.
    - c. Strainers.
  - 2. Exposed Gutters:
    - a. Gutter Caps and Outlet Tubes: Fabricators standard to fit gutters and downspouts.
    - b. Gutter and Conductor Head Guards: 20-gage bronze, or non-magnetic stainless steel mesh, or fabricated units, with selvaged edges and non-corrosive fasteners. Select materials for compatibility with gutters and downspouts.

## 2.5 ALUMINUM FINISHES

- A. Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations. For components which are assembled or welded in factory, apply finish after fabrication is completed
- B. Aluminum Finishes:
  - 1. Prefinished Aluminum:
    - a. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      - 1) Fluoropolymer 2-Coat System: Manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
      - 2) Color to match Alside Terratone "Bronze".
- C. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with manufacturer's installation instructions and recommendation, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof.
- B. Provide for thermal expansion of all exposed sheet metal work in lengths not exceeding 10'-0". Seal all laps and joints using elastomeric sealant. Unless specifically shown exposed joint covers are not acceptable.
  - 1. Allowance shall be set for the temperature occurring at time of installation.
  - 2. Clips to resist rotation and to avoid shear stress when material expands and contracts.
- C. Install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves and avoidable tool marks, considering the temper and reflectivity of the metal. Provide uniform, neat seams with minimum exposure of solder, welds and sealant. Except as otherwise shown, fold back the sheet metal to form a hem on the concealed side of exposed edges.
- D. Conceal fasteners and expansion provisions wherever possible in exposed work and locate so as to minimize leakage. Cover and seal work as required for a watertight installation.
  - 1. Install clips to hold sheet into position. Use two fasteners per clip to prevent rotation.
- E. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- F. Remove temporary protective coverings and strippable films as manufactured roof specialties are installed. Remove unused fasteners, metal filings, and pieces of flashing. Maintain in a clean condition during construction.

### 3.2 GUTTERS

- A. Properly slope gutters to assure adequate drainage in the direction of downspouts. Securely anchor gutters to roof eaves at 2'-0" o.c. intervals.

### 3.3 DOWNSPOUTS

- A. Set downspouts plumb with fabricated offsets where required.
  - 1. Telescope downspouts and fittings at all locations and in the direction of water flow.
    - a. Securely anchor downspouts to building with brackets at intervals not to exceed 4'-6" o.c.
    - b. Run downspouts into Cast Iron or PVC boots.
  - 2. Install "beehive"-type strainer-guard at conductor heads, removable for cleaning downspouts.

### 3.4 SUBSEQUENT OPERATIONS

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
  - 1. Clean and neutralize all flux materials.
  - 2. Clean off all excess solder and sealants.
  - 3. Wipe off all hand prints, smudges and other superficial stains that were placed on sheet metal work during fabrication and installation.
- B. Replace manufactured roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- C. Do not permit unnecessary walking on roofing members. Require all personnel to wear rubber-soled shoes when installing or walking on roof.
- D. Touch up abraded finishes: Touch up in accordance with recommendations of coating manufacturer.

SECTION 07 84 00

FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fire penetration sealants for penetrations of separation walls and floors.
- B. Specified in Other Sections:
  - 1. Joint sealants.

1.2 PERFORMANCE REQUIREMENTS

- A. Firestop all openings and penetrations through fire-rated construction, including those around vents, pipes, ducts, conduit, and the like.
- B. Firestops shall conform to requirements of XHEZ, "Through-Penetration Firestop Systems," in the UL Building Materials Directory.
  - 1. The 'F' rating for firestops shall be 1 hour minimum, but not less than the fire rating of the assembly in which the firestop is installed.
- C. Firestops shall remain permanently in place during normal building use, exposure to fire conditions, and exposure to water from fire hoses.

1.3 SUBMITTALS

- A. Product Data: Proprietary products.
  - 1. Include list of UL Through-Penetration Firestop Systems for Project applications with proprietary products selected for each proposed system.

1.4 QUALITY ASSURANCE

- A. UL Listing: Notwithstanding other requirements, Provide products that have been tested and listed by Underwriters Laboratories for required fire resistance ratings and that conform to indicated UL designs.

1.5 PRODUCT HANDLING

- A. Deliver and store products in unopened original packaging with intact labels.

1.6 PROJECT CONDITIONS

- A. Do not apply sealants when temperature of substrate and surrounding air is below 40°F.

1.7 SEQUENCING AND SCHEDULING

- A. Arrange for installation of firestopping before openings in fire-rated construction are concealed or

## Aston Place Apartments

- made inaccessible by other construction.
- B. Install firestopping before installation of spray-applied fireproofing.
- C. Do not conceal firestopping until inspected and approved by governing authorities.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE PRODUCTS

- A. Sealants:
  - 1. Dow Corning Corporation. Fire Stop Sealant 2000, a single-component silicone elastomer.
  - 2. General Electric Company.
  - 3. 3M.
- B. Safing Insulation:
  - 1. United States Gypsum Co. "Thermafiber" Safing Insulation.
  - 2. United States Mineral "Cafco" Safing Insulation.
- C. Rigid Board Insulation: Pabco Division of Fiberboard Corporation.
- D. Intumescent Wrap Strip: Dow Corning Fire Stop Intumescent Wrap Strip 2002.
- E. Putty: Carborundum Company, Fibers Division; Fiberfrax(R) Fyre Putty(R).

#### 2.2 MATERIALS

- A. Semi-Refractory Fiberboard Safing Insulation: Semi-rigid boards designed for use as fire stop produced by combining semi-refractory mineral fiber manufactured from slab with thermosetting resin binders to comply with ASTM C 612, Class 1 and 2; density of 4.0 lbs. per cu. ft.; passing ASTM E 136 for combustion characteristics; r-value of 4.0 at 75° F.
  - 1. Maximum flame spread and smoke developed: 15 and 10, respectively.
- B. Putty: One component ceramic base putty fill, void or cavity material:
  - 1. UL classified for through-penetration firestop systems numbers 124, 125, 150, 151, 275.
  - 2. Flame Spread/Smoke Developed: 0/0 in accordance with ASTM E 84.

#### 2.3 ACCESSORIES

- A. Primers: As recommended by manufacturer of firestopping materials for Project applications.
- B. Installation Accessories: Clips, collars, fasteners, and other devices as recommended by manufacturer of firestopping materials for Project applications.
- C. Damming Materials: As recommended by manufacturer of firestopping materials.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that all penetrating items in a given opening are completed and that temporary lines have

been removed before firestopping that opening.

### 3.2 PREPARATION

- A. Clean substrates of dirt, dust, oil, grease, moisture, incompatible coatings, and other substances that impair bond or performance of firestopping materials.
- B. Remove debris from openings and voids to receive firestopping.
- C. Install damming where needed to contain firestopping materials.
- D. Protect finishes and other construction from spills, misapplication, and migrations of firestopping materials.
- E. Prime surfaces where recommended by manufacturer of firestopping materials.

### 3.3 INSTALLATION

- A. At penetrations through drywall and plaster partitions, provide minimum 30 gage galvanized steel sleeve for full depth of wall.
- B. Safing Insulation: Install safing insulation without gaps or voids. Firmly pack safing insulation compressed to approximately 40 percent of its uncompressed thickness. Provide clips, wires, or other mechanical devices where recommended by manufacturer to maintain safing insulation permanently in place against displacement.
- C. Firestopping Sealant: Deposit gunnable sealant in continuous ribbons of uniform depth without gaps or air pockets. Tool surface of sealant to ensure full adhesion and to form smooth surfaces that will not trap moisture or dirt.
- D. Intumescent Foam: Mix and inject foam into cavities. Apply foam in layers as needed to fill cavities to required depth. Cure each layer per manufacturer's recommendations before applying subsequent layer. Allow entire application to cure. Inspect cured foam and apply additional foam or firestopping sealant to minor voids, gaps, and inspection cuts as needed to ensure full coverage.
- E. Intumescent Putty: Install putty without gaps or air pockets to form seals of uniform depth. Trowel surface of putty to ensure full adhesion and to form smooth surfaces that will not trap moisture or dirt.
- F. Intumescent Wrap: Provide sufficient number of layers for required hourly rating. Where annular void in wall opening is too small for required number of layers and at all drywall locations, install wrapping on one side of wall with 30 gage galvanized sheet steel restraining collar anchored to the wall and stainless steel draw bands. In such cases, seal opposite side of opening with firestopping sealant over safing insulation backup.

### 3.4 CLEANING

- A. Remove spills and misapplication as they occur. Remove masking and combustible damming materials.

SECTION 07 87 10

DRAFTSTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Smoke Containment barriers to restrict the movement of air within open spaces of concealed areas above ceilings. Acceptable materials are:
  - 1. Gypsum board wall sheathing.
  - 2. OSB/Plywood sheathing.
- B. Specified in Other Sections:
  - 1. Wood truss for floor and roof supports.
  - 2. Firestopping.
  - 3. Blocking in walls to form fireblocks.

1.2 DESCRIPTIONS

- A. Provide draftstopping in locations indicated and elsewhere as required

1.3 QUALITY ASSURANCE

- A. Standards:
  - 1. Plywood Products: PS-1 (ANSI A199.1) and American Plywood Association's Performance Standards.
  - 3. Treated Plywood and Lumber: American Wood Preservers' Association.

1.4 PRODUCT HANDLING

- A. Deliver products to project site in original unopened containers bearing the name of the manufacturer, product name, type, and testing agency's identification mark.
- B. Minimize storage time of products at site. Store products per manufacturer's instructions. Protect from damage and direct exposure to severe weather. Store on leveled supports off ground.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Gypsum Wallboard: Gypsum core glass or paper faced board with additives to enhance fire resistance of the core and complying with ASTM C 1396, Type X.
  - 1. Minimum Thickness - 1/2".
- B. Construction Panels (OSB/Plywood Sheathing): PS 1 (ANSI 199.1) and applicable Engineered Wood Products Association (APA) Performance Standards.
  - 1. plywood Type: APA C-D Plugged Exposure 1, square edge.
  - 2. Minimum Thickness - 3/8".

## 2.2 ACCESSORIES

- A. Fasteners: Complying with Nfopa National Design Specifications for screws and anchoring devices.
  - 1. Gypsum board screws: 1" Type S-12, bugle-head cadmium plated steel or stainless steel.
  - 2. APA panel and plywood fasteners: Common wire nails, staples.
- B. Sealant: ASTM C 920 single or multi-component polyurethane or polysulfide.

## PART 3 - EXECUTION

### 3.1 SHEATHING INSTALLATION

- A. Install panels horizontally with edges tightly butted. Attach sheathing to truss chords not less than 6 inches o.c. typically.
  - 1. Provide solid wood blocking wherever end joints do not bear against framing. and fasten to blocking not more than 8" o.c.
- B. Cut boards at penetrations, edges and other obstructions. Fit tight against abutting work, Seal all junctions with other work with liquid applied sealants.
  - 1. Comply with preservative manufacturer's requirements for cutting, handling, fastening and working treated materials. Treat edges of field cut material.

### 3.2 SUBSEQUENT OPERATIONS

- A. Penetrations: After completion of mechanical and electrical runs and prior to placing the finished ceiling, inspect integrity of the draftstopping. Seal cracks and the annular space around penetrations with Sealant.

SECTION 07 92 00

JOINT SEALERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sealants at intersection of construction components within and exterior to the building.
  - a. Seal all exterior joints weathertight.
  - b. Seal interior joints subject to movement.
  - c. Elastomeric sealants for joints in slabs on grade and elevated concrete slabs.
2. Paintable caulking.
3. Sanitary sealant.
4. Acoustical sealant.

B. Specified in Other Sections:

1. Glazing gaskets.
2. Sealants installed at the time of erection.
3. Firestopping Sealants.
4. Joint sealers for mechanical and electrical work.

1.2 DESCRIPTIONS

- A. Exterior joint sealers shall provide continuous, weatherproof seals that prevent infiltration of air and water through the joints in which they are installed.
- B. Interior joint sealers shall provide continuous seals that prevent air and smoke infiltration through joints in which they are installed, except that sanitary sealants shall also prevent water infiltration.
- C. Joint sealers shall be fully compatible with all surfaces (including other sealers) they contact. Compatibility includes:
  1. No adverse affect on cohesion and other physical properties.
  2. No adverse affect on weathering abilities.
  3. No staining or change of color.
  4. Secure, permanent adhesion between sealer and other material.
- D. Appearance: Exposed surfaces of cured sealants shall have smooth surfaces free of gaps, voids, bubbles, lumps, crevices, runs, drips, striations, and other irregularities.

