

# CIRCLE C -1826 APARTMENTS

## SPECIFICATIONS

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Austin, Texas

OWNER

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212 Lavaca Street, STE 300  
Austin, Texas 78701

ARCHITECT

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MEP ENGINEER

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P.O. Box 81271  
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STRUCTURAL ENGINEER

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CIVIL ENGINEER

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Austin, TX 78735

CONTRACTOR

TBD

DATE

8/02/16

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### 0060 GREEN BUILDING PROGRAM REQUIREMENTS

## **BASIC REQUIREMENTS**

### **1. Current Regulations**

#### **Requirements:**

Meet current City of Austin Codes with local amendments (including energy, building, mechanical, plumbing, electrical, and current drainage and water quality standards applicable for the project site watershed).

### **2. Transportation Alternatives - Bicycle Use**

#### **Requirements:**

Provide covered bicycle parking for 15% of residents and permanent building occupants and provide a safe path from property entrance to bike parking. Bicycle spaces shall be racks or lockers anchored so that they cannot be easily removed. Each space allocated for this kind of parking shall be a minimum of two (2) feet wide and six (6) feet long.

### **3. Building Energy Performance**

#### **Requirements**

**Option 1:** Use a building performance model to demonstrate that the building exceeds the applicable Austin Energy Code with Amendments. Buildings under the commercial code must save 10% of energy (kWh) compared to an ASHRAE 90.1-2007 standard reference design (SRD) building (with Austin Amendments incorporated into the SRD) using a Building Energy Hourly Simulation such as Energy Plus1, Carrier HAP1, Trane Trace1, EnergyGauge Summit1, Energy10, or eQUEST. Buildings choosing Option 1 must also meet the prescriptive code minimums for the building envelope, i.e. lighting and equipment efficiency cannot be traded with envelope efficiency. Buildings under the commercial code should perform modeling per the performance Rating Method in ASHRAE 90.1-2007 Appendix G. Projects doing modeling shall also complete AEGBs Summary Data Table documenting building components incorporated into the standard reference and proposed designs. These cases must submit both the residential and commercial AEGB Summary Data Table.

### **4. Residential Mechanical Systems**

#### **Requirements**

Systems meet **ALL** of the following requirements:

1. Dwellings served by split or individual systems are sized according to the Air Conditioning Contractors Association (ACCA) Manual J Residential Load Calculation Procedure and installed according to code.

2. Air conditioning system components are matched according to AHRI (Air-Conditioning, Heating and Refrigeration Institute). Programmable thermostats are required.

## 5. Tenant Education

### Requirements:

Notify and continually educate building tenants on recycling and green practices through a formal and ongoing educational program, including information on the building's website. A tenant guide to educate tenants shall include at minimum information on the building's green features, recycling program, alternative transportation options, pest management, pet etiquette (if pets allowed), hazardous waste disposal and green tips for conservation must be included in move-in packet information. Use double-sided print option to conserve paper or provide in electronic form (preferred).

Recycling information should provide at a minimum guidelines on what materials are and are not accepted, location of recycling, and contact information for additional questions. Permanent signage must be posted indicating the location of the recycling area.

## 6. Testing/Building Systems Commissioning (Cx)

### Requirements:

For residential spaces using split systems and non-residential spaces using residential split systems (i.e. air conditioners and air-source heat pumps 60,000 btuh or less), assure that mechanical systems are operating properly, efficiently, and according to their design intent through verification and testing that will ensure proper airflow and minimal duct leakage by meeting the AEGB Testing Requirements.

An independent testing company hired by the General Contractor (not the Mechanical Contractor) will prepare the Testing Plan and verify that mechanical systems are installed and tested to meet their design intent via the required testing below.

**Split mechanical systems** (ductless, VRF or inverter systems are treated on a case by case basis):

### Required testing:

1. AEGB Site Visits: 100% of dwellings
2. Duct leakage testing: 25% of dwellings
3. Air balancing: 25% of dwellings
4. Static pressure: 25% of dwellings
5. Blower Door Test 25% of dwellings
6. Bedroom pressure differential

### Required Submittals:

**Specification:** The project specifications should include required testing. The testing requirements may also be included on the mechanical plans. Be sure to

involve the testing company early and work with them to integrate testing appropriately into the construction schedule.

**Testing Plan:** Prior to construction, a testing plan must be submitted that narrates what testing is to be done, the criteria for acceptable performance, and the management protocols for follow-up, particularly in the event that testing demonstrates that there may be problems across all or a subset of systems. Review the Sample Testing Plan in the Online Tool.

**Final Testing Report:** The Final Testing Report must include testing method, common problems encountered, solutions used to meet performance criteria, problems that were not solved, and lessons learned. Field and summary data must be submitted with the Final Report. Contact your AEGB representative for template forms for reporting testing data.

Note: Projects installing ductless, inverter driven or VRF systems should work with AEGB staff to develop testing/commissioning requirements pertinent to these systems. This may include a requirement that a manufacturer's representative is onsite during installation and initial commissioning. Any systems that include an air distribution system must also comply with residential air-side testing requirements.

**Requirements (Non-Residential Systems)**

Commission Mechanical and Electrical systems:

The following documentation must be provided:

1. Cx specification included in construction documents, **including air-side testing required for residential systems (above)**
2. Owner's Project Requirements and Basis of Design documents
3. Cx Plan
4. Installation verification
5. Preliminary Cx Report including testing data

**Note:** Commercial building types or tenant finish outs installing split systems with 60,000 Btuh capacity or less, i.e. residential mechanical systems, may follow the AEGB site visit and testing requirements for residential systems in lieu of commissioning to meet AEGB requirements. Projects that are required to conduct commissioning as per the energy code may include the AEGB testing requirements with code commissioning.

**7. Building Water Use Reduction – Metering**

**Requirements:**

All dwellings are individually metered (or sub-metered) for water and are billed individually for water usage.

**8. Building Water Use Reduction**

**Requirements: (Residential)**

Each dwelling includes **ALL** of the following:

1. Lavatory fixtures (max. 1.0 gpm)
2. Showerheads (max. 2.0 gpm) (no more than one showerhead installed per shower)
3. Kitchen fixtures (max. 1.8 gpm)
4. Toilets (max. 1.28 gpf) 85.

5. Urinals (max 0.5 gpf)
6. Energy Star Dishwasher
7. Either no clothes washer is installed in each unit OR washer has a water Factor (WF) that meets current DOE efficiency standards. The standard is 8.4 WF for top loading and 4.7 for front loading (non-compact machines).
8. Complete the Water Use Reduction Calculator

**Requirements: (Non Residential)**

Meet ALL of the following:

1. Public Lavatories (max. 0.5 gpm)
2. Public Showers (max. 2.0 gpm)
3. Public Kitchen fixtures (max 1.8 gpm)
4. Toilets (max. 1.28 gpf)
5. Urinals (max. 0.5 gpf)
6. Complete the Water Use Reduction Calculator

**9. Irrigation Water Reduction**

**Requirements (Residential and Non-Residential Uses)**

Site meets ALL of the following requirements:

1. 90% of new plants on COA Grow Green list (Native and Adapted Landscape Plants).
2. Plant-based mulch covers non-turf planting beds to a minimum 4-inch depth.
3. Install a minimum of 6 inches of soil below all turf areas.
4. Complete the Irrigation Water Calculator.

**10. Low VOC Interior Paints and Coatings**

**Requirements (Residential and Non-Residential Uses)**

All paints, primers, and anti-corrosive coatings applied on-site to the building interior must not exceed the VOC limit of Green Seal Environmental Standard GS-11 as shown below. All coatings applied on-site to the building interior must not exceed the current VOC limit of SCAQMD Rule 1113. *If a specialty product does not have a low VOC option, contact your AEGB representative for approval prior to application.*

**I. All paints, primers, and anti-corrosive coatings** applied on-site to the building interior must not exceed the VOC limit of Green Seal Environmental Standard GS-11 Section 4.4.

<b>Paint Type</b>	<b>VOC Limit (g/L)*</b>
Non-flat Topcoat	100
Flat Topcoat	50
Primer	100
Anti-Corrosive Coating	250

\* The calculation of VOC shall exclude water and colorants added at the point-of-sale.

**II. Coatings** applied on-site to the building interior must not exceed the current VOC limit of SCAQMD Rule 1113 for clear wood finishes, floor coatings, stains, sealers and shellacs, and all other applicable coatings.

**11. Filtration for Indoor Air Quality**

**Requirements (Residential and Non-Residential Uses)**

Filters installed in ventilation systems shall have a minimum efficiency reporting value (MERV\*) rating of 7 or greater.

*\*MERV is the industry standard rating for air filters that measures their ability to trap particles. The higher the rating, the more efficient the air filter is at trapping particles. A MERV rating of 7 will capture particles as small as 3 microns.*

## **12. Moisture Prevention**

### **Requirements (*Residential and Non-Residential Uses*)**

The site must meet ALL of the following requirements:

1. No vinyl wall coverings or other vapor barriers, such as fiber reinforced plastic or vinyl (FRP or FRV) may be installed as the finish material on the interior of exterior wall.
2. Tenant agreements state that no vinyl wall coverings or other vapor barriers may be installed as the finish material on the interior of any exterior wall.
3. Install building envelope drainage plane systems, including flashing and overhang systems.
4. For buildings with mechanical ventilation systems that bring in outside air, document building will be pressurized.

## **13. Storage and Collection of Recyclables**

### **Requirements (*Both Residential and Non-Residential Uses*)**

Dedicated recycling area

Provide appropriately-sized, easily accessible, clearly marked area(s) dedicated to the separation, collection and storage of the following materials: paper, cardboard, glass containers, aluminum cans, #1 & #2 plastic bottles and containers. Recycling must be as convenient as disposal of trash (ex. trash rooms must include a recycling option in the form of either a recycling chute or recycling container/s or valet recycling).

Signage and Education

Carts/containers must be labeled with the materials accepted. Permanent signage must be posted marking the recycling center/s.

Tenant education

On-going education about the recycling program must be provided to tenants (location, materials accepted, etc).

Comply with the Universal Recycling Ordinance

All projects, regardless of size or type, shall comply with the requirements of the Austin Resource Recovery Universal Recycling Ordinance (URO) (Ordinance No. 20101104-018).

Safe Storage and Recycling of Lamps and Batteries

All projects over 100,000 square feet must also provide safe storage and recycling of fluorescent lamps and batteries.

Adequate Storage Volume for Recycling

Multifamily properties have a minimum weekly recycling capacity of 6.4 gallons per unit, the equivalent of one 96-gallon cart per 15 units or one cubic yard of dumpster recycling per 32 units.

**14. Construction Waste Management**

**Requirement (*Residential and Non-Residential Uses*)**

Recycle and/or salvage at least 50% (by weight) of non-hazardous construction and demolition waste, excluding excavated soil and stone. Calculations need to be filled out and documented for the record.

## DIVISION 1 - GENERAL REQUIREMENTS

### **0101            GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION**

General conditions of the Contract for construction are described by the Contract for construction and Division 1 of the specifications. The Work is a project consisting of 240 apartment units and an at grade parking garage located at 7500 W. Slaughter Lane, Austin, Texas. For the purposes of code compliance, it shall be understood that this project shall be designed and constructed in accordance with the 2012 IBC and City of Austin building code amendments as currently enforced.

### **0102            RELATED DOCUMENTS**

The drawings, specifications (Division 1 through 16), instructions to bidders, addenda, the Contract for construction, and any "Change Orders" make up the "Contract Documents" and together form the entire basis for the Agreement between the Owner and the Contractor.

### **0103            INVESTIGATION**

The Contractor/Subcontractor shall become thoroughly familiar with the provisions of the Contract, drawings, specifications, local codes and ordinances, general requirements and addenda thereto as well as the building site and conditions affecting the Work. No allowance will subsequently be made on behalf of the Subcontractor for errors due to his negligence in failing to acquaint himself with the Contract documents, local codes and ordinances, and the site conditions or for his failure to determine the Owner's or Architect's desired meaning and intention of these Contract documents before starting work.

### **0104            INSURANCE**

1. Contractor/Subcontractor agrees to protect, indemnify and hold the Owner/Contractor or Architect harmless against all loss, cost, damage, liability or expense which Contractor may incur or sustain in connection with or in consequence of any claim of personal injury or property damage (including death or destruction) and of any and all other claims of whatsoever character or nature, in any manner or in any way arising out of, connected with, growing out of or a result of performance of the Subcontract or of breach thereof, or of any activity (or inactivity) whatever conducted or permitted by Subcontractor, and whether or not caused by any negligent act or omission on the part of Subcontractor, irrespective of by whom or on whose behalf such claim, suit or action may be asserted or brought. Subcontractor will service any such claim or demand, defend any such suit or action, and satisfy any judgment, including court costs, which may be awarded therein.
  
2. In addition to and not in lieu of satisfaction of the forgoing, Subcontractor agrees to procure and keep in force for the duration of any work hereunder the following insurance in companies acceptable to Contractor:
  - a. Workmen's Compensation and Employer's liability Insurance providing statutory benefits and with minimum liability limits of \$100,000 for Employer's Liability Coverage.

- b. Comprehensive General Public Liability Insurance with minimum liability limits of \$100,000 each person, \$500,000 each occurrence, \$100,000 each occurrence and \$100,000 aggregate for Property damage. This insurance shall include Independent Contractor Coverage, Contractual Coverage and Completed Operations Coverage.
  - c. Comprehensive Automobile Liability Insurance for all owned, non-owned, and hired vehicles with minimum liability limits of \$100,000 each person, \$500,000 each accident for Bodily Injury and \$100,000 for each accident for Property Damage.
3. Contractor/Subcontractor agrees to furnish Contractor/Owner with Certificate of Insurance indicating compliance with the above requirements and specifically evidencing contractual coverage for assumed liability in the contract. Each such certificate shall contain a provision that the same will not be canceled without ten (10) days prior written notice to Contractor.

**0105 WORK PROGRESS**

Time is of the essence regarding this Subcontract. Subcontractor agrees to supply materials, labor and equipment as necessary to commence the work when directed by Contractor. He shall diligently pursue the completion of his work, and coordinate his work with that being done on the Project by the Contractor and other trades so that his work or the work of others shall not be delayed or impaired by any act or omission of an act by Subcontractor. Contractor shall have complete control of the premises on which work is to be performed and shall have the right to decide the time or order in which the various portions of the work shall be installed or the priority of the work of other Subcontractors, and in general, all matters representing the timely and orderly conduct of the work of Subcontractor on the premises. Any allowance for an extension of time beyond that called for on the current progress schedule shall be agreed upon in writing between Contractor and Subcontractor.

Contractor shall not be liable to Subcontractor for any delay to Subcontractor's work resulting from the act, negligence or default of others, or by reason of fire or other casualty, or on account of riots, strikes or other combined action of the workmen, or on account of any acts of God or any other cause beyond Contractor's control, or on account of any circumstances caused or contributed to by Subcontractor.

**0106 CHANGES AND EXTRAS**

Should Contractor at any time during the progress of the work request any alterations or deviations in the scope of the work of this Subcontract, he shall have the right and power to make such requests and Subcontractor shall within a reasonable time thereafter submit an itemized estimate of any cost changes he foresees to make the alterations or deviations. No alteration or deviations are to be made except by a Subcontract change order issued by Contractor.

**0107 DEFECTIVE WORK AND CLAIMS**

It is the intent of these specifications to require only first class workmanship and materials throughout the project. Payments otherwise due may be withheld by Contractor on account of defective work not remedied, claims filed, reasonable evidence indicating probability of filing claims, failure of



Subcontractor to make payments properly to its Subcontractors for material or labor, or a reasonable doubt that the Subcontract can be completed for the balance then unpaid. If the said causes are not removed on written notice, Contractor may rectify the same at Subcontractor's expense.

**0108 LIENS**

Contractor/Subcontractor will save and keep the building or buildings referred to in this Subcontract and the lands upon which they are situated free from all mechanic's and material, men liens and all other claims by reason of his work or of any materials or other things used by him therein.