1.3 SUBMITTALS

- A. Product Data: Each required type of sealant.
- B. Samples: Cured samples of actual materials in full range of sealant colors available.
- C. Reports on sealant adhesion testing.

#### 1.4 QUALITY ASSURANCE

- A. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers.
- B. Sealants shall be applied by specialists in the application of sealants; minimum 5 years experience required. Applicator is subject to the Architect's approval.
- C. Sealant Adhesion Testing: Obtain samples of aluminum framing with required finishes. Provide testing by manufacturers of sealants that contact exposed aluminum surfaces before starting installation to determine primer requirements and application methods for proper adhesion. Final selection of sealant is contingent upon satisfactory testing.
- D. Mock-Ups:
  - 1. Temporary: Apply sealants to temporary masonry mockups.
  - 2. Permanent: Apply sealants to areas of the building designated as mockups, including sample coating and paint applications.

#### 1.5 PRODUCT HANDLING

- A. Prevent contamination and loss of performance or application characteristics.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with execution under unfavorable weather conditions.
  - 1. Minimum Ambient and Substrate Temperature: 40°F for elastomeric, 60°F for acrylic materials.
  - 2. Maximum Ambient and Substrate Temperature: Do not exceed manufacturer's recommended limit or 90°F, whichever is lower.
- B. Do not apply sealants to joint surfaces that are wet, damp, or frozen.
- C. Joint Width Conditions: Do not proceed with execution when joint widths are less than recommended by manufacturer for application indicated.

#### 1.7 SEQUENCING AND SCHEDULING

- A. Apply interior caulking before finish paint coats.
- B. Where sanitary sealants contact painted surfaces, apply sealant after finish painting.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Provide products in colors selected by Architect from full range of colors available.
- B. Horizontal Concrete Joints: Self-Leveling Sealant ASTM C 920, Type M, Grade P, Class 25, Use T, multi-part pourable urethane-based sealant with Shore A hardness of at least 30 per ASTM

D 2240 and recommended for traffic-bearing joints.

1. Bostik Constr. Products Div. Chem-Calk 550.
2. Mameco International, Inc. Vulkem 245.
3. Pecora Corp. NR-200 Urexpan.
4. Sonneborn Building Products Sonolastic Paving Joint Sealant.

C. Exterior Vertical Joints, except at glass: ASTM C 920, Type S, Grade NS, Class 25 single-part, low to medium modulus, neutral cure silicone sealant. Acceptable Products:

1. Dow Corning Corp. 795 Silicone Sealant.
2. Bostik Constr. Products Div. Chemcalk 1000.
3. Pecora Corp. 864 Silicone Sealant.

D. Exterior Glass and Glazing Sealants: Silicone Rubber Sealant, complying with FS TT-S-001543, Class A. Provide types as recommended by the sealant manufacturer for porosities indicated. Where bond surfaces are non-compatible with acid-type sealant, provide manufacturer's non-acid type sealant. Acceptable Products:

1. General Electric - Silpruf and 1200 Construction Sealant.
2. Dow Corning - 790 Building Sealant and Silicone Rubber Sealant.

E. Bathroom and Toilet Sanitary Sealant: Sanitary-type mold-resistant silicone rubber based elastomeric sealant.

1. Dow Corning 786 Mildew Resistant Sealant.
2. General Electric Co. Sanitary 1700.
3. Pecora Corp. 898 Silicone Sanitary Sealant.

F. Acoustical Sealant: Synthetic rubber

1. Pecora BA-98 Acoustical Sealant.
2. United States Gypsum Company Acoustical Sealant.

G. All Other Interior Wall joints: Latex Caulking ASTM C 834; mildew-resistant acrylic emulsion, non-staining and non-bleeding type suitable for painting.

1. Bostik Constr. Products Div. Chem-Calk 600.
2. Pecora Corp. AC-20.
3. Sonneborn Building Products Div. Sonolac.

## 2.2 ACCESSORIES

A. Joint Fillers: Closed-cell joint fillers acceptable to sealant manufacturer, except furnish open-cell filler where recommended for joint type, and compatible with materials fillers contact. Furnish fillers in indicated shapes and sized for 25 to 35 percent compression when installed.

B. Cleaners, Joint Primers, Surface Sealers: As recommended by sealant manufacturer for Project applications and compatible with joint materials and surface finishes.

C. Bond Breaker Tape: Plastic tape recommended by sealant manufacturer for application to sealant-contact surfaces to prevent bond to substrate or joint filler. Furnish self-adhesive tape where needed.

D. Masking: Nonstaining materials that will not leave residue or adversely affect substrates.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Verify that substrates are sufficiently dry for installation.
  - 1. Notify Contractor of conditions that would hinder proper or timely execution, or adversely affect performance of finished Work.
  - 2. Verify that concrete and masonry substrates have cured minimum 28 days.
- B. Comply with sealant manufacturer's recommendations for joint preparation.
  - 1. Clean joint surfaces immediately before installation of sealants. Use methods that will neither damage surfaces nor leave residues that impair sealer adhesion.
    - a. Remove dirt, insecure coatings, moisture and substances which could impair adhesion.
    - b. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.
    - c. Remove laitance and form release agents from concrete.
    - d. Remove loose particles by blowing out joints with dry, oil-free compressed air.
    - e. If solvent cleaning is required, apply solvent with rag and wipe clean with separate rag.
  - 2. Priming: Prime or seal joint surfaces where recommended by sealant manufacturer. Confine primers and sealers to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking: Mask surfaces adjacent to joints to receive liquid applied elastomeric sealants. Use masking materials that will not mar surfaces to which they are applied. Remove masking immediately after tooling and without disturbing joint seal.

### 3.2 INSTALLATION

- A. At joints to receive liquid applied elastomeric sealants, install joint fillers or bond breaker to ensure that sealant adheres only to two opposite sides of joint and does not adhere to back (concealed) side of joint.
- B. Set joint filler units at uniform depths in joints to support sealants and maintain proper sealant cross-section shape and depth within following general limitations, measured at center (thin) section of beads.
  - 1. Backer Rods and Tape:
    - a. For 3/16" or wider joints, install sealant back rod for sealants, except where recommended to be omitted by sealant manufacturer for application indicated.
    - b. For joints 3/16" or wider, install bond breaker tape where required by manufacturer's recommendations to ensure that liquid applied sealants will perform as intended.
  - 2. Paving Joints: Sealant depth equal to 75% of joint width, but not more than 5/8" deep nor less than 3/8" deep.
  - 3. Other Joints: Sealant depth equal to 50% of joint width, but not more than 1/2" deep nor less than 1/4" deep.
- C. Install joint fillers under compression and friction fit. Do not install filler units that have absorbed water.
  - 1. Do not leave voids or gaps between ends of joint filler units.
  - 2. Do not stretch, twist, puncture, or tear joint fillers.

3. Remove joint fillers which have absorbed moisture or which have ruptured gas cells and install suitable new fillers before sealant application.
- D. Install bond breaker tape where indicated or where joint filler is not used to prevent adhesion to substrate.
  - E. Deposit sealants in uniform, continuous ribbons without gaps or air pockets, with complete wetting of joint bond surfaces equally on opposite sides, and with proper cross-section shape and depth. Push applicator nozzle in direction of application, do not pull.
  - F. Tool sealants to ensure full adhesion. Unless otherwise indicated, form smooth, slightly concave surface.
  - G. Do not allow preparation compounds or sealants to overflow from confines of joints, to spill onto adjoining work, or to migrate into voids of exposed finishes.
    1. Cure joint sealers in compliance with manufacturer's recommendations and in manner which will minimize increases in modulus of elasticity and other accelerated aging effects.
  - H. Acoustic sealant installation:
    1. Gun apply 4 beads of sealant at floor and top of sound walls as indicated on partition manufacturer's standard details. Seal openings around wall outlets and butter back of electrical boxes in these walls with sealant.
    2. Apply in strict accordance with manufacturer's directions.

### 3.3 SUBSEQUENT OPERATIONS

- A. Repair or replace work that exhibits leakage, alligatoring, hardening, cracking, crumbling, shrinking, sagging, or staining of the adjacent work.
  1. If joint sealant requires adjustment or reinstallation as directed by the Architect, do not apply sealant over material already in place. Remove in place material, thoroughly clean and prepare surface, and reinstall sealant using procedures specified herein.
- B. Clean spills, misapplication, and material migrations immediately as they occur.
  1. Clean marred surfaces by whatever means are necessary to eliminate evidence of spillage.

SECTION 08 14 55

MOLDED PANEL WOOD DOOR

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Prefinished solid and hollow core wood fiber facing molded panel door for residential interior and prehung 20 minute Fire rated entry door applications.
  - 1. Door system components include: door panel(s), bifold panel(s) door frame, hinges.
- B. Specified in Other Sections:
  - 1. Metal panel doors.
  - 2. Lock and latchset hardware.
  - 3. 20 minute fire rated glass.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's technical literature with installation and storage instructions for each product specified.
- B. Shop Drawings: Submit door schedule showing elevations of each door type, fabrication details, dimensions, undercuts, finishes and hardware preparations. Number doors in accordance with Door Schedule on the Drawings.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall be experienced in performing work required and shall be specialized in the installation of work similar to that required for this project. Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product packaging instructions for installation.
- B. WDMA Quality Standard: Comply with NWWDA I.S.6
  - 1. Warp in excess of 1/4" in plane of door is not permitted in accordance with ANSI/NWWDA IS1.
- C. Fire-Rated Doors and Frames: Comply with NFPA 252, ANSI A250.3, ASTM E 152, UBC Std 7-2 (UBC 43-2), UL 10B, or CAN4-S104, as required by authority having jurisdiction.
  - 1. Tested by Warnock-Hersey.
  - 2. Attach fire rating label of certifying agency to fire-rated doors and frames; use mylar or metal labels.

1.4 PRODUCT HANDLING

- A. Delivery: Reasonable care shall be exercised during shipping and handling in keeping with the decorative nature of product.

- B. Package doors in vented plastic wrap with identifying marks prior to shipment. Do not remove wrapper until ready to hang.
- C. Storage & Protection: Store upright in a dry, well ventilated building or shelter at a constant temperature. Do not store in damp, freshly plastered, drywall or concrete areas until materials have completely dried. Doors should be stored at least 10' away from any heat source to help prevent uneven drying. Doors must be sealed with an oil-based sealer or primer if stored for long periods.

#### 1.5 PROJECT CONDITIONS

- A. Coordination: Coordinate this work with the work of other Sections to avoid any delay or interference with other work.
- B. Building shall be enclosed prior to receipt of doors.
- C. Allow doors to acclimatize to building temperature and humidity prior to installation.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Masonite Molded Panel Series 2-panel square top solid core door w/ smooth finish.
- B. Other Acceptable Manufacturers:
  - 1. Jeld-Wen.
  - 2. Craftmaster.

#### 2.2 RAISED PANEL DOORS

- A. Door Panel: Molded Panel doors fabricated using loose lay up assembly that includes molded wood fiber facings:
  - 1. Hollow Core Door: Wood or MDF stiles, wood or MDF rails and corrugated cell core.
    - a. Mounting surface for latching hardware to be reinforced with solid internal support.
  - 2. Solid Core Door: Wood stiles, wood or MDF rails and particleboard core.
  - 3. Door facings are to be bonded to stiles, rails and core forming a 3-ply structural attachment.
  - 4. Vertical edge of door to be square, beveled both sides or lock stile only.
- B. Bifold Panel: Masonite Molded Panel bifolds shall be fabricated using loose lay up assembly that includes molded wood fiber facings with optional flush facings on backside, wood or MDF stiles, wood or MDF rails and corrugated cell. Bifold facings are to be bonded to stiles, rails and core forming a 3-ply structural attachment.
- C. Door Frame: Fabricated as flat jamb with doorstop applied or 2-piece split jamb. Use of Fingerjointed material for frames is acceptable.
  - 1. Hinge jamb preparations: 1-3/8" thick doors to be machined for standard weight radius mortise 3-1/2" hinges and 1-3/4" thick doors to be machined to accept 4" hinges.
  - 2. Strike jamb preparations: Machine for full lip cylindrical strike plate.

3. Finish: Pre-finished white.
4. 2-3/8" Backset for casing.

- D. Hinges: (3) standard weight radius mortise hinges are required on doors 7'-0" height or smaller & (4) on doors greater than 7'-0".

### 2.3 FABRICATION

- A. Factory Assembly: Fabricate doors in compliance with drawings and reviewed shop drawings.
- B. Hardware Preparation:
1. Hinge preparations for 1-3/8" thick doors to be machined for standard weight radius mortise 3-1/2" hinges and 1-3/4" thick doors to be machined to accept 4" hinges.
  2. Latch preparations are to be placed in the area of solid internal supports. Face bore(s) for cylindrical lock and deadbolt are to be 2-1/8" diameter at 2-3/4" or 2-3/8" backset.

### 2.4 FINISH

- A. Factory Priming: Factory prime doors on door facings and stile and rails for field finishing.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Installation: Remove protective packaging just prior to installation.
1. Select fasteners of adequate type, number and quality to perform the intended functions.
- B. Hang doors and adjust for proper clearances and operation.
1. Clearance Jamb and Head: 1/8 inch.
  2. Undercuts: Shown in the Door and Frame Schedule on the Drawings.
- C. Refer to Section 08 71 00 - Hardware installation requirements and locations.

### 3.2 SUBSEQUENT OPERATIONS

- A. Clean doors and dry wipe with a soft cloth.
- B. Inspect and completely seal all 6-surfaces (top, hinge side, bottom, lock side, front face and back face) with two coat minimum on operable panel(s) with primer recommended by the door manufacturer.
1. Finishing and/or re-finishing must be completed immediately after door has acclimated to the environment where it is to be installed and within a maximum of 7 days. Avoid finishing after a rain or damp and during periods of higher than average humidity.
  2. Conduct periodic inspections of all coated surfaces to insure that door components are not exposed. Inspections should occur at least once a year. Reseal the surface as needed.
- C. Protect door from damage during subsequent construction activities. Replace damaged doors at no cost to Owner.

SECTION 08 17 11

PREASSEMBLED FIBERGLASS DOORS & FRAMES

PART - GENERAL

1.1 SUMMARY

- A. Section Includes: Prehung Fiberglass Entry Doors.
  - 1. Wood door frame.
  - 2. Insulated glass.
- B. Specified in Other Sections:
  - 1. Site applied finish coating,
  - 2. Interior doors.
  - 3. Locksets, closers and stops.

1.2 SUBMITTALS

- A. Submit door manufacturer's product data, specifications and installation instructions.

1.3 QUALITY ASSURANCE

- A. Safety Glass Standard - Consumer Products Safety Commission 16 CFR 1202.

1.4 PRODUCT HANDLING

- A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration in accordance with manufacturer's instructions.
- B. Identify each door using removable or concealed opening number used on shop drawings.

PART - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. Basis of Design: Therma -Tru Corp.; Classic-Craft Door System
  - 1. Front Entry Door : Mahogany Series.
  - 2. Roof Terrace Entry Door : Canvas Series.

2.2 COMPONENTS

- A. Door: Stile and rail 1-3/4" thick fiberglass bonded insulation core entry doors for field applied painted / stained finish with sweep.
  - 1. Faces: 3/32 inch minimum thickness, proprietary fiberglass reinforced thermoset composite, textured to duplicate handcrafted hardwood master or smooth surface, stainable and paintable.
  - 2. Door edges: machinable kiln-dried hardwood, flush and square with door faces, lock edge reinforced with full -length integrated 3 1/2 inch wide engineered lumber core. Door bottom edge : moisture and decay-resistant composite.

3. Insulation Core: Polyurethane foamed-in-place polyurethane, CFC-free, density 1.9 pcf minimum, K-factor of 0.15 for minimum thermal transmittance.
  - B. Lites: Perimeter frames in raised-molding patterns, frame moldings molded or extruded from proprietary thermoplastic compounds formulated for exterior exposure and weatherability. Certified to withstand high service temperatures resulting from exposure behind storm doors or dark finishes. Frames paintable or stainable, screw-fastened to doors, screw holes concealed with grain-matched plugs in matching material and finish.
  - C. Glazing Materials: Manufacturer's standard. Insulating sealed double pane units with Low E coating.
    1. Outer Pane: Clear fully tempered safety glass.
    2. Inner Pane: Clear fully tempered safety glass.
    3. Pane Thickness: Minimum 1/8 inch thick.
    4. Minimum Total Unit Thickness: 1/2 inch.
    5. U-value is 0.35 and the SHGC is 0.32.
  - D. Wood Door Frames:
    1. Material: Milled from 5/4 kiln-dried pine, profiled with 1/2 inch stop, standard depth 4 9/16 inch..
    2. Profile: Interlocking base and closure profiles for 1/2 inch throat dimension adjustment:
      - a. 1/2 inch high stop.
      - b. Exterior frames: Channel recess for weatherstrip.
    3. Exterior brickmould in WM180 pattern.
  - E. Fabricate doors and frames as pre-hung single piece jamb units with continuous UFAS threshold for openings.
- 2.3 TRANSOMS
- A. At entry door only, rectangular transom frame to match door frame and have matching exterior brickmould. Transom frame material to match door frame. Glazing to be Lo-E insulated glass.
- 2.4 HARDWARE
- A. Doors frames to be factory prepared to receive hardware specified in Finish Door Hardware Section, including cylindrical lock, keyed dead bolt.
  - B. Hinges: Provide each door with 1-1/2 pair of 4 x 4 hinges.
    1. Steel, Minimum hinge size 4 x 4 x 0.098 inches. Strikes are proprietary adjustable type, permitting in-out adjustment of door in frame, up to 3/16 inch.
    2. ANSI A156.18; BHMA 626, satin finish. Screws plated and finished to match hardware.
  - C. Gasketing and Weatherstripping
    1. Inswing models: Jacketed thermoset open-cell foam, press-fit in kerfs at jamb stops in frames. Extruded thermoplastic elastomer, finned and chambered design, press fit into bottom kerf of doors. Corner pads at bottom margin corners from jacketed thermoset open-cell foam..
  - D. Threshold: Fixed type of extruded aluminum, mill finish with safety ribs, ribbed extruded vinyl sweep across door bottom, where indicated on the drawings.
    1. Finish BHMA 628, satin aluminum, clear anodized.

PART - EXECUTION

3.1 INSTALLATION

- A. Install materials and systems in accordance with manufacturer's instructions and test for proper operation.
- B. Install doors with not more than 1/8" clearance at top and sides, 1/4" at bottom.
- C. Immediately prior to final inspection, remove protective plastic wrappings. Clean, and protect against damage until accepted as substantially complete.

SECTION 08 31 00

ACCESS DOORS & PANELS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Access doors and panels for access to valves, controls, and concealed items requiring periodic maintenance and adjustment.
  - 1. Wall access doors and frames.
  - 2. Fire-rated wall access doors and frames.
  - 3. Ceiling access panels.
- B. Specified in Other Sections:
  - 1. Access panels for utilities not shown on architectural drawings.
  - 2. Field painting of doors to match walls.

1.2 DESCRIPTIONS

- A. All access doors and panels shall have tamper resistant entries/locks.

1.3 SUBMITTALS

- A. Submit manufacturer's product data indicating sizes, standard details, specifications, and installation instructions.

1.4 QUALITY ASSURANCE

- A. Obtain access doors for entire project from one source from a single manufacturer.
- B. Fire-Resistance Ratings: For fire-resistance doors provide access door assembly with panel door, frame, hinge, and latch from manufacturer listed in Underwriters Laboratories, Inc.'s "Building Materials Directory" for rating required. Provide UL label on each fire-rated access door.

1.5 COORDINATION

- A. Furnish inserts and anchoring devices that must be built into other work for installation of access doors. Coordinate delivery with other work to avoid delay.
- B. Obtain location and size for required access doors, from trades requiring access to concealed equipment.

PART 2 - PRODUCTS

2.1 MATERIALS AND CONSTRUCTION

- A. Materials:
  - 1. Frames: 16 gauge sheet steel with flange suitable for adjacent material.

## Aston Place Apartments

2. Doors and Panels: 14 gauge sheet steel.
3. Panel fasteners - Zinc-coated countersunk screws

- B. Manufacture each access panel assembly as an integral unit ready for installation.
- C. Welded construction: Furnish with a sufficient quantity of 1/4" mounting holes to secure access panels to types of supports indicated.
- D. Finish: Phosphate dipped and prime coated.

### 2.2 WALL ACCESS DOORS

- A. Flush panel Type, unless noted otherwise.
- B. Locking Devices: Cylinder locks where exposed to public..
  1. Screw driver latching may be used where access to door is controlled, i.e. janitor's closet.
- C. For fire-rated units, provide manufacturer's standard insulated flush panel/doors, with continuous piano hinge and self-closing mechanism.

### 2.3 CEILING ACCESS PANELS

- A. Flush smooth panel and frame when screwed in place when closed.
  1. Provide mounting flange 5/8" recessed by 1" wide flange around perimeter with 1/4" mounting holes.
  2. Recess screw mounting holes so head is flush with face of panel.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Coordinate installation and field finishing with work of other trades.
- B. Comply with manufacturer's installation instructions. Install plumb, level and square. Adjust hardware and operation.
  1. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

### 3.2 SUBSEQUENT OPERATIONS

- A. Adjust hardware and panels after installation for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

SECTION 08 36 41

STEEL SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Steel frame and insulated panel doors for motor operation.
- B. Specified in Other Sections:
  - 1. Motor operator.
  - 2. Opening control system.
  - 3. Miscellaneous steel work,
  - 4. Field painting

1.2 DESCRIPTIONS

- A. Wind Loading: Design and reinforce sectional overhead doors to withstand a 20 lb. per sq. ft. wind loading pressure.
- B. Insulated Door.
  - 1. Thermal performance: Minimum R-Value of 14.86 based on certified test data.
  - 2. Air Infiltration Rating (ASTM E 283) - 0.08 cfm per square foot of door at 15 mph and .13 cfm per square foot at door at 25 mph.

1.3 SUBMITTALS

- A. Product Data: Submit data required to indicate compliance with these specifications. Include manufacturer's operating instructions and maintenance data.
- B. Shop Drawings: Submit shop drawings for special components and installations which are not fully dimensioned or detailed in manufacturer's data. Clearly indicate the following:
  - 1. Design and installation details to withstand standard wind load.
  - 2. All details required for complete operation and installation.
  - 3. Hardware locations.
  - 4. Type of metal and finish for door sections.
  - 5. Finish for miscellaneous components and accessories.
- C. Samples: Manufacturer's standard finish color charts.

1.4 QUALITY ASSURANCE

- A. Provide each sectional overhead door as a complete unit produced by one manufacturer, including frames, sections, brackets, guides, tracks, counterbalance mechanisms, hardware, operators and installation accessories, to suit openings and head room allowable.
- B. Include data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, and spare parts source.

C. Standards:

1. ANSI/DASMA 102 - American National Standards Institute A216.1 Specifications for sectional overhead doors published by Door & Access Systems Manufacturer Association, International in bulletin 102.
2. Sectional overhead doors shall be tested and labeled certifying compliance with ASTM D 1929 and ASTM E 84 standards.

1.5 PRODUCT HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.
- B. Store and protect products in accordance with manufacturer's recommendations.

1.6 WARRANTY

- A. Provide manufacturer's standard SEVEN YEAR warranty against separation/degradation of the polyurethane foam from the steel skin of the panel. Standard manufacturer's TEN YEAR warranty against cracking, splitting or deterioration due to rust-through. TEN YEARS on insulation value.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCT

- A. Basis of Design: Wayne-Dalton Thermospan 5150 insulated steel sectional overhead doors flush panels, no vision panels.

2.2 DOOR SECTIONS

- A. Steel/polyurethane/steel sandwich type construction with thermal break and calculated materials R- value of 11.00 on 5150.
  1. Sections to include an integral thermal break.
  2. Seal ends of section with 18 or 16 gauge hot-dipped galvanized steel full-height end caps.
- B. Exterior Skin: Structural quality, hot-dipped galvanized steel, 0.022" minimum embossing, factory finished with baked-on polyester primer and color as selected by the Architect from manufacturer's full range of colors and textures available.
- C. Interior Skin: Structural quality, hot-dipped galvanized steel, factory finished with a polyester primer and white finish coat.
- D. Insulation: Fill cavity with foamed-in-place CFC free polyurethane core.
  1. Insulated sections shall be tested by an I.C.B.O. certified laboratory in accordance with ASTM E 84 and shall achieve a Flamespread Index of 10 or less, and a Smoke Developed Index of 210 or less.
  2. Insulation material shall be tested by an I.C.B.O. certified laboratory in accordance with ASTM D 1929 and shall achieve a minimum Flash Ignition temperature of 734°F, and a minimum Self Ignition temperature of 950°F.
  3. Insulated sections shall be tested and meet all requirements of the UBC 17-5 corner burn.