**0109 PROGRESS PAYMENTS AND FINAL PAYMENT**

Progress payments shall be made in accordance with the terms on the face of the Contract and payment schedule attached. Final payment shall be made thirty (30) days after the total work of the contract is completed, providing the work has been accepted by all inspecting government agencies, accepted by the Owner and Architect, and the Subcontractor shall have furnished Contractor with signed copy of release of lien and supplier's release of lien.

**0110 WORK FORCE AND CONDUCT**

Subcontractor shall provide sufficient supervision and properly skilled workmen to perform his work in accordance with "Work Progress" as defined in paragraph 0105 above. Subcontractor's employees and employees of his Subcontractor, if any, shall be subject to the rules and regulations at any time imposed by the Contractor for the orderly and efficient conduct of all operations on the site and the Subcontractor shall enforce strict discipline and order in meeting these requirements.

**0111 GUARANTEE**

Contractor/Subcontractor shall, before requesting final payment, provide the guarantee required by the specifications. In the absence of any specific guarantee required by the specifications, Subcontractor in signing the Subcontract agrees at his own expense to replace or repair any faulty or defective material or workmanship within one year from the date of final completion and acceptance of Subcontractor's portion of work. In addition, Subcontractor shall be responsible for and pay for replacement or repair of adjacent materials or work which may be damaged due to the failure of Subcontractor's material or work and/or damages as a result of the replacement or repairs thereof.

**0112 APPROVALS AND RECORD DRAWINGS**

Contractor/Subcontractor shall carefully examine specification requirements for approval. Material to be submitted include shop drawings, data, schedules, samples, etc. Contractor shall submit such material at his own expense and in such form as required by the Contract Documents in sufficient time to prevent any delay in the delivery of such materials and the installation thereof. If record drawings are specified to be prepared by Subcontractor, these shall be prepared and submitted to Contractor/Owner before final payment is requested or otherwise required by the specifications.

**0113 CLEANUP**

Contractor/Subcontractor acknowledges that the execution of his work will result in an indeterminate amount of debris. Subcontractor agrees to retrieve, pick up and place in designated location all such generated debris daily during the course of his work unless otherwise noted in the specification.

**0114 FAILURE TO PERFORM**

Should Subcontractor fail to perform in a satisfactory manner, Contractor will inform Subcontractor's supervisor on the job site of the deficiencies and of the required corrective action. If the Subcontractor does not respond within 48 hours, Contractor will then provide a written work progress schedule directly to the Subcontractor. The schedule requirements should be reasonable. However, if the Subcontractor's failure to perform within the general progress requirements has caused delays, it is not unreasonable to expect the Subcontractor to make additional effort to compensate for some or all of the time lost due to its failure to perform.

Subcontractor agrees that in the event any portion of its work that is part of this written progress schedule is not completed within the time specified, Contractor shall be entitled to retain from Subcontractor the sum of \$250.00 per working day beyond specified completion dates as proper amount for liquidated damages. No portion of the liquidated damages sum is to be construed in any sense as a penalty.

Should Subcontractor at any time during the course of its work fail to respond to Contractor's written schedule demands by failing to provide adequate and properly skilled personnel, material of the proper quantity or quality, proceed with its work in a diligent and orderly manner or fail to adequately fulfill any other conditions of the contract documents, Contractor will have the right after 48 hours written notice to Subcontractor to either provide labor, material or other things necessary to fulfill Subcontractor's obligations or terminate employment of Subcontractor.

Subcontractor shall be responsible for reimbursing Contractor for any expenses incurred to provide labor, material or other things necessary to fulfill Subcontractor's obligations. This reimbursement will be in addition to any liquidated damages already incurred.

If Contractor selects the option to terminate employment of Subcontractor, Contractor may take possession of all material previously provided by Subcontractor and provide additional material, labor and other things necessary to complete the work. Subcontractor will not be entitled to receive any compensation due it until all work specified in the contract documents is complete. If upon completion of the work the unpaid balance of the contract amount exceeds the expense incurred by the Contractor to complete Subcontractor's obligations, the differences will be paid to Contractor by Subcontractor. Contractor will pursue reimbursement from Subcontractor to the fullest extent allowed by law.

Bankruptcy, receivership, change in business entity and any other voluntary or involuntary action by or against Subcontractor will also allow Contractor to fulfill Subcontractor's obligations or terminate its employment with previously stated rights of Contractor.

**0115            ASSIGNMENT AND SUBLETTING**

Contractor/Subcontractor agrees that he will not assign, transfer, convey, sublet, or otherwise dispose of this Contract or any part thereof, or his right, title or interest therein, or of his power to execute the same, without the consent in writing of Contractor. If Subcontractor does, with approval, sublet this Subcontract or any part thereof, he shall require that his Subcontractor be bound to him and to assume toward him all of the obligations and responsibilities that he has assumed toward Contractor.

**0116            MATERIALS AND EQUIPMENT**

Unless otherwise specified, all materials and equipment shall be new and of the best quality of their respective kinds. Proposed substitutions to materials or equipment specified by manufacturer's name or trade name shall be equal or superior to the original in all respects. All proposed substitutions shall be submitted to the Contractor for Owner/Architect approval. In instances where the manufacturer of materials or fixtures used on this job provide installation or maintenance directions not covered in these specifications or detailed on the drawings, the Subcontractor furnishing or installing the item shall follow such directions as though specifically mentioned.

The use of building materials containing toxic or hazardous substances is forbidden. Building materials shall be free of asbestos, poli-chlorinated biphenyl (PCB's), formaldehyde, lead and materials considered by the Environmental Protection Agency (EPA) as toxic or hazardous. Any building material or product found to contain such substances shall be replaced by the Subcontractor in accordance with specifications prepared by the Owner at the Subcontractor's own expense. Such expenses shall include design, administration and inspection costs.

Subcontractor shall provide affidavit that hazardous or toxic materials are not contained within any material which Subcontractor has furnished for the project.

**0117            PROTECTION OF WORK**

Contractor/Subcontractor shall take every reasonable precaution to protect the Work or materials from loss or damage. If Subcontractor or his employees are responsible for any loss or damage to the Work or materials of Contractor, Contractor's suppliers, or any other Subcontractor, he shall be charged with same, and any monies necessary to replace such loss or damage shall be deducted from monies due Subcontractor.

**0118            TEMPORARY FACILITIES**

The Contractor shall provide and maintain sanitary toilet facilities from the commencement of the work to the completion of the Work and these are to be used exclusively rather than buildings under construction or completed. The Contractor shall obtain and have installed a temporary power service line to a point convenient for all trades. The Contractor shall provide temporary water for all trades. The Contractor shall provide temporary water for all trades. Before submitting proposal, Subcontractors shall verify the source or location of temporary power and water. Subcontractors will provide their own storage as needed on the site and there will be no storage allowed in unfinished or finished buildings unless specifically authorized in writing by the Contractor.

**0119 TESTS AND INSPECTIONS**

If the Contract documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to be inspected, tested, or approved, the Subcontractor shall give the Contractor timely notice of its readiness and of the date arranged so the Contractor may observe such inspections, testing, or approval. The Subcontractor shall bear all costs of such inspections, tests, and approvals unless otherwise provided. The Contractor shall arrange for a pre-construction meeting between the Soils Engineer, Foundation Engineer, Testing Laboratory, Architect and Contractor. The purpose of the meeting will be to coordinate the methods and frequency of testing and review procedures of test results to insure compliance with plans and specifications.

Test results shall be evaluated by the Testing Lab in an expedient manner reporting the results to the Architect and Contractor, upon completion of testing of each foundation or paving sub-grade or test cylinder. The Laboratory will certify the results are within the limits as described in the plans and specifications.

**0120 PERMITS, LICENSES AND CODES**

All permits other than Contractor's Building Permit, License and Easements necessary for the prosecution of the Work shall be procured and paid for by Subcontractor. Subcontractor shall give all notices and comply with all laws, ordinances, codes (City of Austin, as currently enforced), rules, and regulations bearing on the conduct of the Work as drawn and specified. It is the responsibility of the Subcontractor to verify all local codes and/or amendments that regulate that Subcontractor's specific scope of work. If Subcontractor observes that drawings and specifications are at variance therewith, he shall promptly notify Contractor and Architect in writing before proceeding with his scope of work.

**0121 TAXES**

Contractor/Subcontractor will pay all federal and state taxes imposed upon him as an employer in connection with the performance of this Work. In addition, he shall pay all local, state and federal taxes in connection with his Work.

**0122 PATENTS**

Subcontractor agrees to forever save Owner and/or Contractor harmless because of any claims, demands, or damages of any nature on account of the use of any patented invention, article or process in connection with the Work under this Subcontract, either in the course of construction or after completion of the Work, and Subcontractor further agrees to defend at his own expense any suits or infringements.

**0123 ARBITRATION**

It is hereby agreed that should any dispute arise respecting the true meaning of the drawings, specifications, the same shall be decided by Architect, and if his decision is not satisfactory to both parties, they shall, if so directed by Architect, nevertheless conform thereto and a final and binding decision shall be obtained by arbitration. Such arbitration shall be had by three disinterested parties,

one of which arbitrators shall be selected by Subcontractor and one by Contractor, and the third shall be selected by the two arbitrators so chosen, and the decision of a majority of said arbitrators shall be binding, final and conclusive upon the parties hereto, and no action shall be brought upon this Subcontract with respect to such price or the length of such extension of time, etc., in any court until the award of such arbitration is duly made. The expense of such arbitration shall be borne equally by both parties hereto.

**0124            EQUAL EMPLOYMENT**

Contractor and Subcontractor agrees to abide by and comply with all procedures, rules and regulations with regard to nondiscrimination issued or to be issued by Equal Employment Opportunity Commission or Executive Order, insofar as they may apply to the Work covered by this Subcontract.

**0125            LEGAL QUALIFICATION**

Contractor/Subcontractor hereby represents that he is legally qualified to transact business and to execute his Work as embodied in this Agreement in the state in which said Work is to be performed.

**0126            PERFORMANCE AND/OR MATERIALS BOND**

The Contractor shall have the right prior to signing the contract to require the Subcontractor to furnish bonds covering the faithful performance for the contract and the payment of all obligations arising there under in such form and amount as the Contractor may prescribe and with such sureties as may be agreeable to the parties. If such bonds are stipulated in the bidding requirements the premiums shall be paid by the Subcontractor. If required subsequent to the submission of quotations or bids, the cost shall be reimbursed by the Contractor.

**0127            SAFETY**

Subcontractor shall be responsible for the compliance with all safety rules and regulations including specifically but not by way of limitation, the Occupation Safety and Health Act of 1970, and any amendments thereto or acts in place thereof during the conduct of the Subcontractor's performance on and in connection with the project. Subcontractor shall indemnify contractor to any and all expenses incurred by Contractor for fines, penalties and corrective measures that result from acts of commission or omission by the Subcontractor, his agents, employees, and assigns in failure to comply with such safety rules and regulations.

**0128            PLANS**

The plans consist of Architectural, Structural, Mechanical, Electrical and Civil as listed on the drawing index and any addenda. The drawings show the kinds of materials to be used and their form, fabrication and assembly. In all cases, measured dimensions taken at the building site shall take precedence over written dimensions. The drawings shall not be scaled. Any discrepancy in dimensions in the plans shall be called to the Contractor and Architects attention for clarification.

Indication on the drawings or mention in the Construction documents of articles, materials, operations

or methods require that the Contractor or his Subcontractors provide each item indicated or mentioned of the quality or subject to the qualifications noted; perform according to conditions stated for each operation prescribed, and provide, therefore, all necessary labor, equipment, services and incidentals. Where the specifications refer to a product of one or more manufacturers, such references designate the materials or equipment to be furnished. Where the plans or specifications indicate "or equal", the Contractor shall first determine that the products are equal, then submit them to the Architect for review on C.S.I. form 13.1A

## **0129 SPECIFICATIONS**

Titles to Divisions, Sections, and Sub-sections in these Construction documents are introduced merely for convenience and shall not be taken as a correct, complete segregation of the several units of materials and labor. No responsibility either direct or implied is assumed by the Architect for omissions or duplications by the Contractor or his Subcontractor due to real or alleged error in arrangement of matter in these contract documents.

## **0130 RELATED WORK IN OTHER SECTIONS**

Listing of items under this heading, in all following Sections, is for convenience only and is not intended to be all-inclusive or all-exclusive.

## **0131 PREFERENCE IN AUTHORITY OF DOCUMENTS**

In case the specifications should not fully agree with schedules, the latter shall govern. Figures given on drawings govern scale drawings. Should the drawings disagree in themselves, or with the specifications, the better quality or greater quantity of Work or materials shall be estimated upon and, unless authorized by the Architect in writing shall be performed or furnished.

Explanatory notes in the drawings shall be preferred to conflicting drawn out indications, if any. Where figures are lacking, the measurements are to be checked from the work in place. Should any variations be found, such must be referred to the Architect for instructions. Details or notes shown on the drawings are typical for all similar conditions throughout the project.

## **0132 DEFINITION OF TERMS**

1. The term "Owner" as used herein refers to Stratus Properties, 212 Lavaca Street, STE 300, Austin, Texas 78701.
2. The drawings and specifications were prepared by Kelly Grossman Architects, LLC, 260 Addie Roy Road, Suite 210, Austin, Texas, 78746. Hereinafter, the term "Architect" refers to Kelly Grossman Architects, Inc.
3. Contractor is the General Contractor – TBD

4. The "Subcontractor" is and shall be a person or persons as sole Owner, Partnership, Company or Corporation entering into written contract with the Owner for the execution of Work herein specified.

**0133 SPECIAL CONDITIONS**

1. Grades, Lines and Levels
  - a. The Contractor shall verify all grades, lines, levels, construction details and dimensions as shown on the drawings; and he shall report any errors or inconsistencies in the above to the Architect before commencing Work or ordering materials.
2. Manufactures Directions
  - a. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturers, unless herein specified to the contrary. The Contractor shall be responsible for obtaining such installation instructions from the suppliers. Contractor shall provide all equipment guarantees to the Owner at the completion of the project.
3. Materials and Equipment List
  - a. The Contractor shall furnish to the Owner at the completion of the project a complete list of all materials and equipment used in the project by name, manufacturer and address, and shall require all Subcontractors to do the same. List shall be in duplicate.
4. Samples and Shop Drawings
  - a. Architect and/or Owner reserve the right to request shop drawings and/or samples prior to start of the Work. See DIV-0135

**0134 FINAL CLEANING**

Scope - Furnish all labor, materials and equipment necessary and proper to complete the final cleaning of all Work shown on the drawings and specified herein or reasonable implied by same. Unless otherwise noted on the drawings or specified, the final cleaning Work shall include the following:

Rough Cleaning  
Finish Cleaning

Execution

1. Rough Cleaning
  - a. Pre-clean tubs and showers.
  - b. Pre-clean windows and doors including tracks and frames.
  - c. Sweep and clean floors in preparation for tile and carpet.

2. Finish Cleaning - All finish cleaning shall be of highest quality. Care shall be taken to not damage surfaces, materials, equipment, etc. During the cleaning process, only those products and devices recommended by the manufacturer shall be used to clean products.
  - a. Ceramic tile, marble, travertine, cut marble, etc.
  - b. Cabinets (inside and out) and tops
  - c. Tubs, showers and plumbing fixtures
  - d. Mirrors
  - e. Wallpaper
  - f. Light fixtures and switch plates
  - g. Closet shelving and rods
  - h. Doors, base mold, miscellaneous trim and hardware
  - i. Appliances
  - j. Fireplaces
  - k. Floors
  - l. Carpet (vacuum)
  - m. Porches and decks
  - n. Patios and entry sidewalks
  - o. Storage closets
  - p. Windows and door glass, inside and out (no metal scrapers other than sharp razor blade type shall be used to clean glass). Care shall be taken to avoid damage to glass and/or frames.
  - q. In general, all surfaces and areas inside the house shall be clean, free of dust and in new condition.

Materials - all materials used for cleaning purposes must be of chemical formula, which will not damage the surface being cleaned.



**0135 SUBMITTALS AND SHOP DRAWINGS**

1. The Contractor will, after issuance of the work order, submit to the Architect digital copies of complete, well organized, detailed and dimensioned shop drawings and/or submittals of all items of equipment and materials as noted in the appropriate section of these documents, with letter of transmittal specifying project name, person sent to and from, contents, and date sent. The Architect has up to 14 business days to return. Additionally, shop drawings shall be submitted on any items, which require inspection, cause a change, and affect the design or construction which are not shown on plans. The specified items that are being submitted shall be clearly marked on all copies of the submittal data and bear the General Contractors' reviewing personnel signature and comments if any.
2. By approving and submitting Shop Drawings and samples, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing and sample with the requirements of the Work of the Contract Documents.

The Architect/Engineer will review the Shop Drawings, submittals and samples with reasonable promptness, but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The approval of the Architect/Engineer of a separate item shall not indicate approval of an assembly in which the item functions. The approval of the Architect/Engineer of the Shop Drawings, submittals or samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Architect/Engineer and the Owner in writing of such deviation at the time of submission and the Architect/Engineer and Owner have given written approval of such deviations.

3. Shop Drawings shall include:
  - a. HVAC System and Duct Layout
  - b. Roof and Floor Truss Framing
  - c. Cabinet Work
  - d. Structural Steel Stairs and Railing and miscellaneous Fabricated Steel items
  - e. Pre-engineered metal carports
  - f. Sprinkler system(s), fire & lawn with Owner and Architect approved surge protector.
  - g. Swimming Pool
  - h. Retaining wall layout / wall sections
  - i. Elevator
  - j. Windows

4. Submittals shall include:
  - a. Concrete foundation and paving design mix(es), Flexible pavement design mix(es), Plumbing / Mechanical / Electrical fixtures and equipment, Appliances, Roofing material(s), Swimming pool equipment, Landscape irrigation equipment, Soffit and roof vents, Stucco and accessories, Weather resistive building wrap, Flexible flashing, Galvanized flashing profiles and gauges (including balcony/breezeway T-bar), Ceramic tile and accessories, Vinyl tile, Carpet and pad, Wood laminate flooring, Insulation, Exterior Doors and Windows, Interior doors, Exterior and interior door hardware, bathroom accessories (including handicap grab bars if required), postal specialties
  - b. The following Mock-up Samples:
    1. Stucco: 2' x 2' panel with chosen color and texture.
    2. Exterior Wood and Trim paint/stain: 2' x 2' panel. Apply stain to appropriate wood grade and texture as noted in the Drawings
    3. Gypsum wall / ceiling textures on 2' x 2' gypsum board panels.
    4. Paint samples applied to interior wood finish and sample 2' x 2' Gypsum board panel
    5. Brick/Stone/Faux Stone: 4' x 4' Panel with chosen Stone and Mortar
    6. Retaining Wall Brick/Stone: 4' x 4' Panel with chosen Masonry and Mortar
5. The Contractors shall notify the Architect in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
6. The Contractors shall begin no fabrication or work, which requires submittals until return of approved submittals from the Architect.
7. Submittals shall contain:
  - a. The date of submission and the dates of any previous submissions.
  - b. The Project title and number.
  - c. Contract identification
  - d. The names of:
    1. Contractor
    2. Supplier
    3. Manufacturer
  - e. Identification of the product, with the specification section number.

- f. Field dimensions, clearly identified as such.
- g. Relation to adjacent or critical features of the Work or materials.
- h. Applicable standards, such as ASTM or Federal Specification numbers.
- i. Identification of deviations from Contract Documents.
- j. Identification of revisions on re-submittals.
- k. A blank space for Architect's and Engineers stamp.
- l. General Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of the Contract Documents.

8. Resubmission Requirements

- a. Make any corrections or changes in the submittals required by the Architect/Engineer and resubmit the required number of corrected copies of the shop drawings or new samples until approved.
- b. Indicate any changes which have been made other than those requested by the Architect.

9. Equal Materials: It is not the intent of these Specifications to limit materials to the product of any particular manufacturer. Where definite materials, equipment and/or fixtures have been specified by name, manufacturer or catalog number, it has been done so as to set a definite standard and a reference for comparison as to quality, application, physical conformity, and other characteristics. It is not the intention to discriminate against or prevent any dealer, jobber or manufacturer from furnishing materials, equipment, and/or fixtures, which meet or exceed the characteristics of the specified items. Substitution of materials shall not be made without the use of CSI form 13.1A "Substitution Request" prior to approval from the Owner and the Architect/Engineer.

**0150 CONSTRUCTION WASTE MANAGEMENT**

(This is a Rolling Owner Controlled Insurance Program (ROCIP) contract. Please ensure that appropriate insurance costs are omitted from the bid amount. Refer to the Section 00700 and Section 00810 and the Project Safety Manual of the bid documents for details.)

**PART 1 GENERAL**

**1.1 REFERENCED DOCUMENTS**

1. Drawings and general provisions of the Contract, including General Conditions, section 00700 and Supplemental General Conditions, section 00810; and other Division One sections, apply to this section.

## 1.2 RELATED SECTIONS

1. Section 02780 – Concrete Pavers
2. Section 02050 – Demolition (Building)
3. Section 03100 – Concrete Form Work
4. Section 03200 – Concrete Reinforcement
5. Section 03300 – Cast-in-Place Concrete
6. Section 03330 – Cast-in-Place Architectural Concrete
7. Section 03350 – Concrete Floor Finishing
8. Section 04200 – Unit Masonry
9. Section 04225 – Autoclaved Aerated Concrete (AAC) Masonry
10. Section 04400 – Stone Work
11. Section 05100 – Structural Steel
12. Section 05311 – Steel Floor Deck
13. Section 05313 – Steel Roof Deck
14. Section 05400 – Light Gauge Metal Framing
15. Section 05500 – Metal Fabrications
16. Section 06101 – Rough Carpentry
17. Section 06200 – Finish Carpentry
18. Section 06400 – Architectural Woodwork
19. Section 07602 – Flashing and Sheet Metal
20. Section 07611 – Preformed Metal Standing Seam Roofing System
21. Section 08100 – Steel Doors and Frames
22. Section 08400 – Aluminum Entrances and Storefront Work
23. Section 08505 – Steel Windows and Doors
24. Section 08800 – Glazing
25. Section 08900 – Aluminum Curtain Wall
26. Section 09250 – Gypsum Wallboard
27. Section 09300 – Ceramic Tile, Quarry Tile, and Pavers
28. Section 09650 – Resilient Flooring
29. Section 09680 – Carpet
30. Section 09985 – Interior Metal Cladding
31. Section 10210 – Metal Louvers
32. Section 15010 – General Requirements for Mechanical Work
33. Section 15260 – Piping and Equipment Installation
34. Section 15330 – Wet Pipe Sprinkler System
35. Section 15350 – Natural Gas Piping System
36. Section 15410 – Plumbing Piping
37. Section 15430 – Plumbing Specialties
38. Section 15440 – Plumbing Fixtures
39. Section 15450 – Plumbing Equipment
40. Section 15510 – HVAC Piping
41. Section 15578 – Double Wall Gas Vent

- 42. Section 15890 – Ductwork
- 43. Section 15910 – Ductwork Accessories
- 44. Section 15930 – Air Terminal Units
- 45. Section 16010 – General Requirements Electrical
- 46. Section 16110 – Conduit
- 47. Section 16130 – Boxes
- 48. Section 16140 – Wiring Devices
- 49. Section 16510 – Lighting Fixtures
- 50. Section 16720 – Fire Alarm System
- 51. Section 17010 – Basic Communication Requirements

## 1.2 WASTE MANAGEMENT GOALS FOR THIS PROJECT

- 1. The Owner has established that this Project shall generate the least amount of waste possible and divert from landfill at least 50% (by weight) non-hazardous construction and demolition waste excluding excavated soil and stone.
- 2. The Owner has established that this Project will attempt to reduce waste due to error, poor planning, breakage, mishandling, contamination, or other factors and that efficient management techniques will be employed.
- 3. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.
- 4. With regard to these goals the Contractor shall develop, for review and approval by the Construction Manager, a Waste Management Plan for this Project.

## 1.3 DEFINITIONS

- 1. Waste Materials: Large and small pieces of construction materials which are excess to the contract requirements and generally include trimmings, cuttings and damaged goods resulting from new installations, which cannot be effectively used in the Work.

## 1.4 SUBMITTALS

- 1. Draft Waste Management Plan: Within twenty-one (21) calendar days after execution of the Contract, or prior to any waste removal, whichever occurs sooner, the Contractor shall submit to the Construction Manager, a Draft Waste Management Plan. The Draft Plan shall contain the following:
  - a. Analysis of the proposed jobsite waste to be generated, recycled, diverted, or landfilled including types and quantities.
  - b. Alternatives to landfilling: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, and the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and

recycling (versus landfilling) each material. "Net" means that the following have been subtracted from the cost of separating and recycling: revenue from the sale of recycled or salvaged material, and landfill tipping fees saved due to diversion of materials from the landfill. The list of these material is to include, at minimum the following materials:

Cardboard: Clean, corrugated cardboard such as used in packaging, etc.

Paper: Discarded office refuse such as unwanted files, correspondence, etc.

Untreated Wood: Unpainted, untreated dimensional lumber, plywood, oriented strand board (OSB), Masonite, particleboard, and wood shipping pallets.

Beverage containers: Aluminum, glass and plastic containers.

Concrete and/or Concrete washout

Concrete Masonry Units (CMU)

Aerated Autoclaved Concrete (AAC)

Metals: Banding, stud trim, ductwork, piping, rebar, roofing, flashing and guttering, other trim, structural steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze, etc.

Gypsum Drywall Scrap: Excess unpainted, un-textured drywall construction materials including cuttings, other scrap, and excess materials.

Carpet and padding

Glass: From glazing applications and beverage containers.

Plastics Buckets: Containers for various liquid and semi-solid or viscous construction materials and compounds washed clean of residue.

- c. Meetings: A description of the regular monthly meetings to be held to address waste management, including potential attendees, at which that month's pull/dump records/receipts, tip fees, and tonnages of waste information will be presented.
- d. Materials handling procedures: A description of the means by which any waste materials identified in item (b) above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities; and a storage plan for items which will removed during demolition for later reuse in the new structure.
- e. Transportation: A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from site for off-site separation or a combination thereof) and destination of materials.
- f. Manager: Name and phone number of the Contractor's designated on-site party (or parties) responsible for instructing workers and overseeing the documentation of results of the Waste Management Plan.

2. Final Waste Management Plan: Once the Construction Manager has determined which of the recycling options addressed in the Draft Waste Management Plan are acceptable, the Contractor shall submit, within fourteen (14) calendar days, a Final Waste Management Plan.

The Final Waste Management Plan shall contain the following:

- a. Analysis of the proposed jobsite waste to be generated, recycled, diverted, or landfilled including types and quantities.
- b. Alternatives to landfilling: A list of the waste materials from the Project that will be separated for reuse, salvage, or recycling, the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and recycling (versus landfilling) each material.
- c. Meetings: A description of the regular monthly meetings to be held to address waste management, including potential attendees, at which that month's pull/dump records/receipts, tip fees, and tonnages of waste information will be presented.
- d. Materials handling procedures: A description of the means by which any waste materials identified in item 1.4.1.b above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities; and a storage plan for items which will be removed during demolition for later reuse in the new structure.
- e. Transportation: A description of the means of transportation of the recyclable materials (whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from site for off-site separation or a combination thereof) and destination of materials.
- f. Manager: Name and phone number of the Contractor's designated on-site party (or parties) responsible for instructing workers and overseeing the documentation of results of the Waste Management Plan.

## 1.5 QUALITY ASSURANCE

1. Distribution of the Waste Management Plan: The Contractor shall distribute copies of the Waste Management Plan to the job site foreman and each subcontractor.
2. Training: The Contractor shall provide on-site training of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.
3. Handling: Deposit all indicated recyclable materials in the containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
4. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers. In such case, request resolution by the Contractor's Waste Management Manager for legal disposal, at which time the Contractor's Waste

Management Manager will inform the Construction Manager of the situation and its resolution.

5. Separation Facilities: If the Construction Manager chooses the option from the Contractor's Draft Plan that site separation shall take place, Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked (in English and Spanish) to avoid contamination of materials, and shall be changed out for empty containers/pulled/emptied as demand requires.
6. Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to prevailing regulations and as otherwise specified in the Contract Documents.
7. Resources for development of Waste Management Plan: The following sources may be useful in developing Draft Waste Management Plan and may not represent a complete listing of available resources:
  - a. Austin Energy Green Building. Ask for a list of construction and demolition companies operating in the Austin area. Email [Katherine.Murray@austinenergy.com](mailto:Katherine.Murray@austinenergy.com), or call 482-5351.
  - b. City of Austin Solid Waste Services  
Commercial Waste Reduction Assistance Program  
Keith Bible  
PO Box 1088  
Austin, Texas 78767  
(512) 974-6492, [http://www.ci.austin.tx.us/sws/commercial\\_wrap.htm](http://www.ci.austin.tx.us/sws/commercial_wrap.htm)  
[Keith.bible@ci.austin.tx.us](mailto:Keith.bible@ci.austin.tx.us)  
*Free consulting services for businesses to reduce waste and associated costs*
  - c. **Reducing Construction and Demolition Waste, Guide to Resource Efficient Building Elements by the NCAT/Center for Resourceful Building Technology**  
PO Box 100  
Missoula, MT 59806  
(406) 549-7678, [www.montana.com/crbt](http://www.montana.com/crbt)
  - d. WasteSpec: Model Specifications for Construction Waste Reduction, Reuse, and Recycling by the Triangle J Council of Governments  
PO Box 12276  
Research Triangle Park, NC 27709  
(919) 549-0551
  - e. Recycling Plus Program Manual: A Best Practices Manual for Construction Jobsite Recycling distributed by the Clean Washington Center (Publication # CDL-96-1)  
Attn. Publications  
2001 Sixth Ave., Suite 2700



Seattle, WA 98121  
(206) 587-5520

8. Reporting: The Contractor shall provide monthly tonnage updates. The Contractor shall document work methods, recycled materials, and quantities recycled under the Final Waste Management Plan. This report to be summarized and tallied at the final Waste Management Meeting at the conclusion of the Project.

## DIVISION 2 - SITEWORK

### **0210 CLEARING**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, equipment necessary and proper to complete the clearing and layout shown on the drawings and specified herein or reasonably implied by same.

#### **CLEARING OF TREES AND OTHER VEGETATION PROTECTION OF EXISTING TREES**

##### Execution

1. Clearing:
  - a. Remove all trash, brush or other debris from the surface of the project site and haul away.
  - b. Remove all trees falling within building lines or shown on the drawings to be removed, including roots and stumps. No other trees shall be cut without specific approval of the Architect or Owner.
  - c. All trees in immediate building and parking areas that are to remain will be flagged by the General Contractor and protected prior to start of clearing.
  - d. Remove no other trees than are noted by the General Contractor. Any tree or shrub which is removed or damaged by Subcontractor or his employee's without prior approval of the Contractor shall result in a fine of \$250.00 per 1" Caliper.
2. Cleaning: All trash or debris from clearing and tree cutting shall be removed from the site and disposed of at the Subcontractor's expense keeping site and buildings neat at all times. Paragraph 0113 of General Requirements will be strictly adhered to.
3. Permits: If required shall be at Subcontractor's expense.

### **0220 EARTHWORK**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, material, equipment necessary and proper to complete the earthwork shown on the drawings recommended by the Soils Report # 96155091 prepared by Terracon dated July 14, 2015.

##### Section Includes:

1. Remove surface debris.
2. Remove topsoil and subsoil.

3. Excavation and Backfill.
4. Remove paving, curbs and other foreign materials.
5. Grading.
6. Remove trees and shrubs.

#### References

1. ASTM C136 – Method of Sieve Analysis and Coarse Aggregates.
2. ASTM D2487 – Classifications of Soils for Engineering

#### Execution

1. Stock Pile Topsoil: No room on site. Haul off.
2. Rough Grade: Grade site so as to achieve final finished grades for positive site drainage as shown on plans (and in accordance with the soils report 1½ to 2% grades to storm inlets). Grades around buildings should provide for a minimum of six (6”) inches of relief between finish floors and finish grades. Potential problems with surface drainage that become evident during grading shall be brought to the General Contractor's attention and a solution worked out before grading is completed.
3. Compacted Fill: Reference Soils Report # 96155091 prepared by Terracon dated July 14, 2015.