## 2.3 OPERATIONAL HARDWARE

- A. Track: Track design shall be low headroom. Vertical mounting angles shall be hot-dipped galvanized. Track size shall be 3". Vertical track shall be graduated to provide wedge type weathertight closing with continuous angle mounting for wood jambs, and shall be fully adjustable to seal door at jambs bracket mounting for wood jambs. Horizontal track shall be reinforced with continuous angle of adequate length and gauge to minimize deflection.
- B. Hinge and Roller Assembly:
  - 1. Hinges and brackets shall be made from hot-dipped, galvanized steel.
  - 2. Track rollers shall be case-hardened inner steel races with 10-ball 3" rollers.
  - 3. All factory authorized attachments shall be made at locations indicated and reinforced with backup plates.
- C. Counterbalance:
  - 1. Springs shall be torsion type, low-stress, helical wound, oil-tempered spring wire to provide minimum 100,000 cycles of use, on continuous steel.
  - 2. Spring fittings and drums made of die cast, high strength aluminum.
  - 3. Pre-formed galvanized steel aircraft cable shall provide a minimum of a 5:1 safety factor.
- D. Mounting: Continuous angle mounting.

## 2.4 ACCESSORIES

- A. Weatherstripping: Doors shall be equipped with field installed, top seal 5150 to seal against header, co-polymer joint seals between sections and vinyl "bulb" shaped astragal provided on the bottom section.
  - 1. Jamb: Roll formed steel fitted full height of jamb with replaceable weatherstripping
  - 2. Door Bottom: Full width aluminum retainer fitted with replaceable weatherstripping
- B. Lift Mechanism: Helically wound torsion spring, on cross head shaft, with braided steel lift cables. Solid torsion shaft for motor operated doors.
  - 1. High cycles Springs: 50,000 cycles.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Verify that existing conditions are ready to receive sectional overhead door work.
  - 1. Beginning of sectional overhead door work means acceptance of existing conditions.

### 3.2 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions. Installation shall be by an manufacturer's authorized representative.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

- C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.
- F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07920.
- G. Install perimeter trim and weatherseals.
- H. Fit, align and adjust sectional overhead door assemblies level and plumb for smooth operation.

### 3.3 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
  - 1. Variation From Plumb: 1/16" maximum.
  - 2. Variation From Level: 1/16" maximum.
  - 3. Longitudinal or Diagonal Warp: Plus or minus 1/8" from 10 ft straight edge.

### 3.4 ADJUSTING AND CLEANING

- A. Adjust door assembly so that operation is smooth without binding or other hindrance.
  - 1. Remove labels and visible markings.
  - 2. Touch up areas of damage to finish in accordance with manufacturer's instructions.
- B. Final Adjustments: Upon completion of installation, lubricate, test and adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.
  - 1. Clean doors, and frames

### 3.5 DEMONSTRATION

- A. Instruct Owner's designated maintenance and operation personnel in the proper operation, maintenance and adjustment of the installed overhead door units.

SECTION 08 60 00  
POLYVINYL CHLORIDE (PVC) WINDOWS

PART 1 – GENERAL

1.1 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced.

The publications are referred to in text by basic designation only.

- 1.1.1.1 Federal Specifications (Fed. Spec.):
  - L-S-125B Screening, Non-metallic, Insect
  - DD-G-45-1D Glass, Float or Plate, Sheet
- 1.1.2 American Architectural Manufacturers Association (AAMA)
  - National Fenestration Rating Council (NFRC)
  - American Society for Testing and Materials (ASTM)

AAMA 101 I.s2/A440-05 Voluntary Specification for Aluminum, PVC, and Wood Windows and Glass Doors

Test method for rate of Air Leakage through Exterior windows, Curtain walls and doors (ASTM E283)

Test method for Structural Performance of Exterior Windows, Curtain walls and doors (ASTM E330)

Test method for Water Penetration of Exterior windows, Curtain walls and doors by Uniform Static Air Pressure Difference (ASTM E547)

Specifications for Sealed Insulating Glass Units (ASTM E774)

AAMA 615-02 Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles

AAMA 1701.2-95 Voluntary Standard for Utilization in manufactured housing for Primary Windows and Sliding Glass Doors.

AAMA 1503-98 Voluntary test method for Condensation Resistance of Windows, Doors, and Glazed wall sections

NFRC 100-2004 Procedure for Determining Fenestration Product U-Factors

NFRC 200-2004 Procedure for Determining Fenestration Product Solar Heat Gain Coefficients

- 1.1.2 AAMA Certification Program for Vinyl Window Manufacturers

1.2 SUBMITTALS: Submit to Contracting Officer for Approval.

1.2.1 Certified Test Reports: Submit for air infiltration, water resistance, and uniform loading in accordance with the above referenced specification.

1.2.2 Catalog Data: Shall describe each type of window, hardware, fastener, accessory, operator, screen, and finish.

1.2.3 Certification of Compliance: Submit certificates that identical windows have been successfully tested and meet the requirements specified herein for air infiltration and water penetration.

1.3 DELIVERY AND STORAGE: Deliver windows to project site in an undamaged condition. Use care in Handling and hoisting during transportation and at the job site. Store windows and components out of contact with the ground, under cover, protected from weather, so as to prevent damage to the windows. Damaged windows shall be repaired to an "as new" condition or replaced as approved.

1.4 PROTECTION: Finished surfaces shall be protected during shipping and handling using manufacturers standard method.

1.5 CERTIFICATION: Window units shall be tested and certified for performance with the above referenced test methods. All window units shall be labeled certifying conformance with AAMA 101/I.S.2-05, NFRC 100-04 and Energy Star.

1.6 CERTIFIED FABRICATOR: Windows shall be fabricated by an AAMA Certified Fabricator.

#### 1.7 WARRANTIES:

1.7.1 Windows shall be fully warranted against any defects in material or workmanship under normal use and service for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.

1.7.2 Optional factory-applied exterior paint finish shall be warranted to the original purchaser against adhesive failure, peeling, cracking, or blistering for a period of 10 years when exposed to normal weather conditions. Color retention shall be warranted for the same period to be less than 5 Delta E per ASTM D2244. Change in gloss is not considered a defect.

1.7.3 Insulated Glass Units shall be fully warranted against visual obstruction resulting from film formation or Moisture collection between the interior glass surface, excluding breakage, for a period of 20 years from date of acceptance on commercial projects and lifetime warranty to original homeowner on residential projects. 5 years factory labor included.

1.7.4 Contractor shall provide a written service warranty that clearly spells out how requests for service shall be handled, by whom, under whose responsibility and shall include the time frame for handling these service requests. A labor warranty providing service on the windows shall cover a period of not less than 10 years, and shall be provided in writing. A copy of the product and labor warranty must accompany other applicable warranties and be presented with bid.

1.8 PERFORMANCE REQUIREMENTS: Thermopane double Glazed Low E2 insulating glass and argon gas fill may be optional.

1.8.1 Test for air infiltration shall be in accordance with AAMA 101/I.S.2-05. On a test, the air rate shall not be greater than 0.3 cfm\* per square foot of sash area.

1.8.2 Test for water infiltration shall be in accordance with AAMA/NWWDA 101/I.S.2-05. Test results for different window sizes appear below.

1.8.3 Uniform Load Structural Test, with the window closed and locked, shall be in accordance with AAMA 101/I.S.2-05. Test results for different window sizes appear below.

Type	H	H
Rating(DP)	R50	C30
Max. Structural Test Pressure <sup>1</sup> :	90.00	45.00
Water Infiltration <sup>2</sup> :	7.5	4.5
Air Infiltration <sup>3</sup>	.06	.07
Size Tested	36 X 60	56 X 91

<sup>1</sup>Structural Test Pressure (psf) tested to at least 150% of DP rating

<sup>2</sup>Water Infiltration (psf) tested to at least 15% of DP rating

<sup>3</sup>Air Infiltration units are scfm/ft<sup>2</sup>

Test for Thermal Performance shall be in accordance with NFRC 100-97.

Test for Condensation Resistance Factor (CRF) shall be in accordance with AAMA 1503-98

## PART 2 – PRODUCTS

2.1 MANUFACTURER: Paradigm Single Hung Window, Model 8381, as manufactured by **Paradigm Window Solutions**, 400 Riverside Industrial Parkway, Portland, ME 04103.

2.2 MATERIALS: Windows shall conform to the requirements of specifications listed above. Provide windows of combinations, types and sizes indicated or specified.

2.2.1 Extruded PVC components, produced from commercial quality virgin PVC (unplasticised polyvinyl chloride), conforms to AAMA 303 from sections in one piece, straight, true and smooth. Provide multi-chambered PVC extruded frames and sash in accordance with the manufacturers standard practice. Make fusion welded frame joints strong enough to develop full strength of members, with an exterior wall thickness of .070". Head and jamb members shall have integral screen stops. Make interior horizontal top surfaces of both meeting rails flat and in the same plane. Meeting rails have an integral interlock with two contact points of pile weatherstrip provided. Sash shall have fusion welded miter corners with an external wall thickness of .070".

2.2.1.1 Balance Mechanism: Provide two stainless steel 1/2" thickness constant force coil balance springs for sash. Enclose balance springs in rustproof cases, with jamb liner covers, from the top of the bottom sash to the head of the window unit. Balance covers shall be finished to match window frame finish and easily removable for field service. Balances shall also have an interlocking pivot bar, for integral frame alignment with sash for keeping window frames straight and true during installation.

2.2.1.2 Locking Device: Provide each window over 32 inches in width with two cam-action sweep sash locks. The sash shall have one continuous, integral lift rail at the bottom of the sash. Provide

two tilt latches in the top of sash for tilting in sash for cleaning. The tilt latches shall be integrally mortised into the sash top rails for a clean appearance.

2.2.2 Glass and Glazing: Glass shall conform to DD-G-451 and not less than “B” quality. Factory glazed ¾” insulating glass conforming to ASTM-E-2090, with Truseal Duralite seal spacer, manufactured by TruSeal Industries Inc., Cleveland, OH. Glazing shall be integral glazing type system with architectural back bedded glazing tape and designed to maintain a watertight seal between glass and sash frame. Non-standard glass options will have a thermally-improved box-type spacer with dual seal system.

2.2.3 Factory-applied high performance. Low VOC, low heat gain, waterbourne paint finish to exterior and/or interior of window. Finish may be provided in various standard colors, satin finish only, on surfaces as determined by the factory. Finish shall meet the performance requirements specified by AAMA 615-02.

2.2.4 Caulking and Sealing: As specified or recommended by window manufacturer.

2.2.5 Weather-stripping: All sash units shall be triple weather-stripped where the sash meet the jamb using silicone treated pile with a mylar center fin bonded to backing. There shall be two contact points of silicone treated pile weatherstrip where the sash comes into contact with the master frame sill.

2.2.6 Insect Screening: Fed. Spec. L-S-125, Type II, Class 2 (plastic coated or impregnated fibrous glass yarn) of standard color as approved, mesh 18 X 16

## 2.3 FABRICATION

2.3.1 Weathering Surfaces: All frame members shall be multi-chambered PVC extrusions utilizing double wall design without the need for reinforcement. Frame corners shall be fusion welded. Sash members shall be multi-chambered PVC extrusions utilizing double wall design at all glazing locations. Horizontal sash members shall be mitered and fusion welded to vertical sash members.

2.3.2 Drips and Weep Holes: Provided as required to return water to the outside.

2.3.3 Glazing Thickness: Design glazed windows and rabbets suitable for glass thickness specified above.

2.3.4 Fasteners: All fasteners are to be stainless steel type, corrosion resistant. Use flathead, cross-recessed type, exposed head screws with standard threads on windows, trim, and accessories. Screw heads shall finish flush with adjoining surfaces. Self-tapping sheet metal screws are not acceptable for material more than 1/16 inch in thickness. All sheetmetal screw fasteners shall penetrate into a screw boss consisting of at least three layers of PVC profile for secure fastening and reduce pull out.

2.3.5 Provisions for Glazing: Design sash for outside double-glazing and for securing glass with manufacturer’s standard glazing systems. Provide glazing channels of adequate size and depth to receive and properly support the glass and glazing accessories.

2.3.6 Factory Mulls: Factory mulls to be fully reinforced with extruded aluminum I-beam reinforcement of 6005-T5 alloy and assembled utilizing interior and exterior “U” channels and

proprietary sealant application patterns. Reinforcement to be further attached to window frames with .080" x 1.375" x 12" stainless steel straps and appropriate stainless steel fasteners.

2.3.7 Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.