Fill material under foundations and paving shall be placed following the soils report recommendations and shall not include any trash or organic material. Material brought in from off-site must be approved by the Soils Engineer.

Compaction procedures, uniformity, and density must be approved by the Soils Engineer. The Contractor will notify the Engineer 24 hours in advance to permit scheduling of inspection. Field density tests shall be performed by the Soils Engineer at a frequency of one (1) test for every 4000 square feet of Building Sub-grade, or one (1) test for every 5000 square feet of paving Sub-grade or as required to confirm compaction. Do not proceed with the placement of reinforcement steel or cables until all compaction tests are within the limits set above.

4. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0255            TERMITE CONTROL**

General – Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 of the specifications apply to this section.

Scope – This section includes soil treatment for termite control.

### Submittals:

Product data and application instructions.

Certification that products used complies with U.S. Environmental Protection Agency (EPA) regulations for termiticides.

### Quality Assurance:

In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for preparing substrate and application. Engage a professional pest control operator who is licensed according to regulations of governing authorities to apply soil treatment solution. Use only termiticides that bear a federal registration number of the EPA and are approved by local authorities having jurisdiction.

### Job Conditions

1. Restrictions: Do not apply soil treatment solution until excavating, filling and grading operations are completed, except as otherwise required in construction operations.
2. To ensure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

### Warranty

1. Warranty: Furnish written warranty, executed by applicator and contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.
2. Warranty Period: Five (5) years from the date of substantial completion.
3. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

### Products

1. Soil Treatment Solution: Use and emulsible, concentrated termiticide that dilutes with water, specially formulated to prevent termites infestation. Fuel oil will not be permitted as a diluent.
2. Available Products: Subject to compliance with requirements, products incorporated in the Work are limited to the following:
  - a. Any chemical termite control used is Pyrethroid or Borate based.

3. Dilute with water to concentration level recommended by manufacturer.
4. Other solutions may be used as recommended by Applicator if approved for intended application by local authorities having jurisdiction. Use only soil treatment solutions that are not harmful to plants.

#### Execution

1. **Surface Preparation:** Remove foreign matter that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placing compacted fill under slabs if recommended by toxicant manufacturer.
2. **Application Rates:** Apply soil treatment solution as follows:  
Apply four (4) gallons of chemical solution per 10 linear feet to soil in critical areas under slab, including entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers.

Apply one (1) gallon of chemical solution per 10 sq. ft. as an overall treatment under slab and attached slab areas where fill is soil or unwashed gravel. Apply 1½ gallons of chemical solution to areas where fill is washed gravel or other coarse absorbent material.

Apply four (4) gallons of chemical solution per 10 linear feet of trench for each foot of depth from grade to footing, along outside edge of building. Dig a trench six (6) to eight (8) inches wide along outside of foundation to a depth of not less than 12". Punch holes to top of footing at not more than 12" on center and apply chemical solution. Mix chemical solution with the soil as it is being replaced in the trench.

3. Under crawlspace and basement structures, treat soil along exterior and interior walls of foundations with shallow footings as specified above for exterior of slab-on-grade structures.
4. Treat soil under or around crawlspace structures as follows:
  - a. Apply four (4) gallons of chemical solution per 10 linear feet of trench along inside of foundation walls, along both sides of interior partitions, and around piers and plumbing. Do not apply an overall treatment in crawlspaces.
  - b. Apply four (4) gallons of chemical solution per 10 linear feet of trench, for each foot of depth from grade to footing, along outside of foundation walls, including part beneath entrance platform porches, etc.
  - c. Apply four (4) gallons of chemical solution per 10 linear feet along the inside and outside of foundation walls of porches.
  - d. Apply one (1) gallon per 10 sq. ft. of soil surface as an overall treatment only where attached concrete platform and porches are on fill or ground.

5. At hollow masonry foundations or grade beams, treat voids at rate of two (2) gallons per 10 linear feet, poured directly into the hollow spaces.
6. At expansion joints, control joints, and areas where slabs will be penetrated, apply at a rate of four (4) gallons per 10 linear feet of penetration.
7. Post signs in areas of application to warn workers that soil termiticide treatment has been applied. Remove signs after areas are covered by other construction.
8. Reapply soil treatment solution to areas disturbed by subsequent excavation, landscape grading, or other construction activities following application.

## **0256 SITE PLUMBING**

General - Related documents; see DIV 0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the site utilities Work shown on the drawings and specified herein or reasonably implied by same.

All Work performed under this Section of the specifications shall be in strict accordance with all state and local codes and in accordance with the soil report recommendations. All equipment, fixtures, etc., shall be approved by such national organizations having jurisdiction over that class of materials.

In general, the drawings for the building plumbing Work shall be considered diagrammatic showing the location, type and size of piping, plumbing fixtures and equipment.

### Materials

1. Waste sewer line system and water system: Per governing agency requirements as a Contractor's option, all according to local building codes. Cleanouts shall be standard type as noted under the execution part of this Section.
2. Products: Fill shall be earth, free from waste, frost, stumps, roots and sod.

### Execution

1. Protection of persons and property:  
Barricade open excavation and post with warning lights for safety of persons. Operate warning lights during hours of darkness.

Protect structures, utilities, pavements, drives and other facilities immediately adjacent to excavations from damage.

Take precautions and provide necessary bracing and shoring, guard against movement or settlement of existing improvements or new construction. Subcontractor is entirely responsible for strength and adequacy of bracing, shoring, safety and support of construction from damage or injury caused by the lack thereof or by movement or settlement.

All excavation shall be unclassified. It shall be the responsibility of the Subcontractor to examine the site and decide on the type of excavation material that will be encountered.

2. Excavation and Backfilling:

A minimum of six (6") inches of fine textured soil or sand will be used around and under all underground lines. A solid well-compacted bed shall be provided for all gravity drainage piping so that no settling shall occur to disrupt the lines. Backfilling shall be compacted so there is no uneven settling of finish grade. When backfilling under site paving, place fill in eight (8") inch lifts compacted to 95% Standard Proctor. No rocks larger than three (3") inches will be allowed in backfill.

3. Site Sanitary Sewer System:

Install a complete site sanitary drainage system as shown on the drawings and specified herein. Provide a four (4") inch drain in the swimming pool equipment area(s) for pool equipment back-wash lines and extend lines to sanitary sewer or storm sewer system per code requirements.

4. Site Cold Water Distribution System:

a. Furnish and install complete water supply systems as required for all fixtures, hydrants and laundry equipment. The system shall include the complete cold water supply and "fire-line" as shown on drawings.

b. Provide stop valve at each building in water distribution system to allow individual building disconnection of service as shown on the drawings.

5. Gas Service:

Provide and install gas lines with stop valves as shown on the drawings, unless installed by the gas company.

6. Tests, Guarantees and Warranty:

a. This Subcontractor shall warrant the Work under this Section for one (1) year following date of final completion of his Work on all buildings against defects in material and workmanship.

b. The sanitary drain lines shall be proved tight by temporarily plugging outlets and filling the system with water. Test to determine no loss of water in accordance with local code.

c. Test hot and cold water piping systems hydraulically to a pressure of 100 psi of a minimum period of four (4) hours. Repair any and all leaks and retest until systems are proved tight.

7. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## 0257 SITE ELECTRICAL

General - Related documents; see DIV 0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the site electrical work shown on the drawings and specified herein or reasonably implied by same. Unless otherwise noted on the drawings or specified, the site electrical work shall include all electrical work on the site except that which is noted or otherwise provided or installed by electric service company.

Code Jurisdiction - All Work done shall be in strict conformity and compliance with the requirements of the National Electrical Code and local codes and regulations and shall be considered the minimum allowable.

### Materials

1. All materials involved shall be new and quality specified.
2. All empty conduit for electrical, telephone and television shall be provided and sized as noted or required and be of rigid, thin wall, hot dipped, galvanized steel. PVC may be used if acceptable by the local codes.
3. All wiring in conduits may be wired in aluminum rather than copper, if acceptable by the local codes. All wiring is sized on copper in accordance with the National Electrical code and local code requirements.
4. Light fixtures per schedule in plans.

### Execution

1. **Temporary Power and Lighting:**  
This Subcontractor shall provide temporary electrical power and connections for construction use as directed by the Superintendent.
2. **Distribution from Point of Service to Building Distribution Panels:**  
Primary power and transformers shall be set as detailed by electric service company. Primary power runs from the property line shall be by electric service company in easements agreed upon by Owner and the Architects. This Work shall be coordinated by the General Contractor. This Subcontractor shall provide all on site electrical equipment, conduit and wiring not provided by the power company.
3. **Exterior Landscape and Swimming Pool Lighting:**  
This Subcontractor shall install conduit and wiring for all exterior landscape, parking lot, unless otherwise noted, and carport lights. Utilize direct burial cable where local codes permit. Install all site light fixtures. All post site lighting shall be on photo cells and noted on drawings. Connect all electrical for swimming pool equipment and underwater lights. Coordinate with General Contractor for locations and quantities of tree lights.



4. Power to Controlled Access Gates:  
Provide all power and control conduit as required to complete security gates and systems.
5. Telephone and Television Conduit:  
Install all empty conduit required for the telephone and television systems.
6. Tests, Guarantees and Warranty:
  - a. This Contractor shall warrant the work under this Section for one (1) year following date of final completion of all site Work against defects in material and workmanship.
  - b. Properly test all systems to insure all connections were made properly and completed.
  - c. This Subcontractor shall provide an accurate record of drawings showing exact locations of all underground lines before final payment. One (1) set of reproducible sepia is required.
7. Cleaning:  
Clean up all debris caused by Work of this Section keeping site neat at all times. All debris must be deposited in designated locations on the site. Debris encompasses light fixture boxes or cartons provided by the General Contractor as well as materials supplied by Electrical Subcontractor. Paragraph 0113 of General Requirements will be strictly adhered to.

**0261 ASPHALT PAVING**

General - Related documents; see DIV 0102. Also Soils Report # 96155091 prepared by Terracon dated July 14, 2015.

Scope - Furnish all labor, materials, equipment necessary and proper to complete the asphalt paving shown on the drawings and specified herein or reasonably implied by same. In general, the asphalt paving work shall include the following: Base course, Wearing course, Warranty, Cleanup.

All Work performed under this section of the specifications shall be in strict accordance with all local governmental codes.

Prior to all Work of this section, carefully inspect the surfaces to which asphalt paving will be applied and verify that all work of other trades is sufficiently complete to allow this installation to commence. Verify that all grading has been performed and that the pavement installation will produce surfaces of the designed slope and pattern. In the event of discrepancy, immediately notify the General Contractor and proceed as it directs.

Do not work under weather conditions which will adversely affect the quality of paving.

**Materials**

1. All material involved shall be new and quality specified.

2. Base Course: Flexible crushed stone base conforming to Texas Highway Department specifications #248-Type A or B Grade 2 or better. Maximum liquid limit of 40. Maximum PI of 12. Retained by #1 sieve 0%, retained by #4 sieve 45% to 75% and #40 sieve 60% to 85%.
3. Wearing Course: Prime coat to be "MC-30" liquid asphalt. Asphaltic concrete conforming to SDHPT item 340, type "D".

#### Execution

1. Base Course:
  - a. After the approved subgrade course is established, place a minimum of six (6") inches thick at parking areas and (when compacted) crushed stone base on all drives and parking areas.
  - b. Water and compact base to a density of 95% of SDHPT TEX-113-E and to the contours and grades shown on the plans.
  - c. Maintain a smooth compacted condition until asphalt paving is placed.
2. Wearing Course:
  - a. After the base course has cured, a primer coat must be applied before the wearing course can be placed.
  - b. After the prime coat is fully absorbed, place a wearing surface of asphaltic paving to an evenly compacted depth of 1½". Compaction shall be in accordance with City of Austin standards and specifications.
3. Warranty: This Subcontractor shall warranty the complete asphalt paving and striping for one (1) year following date of installation against undue buckling, cracking, scaling, holes and other related defects which would cause an uneven surface.
4. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0262 CONCRETE PAVING**

General - Related documents; see DIV-0102. See Soils Report # 96155091 prepared by Terracon dated July 14, 2015.

Scope - Furnish all labor, materials and equipment necessary to complete the concrete paving shown on the drawings and specified herein or reasonably implied by same.

#### Material

1. Concrete Mix: Minimum per ASTM C94-557 having 3000 pounds per square inch minimum ultimate 28 days compressive strength.

2. Reinforcing: Deformed bars #4's clean, free of rust, scale, per ACI 315 @ 18" o.c.e.w.
3. Aggregate: Shall be clean and free from clay of any foreign matter, maximum 1½".
4. Expanding Joints: Shall be approved material with removable top strip with #5 smooth bars 12" - 18" long.
5. Joint Filler: Rubber based material approved by Contractor.

#### Execution

1. After the subgrade is established, bring the subgrade to a true and accurate grade in accordance with the soil report recommendations. Contractor shall review grading plan to verify that grades will result in a uniform surface drainage so that water will not pond on paving. Any areas which are too flat shall be called to the attention of the Owner and the Architect prior to the placement of concrete. Stabilize the subgrade for a depth of six (6") inches below finished subgrade. Compact to a minimum of 95% of maximum density per TxDot TEX-114-E. Visually inspect the subgrade to detect any wet, soft or pumping area. Notify the Contractor and Soils Engineer for a resolution of any subgrade problems prior to commencing work.
2. Verify layout of corner pins and exact dimensions with Contractor. Pavement shall be a minimum of 5" thick.
3. Install forms to conform to lines, grades and dimensions shown on the drawings being careful to coordinate with landscaping architectural and civil engineering drawings. Form edge of paving with 2 x 6 and pour reinforced 6" curb with the paving.
4. Install accurately all reinforcing steel as indicated and/or specified including dowels to related work. Reinforcing shall be placed flat in the forms without bends, and shall be lapped 30 diameters (min. - 20"), install one #3 continuous in curb. Reinforcement shall be placed vertically at approximately mid-point of five (5") thick concrete at 18" o.c.e.w. (min.).
5. Prior to placing of concrete a representative of the testing Laboratory shall visually inspect forms, depth of concrete and reinforcing placement and supply the Architect and Contractor with a written report verifying compliance with plans and specifications.
6. Expansion joints shall be installed true to grade and line such that no area of paving shall exceed 3600 sq.ft. After concrete placement, remove top strip and apply Joint Sealer.
7. Control joints shall be saw cut at 15'-18' intervals from outside edge of paving and run along the length of the paving. Control joints shall also be saw cut at 15' intervals across the width of the paving and at other sections where paving narrows.
8. Subcontractor shall not exceed 5" slump during placement operations.

9. During the placement operation thoroughly compact all concrete by suitable means around the reinforcements and into corners of the forms.
10. Place concrete only when the atmospheric temperature is at least 40° Fahrenheit and rising.
11. Concrete shall be screed to a smooth machine trowled plane with uniform slope to maintain constant drainage to avoid any bird bath. Apply a stiff broom finish to provide a non-slip surface.
12. Laboratory Inspection and Testing:
  - a. Provide Laboratory testing in accordance with specification 0119 and as follows:
    1. During the progress of the work, make standard 6" diameter x 12" cylinders in accordance with ASTM C31. Make a set of four (4) cylinders from each pour, or from each 150 cu. yards, whichever quantity is less. Identify cylinders to show the date made, the slump, in accordance with ASTM C-143, and the exact location in the structure from which the sample was taken.
    2. The test cylinders shall be cured by the testing laboratory, and tested in accordance with ASTM C-139. Test one cylinder at 3, 7, 28 days and reserve one (1) cylinder. Test results shall be mailed to the Architect/Engineer indicating the results obtained from each cylinder.
    3. 2" core sample of concrete paving @ 200' intervals to confirm consistent required depth.
13. Warranty: This subcontractor shall warrant the work of this Section for one (1) year following the completion of all work against defects in material and workmanship.
14. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0264 CONCRETE FLATWORK**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, equipment necessary to complete the concrete Flatwork shown on the drawings and specified herein or reasonably implied by same.

### Materials

1. Concrete Mix: Per ASTM C94-557, having 2500 pounds per square inch minimum ultimate 28 days compressive strength.
2. Reinforcing: Deformed rebar's or wire mesh (size and location per plans).
3. Aggregate shall be clean and free from clay and any other foreign matter.

4. Expansion joints shall be approved plastic divider.

#### Execution

1. Install accurately all reinforcing steel as indicated and/or specified including dowels to related Work.
2. Flatwork shall be screened off level or to shift slope as indicated on plans.
3. Use medium broom finish unless otherwise noted on plans. Before final finish use 3" to 4" smooth edging tool leaving this area smooth or as shown on the plans.
4. Concrete walks shall be 3'-6" wide unless noted otherwise and shall have tooled edge joints, scored control joints 6' o.c. and expansion joints shall be placed at a minimum of 24' o.c.
5. Flatwork immediately adjacent to or close to building shall slope away from building.
6. Other Flatwork shall slope in direction of finish grade drainage or edge of deck unless otherwise indicated.
7. Warranty: This Subcontractor shall warrant the work of this Section for one (1) year following the completion of all Work against defects in material and workmanship.
8. Cleaning:
  - a. Immediately strip all forms from Flatwork and move all forms, stakes and excess material forward.
  - b. Leave area around Flatwork level after pouring concrete so as to allow other trades to do their Work.
  - c. Remove all excess concrete spills and unusable or discarded materials from the jobsite.
  - d. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0270 SITE FURNISHINGS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, equipment necessary to complete the bicycle racks shown on the drawings and specified herein or reasonably implied by same. Accommodate up to 61 bikes.

#### Manufacturer

1. Dero Bike Racks, [www.dero.com](http://www.dero.com) 800-298-4915

#### Materials

1. 1.5" Schedule 40 pipe (1.9" OD)
2. Mounting: Surface. Attach as instructed/recommended by manufacturer.
3. Color: Galvanized.

#### Execution

1. Install per manufacturer's instructions and recommendations as located per plans. Each space allocated for this kind of parking shall be a minimum of 2 feet wide and 6 feet long as per COA codes.
2. Warranty: This Subcontractor shall warrant the work of this Section for one (1) year following the completion of all Work against defects in material and workmanship.
3. Cleaning:
  - a. Remove all packaging and dispose of properly.
  - b. Clean benches carefully to not mar finish surfaces.
  - c. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

### **0281 IRRIGATION**

#### General Scope

Provide a complete sprinkler installation as detailed and specified herein. Includes furnishing all labor, materials, and equipment for the proper installation. Work includes but not limited to:

1. Provide shop drawings for complete system for review by Kelly Grossman Architects, LLC. prior to construction.
2. Trenching and backfill.
3. Automatic Controlled system.
4. Upon completion of installation, supply drawings showing details of construction including location of mainline piping, manual and automatic valves, electrical supply to valves, and specifically exact location of automatic valves.

NOTE: All sleeves as shown on plan will be furnished by Owner. Meter and power source to be provided by Owner.

Irrigation system shall provide the following:

1. Controller for 5-day programming.

2. Multiple start times.
3. Two (2) or more independent programs.
4. Manual flow control valves.
5. Rain shut off device.
6. Matched precipitation heads with head-to-head spacing.
7. Check valves for heads on slopes.
8. An "As-Installed" record document plan.

#### Related work Specified Elsewhere

See plans for controller, heads, and valves.

#### Applicable Standards

1. ASTM
2. D2241 - Poly (Vinyl Chloride) (PVC) Plastic pipe (SDRPR) 2287 - Flexible PVC.
3. DD2464 - Poly (Vinyl Chloride) (PVC) Plastic pipe Fittings Socket Type, Schedule 40.
4. D2564 -Solvent Cements for Poly (Vinyl Chloride) - (PVC) Plastic Pipe Fittings.
5. Standard recommended practice for:
  - a. D2855 - Making Solvent - Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.

#### Guarantee and Maintenance

1. Materials and workmanship shall be fully guaranteed for one (1) year after final acceptance. All material will be new and the current production model of the material specified.
2. Provide maintenance of system, including raising and lowering of heads to compensate for lawn growth, cleaning and adjustment of heads, raising and lowering of shrub heads to compensate for shrub growth, for one (1) year after completion of installation.
3. Guarantee is limited to repair and replacement of defective materials or workmanship, including repair of backfill settlement.

#### Submittals

1. Use of materials differing in quality, size or performance from those specified will only be allowed upon written approval of Owner. The decision will be based on comparative ability of material or article to perform fully all purposes of mechanics and general design considered to be possessed by item specified. Bidders desiring to make a substitution for specified sprinklers shall submit manufacturer's catalog sheet showing full specification of each type

sprinkler proposed as a substitute, including discharge in GPM maximum allowable spacing and distance of throw (coverage) and minimum allowable operating pressure at sprinkler. Approval of substitute sprinkler shall not relieve Contractor of his responsibility to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system.

2. It is the responsibility of the Irrigation Contractor to demonstrate that final installed sprinkler system will operate according to the intent of originally designed and specified system. If Irrigation Contractor notes any problems in head spacing or potential coverage, it is his responsibility to notify the owner in writing before proceeding with the work. Irrigation contractor guarantees 100% coverage of all areas to be irrigated.

#### Testing

1. Perform testing required with other trades, including earthwork, paving and plumbing to avoid unnecessary cutting, patching and boring.

#### Coordination

1. Coordinate installation with other trades, including earthwork, paving, and plumbing, to avoid unnecessary cutting, patching and boring.

#### Project Record Documents

1. Maintain at site one (1) copy of Drawings, Specifications, Addenda, approved Change Orders and other modifications in good order and marked to record changes made during construction.
2. Upon completion of work, copy all changes/modifications to a reproducible medium such as mylar or vellum.
3. Deliver reproducible mylar to Landscape Designer prior to issuance of final acceptance. Reproducible to include location, by written dimension, of all main line piping, remote control valves, quick coupler valves, water meters, and field units. Title reproducible "Record Drawing" and include date, signature and license of installer.
4. Prior to issuance of final acceptance, deliver two complete sets of operating manuals for all of the items in the installation, including catalog and specification sheets. These manuals shall include the manufacturer's installation, operation, and maintenance recommendations, including parts list and source in 3-ring binders and indexed for easy reference.
5. Within 14 days of the completion of all punch list items, or at the discretion of the Owner, conduct a training seminar for the Owner's maintenance personnel. The purpose of the seminar will be to familiarize and train the maintenance personnel in the overall operation and maintenance of all the major equipment components.

#### Quality Assurance



1. The LIC shall have in his employ a representative holding a valid license as issued by the Texas Board of Irrigators, P.O. Box 12337, Austin, TX 78711 on site at all times during the performance of this contract.
2. A working foreman will be required on site at all times during construction. This foreman will remain on this project throughout the duration of the contract. In the event of his illness, or other extenuating circumstances, notify and advise the Owner's Representative immediately as to what remedial action will be taken.

#### Project/Site Conditions

1. Water Supply: Owner to provide meter in locations as shown on Drawings. Owner will provide water for required testing, flushing, and jetting.

### **0282 ACCESS GATE**

General- See related documents: See DIV - 0102

Scope- Furnish all labor and equipment necessary to install the access gate and hardware work shown on the drawings and specified herein or reasonably applied by same.

#### Materials

1. Gates are to be constructed of two (2") inch square tubing, 11 gauge iron with  $\frac{3}{4}$ " pickets six (6") inch on center.
2. Slide gate: Gate rollers, similar to six (6") inch Elite with sealed bearings.
3. Track: Hot dipped galvanized after bending type track.
4. "EXIT ONLY" Gates: Should swing inward and meet fire department regulations for width and locking.
5. Gate Operators: Sentex Systems 1000 slide gate operator with in ground sensing loops (shielded belden cable with twisted tails.) System shall be backed up with an Owner and Architect approved surge protector. Chain drive shall be #40 nickel-plated chain.
6. Gate Controller: Shall be Sentex, Elite, or Doorking equal to Sentex "Infinity". Antennas shall be located near the gate. Computer program settings shall be approved prior to installation. All telephone lines and electric power sources shall have battery backup surge protection. Telephone entry system shall have video camera tied to CATV systems for security and maintenance on a 24 hour loop. All gates shall be 4' x 6' safety loop on each side of gates and one exit safety loop.
7. Gates shall be programmed and wired for emergency battery backup, so that in the event of a power failure the gates will automatically open and remain open until power is restored.

8. Pedestrian sidewalk gates: The passage gates that allow entry into resident only areas should contain a locking and latching device. These manually operated gates should have a double sided keyed bolt that will automatically return to the locked position once the gate is again closed. These gates will also be required to have a mechanical closer to return the gate to the closed and locked position.

Execution

1. Gates and locking devices are to be installed as per manufacturer's instructions.

**0283            RETAINING WALLS**

General- See related documents: See DIV - 0102

Scope- Furnish all labor and materials necessary to construct a Stone Gravity Retaining Wall System, as specified by the grading plans in a manner as prescribed below.

Clean-up: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

Defective work: Defective work shall be satisfactorily replaced at the Subcontractor's expense and in conformity with all the requirement of the drawings and specifications

Materials

1. Stone: All concrete walls, No Stone.
2. Weep Pipes: Three (3") inch pvc weep pipes to be cut to fit thickness of retaining wall, and located every eight (8') feet on center. Weep pipes are to be free of debris and wrapped on the back side with filter fabric.
3. Filter Fabric: Filter Fabric to be wrapped around the weep pipes, and on top of the gravel backfill to keep the pipe and gravel clean. Fabric type to be Typar 3201, or approved equal.

<b>Fabric Properties</b>	<b>Test Method</b>	<b>MARV</b>
Grab Tensile Strength (lbs.) (weakest principal direction)	ASTM D-4632	60
Grab Elongation (%) (weakest principal direction)	ASTM D-4632	60
Trapezoidal Tear (lbs.) (weakest principal direction)	ASTM D-4533	25
Mullen Burst (psi)	ASTM D-3786	65
Puncture (lbs.)	ASTM D-4833	18
Permittivity (sec-1)	ASTM D-4491	1.0
AOS (U.S.Sieve Size)	ASTM D-4751	30
Mass per Unit Area (oz. / SY)	ASTM D-5261	1.8

4. Concrete Mortar: A mixture of portland cement and sand with minimum strength of  $f=3000\text{psi}$  at 28 days.

Mix Specifications	Materials	ASTM	Weights
Strength( $f_c$ ): 3000 psi	Cement	C-150	500 lbs.
Slump: 5"	Fine Agg.	C-33	3290 lbs.
Air: 1.5%(+/- 1½%)	Water		250 lbs.
W/C Ratio: .50			

Note: Retardant may be added to extend initial set time / workability. However, it should be known that the retardant will not hinder the minimum strength of  $f=3000\text{psi}$  at 28 days.

5. Gravel Backfill: Shall be continuous gravel or rock and have a gradation similar to an ASTM C-33, size 57. Also a Mirafy Filter Fabric shall separate interfaces between the free draining material and foundation soil, retained soil and soil placed above the free draining material.
6. On-site generated fill may also be used behind the building retaining walls. The on-site generated fill may be used behind the building retaining walls, but should not be placed within two (2') feet of the retaining walls. The 2-foot zone, behind the walls were established to provide a free draining area as a relief for pore water pressures within the clay. The drainage zone should extend two (2') feet from the back of the retaining wall and extend from the heel of the retaining wall to beneath the floor slab or other flat work. If flat work is not above the drainage medium, an impervious cover should be constructed. The drainage medium should be a free draining material having a gradation similar to an ASTM C-33, size 57.
7. Expansion Joint Material: Expansion joint material is a standard ½" x 4" x 10' asphalt expansion joint material used to accommodate control joint at 16' o.c.

#### Execution

1. Site Grading: Grade work to be done prior to arrival of retaining wall contractor. All fill areas to be compacted to a minimum of 95% of the maximum density determined by ASTM D698 compaction procedures at moisture content within +/-3 percentage points of optimum. All ditch lines in close proximity to retaining walls to be fill and compacted to the same specification.
2. Layout: Walls to be staked out by others. Exact stake out characteristics may vary, but typical layout is for ten (10') foot offsets to the high side, with cut and fill points to top and bottom of wall, as specified by the grading plan.
3. Excavation: Excavation to accommodate the stone foundation below subgrade to be done by subcontractor. The excavation parameters to be set by the structural engineering design by subcontractor. Excavation spoils to be used as fill above the grade pocket. In the event that

additional fill is required to accommodate final grade behind the retaining wall, it is to be supplied and installed by the grain contractor.

4. Details of construction:
  - a. Leads are to be set at a 1:6 batter on the front side and back side of the retaining wall (unless otherwise noted by the structural engineer).
  - b. Mortar bed to be placed at the bottom of footing excavation, followed by placement of tightly fitted stone and mortar up to subgrade at the bottom of wall elevation.
  - c. Weep pipes to be placed six (6") inches above subgrade, every eight (8') feet o.c. (see materials, item #2). In a manner which accommodates positive drainage from back of wall to front of wall.
  - d. Control joints to be installed every 16' o.c., using a ½" by 4", typical, asphalt expansion joint material.
  - e. Retaining wall above subgrade to be constructed to minimum dimensions as prescribed by structural engineering and determined by wall height above subgrade. Actual wall dimensions will vary dependent upon bearing capacity of the soils below the retaining wall (i.e. walls bearing on competent bedrock will have less mass than walls bearing on clays at 2000 psf bearing capacity. Refer to structural engineering). Wall above subgrade to be constructed with tightly fitted stone from base to cap, and mortar placed in areas as prescribed by structural drawings only.
  - f. Cap to be constructed at 12" width (unless otherwise noted).
  - g. Wall face to be brushed and swept clean to remove any excess mortar from the front face (aesthetics purposes only).
  - h. Gravel backfill to be placed during the construction of the retaining wall and covered with filter fabric. Following gravel placement, the void above the gravel is to be backfilled to rough grade above the wall (final grade and sod placement to be done by others).
5. Clean-up: Retaining wall Contractor to remove any excess mortar, rock, and trash created by the construction of the retaining wall.
6. Warranty: Subcontractor shall warrant the complete retaining wall system for one (1) year from date of retaining wall completion against defects in materials or workmanship.
7. Maintenance: The extended life of the retaining wall system is based solely on the maintenance practices of the Owner of the project. It is imperative that positive drainage occurs over the top of the retaining wall, and away from the toe of the wall. Particular attention should be taken to verify that the finished grade behind the wall does not fall below the top of the cap. Another alternative is to keep drainage away from the wall all together.

Downspouts should not be allowed to dump water in the vicinity of the retaining wall system. When necessary, downspouts should be tied into the retaining wall weep pipes, or into the area drain boxes. All drain boxes should be kept free and clear from debris. Heavy equipment should never come with close proximity to the top of the retaining wall. Recommended allowable distance to the back of the wall should not be less than the distance from the top of the wall to the bottom of the wall (ie. For a wall height of 8' tall, no heavy equipment should come within 8' of the wall – on the high side, particularly within the 28 day curing period.)

## **0295            LANDSCAPE**

### General Referenced Documents

#### **\*\*City of Austin Green Building Requirements\*\***

1. 90% of new plants on COA Grow Green list (Native and Adapted Landscape Plants).
2. Plant-based mulch covers non-turf planting beds to a minimum 4-inch depth.
3. Install a minimum of 6 inches of soil below all turf areas.

Refer to bidding requirements for special provisions, general provisions, and schedules for additional requirements. This section covers landscape technical specifications only.

### Description of Work

1. Work included: Furnish all supervision, labor and materials, services, equipment and appliances required to complete the work covered in conjunction with the landscape plans, including:
  - a. Planting (trees, shrubs and grass).
  - b. Bed Preparation, Fertilization and Mulch.
  - c. Notify and verify location of utilities prior to excavation.
  - d. Water and maintenance until final acceptance.
  - e. Guarantee.