2.3.8 Type 908 Brick Mould Casing: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. The extrusion shall consist of multiple chambers with a 1 7/8 " extruded nailing fin and 1 " by 1 " integral J channel with an exterior wall thickness minimum of 0.075 ". All welded joints shall be aesthetically cleaned of weld flash material. The nominal overall dimension of the 908 brick mould Casing is 2 1/4 " by 1 5/8 ". Optional exterior color finish may be applied to match or complement the exterior color of the window.

2.3.11 Sill Nose: Co-extruded flex-fin' durometer weatherstrip to provide a seal between the casing and the window frame without the use of surface applied caulking. The extrusion shall consist of multiple chambers with a 1 3/4 " extruded nailing fin and 1 " by 3/4 " integral J channel. Exterior wall thickness shall be a minimum of 0.075 ". A colormatched end cap shall be installed at both ends. Optional exterior color finish may be applied to match or complement the exterior color of the window.

2.3.12 Jamb Extension: Primed finger-jointed pine

2.3.14 Weather-stripping: Provide for ventilating sections of all windows to insure a weathertight seal meeting the infiltration tests specified herein. Use easily replaceable factory applied weather-stripping of manufacturer's stock type, as specified above. For sliding surfaces, use silicone treated pile, with a mylar center fin bonded to a plastic-backing strip. Do not use neoprene or polyvinylchloride weather-stripping where they will be exposed to direct sunlight.

2.3.15 Screens: Provide one insect screen for each operable ventilating unit. Design screens to fit closely around entire perimeter of each ventilator or opening, to be rewirable, easily removable from inside building, and interchangeable for same size ventilators of similar type windows, with no exposed fasteners. Provide all guides, stops, clips, bolts and screws as necessary, for a secure and insect tight attachment to window. Provide continuous extruded or roll-formed aluminum screen frame for screen strength.

2.3.16 Screen Frames: Provide same quality and color finish as the window units. Frames shall have roll-formed sections not less than .375" by .750" by 0.025" thick and shall have removable vinyl splines. Hardware, attachment devices, and accessories shall be manufacturer's standard and of same quality, material and finish as hardware of window unit.

2.3.17 Screening: Install screening with weave parallel to frame and stretch sufficiently to present a smooth appearance. Conceal edges of screening in the spline channel.

2.3.18 Screen Finish: Exposed surfaces of aluminum extrusions shall be thoroughly cleaned, primed and given a baked enamel finish in accordance with AAMA 603.8 with total dry thickness not less than 0.8mil. The finish color shall match the vinyl window.

## PART 3 – EXECUTION

### 3.1 INSTALLATION

3.1.1 Method of Installation: Install in strict accordance with the window manufacturer's printed instructions And details, except as specified otherwise herein. Install windows without forcing into prepared window openings. Insulate perimeter of window frame with acceptable approved insulation material, as recommended by window manufacturer. Set windows at proper elevation, location, and reveal; plumb, square, level, and in alignment; and brace, strut, and stay properly to prevent distortion and misalignment. Protect ventilators and operating parts against accumulation of dirt, and building materials by keeping ventilators tightly closed and locked to frame. Bed screws in sill members, joints at mullions, contacts of windows with sills, built in fins, and sub-frames in approved sealant. Install windows in a manner that will prevent entrance of water. Provide sill angle flashed in sealant at windowsills.

3.1.2 Anchors and Fasteners: Make ample provision for securing units to each other, and to adjoining construction.

3.1.3 Adjustments after Installation: After installation of windows adjust all ventilators and hardware to operate smoothly and to provide weathertight sealing when ventilators are closed and locked. Lubricate hardware and operating parts as necessary.

3.1.4 Protection: Where surfaces are in contact with, or fastened to wood, or dissimilar materials, the surface shall be protected from dissimilar materials as recommended by the manufacturer. Surfaces in contact with sealant after installation shall not be coated with any type of protective material.

3.2 CLEANING: Clean interior and exterior of window units of mortar, plaster, paint spattering spots, sealants, and other foreign matter to present a neat clean appearance and to prevent fouling of weather-stripping surfaces and weatherstripping, and to prevent interference with the operation of hardware. Replace with new windows all stained, discolored, or abraded windows that can not be restored to their original condition.

SECTION 08 71 15

COMMERCIAL OVERHEAD DOOR OPERATORS

PART GENERAL

1.1 SUMMARY

- A. Section Includes: Trolley-type door operators for overhead sectional doors.
- B. Specified in Other Sections:
  - 1. Automatic Reversing Control system.
  - 2. Remote operating systems.
  - 3. Uninsulated Sectional Overhead Doors.
  - 4. Power to disconnect.

1.2 DESIGN REQUIREMENTS

- A. Operator speed: Operator shall lift the specified door at a speed of not less than 12 inches per second and lower the door at a speed between 11 and 12 inches per second.
- B. Duty cycle: Accommodate heavy usage, up to 60 cycles per hour under a large constant load.
- C. Wiring Connections: Refer to Electrical drawings. characteristics.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Details of construction and fabrication.
  - 4. Installation methods.
- B. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent construction.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- D. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.4 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.
- B. Standards:
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 2. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.

3. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
4. NEMA MG 1 - Motors and Generators.

- C. Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

#### 1.5 PRODUCT HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

#### 1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### 1.7 COORDINATION

- A. Electrical Contractor shall provide power to disconnect switch where indicated on the drawing. Door installer shall provide all wiring from disconnect to operator, control wiring and switching devices.

#### 1.8 WARRANTY

- A. Provide operators with a 2 year warranty on motor and parts.

### PART 2 - PRODUCTS

- B. Basis of Design: The Chamberlain Group, Inc.
  1. Operator - Model GT heavy industrial-duty assembly,
  2. Motor Control and Enclosure: LiftMaster LOGIC 4.0

#### 1.9 TROLLEY OPERATED DOOR OPERATOR

- A. Heavy Industrial-Duty for Standard Lift Sectional Door: Continuous-duty, high-starting torque motor with overload protection and emergency disconnect for manual door operation;
  1. Door Drive: Full #41 roller chain with emergency disconnect for manual door operation.
    - a. Release shall be a pull and hold type mechanism with single cable operation and an integrated interlock switch on hoist units.
  2. Track: Heavy-duty, double-angle, 11 gauge galvanized steel.
  3. Trolley Assembly: 2 inch by 2 inch galvanized steel angle rails with cast aluminum trolley including plated steel rail spacers with nylon chain-guide assembly.
- B. Electric Operator: UL Listed and UL Labeled, complete with electric motor and factory-prewired motor controls, wormgear reduction unit, electric solenoid-actuated brake, 3-button

OPEN/CLOSE/STOP control station along with conduit-encased wiring from control circuit to motor and accessories required for proper operation;

1. Primary Drive Reduction: Wormgear-in-oil-bath gear reducer with synthetic "All Climate" oil with 45:1 speed reduction; adjustable torque limiter and quick disconnect door arm to facilitate manual operation; permanently lubricated ball bearings on output shaft; and, output and door driven sprockets.
2. Brake: Electric solenoid-actuated brake that is capable of stopping and holding a door at any position.
3. Limit Switches: Fully adjustable, driven linear-type switch mechanism synchronizing operator with door; low friction nylon limit nuts fitted on treaded steel shaft that rotates on oil-tight self-lubricating bronze bushings; motor shall be removable with affecting limit switch settings.
4. Electric Motor: High-starting torque, continuous-duty, industrial-type protected against overload by current sensing and thermal overload devices.
  - a. Motor Size and capacity: 1-1/2 HP as recommended door manufacturer.
  - b. Electrical service as indicated on the Electrical drawings.

#### 1.10 CONTROLS

- A. Motor Control and Enclosure: UL approved microprocessor solid-state type and shall include the capability to select one of seven wiring types; additional features shall include a maintenance alert diagnostic system, programmable timer-to-close w/ timer defeat input, mid-stop programming capabilities and a maximum run timer to provide motor overrun protection; motor control shall be housed in a NEMA 1 enclosure integral to the operator and shall conform to ANSI/NEMA ICS6.
  1. Radio Receiver: On-board, 3-channel receiver with standard external antenna; equipped to accept Security+ Rolling Code Technology remote transmitters and Trinary DIP Switch remote transmitters, with memory for up to 23 Security+ remote transmitters or an unlimited number of Trinary Dip Switch remote transmitters.
  2. 3-Button Control Station: 3-button station providing OPEN/CLOSE/STOP functionality shall be NEMA Type 1 with maintenance alert indicator to signal intervals for routine door and operator maintenance.
- B. Primary Entrapment Protection Safety Devices: Shall reverse, in conjunction with the operator, a closing door to full open position when an obstruction is sensed;
  1. NEMA 4 Monitored Photo Sensors: CPS-UN4 fully monitored, non-contact, infrared beam reversing photo sensor system, with NEMA 4 watertight enclosure; photo sensors shall be mounted no higher than 6" maximum above the floor.
  2. Ancillary Entrapment Protection Safety Devices
    - a. Non-Monitored Electric Sensing Edge: 2-wire non-monitored electric edge shall reverse a closing door to the full open position when an obstruction is sensed

### PART 3 - EXECUTION

#### 1.11 EXAMINATION

- A. Verify door sizes, configuration, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be

performed.

- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 1.12 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### 1.13 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly without distortion or stress.
- C. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- D. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

#### 1.14 ADJUSTING

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

#### 1.15 CLEANING

- A. Clean components using non-abrasive materials and methods recommended by manufacturer.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

#### 1.16 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

SECTION 08 83 15

CUSTOM SIZE MIRRORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Custom size mirrors.
  - 1. Trim.
- B. Specified in Other Sections:
  - 1. Glass for Exterior windows and Entrance Construction.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product specifications, including certification of compliance with requirements, and instructions for handling, storing, installing, cleaning and protecting glass.
- B. Samples: Submit 12" square mirror samples.

1.3 QUALITY ASSURANCE

- A. Safety Glass Standard - Consumer Products Safety Commission 16 CFR 1202.
- B. Installation Standard - Flat Glass Marketing Association's "Glazing Manual".

1.4 PRODUCT HANDLING

- A. Comply with manufacturer's instructions for shipping, handling, storing and protecting mirrors.
- B. Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coatings on glass.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS

- A. Mirror Glass: ASTM C 1503 clear colorless glass with copper and silver coating, organic overcoating.
  - 1. Cut glass units to final sizes and complete edge treatment prior to silvering.
  - 2. Edges: Arrissed; ground smooth and polished.
  - 3. Thickness: 1/4".

2.2 ACCESSORIES

- A. Trim: 2" Painted mitered trim applied to mirror.

- B. Mirror Adhesive: Palmer "Mirro-Mastic".

### PART 3 - EXECUTION

#### 3.1 MIRRORS

- A. Set mirrors on stainless steel clips and adhere to wall with mirror adhesive.

#### 3.2 SUBSEQUENT OPERATIONS

- A. Protect glass immediately upon installation, with crossed streamers attached to framing, not to the glass.
- B. Replace broken, chipped, cracked, abraded or damaged glass.
- C. Remove non-permanent labels. Clean both faces of glass four days before substantial completion in accordance with glass manufacturer's recommendations.

SECTION 08 95 20

DRYER VENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Through wall metal dryer vents.
  - 1. Remove existing vents.
  - 2. Provide bird screen on outside of duct.
- B. Specified in Other Sections:
  - 1. Mechanical louvers.

1.2 DESCRIPTIONS

- A. Locate where indicated on the drawings.

1.3 SUBMITTALS

- A. Submit for approval product data.

1.4 PRODUCT HANDLING

- A. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Model #RCA4S by Seiho International or equal.

2.2 COMPONENTS

- A. Provide Duct to be 28 ga. min. galvanized sheet metal 4" diameter
- B. Bird Screen: 0.063 inch diameter, aluminum wire, 1/2 inch inter-woven square mesh in an aluminum screen frame, screwed to interior side of louver.

PART 3 - EXECUTION

3.3 INSTALLATION

- A. Modify existing wall to extent necessary for installation.
- B. Provide anchors, supports and accessories as needed. Provide gaskets, flashings and fillers as

Aston Place Apartments

necessary to make installation water tight.

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Gypsum board for
  1. Exterior Wall finishes and interior partitions rated and non rated systems.
  2. Ceilings.
    - a. Resilient furring channel supports.
  3. Exterior soffits.
  4. Sound insulation batts in partitions.
- B. Specified in Other Sections:
  1. Framing for support of gypsum board.
  2. Gypsum sheathing.
  3. Cement backer boards for shower and tub walls.

1.2 DESCRIPTION

- A. Gypsum Wall Board:
  1. Provide fire rated board for all partitions whether rated or not.
  2. Provide water resistant board in bathrooms, except behind tile at shower and tubs and similar wet areas provide cement board specified in tile section.
- B. Resilient Furring Channels are to reduce sound transmission through wood framed ceiling assemblies. Do not attach gypsum panels directly to wood floor trusses and headers. Float gypsum panels over these members using resilient channels, or provide control joints to counteract wood shrinkage.
  1. Spacing of Resilient Furring Channels should not exceed 24" o.c. nor span more than 24".
- C. Acoustical Rating and Thickness for walls with Sound Insulation: Minimum STC 50 (within 6" thick wood stud walls).

1.3 SUBMITTALS

- A. Product Data: Manufacturer's specifications and installation instructions for each product.

1.4 QUALITY ASSURANCE

- A. Gypsum Associations Standards:
  1. GA-201 - Using Gypsum Board for Walls and Ceilings.
  2. GA-216 - Recommended Specifications for the Application and Finishing Gypsum Board.
- B. Gypsum Board Installation Standards: ASTM C 840 and GA 216.
- C. Tolerances: Not more than 1/16" between adjacent boards before finishing. Not more than 1/8"

in 10' deviation from true plane, plumb and level in finished work.

- D. Fire-Resistance Rating: Provide assemblies identical to referenced design designations in UL "Fire Resistance Directory" or other testing agencies acceptable to authorities having jurisdiction.

#### 1.5 PRODUCT HANDLING

- A. Ship materials in original packages showing manufacturer's name and product brand name.
- B. Store materials inside with board ends, edges, and faces protected from damage.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Requirements: Establish and maintain application and finishing environment in accordance with ASTM C 840.

### PART 2 - PRODUCTS

#### 2.1 GYPSUM BOARD

- A. Regular: ASTM C 1396, gypsum core wall panel surfaced with paper on front, back, and long edges. Taper edges for finishing.
  - 1. Thickness: 5/8" unless otherwise indicated or specified.
- B. Fire-Rated Board: Gypsum core wall panel with additives to enhance fire resistance of core and surfaced with paper on front, back, and long edges and complying with ASTM C 1396, Type X.
  - 1. Thickness: As required for rating.
  - 2. Edges: Tapered.
- C. Water-Resistant Board: ASTM C 1396 gypsum core wall panel with additives to enhance the water resistance of core; surfaced with water repellant paper on front, back, and long edges. Taper edges for finishing.
- D. Exterior Gypsum Soffit Board: Exterior grade firecode - ASTM C 1396 Type X fire resistant, and mold resistant core manufacturer's standard edges.

#### 2.2 JOINT TREATMENT

- A. Tape: 2-1/16" wide paper reinforcing tape.
- B. Compound: Setting type job mixed chemical-hardening compound.

#### 2.3 ACCESSORIES

- A. Resilient Furring Channels designed to reduce sound transmission:
  - 1. Hat shaped, with face attached to two flanges by slotted or expanded metal legs.
    - a. 5/8" deep member weighing 220 lbs. per 1000 lin. ft. with min. base steel of 0.019 in., galvanized
- B. Attachment Devices: GA 203 and as recommended by manufacturer of support; galvanized

finish where noted.

1. Nails: Angluar ring nails as recommended by the Board manufacturer.
  2. Screws: ASTM C 954 or ASTM C 1002 or both with heads, threads, points, and finish as recommended by the manufacturer.
  3. Adhesives: Conform to requirements of ASTM C 475.
    - a. Laminating adhesive for multiple layers: Special adhesive or joint compound specifically recommended for laminating gypsum boards.
    - b. Laminating adhesive for direct application: Special adhesive or joint compound specifically recommended for laminating gypsum boards and for adhering gypsum boards to solid substrates.
- C. Corner Bead: Formed galvanized steel square nose corner beads, min. base steel 0.014 in. thick, and complying with ASTM C 1047.
- D. Casing Bead: Formed galvanized steel trim, ASTM C 1047, min. base steel 0.014" thick. Provide L-type edge trim beads, U-type edge trim beads, and special L-kerf-type edge trim beads.
- E. Control Joint: Extruded vinyl formed with V shaped slot covered with removable flexible vinyl strip and complying with ASTM C 1047.

## 2.4 SOUND INSULATION

- A. Inorganic glass fibers formed with binders into resilient flexible blankets or semi-rigid batts; ASTM C 665, densities of not less than 0.5 lb. per cut. ft., manufacturer's standard lengths and widths required to coordinate with spaces to be insulated.
1. Insulation in rated walls to conform to indicated UL rating.
- B. Flame Spread Rating: Provide units with rating of 25 or less, ASTM E 84.
- C. Acoustical Sealant: Non-drying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable type as recommended by the manufacturer.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Verify that mechanical and electrical services within walls have been tested and approved, and that thermal insulation has been installed before starting application.
- B. Verify that grounds, blocking, concealed mounting plates, and supplemental framing within walls for support of other work have been installed before starting application.
- C. Protection: Protect other work and existing construction and furnishings from soiling, moisture, and other harmful effects of drywall operations. Use protection means that will not themselves adversely affect what they are intended to protect.
- D. Where gypsum wallboard is to be adhesively applied, clean substrates of substances that impair bond. Level, fill, and prepare substrates per wallboard manufacturer's recommendations.

### 3.2 GYPSUM BOARD INSTALLATION

- A. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA216.
- B. Double Nailing: First single nail the field of the board, starting at the center and working toward ends and edges. Nail the edges of the board at not to exceed 7" on ceilings, and 8" on walls, a minimum of 3/8" and a maximum of 1/2" from edges and ends of gypsum board. Then drive another nail in close proximity (2" to 2 1/2") to each of the field nails and then restrike the first series of nails to ensure the board is drawn tightly to the nailing member.
- C. Tolerances:
  - 1. Do not exceed 1/16" offset at joints between gypsum board panels in any direction.
  - 2. Tolerances for Drywall Work: Do not exceed variation of 3/16" in 8'-0", and 1/8" in 4'-0", from plumb, level and flat (all directions) and do not exceed 1/16" offset of planes at joints between panels; shim panels as necessary to comply with tolerances.
- D. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.
- E. Install wall/partition boards vertically to avoid end-butt joints wherever possible.
- F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
- G. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports, or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs at opposite sides of partitions.
- H. Attach gypsum board to supplementary framing and blocking. Provide for additional support at openings and cutouts.
- I. Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.
- J. Ceiling resilient channels on wood framing:
  - 1. Install resilient channels at right angles to wood joists.
  - 2. Use 1-1/4 inch Type S or W screws.
  - 3. Spacing of channels: 24 inches on center (for joists 16 inches o.c.).
  - 4. Splice channels directly under support and fasten ends together with screws. Maximum cantilever at ends: 6 inches.

### 3.3 METHODS OF GYPSUM DRYWALL APPLICATION

- A. Single Layer Application:
  - 1. Ceiling installation on resilient channels.
    - a. Install board with long dimension at right angles to resilient channels and fasten with Type S screw spaced per GA216.
    - b. Neatly fit and stagger end joints; locate end joints over resilient channels or midway

- between channels with joints floated and back blocked.
2. On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
  3. Apply gypsum boards to support with nails as specified above..
- B. Fire Rated Double Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer in accordance with applicable U.L. Requirement and as follows:
1. Where required for ratings, fasten both base layers and face layers separately to supports with screws.
  2. Otherwise fasten base layers with screws or nails and face layer with adhesive and supplementary fasteners.
- 3.4 INSTALLATION OF DRYWALL TRIM ACCESSORIES
- A. Where feasible, use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports. Otherwise, fasten flanges in accordance with manufacturer's instructions and recommendations.
- B. Install metal corner beads at external corners of drywall work using crimp tool. Locate screws at 4'-0" maximum spacing.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- 3.5 SOUND INSULATION
- A. Extend insulation full thickness over areas to be insulated. Cut and fit tightly to perimeter and around obstructions and fill all voids.
- B. Where possible friction fit between framing members. Provide mechanical fasteners as required to prevent shifting.
- 3.6 FINISHING OF GYPSUM BOARD
- A. Joint Treatment: ASTM C 840.
1. Treat gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer. Finish all exposed gypsum board.
  2. Apply joint tape at joints between gypsum boards. Where open spaces of more than 1/16" width occur between abutting drywall units, prefill joints with joint compound and allow prefill to dry before application of joint tape.
  3. Apply joint compound in three coats not including prefill of openings in base, and sand between last two coats and after last coat.
- B. Interior Finishing: In accordance with GA-214 as follows:
1. Level 1: Plenums and service corridors.

## Aston Place Apartments

2. Level 2: Water resistant gypsum backing board scheduled to receive tile.
3. Level 4: All other gypsum board.

### 3.7 PROTECTION OF WORK

- A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

SECTION 09 31 00

MORTAR THIN SET TILE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Ceramic Tile for floors, bases, and walls, including bath and shower surrounds.
  - 1. Mortar thin setting on gypsum wall board, and gypsum concrete underlayment.
  - 2. Organic adhesive setting on drywall.
  - 3. Metal edge strips installed as part of tile installations.
- B. Specified in Other Sections:
  - 1. Elastomeric joint sealant for expansion and other joints in tile work.
  - 2. Gypsum wallboard.
  - 3. Gypsum floor leveling underlayment.

1.2 DESCRIPTIONS

- A. Setting methods:
  - 1. Set tile for shower and bath walls and floors using mortar thin setting.
  - 2. Organic adhesive setting on drywall.
- B. Provide cement backer board behind all tile for showers and baths.

1.3 SUBMITTALS

- A. Product Data:
  - 1. Installation Instructions: Manufacturer's printed instructions for each tile.
- B. Samples:
  - 1. Submit assembled samples for approval of each tile pattern and grout selected not less than 12" square.
- C. Certification: Furnish Master Grade Certificates for each shipment and type of tile signed by manufacturer and Installer.

1.4 QUALITY ASSURANCE

- A. Standards:
  - 1. Installation: Tile Council of America "1998 Handbook for Ceramic Tile Installation" and ANSI A137.1.
  - 2. Tile Grade: TCA 137.1 Standard Grade.
- B. Use experienced installers of acceptable subcontractors having installed tile for 3 years.
- C. Obtain materials from one source for each type and color of tile, grout and setting materials.

1.5 PRODUCT HANDLING

- A. Deliver packaged materials and store in original containers with seals unbroken and labels intact until time of use, in accordance with manufacturer's instructions. Containers to bear manufacturer's name size, color and quantities.
- B. Store material in heated areas to prevent damage from freezing.

#### 1.6 PROJECT CONDITIONS

- A. Maintain ambient temperature at 50°F or higher during and after installation in accordance with manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE PRODUCTS

- A. Basis of Design:
  - 1. Tile: Refer to drawings for product, color and texture.
  - 2. Grout: Refer to drawings for product and color.

#### 2.2 CERAMIC TILE

- A. Trim: Matching field tile color, texture;
  - 1. Coved Base:
    - a. Integral coved base that butts and matches floor tile size and color.
- 2. Wainscot Cap: Surface bullnose.
  - 3. External Corners: Surface bullnose.
  - 4. Internal Corners: Field-buttet square corners, except use cove base and cap angle pieces designed to member with stretcher shapes.
- B. Thresholds:
  - 1. Solid Polymer: Made from homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without precoated finish.

#### 2.3 SETTING MATERIAL

- A. Setting Methods: Thin set latex portland cement crack-isolation mortar.
- B. Grout:
  - 1. Commercial Cement Grout: Proprietary compound of Portland cement and additives, factory-blended to decrease shrinkage and increase moisture resistance.
    - a. Hydroment Ceramic Tile Grout; Upco Chem./USM Corp.
- C. Mix and proportion setting bed and grout materials in accordance with manufacturer's instructions and ANSI/TCA A118.4.

#### 2.4 BACKER BOARD

- A. Cementitious Backer Units: ANSI A118.9.
  - 1. Size: 1/2" thick x 4' x 8'.
- B. Cement board screws: Self-drilling, self-tapping, cadmium plated screws 1-1/4" #3 Type S-12, bugle-head corrosion resistant or stainless steel as approved by Laticrete International.
  - 1. Provide corrosion resistant 3/4" washers for fastening.
- C. Cement board Tape: coated glass fiber as recommended by board manufacturer.

## 2.8 ACCESSORIES

- A. Tile Cleaner: Product specifically acceptable to manufacturer of tile and grout manufacturer for required application and as recommended by National Tile Promotion Federation or Ceramic Tile Institute.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Remove dirt, grease, and any substances from bond surfaces of existing tile that impair bond of new tile.