### Quality Assurance

1. Plant quality is to comply with the standards as outlines by the American Standard for Nursery Stock, by the American Association of Nurserymen, 1986 edition.
2. Plant names are to comply with the standards of Hortus Third by: Staff of L.H. Bailey Hortorium, 1976.

### Job Conditions

1. General Contractor to complete the following punch list: Prior to Landscape Contractor initiating any portion of landscape installation, General Contractor to leave site clean and free of debris and graded in accordance with civil engineer documents and landscape architectural grading documents. It is the landscape Contractor responsibility to set beds at their proper elevation according to the above referenced grading documents.
2. Storage of materials and equipment at the job site will be at risk of the Landscape Contractor. The Owner cannot be held responsible for theft or damage.

#### Maintenance and Guarantee

1. Maintenance:
  - a. The Landscape Contractor shall be responsible for the maintenance of all work from the time of planting until final acceptance by the Owner. No trees, ground cover or grass will be accepted unless they show a healthy growth and satisfactory foliage conditions.
  - b. Maintenance shall include watering of trees and plants, cultivation, weeding, spraying, edging and pruning of trees, mowing of grass, cleaning up and all other necessary work of maintenance.
  - c. A written notice requesting final inspection and acceptance should be submitted to the Owner at least seven (7) days prior to completion. An on-site inspection by the Owner, Landscape Contractor and Landscape Designer will be completed prior to written acceptance.
  - d. After final acceptance of installation, the Landscape Contractor will not be required to do any of the above listed work.
2. Guarantee:
  - a. Trees, shrubs, and groundcover shall be guaranteed for a twelve month (12) period after acceptance. The Landscape Contractor shall replace all dead materials not in a vigorous, thriving condition as soon as weather permits and upon notification by Chiles Architects, Inc. Plants, including trees, which have partially died so that shape, size or symmetry has been damaged, shall be considered subject to replacement. In such cases, the opinion of the Landscape Designer shall be final.
    1. Plants used for replacement shall be of the same species and size as those originally planted and shall be planted as originally specified. All work, including materials, labor and equipment used in replacements, shall be at no cost to the Owner. Replacement plants shall carry a twelve month (12) guarantee. Any damage, including ruts in lawn or bed areas, incurred in making replacements shall be immediately repaired.
    2. At the direction of the Landscape Designer, plants may be replaced at the start of the next year's planting season but in such cases, dead plants shall be removed from the premises.

3. When plant replacements are made, plants, plant soil mix, fertilizer and mulch, etc., to be replaced to original plant specified and reinspected for full compliance with Contract requirements. All replacements are to be included under "Work" of this section.
  - b. The Owner agrees that for the guarantee to be effective, he will water plants at least twice a week during dry periods and cultivate beds once a month after final acceptance.
  - c. The above guarantee shall not apply where plants die after acceptance because of injury by storms, drowning, hail, freeze, insects, disease, injury by humans, machines or theft.
  - d. Acceptance for all landscape Work shall be given after final inspection by the Owner and/or Landscape Designer provided the job is in a completed, undamaged condition and there is a stand of grass (substantial coverage) in all full sod lawn areas. At this time, the Owner will assume maintenance on the accepted work.
3. Repairs:
- a. Any necessary repairs under the Guarantee must be made within ten (10) days after receiving notice, weather permitting. In the event the Landscape Contractor does not make repairs accordingly, the Owner, without further notice to Contractor, may provide materials and men to make such repairs at the expense of the Landscape Contractor.

## Execution

### Bed Preparation and Fertilizing

1. Landscape Contractor is to inspect all existing conditions and report any deficiencies or discrepancies to the Landscape Designer.
2. All planting areas, unless otherwise indicated, should be conditioned as follows:
  - a. **POCKET PLANT**  
All planting beds to be brought up to finished grade by General Contractor per grading plan. Landscape Contractor to pocket plant all shrub material and backfill with approved backfill. Dillo Dirt shall be used for all soil amendments.
  - b. Backfill for tree pits shall be as follows: Use topsoil as specified in 0300 Products, free from debris, placed in layers and watered in thoroughly.
  - c. In pool area (within fencing) and around perimeter of club/rec. building condition beds as follows: apply four (4") inches approved organic material worked into the top four (4") inches of bed giving a uniform mixture to a depth of eight (8") inches. Also use this preparation for all seasonal color area.
  - d. All planting beds, whether Pocket Plant or prepared per item No. 3, shall be fertilized as indicated in section 0300 item D.
  - e. Pocket planting as specified in No. 1 requires that general contractor utilize good quality topsoil to achieve grading.

- f. NOTE: In no way shall any trees, plants, ground cover or seasonal color obstruct drainage or block a 2% minimum positive slope away from building.

#### Installation

1. Maintenance of plant materials shall begin immediately after each plant is delivered to site and shall continue until all construction has been satisfactorily accomplished.
2. Plant material shall be delivered to the site only after the beds are prepared and are ready for planting. All shipments of nursery materials shall be thoroughly protected from the drying winds during transit. All plants which cannot be planted at once, after delivery to site, shall be well protected against the possibility of drying by wind or sun. Balls of earth of B&B plants shall be kept covered with soil or other acceptable material. All plants remain the property of the Contractor until final acceptance.
3. Position the trees and shrubs or stake their intended locations as per the plans.
4. Excavate pits with vertical sides and horizontal bottom. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots and shall be of such depth that, when planted and settled, the crown of the plant shall bear the same relation to the finish grade that it did to soil surface in place of growth.
5. Tree pits shall be no less than two (2') feet twenty-four inches (24") wider than lateral dimension of earthball and six (6") inches deeper than its vertical dimension. Remove and haul from site all rocks or stones over two (2") inches in diameter.
6. Before setting plants, loosen soil in bottom of pit no less than six (6") inches in depth. Place soil mix and tamp in bottom of it so that plants will be at a proper height when fully settled. Plants are to set vertically and soil mix filled into half depth of ball, tamped and thoroughly watered. Remaining burlap around plant balls to be loosened and spread out away from plants or, if too bulky, cut away and removed. Remainder of pit then filled with soil mix, thoroughly tamped and watered all within the same day of planting. Watering means thorough saturation of all backfill in pits, applied only by open hose at very low pressure. On all slopes, soil to be formed into an adequate compacted shoulder on downhill side, with slope on uphill side regraded to form water retaining saucer. Blend saucer into surrounding grade.
7. All plant beds and trees to be mulched with finely ground bark spread to a minimum settled thickness of 4" of mulch and shall be used in all non-turf planting areas that are within the limits of construction. A minimum of 6' in diameter around tree trunk shall be mulched.
8. Trees are to be pruned after inspection and approval by Landscape Designer with care taken to preserve natural appearance. Broken or badly bruised branches to be removed with a clean cut, and treated with tree wound dressings. Pruning to be done by skilled men in accordance with best horticultural practice, appropriate to type and special requirements of individual tree. All cuts are to be covered by an application of "Tree Seal" or equal, colored to match trunk. Do not use lead base paints.



9. Obstruction below ground: In the event rock or underground construction Work or obstructions are encountered in any plant pit excavation work to be done under this section, alternate locations may be selected by the Landscape Designer. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3') feet below grade and no less than six (6") inches below bottom of ball when plant is properly set at the required grade. The work of this section shall include the removal from the site of such rock or underground obstructions encountered at the cost of the Landscape Contractor.

#### Products/Materials

1. Plants:
  - a. Quantities: The drawings and specifications are complementary; anything called for on one and not the other is as binding as if shown and called for on both. The plant schedule is an aid to bidders only. Confirm all quantities on plan.
  - b. Quality and Size: Plant materials shall conform to the size given on the plan and shall be sound, healthy, and vigorous, with well formed tops and good healthy root systems. The plants shall be free from injurious insects, diseases, injuries to the bark, broken branches, and objectionable disfigurements and are to be of specimen quality.
  - c. Approval: All plant materials shall be subject to the approval of Chiles Architects, Inc. All plants which are found unsuitable in growth, or in any unhealthy, badly shaped, or undersized condition, will be rejected by the Landscape Designer, either before or after planting and shall be removed at the expense of the Landscape Contractor and replaced with acceptable plants as specified.
  - d. Trees shall be healthy, vigorous, full-branched, well-shaped and shall meet the trunk diameter and height requirements of the plant schedule. Balls shall be firm, neat, slightly tapered and well burlapped. Any tree loose in the ball or with broken ball at time of planting will be rejected. Balls shall be ten (10") inches in diameter for each one (1") inch of truck diameter, measured six (6") inches above ball.
    1. Nomenclature conforms to customary nursery usage; for clarification, the term "multi-trunk" defines a plant having three (3) or more trunks of nearly equal diameter.
    2. Organic Material: "Dillo Dirt" or as approved per Landscape Designer.
    3. Mulch: Mulch for planting bed areas and trees shall be shredded bark mulch, fine textured, shredded hardwood or cedar.
    4. Integrated Pest Management Plan.
      - a. Fertilizer.  
(Pelleted or granular slow-release type)  
Grasses-Prairie Buffalo-New Planting: None  
Grass Maintenance: 1 to 3 pounds of actual nitrogen per 1000 s.f. of area.  
Native - None.  
Trees/Shrubs-New Planting: 16-8-0 (At planting and once more during period of establishment)

Maintenance: 15-15-15

- b. Pesticide  
(Fire Ant Control)  
Logic-As needed  
Amdro-As needed  
Bushwacker-As needed
- c. Herbicide (Poison Ivy)  
Round-Up - As needed  
Apply in accordance with manufacturer's recommendations.

- 2. Topsoil: Fertile sandy-loam, uniform in composition, free of stones, lumps, roots and seeds minimum 15% organic matter, 50-70% sand, 15-20% clay.

#### Sodding on Prepared Finished Grade

- 1. Do not commence sodding operation until irrigation system is certified by the Landscape Architect and Owner.
- 2. Bed Preparation: Immediately after the finished grade has been approved, begin sodding operations to reduce excessive weed growth. If soil is dry or hot (above 85° Fahrenheit) immediately prior to sod installation, dampen surface with a fine mist of water.

#### Installation

- 1. Lay sod so that adjacent strips butt tightly with no spaces between strips. Sod joints shall butt evenly with no overlap. Discard sod with irregular edges, discolored, uneven thickness or insufficient topsoil. Lay sod on mounds and slopes with strips parallel to contours. Stagger joints. Sodded areas shall be flush with adjoining plugged areas.
- 2. Peg sod on slopes three (3) to one (1) or steeper with pegs driven through sod into soil until pegs are flush with turf. Space pegs eighteen (18") inches on center. Pegs to be one (1") inch square by six (6") inch lengths of lath or similar approved device.
- 3. Water sod thoroughly within 45 minutes of laying with water truck, firehose or similar method to deliver quick application of water.
- 4. Trim all sod edges and planting bed edges by the end of the same day as adjacent sod is laid. Hand water trim pieces as above.
- 5. Immediately after installation of the sod, remove sod clumps and soil. Keep all areas clean during the maintenance period.
- 6. Adjust irrigation system to regularly syringe newly laid sod to prevent turf from drying out. Hand water to supplement irrigation as required during initial establishment period.

#### Plug Planting on Finished Grade

- 1. Do not commence sodding operation until irrigation system is certified complete by the Owner.

2. Bed Preparation: Immediately after the finish grade has been approved, begin sodding operation to reduce excessive weed growth. If soil is dry or hot (above 85° Fahrenheit) immediately prior to sod installation, dampen surface with a fine mist of water.
3. Installation
  - a. All plug planting shall be accomplished using appropriate mechanical equipment meeting the following criteria.
    1. Plug size 4" x 4".
    2. Row spacing 18" on center (may be variable from 9" to 24" on center).
    3. Active cultivation mechanism.
    4. Application Rate: 400 s.y./acre.
    5. Operable on 3:1 slopes.
    6. Operable in moist conditions.
    7. Maximum plug spacing in rows - 18".
  - b. Coordinate equipment passes to maintain parallel, evenly spaced rows.
  - c. Where equipment access is restricted, plugs shall be placed by hand at the row spacing indicated.
  - d. In no case shall grass plugs be spaced more than 18" on center.
  - e. Within 45 minutes of completion of plugging operations in a given area, that area shall be irrigated or hand watered so as to thoroughly wet the top 1" of plug bed.
  - f. Plugged areas shall be watered a minimum of twice daily, (as needed to keep plugs moist) except during periods of sufficient natural rainfall, until final completion at the end of the 90 day maintenance period.
  - g. All ruts and equipment tracks shall be backfilled and raked smooth upon completion of operations.
  - h. Remove all waste debris and soil deposits at adjacent walks and curbs.

#### Maintenance by the Contractor

1. Maintenance under this contract shall commence immediately and include the care and periodical mowing as required to keep the site clean and presentable.
2. The Contractor's maintenance period shall begin upon issuance of the Notice to Proceed and shall not complete until final acceptance by the Owner.

## DIVISION 3 - CONCRETE

### **0330 CAST-IN-PLACE CONCRETE**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the foundation Work shown on the drawings and specified herein or reasonable implied by same.

Imperfect or Damaged Work - Defective Work shall be satisfactorily replaced at the Subcontractor's expense and in conformity with all the requirements of the drawings and specifications (before final acceptance).

#### Materials

1. Lumber: All lumber used in the construction of forms for concrete shall be sound, clean and free of surface imperfections, and shall be suitable for use in forming concrete.
2. Plywood: Form plywood shall be sound and free of surface imperfections, and shall be manufactured with exterior glue suitable for use in forming concrete.
3. Accessories: Form ties, clamps and other accessories shall be of such type, size etc., as will safely support the loads to be encountered. Accessories on exposed faces shall be such as will not leave exposed metal on concrete face.
4. Form Coating: Equal to A.C. Horn Formfilm or Sonneborn Formsave.
5. Reinforcing Bars: All reinforcing bars shall be deformed, new billet steel bars, intermediate grade (unless otherwise shown on the plans) free of loose rust or mill scale, having no kinks or bends not shown on the drawings and delivered to the job site properly tagged and identified.
6. Wire Mesh: Wire mesh shall be standard, smooth welded wire fabric of the gauges and spacing shown on the plans.
7. Tendons:
  - a. Steel for post-tension strand tendons, shall be domestic, stress-relieved, bright 7-wire extra high strength strand having a guaranteed ultimate tensile strength of 270,000 PSI manufactured in accordance with ASTM A-416 (current) for unbounded 7-wire stress-relieved strand for pre-stressed concrete.
  - b. Anchorages and couplers shall meet requirements set forth in ACI code 318-71, and shall be capable of developing the actual ultimate strength of the tendons without excessive deformation.
8. Tie Wire: No. 18 gauge soft annealed black wire.

9. Cement: Portland Cement shall conform to the Standard Specifications for Portland Cement, ASTM Serial Designation C-150 with latest revision Type 1, or the standard specifications for High Early Strength Portland Cement, ASTM Serial Designation C-74, with latest revisions.
10. Concrete Aggregates: Concrete aggregates shall conform to the Tentative Specifications of Concrete Aggregates, ASTM Serial Designations C-33, with latest revisions. The maximum size for concrete aggregate shall be not larger than 1½" for slabs on grade.
11. Water: Water shall be clean, potable and free of injurious amounts of acids, alkalis or organic materials.
12. Ready Mix Concrete: Ready mix concrete shall conform to ASTM specifications C-94, with latest revisions to date having 3,000 PSI minimum ultimate 28 day compressive strength, five (5") inch slump.
13. Expansion Joints: Joint filler shall consist of asphalt vegetable fiber and mineral filler between two sheets of asphalt saturated paper and shall meet the requirements of ASTM Specifications D-994, revised.
14. Admixture: A chemical control compound may be used as an admixture to control plastic shrinkage and improve workability. The admixture shall contain no chlorides, fluorides or nitrates and shall be formulated by the manufacturer for the job area and weather conditions to control set.
15. Vapor Barrier: .006 Black Polyethylene.
16. Curing Compound: Acrylic type, clear finish, manufactured by Sonneborn or an approved equal.
17. Fill dirt at foundation beams shall be placed in plastic sand bags.
  - a. No wood, cardboard, or paper shall be left in soil under, or near foundation.
  - b. Remove all "sono-tube" forms.
18. Drainage Mat

#### Execution

1. Layout: Verify that building corner pins are properly located with lot corner pins as reference, locate and lay out structure as shown on site plan and foundation plan. Verify with interior designer and owner all specialty flooring locations in club house and miscellaneous buildings and provide block outs/recesses as required for these items. Installation shall be in accordance with manufacturer's recommendations.
2. Forms and Details of Construction:
  - a. Install forms to conform to shapes, lines and dimensions of all concrete construction as shown, schedules or implied on the drawings.