### 3.2 BACKER BOARD

- A. Install backer board at in accordance with manufacturer's specifications.
  - 1. Joint between panels to be between 1/8" and 3/16" wide.
- B. Install with vertical joints over studs and furring supports.
  - 1. Screw attach board to supports with fasteners spaced at maximum 6" o.c. along edges and maximum 8" o.c. at intermediate studs. Where two panels abut, place screws in the joint with a washer size to overlap the board a minimum of 3/16".
- C. Boards: Cut boards at penetrations, edges and other obstructions. Fit tight against abutting work, except provide 3/8" setback where work abuts structural elements at head and jams. Seal all junctions with other work with liquid applied sealants.
  - 1. Cover joints with 6.2 oz. by 6" wide glass fabric embedded and sealed with waterproofing liquid.

### 3.3 TILE INSTALLATION STANDARDS

- A. Comply with applicable requirements of the following:
  - 1. ANSI A108.4: Organic adhesive.
  - 2. ANSI A108.5: Dry-set portland cement mortar or latex-portland cement mortar.
- B. Mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.
- C. Provide sealant joints where recommended by TCA and approved by Architect.
- D. Grout: Install and cure grout in accordance with manufacturer's specifications.

- E. Extend tile work into recesses and under or behind equipment and fixtures, to form complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.
- F. Form intersections and returns accurately. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.
- G. Jointing Pattern:
  - 1. Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are same size.
  - 2. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting.
  - 3. Install tile with straight, accurately aligned joints of uniform width.
  - 4. For tile factory mounted in sheets, make joints between sheets same width as joints within pre-mounted tile sheets so that joints between sheets are not apparent in finished work.
- H. Leave following joints open to receive sealant:
  - 1. Control joints.
  - 2. Vertical inside corner joints.
- I. Thresholds: Install thresholds in full bed of adhesive. Do not allow adhesive to contact exposed surfaces of thresholds, finish surfaces of other construction, nor substrates that receive subsequent flooring or other finishes. Install thresholds with uniform joints of same width as adjacent floor tile.
- J. Grouting: Comply with referenced standards. Mix and install proprietary materials per manufacturer's recommendations.

### 3.4 CLEANING

- A. Upon completion of grouting, clean tile surfaces to be free of grout and foreign matter.
  - 1. Do not use acid solutions unless specifically recommended by tile and grout manufacturer's printed instructions. If used, do not apply such solutions sooner than 14 days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Neutralize surfaces and flush with clean water before and after cleaning.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

### 3.5 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during subsequent construction period to prevent staining, damage and wear.
- B. Prevent foot and wheel traffic on tiled floors for at least 7 days after grouting is completed.

SECTION 09 68 20

SHEET CARPET

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Sheet Carpeting for:
  - 1. Glued-down carpet installation on gypsum concrete
  - 2. Moldings, adhesives cements, for complete installation.
- B. Specified in Other Sections:
  - 1. Wall Base.
  - 2. Resilient Flooring.

1.2 QUALITY ASSURANCE

- A. General Terminology/Information Std: Carpet and Rug Institute's "Carpet Specifier's Handbook".
- B. Carpet Flammability: Pass Methenamine Pill Test, ASTM D 2859.
  - 1. Radiant Panel Test: Minimum rating of 0.22 watts/sq. cm.; ASTM E 648.
  - 2. Surface Burning Characteristics: ASTM E 84, maximum flame spread of 75.
  - 3. Smoke Developed: Less than 450.
- C. HUD Certification: Comply with HUD "Use of Materials Bulletin" UM-44c, and carry current listing in HUD "Certified Products Directory".
- D. Static Electricity: 3.5 KV max. at 70° F and 20 percent relative humidity, AATCC 134.
- E. Qualified installer: Experienced in installation of commercial carpeting of type, quantity and installation methods similar to work of this section.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's complete technical product data for each type of edge trim, cement and adhesive types and other related materials necessary to complete the installation.
- B. Samples: Submit upon request, 12" long sample of each type of edge trim and miscellaneous hardware required or necessary for a proper and complete installation.

1.4 PRODUCT HANDLING

- A. Storage areas shall be secure and dry with temperatures maintained above 65°F at all times.
  - 1. Contractor shall not store carpet more than five (5) rolls high.

1.5 PROJECT CONDITIONS

- A. Coordination: Coordinate this Work with the Work of other Sections to avoid any delay or

interference with other Work.

- B. Temperature: Do not install carpet unless a constant temperature of at least 65°F is maintained for 72 hours before, during and 48 hours after application in all areas to receive carpeting, unless otherwise directed by the Construction Manager.
  - 1. Unwrap carpet and allow to acclimatize to installation area 24 hours before application.
- C. Notify Construction Manager of any defects, mismarking or evidence of damage to carpet materials or appearance of moisture, mildew or fungus.

## 1.6 WARRANTY

- A. Warrant carpet installation for one year from substantial completion from becoming unserviceable or causing an objectionable appearance resulting from defects such as:
  - 1. Release from the substrate.
  - 2. Bunching and rippling.
  - 3. Opening of seams.

## PART 2 - PRODUCTS

### 2.1 CARPET

- A. Basis of Design: Refer to drawings for product, color and texture.
- B. Other Acceptable Products:
  - 1. Bigelow.
  - 2. Lees.
  - 3. Karastan
- C. 24 ounce, filament carpet and meeting HUD requirements

### 2.2 CARPET ACCESSORIES

- A. Padding - 3/8" thick, medium density, 6 pound pad.
- B. Underlayment: Selected by Installer to meet project circumstances and requirements and acceptable to manufacturer of carpet and carpeting adhesive.
- C. Tack Strips: Commercial with 3 rows of pins.
  - 1. Type I: Prenailed (Concrete) for anchoring into concrete sub-floor.
  - 2. Type II, extra long nails for cementitious leveling bed over plywood sub-floor.
  - 3. Acceptable Products: APM #333.
- D. Seaming Taping: Seaming adhesive or similar product recommended by carpet manufacturer, for taping seams and buttering cut edges at backing to form secure seams and prevent pile loss at seams.
- E. Adhesive: Water resistant, non-staining types as recommended by carpet manufacturer for various types of installation specified herein. Adhesive shall comply with flammability requirements where required. Adhesive shall be Henry's #251.

## 2.3 TRANSITION STRIPS

- A. Carpet Moldings: Extruded or molded heavy-duty vinyl or rubber minimum 2" wide anchorage flange.
  - 1. Do not provide self-adhesive type.
  - 2. Color: As selected by Architect from Burke/Mercer standard colors.
  - 3. Types:
    - a. For carpet to resilient flooring: Burke Mercer #150 "Tile-Carpet Joiner".
    - b. For carpet to ceramic tile flooring: Burke Mercer #153 "Cerco Bar - 3/8 inch".
    - c. For carpet to unfinished flooring: Burke Mercer #705 "Super Imperial Reducer".
  - 4. Adhesive for carpet moldings: Type recommended by molding manufacturer. Do not use self-adhering type of transition strip.
- B. Metal: Brass strips specifically designed for carpet.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Repair minor holes, cracks, depressions and rough areas using material recommended by carpet and adhesive manufacturer. Use underlayment to even substrates. Remove contaminants and dirt and prepare floors as recommended by carpet manufacturer. Leave floor clean and dry.

### 3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations for seam locations and carpet direction. Maintain uniformity of carpet direction and lay of pile. At doors, center seams under doors. Do not place seams in traffic direction at doorways.
- B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into alcoves and offsets of each space.
  - 1. Provide cutouts where required. Install edge guards where edge of carpet is exposed. Bind cut edges not protected by edge guards or overlapping flanges.

### 3.3 GLUE-DOWN INSTALLATION

- A. Non cushioned carpet: Test substrate to demonstrate effectiveness of adhesive. Remove sample demonstrating procedure to minimize damage to carpet. Apply primer to entire substrate as necessary for adequate bond of carpet.
- B. Fit carpet prior to application of adhesive. Trim off mill edges if carpet is not pre trimmed. Maintain straight seams, true with lines of building.
- C. Securing base of pile at cut edges with seaming cement without evidence on carpet face.
- D. Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll lightly to eliminate air pockets and ensure uniform total-area carpet substrate bond. Remove adhesive (if appears) promptly from face of installed carpet.

- E. Carpet base: Adhere cove sticks and cap in accordance with manufacturers instructions.

#### 3.4 SUBSEQUENT OPERATIONS

- A. Remove and dispose of debris and unusable scraps.
- B. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove protruding face yarn.
- C. Close area to traffic during and after installation until recommended by installer. Protect carpet from deterioration or damage until final acceptance.

SECTION 09 92 00

PAINT & TRANSPARENT FINISHES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Except for items specifically excluded in (B) below, field paint all new construction provided under this specification.
  - 1. Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatments specified under other Specification Sections.
  - 2. Where items or surfaces that are normally painted (such as piping and conduit in painted areas) are not specifically mentioned, paint same as adjacent similar material or areas.
  
- B. Work Not to be Field Painted:
  - 1. Prefinished items.
  - 2. Walls or ceilings internal to the building shell.
  - 3. Non-ferrous metal surfaces.
  - 4. Operating parts and labels.
  - 5. Do not paint over any code-required labels, or any equipment identification, performance rating, name, or nomenclature plates.
  - 6. Floors.
  - 7. Glazing.
  - 8. Garage interior walls are not to be painted. Ceilings are to be painted.
  
- C. Specified in Other Sections:
  - 1. Shop priming of ferrous metal; structural steel, miscellaneous metals and hollow metal.

1.2 DEFINITIONS

- A. "Paint": Opaque and transparent coating materials, including primers, emulsions, enamels, and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.3 QUALITY ASSURANCE

- A. Use paints that are compatible with shop primed surfaces and existing painted surfaces.

1.4 COLOR SCHEDULE

- A. Provide colors in accordance with accepted color schedule. Regardless of material source or base material, final finish must match exactly the finish samples provided.

1.5 DELIVERY AND STORAGE

- A. Store materials and equipment in well ventilated storage area. Keep storage area clean and accessible at all times.

- B. Deliver materials to job site in original, new and unopened containers bearing manufacturer's name and label and following information:
  - 1. Name or title of material.
  - 2. Fed. Spec. number, if applicable.
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Manufacturer's name.
  - 5. Content by volume, for major pigment and vehicle constituents.
  - 6. Thinning instruction.
  - 7. Application instructions.
  - 8. Color name and number.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis of Specification: Sherwin Williams as scheduled herein.
- B. Equivalent products by one of the following manufacturers are also acceptable.
  - 1. PPG
  - 2. ICI Dulux

### 2.2 MATERIALS

- A. Provide pure linseed oil, turpentine, shellac, and other like materials of the highest quality, with identifying labels intact and seals unbroken. Use thinners specified by the paint manufacturer.
- B. Use primers, sealers, stains, and undercoaters suitable for each surface to be covered and compatible with finish coat required.