- b. All form work shall be placed straight, level, plumb and true to line, sufficiently supported, braced and tied to rigidly support the loads involved without movement, and constructed to maximize resistance to shortening of the member.
  - c. Arrange joints in forms Work in contact with concrete either horizontally or vertically. Forms to be reused shall have all nails withdrawn and surfaces thoroughly cleaned.
  - d. The Subcontractor shall construct framework to adequately support pre-stressing tendons and shall install them in the forms as specified elsewhere.
  - e. The Subcontractor shall check with all other trades and make certain that all piping, conduit, sockets, inserts, sleeves, anchors, bolts, etc. required by the various trades are properly placed and supported to prevent movement during placement of concrete.
3. Trenching: Beam dimensions are the minimum size required and may not be reduced or enlarged without approval of the Engineer.
4. Fine Grade: This Subcontractor shall fine grade all of the slab area by either removing excess fill or importing the required amount to bring elevation to the required grade. Provide a two (2") inch sand cushion as shown on the drawings.
5. Vapor Barrier: This Subcontractor shall install a vapor barrier between earth fill and reinforcing.
6. Reinforcement:
- a. Reinforcing bars shall be placed in the exact locations shown on the plans.
  - b. Suitable spacers, chairs and/or blocks shall be provided to hold the reinforcing steel in place during the placing of concrete. Bars shall be protected from rust and damage.
  - c. Bars shall be securely tied at all intersections and shall be spaced from the forms with suitable blocks, metals supports or chairs.
  - d. Wire mesh shall be placed flat in the forms without kinks, shall be lapped six (6") on each edge, and shall be tied at the laps in intervals not to exceed two (2') feet.
  - e. Tendons of the proper size shall be placed in the forms per the drawings using recognized established procedures according to ACI 318-71.
7. Mixing:
- a. It shall be the responsibility of the Subcontractor to furnish concrete with compressive strengths as called for below.
  - b. Concrete for this Work shall be designed for a compressive strength at 28 days of 3,000 PSI, for slabs on fill and shall have a water cement ratio of not more than 7 gallons of water

per sack of cement, (maximum 5" slump - no water shall be added to the mix on the job site).

8. Placing Concrete:

- a. Form Work shall be complete; excess water shall be removed; reinforcement shall be secured in place; expansion joint material, anchors and other embedded items shall be positioned; and the entire preparation shall be reviewed by the General Contractor and/or designated inspection service prior to concrete placement.
- b. Water shall not be added to a properly designed and batched mix. When necessary for pumping, adjustments may be made on the job, using super plasticizers approved by the Foundation Engineer, maximum slump prior to adding plasticizer - 4".
- c. Use a method which will prevent honeycombing, separation or loss of the materials.
- d. When placing has begun, it shall be carried on as a continuous operation, until placing of unit or section is completed.
- e. Keep reinforcing in proper place.
- f. No concrete shall be placed or finished when the temperature is 40° degrees and falling, without the permission of the Engineer. Concrete, after pouring, shall be protected from freezing for a period of four (4) days after it has been placed or for a period of four (4) curing days. Curing days shall mean days in which the temperature is above 40° degrees for a period of twelve (12) hours.
- g. Exterior entries and patios shall pitch 1/8" per foot with salt finish uniformly for drainage unless otherwise more stringently indicated.

9. Finishing Concrete:

- a. The concrete shall be raked into place and thoroughly compacted by vibration and with a grill tamp. The surface shall be struck off at floor level.
- b. Floating shall begin when the floor has hardened sufficiently such that excess fines will not be brought to the surface. The floor shall be floated with a machine float to a smooth surface free from high spots, valleys, and other imperfections.
- c. After the surface has hardened sufficiently it shall be troweled with a steel trowel to a hard, dense surface free of blemishes. Floating and troweling may be accomplished with a power-driven machine, but final smoothing, finishing and touch-up shall be by hand troweling.
- d. All monolithic floor slabs shall receive a hard troweled smooth finish. All exterior portions of the slab, porches, etc., shall be troweled smooth and receive a light brush finish.

- e. Slab beams exposed to view shall have all honeycomb filled and all burrs and rough form marks filled and removed.
  - f. All expansion joints shall be well and accurately tooled. The expansion joint material shall be cut back a minimum of ¼".
10. Curing and Protection: Freshly placed concrete shall be protected from damage resulting from accidents or weather. Apply curing compound according to manufacturer's recommendations.
11. Laboratory Inspection and Testing:
- a. Provide Laboratory testing in accordance with specification 0119 and as follows:
    - 1. During the progress of the work, make standard 6" diameter x 12" cylinders in accordance with ASTM C31. Make a set of four (4) cylinders from each pour, or from each 100 cubic yards, whichever quantity is less. Identify cylinders to show the date made, the slump in accordance with ASTM C-143, and the exact location in the structure from which the sample was taken.
    - 2. The test cylinders shall be cured by the testing laboratory and tested in accordance with ASTM C-139. Test one cylinder at 7, 21, 28 days and reserve one (1) cylinder. Test results shall be mailed to the Architect/Engineer the same day the tests are made. The laboratory shall furnish a report to Contractor and to Architect/Engineer indicating the results obtained from each cylinder.
12. Cleaning:
- a. On completion of this Work, clean all exposed concrete and remove from the premises: form lumber, cement sacks, excess concrete and any other debris caused by these operations.
  - b. Clean off all excess concrete from surrounding surfaces.
  - c. Paragraph 0113 of General Requirements will be strictly adhered to.
13. Warranty: The Subcontractor shall warrant the complete foundation for one (1) year from date of final slab completion against defects in materials or workmanship.

## **0351 CONCRETE LANDINGS, BALCONIES, AND WALKWAYS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary to complete the concrete work shown on the drawings and specified herein or reasonably implied by same.

### **Materials**

- 1. All materials involved shall be new and quality specified.



2. Vapor Barrier - 60 mil. W. R. Grace Company, Bituthene 3000, Polyken or approved equal.
3. Construction Joints - tooled joints @ 8' on center maximum.
4. Readymix Concrete - Shall conform to ASTM C-94 with a minimum compressive strength of 2,500 PSI.
5. Aggregate - Aggregate to be 3/8" - 5/8".
6. Edge Metal - Extruded aluminum T-Bar, 26 gauge galvanized flashing - see section 0710.
7. Reinforcing - 1½ pound c.y. Fiber mesh MD as manufactured by Fiber Mesh Company or equal.

#### Execution

1. Broom clean entire plywood subfloor before placing vapor barrier.
2. Vapor Barrier: Install vapor barrier continuously over entire plywood subfloor overlapping edges a minimum of four (4") inches. Form turn-ups around all plumbing pipes and any other projections through subfloor.
3. Exterior Concrete Landings and Balconies:
  - a. Fold exterior waterproofing membrane over face of fascia, forming a smooth crease at top edge of fascia. See waterproofing section 0710.
  - b. Place spacers on waterproofing at top of fascia before installation of T-Bar to allow for escape of water between T-Bar and water-proofing.
  - c. Install T-Bar and nail sufficiently to hold rigidly in place.
  - d. Install weld plates for metal handrails as shown on the drawings.
  - e. Cut folded membrane flush with bottom of T-Bar.
  - f. Place concrete with highest point at wall and slope at 1/8" per foot to T-Bar. Provide tooled control joints in locations per plans or a minimum of 8' o.c. Screed and salt finish (medium) concrete to produce a safe walking surface.
  - g. Burn off or remove per manufacturer recommendations any fiber-mesh exposed on surface.
4. Warranty: This Subcontractor shall warrant the complete concrete installation for one (1) year following date of final completion of all areas against defects in materials and workmanship.
5. Cleaning: Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site as each pour is made. Paragraph 0113 of

General Requirements will be strictly adhered to. Metal "T" Bar surfaces shall be cleaned properly.

## **0352 GYP-CRETE FLOORING**

General- Related documents: DIV-0102.

Scope- Furnish all labor, materials, equipment necessary to complete the gyp-crete floor underlayment shown on the drawings and specified herein or reasonably implied by same.

### **Materials**

1. All materials involved shall be new and quality specified.
2. Gyp-crete Floor Underlayment:  
2.1 Mix Design: Mix proportions of 2.1 cubic feet of sand per 80-pound bag of GYP-CRETE 2000, attain typical compressive strengths ranging from 1250 psi to 1500 psi. This mix is not to be used on pours  $\frac{1}{2}$ " or less in depth.
3. Gyp-crete Primer.
4.  $\frac{1}{4}$  "Acoustical Matt. (to be installed at all hard surface locations)
5. Fiber-fill Underlayment.

### **Execution**

1. Broom clean entire plywood subfloor before applying primer. Prime subfloor with gyp-crete primer.
2. Gyp-crete Floor Underlayment: Install 1" of Gyp-crete on all plywood subfloors. Greater than 1" at non-acoustical mat locations. The Gyp-crete shall be pumped to the point of application by methods which, will prevent segregation, loss of materials, or not require water in excess of standard mix. Gyp-crete to be screened and troweled to produce a flat, level surface suitable for application of floor covering. Gyp-crete should not be placed when freezing temperatures are expected within six (6) hours. Continuous ventilation and adequate heat should be provided to rapidly remove moisture from the area until underlayment is dry. General Contractor must supply mechanical ventilation and heat if necessary. Under the above conditions, 5-7 days is usually adequate drying time.
3. Warranty: This Contractor shall warrant the complete Gyp-crete installation for one (1) year following date of final completion of all areas against defects in materials and workmanship.
4. Cleaning: Clean up all debris caused by work of this section keeping site and buildings neat at all times. Debris is to be removed from job site as each pour is made. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 4 – MASONRY

### **0409 MASONRY ACCESSORIES**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the brick masonry shown on the drawings and specified herein or reasonably implied by same.

#### Materials

1. Corrugated Wall Ties shall be 22 gauge galvanized corrugated ties, attached with 6d galvanized nails, spaced on center 32" horizontally, 16" vertically or per plans.
2. Plastic flashing above steel lintel shall be 18" wide x 20 mil thick polyethylene extending full length of brick/stone steel lintel. Top of flashing to weather resistive barrier shall be taped with 4" wide Vycor Plus flexible flashing.
3. Plastic flashing at brick/stone ledge shall be 6 mil thick polyethylene extending full length of brick/stone ledge. If weather resistive barrier other than felt paper is used, top of flashing shall be taped to barrier with 4" wide Vycor Plus flexible flashing. If felt paper is used as weather resistive barrier at sheathing, overlap felt on to plastic flashing on sheathing.

or

- 3.\* Flashing at brick/stone ledge shall be 12" wide Vycor Plus flexible flashing with 6" minimum on sheathing.
4. Expansion Joint Backer Rod: closed cell Neoprene foam, diameter as appropriate for joint width and depth.
5. Expansion Joint sealant shall be one part polyurethane sealant.
6. Metal Cap flashing: lead for rough stone masonry or galvanized paint grip metal for smooth masonry. Gauges and profiles per plans.
7. Pressure treated wood.
8. Tyvek **OR** commercial building wrap.
9. Steel lintels, shop primed, sized per plan.
10. Mortar net @ first course.

#### Execution

1. Install all accessories per manufacturer's instructions. Install all steel lintels, sealants and flashing as indicated in specifications/plans.

## **0422 CONCRETE MASONRY UNITS**

### General

#### Section Includes:

1. Concrete Masonry Units.

#### Related Sections

1. Section 0409 - Masonry Accessories.
2. Section 0700 - Thermal Protection.
3. Section 0792 - Joint Sealers.

### References

1. ASTM C 90 - Standard Specification for Load-bearing Concrete Masonry Units.
2. ASTM C 744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.
3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

### Submittals

1. Submit under provisions of Section 01300.
2. Manufacturer's data sheets on each product to be used, including:
  - a. Preparation instructions and recommendations.
  - b. Storage and handling requirements and recommendations.
  - c. Installation methods.
3. Manufacturer's Certificates: Certify that products meet or exceed specified requirements.
4. Selection Samples: For each block and finish specified, two complete sets of full size samples representing manufacturer's full range of available colors and patterns.
5. Verification Samples: For each finish product specified, two full size samples representing actual product, color, and patterns.
6. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, finishes, polishes and waxes.

### Quality Assurance

1. Fire Performance Characteristics: Where indicated, provide materials and construction which are identical to those of assemblies, equivalent thickness, whose fire endurance has been

determined in compliance with ASTM E 119 by means acceptable to authorities having jurisdiction.

2. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - a. Construct a mock-up, no less than 4 feet by 4 feet by full thickness, of each type of unit and of each color and size to be used in the project.
  - b. Locate mock-up panels in areas designated by Architect.
  - c. Do not proceed with the work until workmanship, color, and finish are approved by Architect.
  - d. Refinish mock-up area as required to produce acceptable work.

#### Delivery, Storage, and Handling

1. Store products in manufacturer's unopened packaging until ready for installation.
2. Deliver masonry units to the jobsite on banded pallets with individual protective covers on each block face. Keep protective block covers on the blocks until installation.
3. Store pallets in single-stacks on level ground and cover with waterproof covering to protect the blocks from inclement weather. Handle blocks carefully to avoid breakage and damage to the finished surface.

#### Project Conditions

1. 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.
2. Do not lay masonry units that are wet or frozen.
3. Remove ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
4. Remove masonry damaged by freezing conditions.
5. Protect completed masonry and masonry not being worked on in the following manner. For grouted masonry, temperature ranges below apply to anticipated minimum night temperatures. For all other masonry, temperature ranges below apply to mean daily air temperature.
  - a. 40 Degrees to 32 Degrees F (4.5 Degrees to 0 Degrees C): Protect masonry from rain or snow for at least 24 hours by covering with weather-resistant membrane.
  - b. 32 Degrees to 25 Degrees F (0 Degrees to Minus 4 Degrees C): Completely cover masonry with weather-resistant membrane for at least 24 hours.

- c. 25 Degrees to 20 Degrees F (Minus 4 Degrees to Minus 6.7 Degrees C): Completely cover masonry with weather-resistant insulating blankets or similar protection for at least 24 hours; 48 hours for grouted masonry.
  - d. 20 Degrees F and Below (Minus 6.7 Degrees C and Below):
    1. Except as otherwise indicated, maintain masonry temperatures above 32 degrees F (0 degrees C) for 24 hours, using enclosures and supplementary heat, electric heating blankets, infrared lamps, or other methods proven to be satisfactory.
    2. For grouted masonry, maintain heated enclosure to 40 degrees F (4.5 degrees C) for 48 hours.
6. Cover open walls to protect from wet conditions and damage from other trades that can stain or damage the finished masonry surfaces. Protect corners by covering with plywood.

#### Products

1. Manufacturers
  - a. Acceptable Manufacturer: Trenwyth Industries, which is located at: 1 Connelly Rd. P. O. Box 438 ; Emigsville, PA 17318; Toll Free Tel: 800-233-1924; Tel: 717-767-6868; Fax: 717-764-6774; Email: [info@trenwyth.com](mailto:info@trenwyth.com); Web: [www.trenwyth.com](http://www.trenwyth.com)
  - b. Requests for substitutions will be considered in accordance with provisions of Section 01600.
  - c. Obtain all exposed masonry units from one manufacturer for each individual product required.