### 2.3 MATERIALS AND PROCEDURES

- A. Provide paint and coatings of type and number of coats for substrates indicated. The number preceding each listed product is the number of coats.
- B. Exterior Treated Wood Composite: Finish trim with two coats of paint within 90 days after installation. If the material is not painted within 90 days, reprime the trim using an exterior primer that is recommended for use on composite wood products and is compatible with the topcoat to be used. Use the same primer for repair of any damage to the original factory applied primer.
  - 1. A total field-applied dry film paint thickness of a minimum of 2-1/2 mils is required on composite trim.
- C. Touch-up of Ferrous Metal: For factory primed or galvanized ferrous metal where no further field painting is indicated or that is not specified to be touched-up in the specification section under which it is furnished, touch up with rust-inhibitive metal primer. Use galvanizing repair paint on galvanized surfaces.
- D. Interior Painting

Aston Place Apartments

1. Ferrous Metal
  - a. Unprimed: One coat Ken Kromik Primer  
Two coats Pro-Mar 200 Eg-Shel Enamel
  - b. Primed: One coat spot prime with Kem Kromik primer  
Two coats Pro-Mar 200 Eg-Shel Enamel
  - c. Galvanized: One coat wash primer B60G2  
Two coats Pro-Mar 200 Eg-Shel Enamel
  - d. Exposed Construction One coat dryfall flat B42W1 B48W61  
ceilings, including deck, piping, Acrylic flat white  
etc.  
\* Note: All galvanized duct and galvanized deck (if any) must be primed with P60G2 wash primer.
2. Concrete Masonry: One coat B25 W25 filler  
Two coats P/M 200 Eggshell enamel
3. Drywall:
  - a. Latex One coat P/M 200 latex Wall Primer  
Two coats P/M 200 Latex Eg-Shel
  - b. Water Based Epoxy System Preprite 200 Primer  
Water Based Epoxy B70 series
4. Wood (opaque): One coat ProMar 200 alkyd enamel undercoat  
Two coats P/M 200 alkyd Eg-Shell  
Wood (transparent): Three coats varnish sanding sealer A26V3  
Sand between coats. Add SW Sherwood A48 series interior wood stain to first coat
5. Aluminum: One coat Zinc Chromate B5041  
Two coats P/M 200 semi gloss oil B34 series

E. Exterior Painting:

1. Ferrous Metal
  - a. Unprimed: One coat Ken Kromik Primer  
Two coats industrial enamel B54 series
  - b. Primed: One coat spot prime with Kem Kromik primer  
Two coats industrial enamel B54 series
  - c. Galvanized: One coat DTM primer B66W1  
One coat DTM finish B66 series
2. Composite Trim Board: One coat DTM Acrylic Semi-Gloss B66-200  
Two coats A100 A6 series
3. Prefinished trim. One coats A100 A6 series
4. Plastic trim. One coat 424W20 Alkyd wood primer  
Two coats A100 A8 or A82 series
5. Wood: One coat 424W20 Alkyd wood primer  
Two coats A100 A8 or A82 series

## PART 3 - EXECUTION

### 2.4 PREPARATION

- A. Examine areas and conditions under which painting work is to be applied. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
- B. Place paint or solvent soaked rags, waste, or other materials which might constitute a fire hazard in metal containers and remove from premises at close of each day's work. Take very precaution to avoid fire.
- C. Protect the work of trades against damage, marking or injury by suitable covering during the progress of painting and finishing work. Repair any damage done.
- D. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
- E. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space of area, reinstall removed items.
- F. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Schedule cleaning and painting so contaminants from cleaning process will not fall onto newly painted surfaces.
- G. Patch imperfections in insitu substrates to be repainted.

### 2.5 SURFACE PREPARATION

- A. Metals: Wire brush and clean rusted areas and touch up with primer. Solvent clean in accordance with SSPC-SP1.
  - 1. Treat bare and sandblasted or pickled clean metal with a metal pretreatment wash coat before priming.
  - 2. Pretreat aluminum and galvanized surfaces.
- B. Cementitious Materials: Determine alkalinity and moisture content off surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds manufacturer's printed recommendations.
- C. Concrete Masonry Units:
  - 1. Prepare surfaces by removing all efflorescence, dirt, rust, oil, and grease stains and coatings detrimental to paint bond; method used shall be determined by Painting Contractor and paint manufacturer's representative; results must be satisfactory to the Architect.

2. Before first paint coat is applied, spot prime any exposed metal occurring in the surfaces with an oil-base masonry primer as recommended by paint manufacturer, to insure against rust.
- D. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand paper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler.
1. Prime, stain, or seal wood required to be job painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
  2. When transparent finish is required, use spar varnish for backpriming.
  3. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.
- E. Other Substrates: Conform to coating manufacturer's instructions.
- F. The following is applicable to all substrates:
1. Thoroughly remove materials detrimental to coating bond such as oil, grease, dirt, releasing agents, protective coatings and similar materials.
  2. Surfaces shall be dry and material to be painted shall be within the moisture content range permitted by the coatings manufacturer.
  3. Both the temperature of the substrate and the ambient temperature and humidity shall be within the range permitted by the coatings manufacturer.

## 2.6 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using. Continuously agitate zinc-rich primers.

## 2.7 APPLICATION

- A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.
  1. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
  2. Finish doors on tops, bottoms and side edges.
- B. Scheduling Painting:
  1. Apply first coat material to surfaces that have been cleaned, pretreated or otherwise

prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of undercoat.
- C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
- D. Prime Coats:
1. Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
  2. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure finish coat with no burn-through or other defects due to insufficient sealing.
- E. Pigmented (Opaque) Finishes: Complete cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be accepted.
- F. (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.
- G. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance.

## 2.8 SUBSEQUENT OPERATIONS

- A. Clean-up:
1. During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
  2. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- B. Protection:
1. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. correct any damage by cleaning, repairing or replacing, and repainting.
  2. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
  3. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

SECTION 10 57 30

WIRE CLOSET SHELVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Custom fitting vinyl coated wire Ventilated Shelving.
  - 1. Intermediate support brace.
  - 2. End brackets.
  - 3. Closet rod.
  
- B. Specified in Other Sections:
  - 1. Rough Carpentry wall blocking.
  - 2. Wood shelving.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's technical literature with installation and storage instructions for each product specified.
  
- B. Samples: Each product and color specified.

1.3 QUALITY ASSURANCE

- A. Mock Ups:
  - 1. Install Work of this section into a full size erected mock-up as directed by Contractor prior to beginning the Work of this section.
  - 2. Upon review and acceptance by the Architect the installed work will establish quality standards by which the work of this section will be judged.

1.4 PRODUCT HANDLING

- A. Deliver materials in unopened containers bearing manufacturer's name and content identification.
  - 1. Closet rack hangers to be packaged and shipped separately to avoid loss during construction.
  - 2. Pack installation instructions with each item.
  
- B. Store materials as recommended by the manufacturer.
  - 1. Provide blocking to support and retain original shapes during storage.

1.5 PROJECT CONDITIONS

- A. Coordination: Coordinate this work with the work of other blocking in rough carpentry to avoid any delay or interference with other work.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE PRODUCTS

- A. Basis of Design: Schulte Corp, Cincinnati, OH (800) 669-3225
- B. Other Acceptable Manufacturers:
  - 1. Closetmaid.

### 2.2 MATERIALS AND COMPONENTS

- A. Rods: ASTM A 29, Grade C1008 cold drawn steel wire.
- B. Space deck rods spaced at one inch on center.
  - 1. Resistance weld at each intersection of cross deck wires.
- C. Mounting Hardware: Manufacturer's standard components.
- D. Metal cleaned and primed to produce proper bond of finish coating.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify blocking is in place prior to fastening to walls.

### 3.2 INSTALLATION

- A. Install items in strict accordance with manufacturer's recommended instructions.
- B. Before installation work begins, insure that all finish work within the closet is completed, including painting and floor finishes.
- C. Set units level, plumb, and firm without movement. Secure units in place to blocking, using suitable fasteners, length as required to penetrate blocking a minimum of 3/4".

SECTION 11 31 00

RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Provide allowance for all residential appliances. Verify amount of allowance with Owner.
- B. Specified in Other Sections:
  - 1. Countertops and cabinetry.
  - 2. Sinks.
  - 3. Drain traps, steam traps, atmospheric vents, valves, pipes and pipe fittings, ductwork, and materials necessary to hookup of appliances.
  - 4. Wiring, disconnects, and other materials necessary to hookup of appliances.

SECTION 12 21 12

HORIZONTAL PVC SLAT LOUVER BLINDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Horizontal blinds with vinyl (PVC) louver slats louver blinds.
  - 1. Fasteners and accessories for surface installation.
- B. Specified in Other Sections:
  - 1. Aluminum fixed and operable windows.

1.2 SUBMITTALS

- A. Provide schedule of all units to be furnished, including field measurements at each location.

1.3 QUALITY ASSURANCE

- A. Provide units by one manufacturer, with complete standard assemblies including hardware accessory items, mounting brackets, and fastenings.

1.4 PRODUCT HANDLING

- A. Deliver materials to project site in original factory containers, clearly labeled with identification of manufacturer and installation location.
- B. Store materials in well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

PART 2 - PRODUCTS

2.1 HORIZONTAL BLINDS

- A. Louver Blades: Lead-free, UV-stabilized, integrally colored, opaque, permanently flexible, extruded PVC that will not crack or yellow, antistatic, dust-repellent treated; with crowned profile.
  - 1. Width: 2" nominal.
  - 2. Slat spacing not less than every 44 mm for 6.9 slats or more per foot.
  - 3. Slat Finish: White.
- B. Headrail: Formed steel or extruded aluminum; long edges returned or rolled; fully enclosing operating mechanisms on three sides and ends; capacity for one blinds per headrail, unless otherwise indicated
- C. Bottom Rail: Formed-steel or extruded-aluminum tube, sealed with plastic or metal capped ends; with enclosed and protected ladders and tapes to prevent their contact with sill.

## Aston Place Apartments

- D. Tilt Control: Manual operation of enclosed worm gear mechanism and linkage rod and clear plastic wand.
- E. Lift Operation: Manual, cord lock; locks pull cord to stop blind at any position in ascending or descending travel.
- F. Ladders to support and maintain slats at proper spacing and alignment in open and closed positions.
  - 1. Braided polyester cord design with vertical components of not less than 0.043" diameter and not greater than 0.068" diameter. Provide integrally braided ladder rungs of not less than 2 threads.
  - 2. Space ladders not more than 24" apart nor more than 7" from ends of slats.
- G. Installation Brackets: Design brackets to support weight of blind assemblies plus forces applied to operate blinds, and to facilitate removal of head channel. Provide mounting holes located to accommodate horizontal or vertical mounting. Include hardware necessary for secure attachment of brackets to adjoining construction and head rails.
  - 1. Provide intermediate brackets at spacing recommended by blind manufacturer.

### 2.2 FABRICATION

- A. Prior to fabrication, verify actual opening dimensions by accurate site measurements. Adjust dimensions for proper fit at openings.
- B. Blinds to fill opening from head to sill and from jamb to jamb. Slats to provide overlap for light exclusion when in fully closed position. Space supporting ladders per manufacturer's standards.
- C. Operation:
  - 1. Full tilting operation with slats rotating 180 degrees.
  - 2. Place tilt operating controls on left side of blind when facing blind units.
  - 3. Provide top-locking cord lock to limit lifting operation to a fully open position.
  - 4. Place pull cords on left side when facing blind.

### 2.3 FINISHES

- A. Finish exposed accessories and hardware to match rail color.
  - 1. Provide corrosion-resistant finish to concealed items of hardware.
  - 2. Steel components: Galvanize and either phosphate-coat or prime exposed steel surfaces; follow with baked-on synthetic resin enamel finish.
  - 3. Aluminum slats: Provide factory-applied finish system consisting of chemical conversion coating followed by baked-on synthetic resin enamel finish coat.
- B. Pattern/color: As selected by the Architect from manufacturer's standard patterns/colors.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with manufacturer's installation instructions. Position units level, plumb, secure, and at proper height and location relative to adjoining window units.

## Aston Place Apartments

- B. Securely anchor units with clips, brackets, and anchorages, suited to type of mounting required.
- C. Provide adequate clearance between window sash and blinds to permit unencumbered operation of sash hardware.
- D. Isolate metal parts from concrete and mortar to prevent galvanic action using tape, thick coating.

### 3.2 SUBSEQUENT OPERATIONS

- A. Test operation of each blind unit, and adjust as required to provide smooth operation. Repair or replace damaged or otherwise defective units.
- B. Protect installed units from damage until substantial completion.

SECTION 12 36 40

STONE COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Granite slab countertop.
- B. Specified in Other Sections:
  - 1. Joint Sealants.
  - 2. Ceramic tile backsplash.

1.2 SUBMITTALS

- A. With manufacturer's data and installation instructions, submit samples not less than 12" x 12" for each type, color, and finish of stonework units.

1.3 QUALITY ASSURANCE

- A. Standards:
  - 1. Stone Association Publications: Comply with recommendations contained in the publications indicated below:
  - 2. National Building Granite Quarries Assoc., Inc. (NBGQA) "Specifications for Building Granite."

PART 2 - PRODUCTS

2.1 STONE

- A. Basis of Design: Marble & Granite Works; style, color, finish as indicated on the drawings.
  - 1. Kitchens: 3cm granite.
  - 2. Bathrooms: 2cm granite.
  - 3. Windowsills: 2cm granite.
- B. Granite: ASTM C 615 and NBGQA "Specifications for Building Granite".
  - 1. Reinforce unexposed faces to avoid cracking of slab.
- C. Fabrication: Precut stone units to required size and shape. Counter top shall be one piece with holes for sinks and fixtures based on templates provided by fixture manufacturers.

2.2 SETTING MATERIALS

- A. Adjustable Inserts: Malleable iron.
- B. Setting Buttons: Lead or plastic, sized to maintain uniform joint width and with sufficient surface area to avoid crushing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Do not use stone units with chips, cracks, voids, stain or other defects visible in finished work. Clean stone before setting by scrubbing with fiber brushes and water. Wet stone, as required, before setting. Comply with manufacturer's instructions for application of setting materials for counter top.
- B. Set counter top level with shims or bedding as required. Install splash strips and grout joint with marble top.