#### Execution

1. Examination
  - a. Do not begin installation until field conditions are acceptable and are ready to receive work.
  - b. Verify that items provided by other sections of work are properly sized and located.
  - c. Verify that built-in items are in proper location, and ready for roughing into masonry work.
  - d. If preparation is the responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.

#### Preparation

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the architectural masonry units under the project conditions.

#### Installation

1. Install in accordance with manufacturer's instructions.

2. Lay units using the best concrete masonry practices. Install only quality units; reject all defective units. Align units level, plumb, and true to line and grade with uniform, carefully-tooled 3/8 inch wide joints on the finished face of the wall.
3. Tool joints neatly after they are finger-hard to ensure they are straight and uniform. Size and place cut pieces appropriately to maintain consistency and bond.
4. Draw blocks from more than one pallet at a time during installation. All exterior mortar shall include W.R. Grace "Dry-Block" water-repellent additive added to each batch in the appropriate dosage rates for mortar type (M,S or N) per manufacturer's instructions. Refer to NCMA TEK 3-1A for Hot and Cold weather construction practices.
5. Make all unit cuts, including those for bonding, holes, boxes, etc., with motor-driven masonry saws, using either an abrasive or diamond blade. Cut neatly and locate for best appearance.
6. Glazed-faced units shall be free from chips, cracks, crazes or any other imperfections that would detract from the overall appearance of the finished wall when viewed from a distance of five feet at right angles to the wall with normal lighting.
7. Mortar Bedding and Jointing:
  - a. All exterior mortar joints must contain W.R. Grace "Dry-Block" water repellent additive or approved equal.
  - b. Lay units with full mortar coverage on head and bed joints taking care not to block cores to be grouted or filled with masonry insulation.
  - c. Tool all mortar joints when thumbprint hard into a concave configuration.
  - d. Care should be taken to remove mortar from the face of masonry units before it sets.
  - e. Tuckpoint the joints of scored units for proper appearance. All exterior scored units must be tuckpointed to prevent water penetration. No raked joints should be used.
  - f. For glazed units, tool mortar joints to a minimum depth of 1/4 inch. Tuckpoint finish joint using a mortar gun with approved BONSAL Polymer Modified Sanded Tile Grout mixed with BONSAL B-7000 Epoxy, per manufacturer's instructions. Do not float grout across the glazed surface.
8. Install flashing at locations shown in the plans and in strict accordance with the details and the best masonry flashing practices.
9. Install weep holes and vents at proper intervals (32 inches O.C. and 2 inches long, above bed joints, typical) at courses above grade, above flashing, and at any water stops over windows, doors, and beams.

## Cleaning

1. Glazed Units: Clean masonry units in accordance with the block manufacturers recommendations. Keep walls clean daily during installation using clean, damp cloth, brushes or rags. Harsh cleaning may mar the glazed surface.
  - a. Do not allow excess mortar to harden on glazed surface. Remove green mortar with dry cloth. Do not use steel wool, sandpaper or other abrasive.
  - b. Use masonry cleaners, such as Sure Klean 600 or Vanatrol, carefully following manufacturer's instructions.
  - c. Clean completed walls with a detergent cleaner, such as Pinsol or Fantastik, rinsing thoroughly. Do not use acid or abrasive on glazed surfaces.
  - d. Do not use paint remover, lacquer thinner, methylene chloride, acetone or muriatic acid on glazed surface.

#### Protection

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

### **0460 STONE VENEER**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the stone masonry shown on the drawings and specified herein or reasonably implied by same.

A 4' x 4' sample panel shall be prepared for approval.

#### Materials

1. Stone shall be White Limestone with a small amount of cream and gray highlights, millsap limestone, or stone as selected and approved by owner/architect - minimum 3½" thick in locations shown on the plans.
2. Mortar shall be in machine mixes from prepared masonry cement, lime, and sharp masonry sand. Mortar to be type N Masonry cement, lime and sand shall be selected so as to provide the Owner with the most desirable color to match the final stone selections. General color range of White and Creme and small amounts of Gray, to be approved by Owner & Architect.
3. Wall anchors shall be 22 gauge galvanized corrugated ties, attached with 6d nails.
4. See drawings for steel lintels.

#### Execution

1. All stone shall be laid true to line with top edges level with corners plumb and true to line.



2. Each stone shall be laid on a full bed of mortar, with ends buttered.
3. All joints on the buildings shall be smooth and flush.
4. Laying and anchoring stones to building shall be according to local building codes with all ties supplied and installed for each three (3) square foot of wall surface of 16" horizontal and 32" vertical. Extra wall ties at 16" o.c. horizontally shall be installed along all archways and sills.
5. Subcontractor to build in flashing and anchorage as detailed on the plans. Flashing shall be provided by others.
6. All joints adjoining openings, windows, doors, fixtures and adjacent materials shall be consistent in size with mortar joints and filled with full mortar bed to provide a weather-proof exterior finish.
7. Subcontractor to construct all stone arches, stone sills and stone accent courses as shown on the drawings.
8. All veneer walls shall have joint weep holes at 4' o.c. in bottom course.
9. This Subcontractor shall protect all window openings, tracks and adjacent materials during this portion of the Work.
10. All stone Work shall be cleaned according to manufacturer recommendations. No acid shall be used unless expressly approved by the Architect.
11. This Subcontractor shall warrant all stone installation for a period of one (1) year following date of final completion and acceptance.
12. Upon completion of the Work on each building, all debris shall be cleared away from the building for removal from the job site by the Subcontractor and all usable brick will be moved for use on the next building.
13. Subcontractor will supply forklifts, mixers, scaffolding and any other equipment necessary to complete his Work.

## DIVISION 5 - METALS

### **0511 METALS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the iron and steel Work shown on the drawings and specified herein or reasonably implied by same.

Prior to the erection of Work of this Section, verify that all work of other trades is sufficiently complete to allow this installation to proceed and verify that all such Work enables the Work of the Section to be completed in accordance with the drawings and these specifications. In the event of discrepancy, immediately notify the Contractor and/or Architect.

Shop drawings - Submit shop drawings on any metal item which differs from the plans.

Application standards - AISC applicable Sections and AWS.

#### Materials

1. Structural Steel: All structural steel and plates shall conform with ASTM A-36 in the size and shape indicated on the drawings and shall receive one (1) shop coat of primer paint.
2. Bolts and Nuts: All bolts and nuts shall be new, free from rust and conforming with ASTM A-307.
3. Welding Rods: All welding rods shall be appropriate for the structural member material (E-60). Also all structural bolts and accessories shall be in accordance with AISC.
4. Other Materials: All other materials, not specifically described but required for the complete installation, shall be new, free from rust, best quality of their respective kinds and subject to the approval of the General Contractor.
5. Primer Paint: All shop primer paint shall be an industrial grade metal primer.

#### Execution

1. Subcontractor will provide the concrete Subcontractor all miscellaneous metal pieces to be imbedded in concrete necessary for this portion of Work.
2. Subcontractor will furnish any structural beam or column and metal lintel or brick ledge which does not directly affect the Work of the concrete Subcontractor.
3. Subcontractor will provide the rough carpentry Subcontractor or masonry Subcontractor all structural metal plates and connectors to properly support the wood construction with the following exceptions. Not included are: nails, forced entry fasteners, stair tread angles, joist and truss hangers.

4. Subcontractor will furnish and install any structural metal beams or columns which the rough carpentry Subcontractor must frame into for support.
5. Drill or punch all holes required for the attachment of Work of other trades and for bolted connections, burned holes are not acceptable.
6. Erect all structural steel, aligning straight, plumb and level. Protect all adjacent Work during erection of metal Work.
7. Make all joints and intersections of metal tightly fitting and securely fastened. Make all work square, plumb, straight and true.
8. This Subcontractor shall grind all exposed welds smooth; all field welds will receive one (1) touch up coat of paint. After the erection and installations is complete, touch up all shop priming coats damaged during erection of metal Work.
9. Warranty: This Subcontractor shall warrant all items furnished and installed for one (1) year following date of final completion of all Work against defects in materials and workmanship.
10. Cleaning: Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

**0551 METAL STAIRS AND RAILS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the metal stairs and rails Work shown on the drawings and specified herein or reasonably implied by same.

Prior to the erection of Work of this Section, verify that all Work of other trades is sufficiently complete to allow this installation to proceed and verify that all such Work enables the Work of this Section to be completed in accordance with the drawings and these specifications. In the event of discrepancy, immediately notify the Contractor and/or the Architect.

All Work must be in accordance with the latest AISC Standards.

**Materials**

1. Structural Steel: All structural steel and plates shall conform with ASTM A-36 in the size and shape indicated on the drawings and shall receive one shop coat of primer paint.
2. Bolts and Nuts: All bolts and nuts shall be new, free from rust and conforming with ASTM A-307.
3. Stairs and Rails: Stairs and railing shall be as detailed on the drawings and primed with one coat of paint.

4. Other Materials: All other materials, not specifically described but required for the complete installation, shall be new, free from rust, best quality of their respective kinds and subject to the approval of the General Contractor.
5. Primer Paint: All shop primer paint shall be an industrial grade metal primer.
6. Pre-cast concrete treads shall be used at all stairs. Pre-cast treads shall be slip resistant to comply with all local safety code requirements, size per plans, finish approved by Architect.

#### Execution

1. Subcontractor will provide to the Concrete Subcontractor all miscellaneous metal pieces to be embedded in concrete necessary for this portion of Work.
2. Subcontractor will furnish and install the complete stair assemblies with columns, plates, treads, risers, stringers, platforms, and railings. Furnish all anchor bolts, fasteners, washers and parts of devices necessary for proper and stable installation of all stairs. Provide lock washers under all nuts. Install all stairs as complete.
3. Subcontractor will furnish and install handrails as shown on the drawings.
4. Drilled or punched holes are required for the attachment of Work of other trades and for bolted connections, burned holes are not acceptable.
5. Make all joints and intersections of metal tightly fitting and securely fastened. Make all Work square, plumb, straight and true.
6. This Subcontractor shall grind all exposed welds smooth; all field welds will receive one (1) touch up coat of paint. After the erection and installations is complete, touch up all shop priming coats damaged during transportation and erection using the priming paint specified for shop priming.
7. Submittals: Submit shop drawings to the Contractor for approval. Show conditions for all typical stairs and locations, marking, materials, sizes, shapes and indicate all methods of connecting, anchoring, fastening, bracing, and attaching to the Work of other trades. Provide shop drawings for stairs and handrails.
8. Warranty: This Subcontractor shall warrant all items furnished and installed for one (1) year following date of final completion of all Work against defects in materials and workmanship.
9. Clean up: Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 6 - CARPENTRY

### **0610           ROUGH CARPENTRY**

General - Related documents; see DIV-0102.

Scope - Furnish all labor and equipment necessary to rough frame and exterior trim all floors, roofs, partitions, walls, blocking, nailers, trusses, beams and incidentals to receive finishes as shown on the drawings and specified herein or reasonable implied by same.

All Work performed under this Section of the specifications shall be in strict accordance with all state and local codes, more specifically 2003 IBC with City of Austin amendments.

Protect adjacent installed or stored materials from damage. Any damaged material will be repaired or replaced at expense of this Subcontractor. Particular attention will be paid to Paragraph 0117 of the General Requirements.

\*\*\*\* Note the structural plans over-ride these specifications.\*\*\*\*

#### Materials

1. All framing and siding material shall be new and free of material defects. NOTE: All lumber grades shown in the specifications are subject to change to comply with the framing notes shown on the plans. Subcontractor shall also furnish his own nails, staples, lag bolts, screws and other connectors.
2. Acceptable grades of Kiln dried lumber:
  - a. Studs (104-5/8" long) 9'-1" plts.
    1. Finger jointed Stud Grade SPF
  - b. Sole Plates (treated at all ground floors)
    1. SYP #3 1<sup>st</sup> Floors
    2. SPF #3 2<sup>nd</sup> & 3<sup>rd</sup> Floors
  - c. Top Plates
    1. SPF #3
  - d. Joists and Rafters
    1. SYP #2 (see structural drawings)
  - e. Headers and Beams
    1. SYP #2 (see structural drawings)
  - f. Solid Beams
    1. Douglas Fir #2 (see structural drawings)
  - g. Truss Bracing

- 1. Utility SPF
  - h. Fascia
    - 1. SPF Primed 2" x 8"
  - i. Trim
    - 1. SPF Primed – finger jointed
3. Acceptable grades of plywood sheathing and siding:
    - a. Floor at 1" Gyp-crete decking -23/32" T&G OSB interior underlayment with exterior glue.
    - b. Floor at poured exterior concrete decking -23/32" T&G OSB.
    - c. Roof – 3/4" thick 3 ply, 23/32 CDX APA or 23/32" OSB; exterior grade underlayment with 1 x 2 battens per plans.
    - d. Soffits and siding
      1. Siding – 9 1/2" "Hardiplank" w/ 8" exposure per Architect approval.
      2. Soffit - 5/8" "soffit" board rated per plans.
  4. Miscellaneous framing:
    - a. Posts, poles and timbers, etc., grade to be per plans. Provide post anchors at first floor at each deck level, condition-waterproof end grain prior to installation with black mastic.
    - b. All load bearing post columns to be cedar (grade per plans).
    - c. Bridging to be solid blocking, #3 or better SYP or per plans.
    - d. Wind bracing to be 1" x 4", #2 or better-resawn SYP, diagonal or 1/2" CDX plywood at building corners, see plans for notes.
    - e. Fire blocking as required by code and as shown on the drawings.
    - f. 15/30# asphalt impregnated felts or poly-wrap.
  5. Trusses:
    - a. Engineer to design shapes as detailed. Exact sizes and connections shall be engineered by the truss manufacturer to fit the units and buildings as shown on the drawings.
    - b. Bridging and bracing of trusses shall be per Truss Engineer's drawings and per plans.
  6. "Gypsum Exterior Sheathing" exterior grade 1/2" or 5/8" impregnated and water-resistant gyprock type sheathing (see plans).
  7. Beams: S4S Fir, #2 or better, per plans.

8. Trim and Fascias: Exterior trim and fascia material in sizes shown on the drawings (S1S2E or S3S - #2 cedar or better or approved Hardiplank alternate) for feature strips, fascias, corner mold, exterior opening trim, divider trim, expansion joints, balcony railings and balusters, balcony facers, stair stringers, etc. as noted on plans.
9. Structural glued laminated member shall be equal to Koppers wrapped in paper. Use Appearance Grade where exposed to view, Commercial Grade where hidden in framing.
10. Micro-Lam Beams as manufactured by Truss Joist Corporations or Par-lam Beams as manufactured by MacMillan Bloedel Limited as shown on the drawings.

#### Execution

1. Framing:
  - a. Framing shall be cut square on bearing points, closely fitted, set to required lines, level, plumb and secured rigidly in place at bearings and connections. Provide wood framing as required for support for various items of Work. The structural integrity of members shall not be impaired by improper cutting or drilling.
  - b. Anchor all plates 4' o.c. with ramset or concrete nails or anchor bolts as required by code. Nail all studs top and bottom. All nailing in accordance with City Code and Nailing schedule on the drawings.
  - c. Install double studs at openings. Frame all corners of not less than three (3) full members. Install cut-in 1" x 4" or 4" x 8", ½" CDX plywood wind bracing at all major outside corners and at all party wall intersections to exterior walls. Wind bracing shall minimally comply with all local building codes.
  - d. Roof trusses - receive, unload, hoist in place, assemble and firmly anchor all trusses as noted on plans. Cut, brace and reframe trusses when shown on plans. Any extra roof extension not part of the trusses will be job built by this Subcontractor and installed according to plans. All roof truss bracing shall be installed according to roof truss manufacturer's engineered shop drawings and per plans and notes.
  - e. All joists properly spaced and spanned according to plans. Construct and erect all beams according to plans and details.
  - f. Cut out both bottom plates at upper floor door openings to allow continuous pour of concrete.
2. Sheathing:
  - a. Sheathing shall be applied horizontally with long dimension across the studs. All vertical joints shall be staggered and shall be centered over framing members.
  - b. Plywood sheathing shall be laid with surface grain at right angles to main supports and with butt joints over supports.

- c. Application shall be continuous from first floor level to roof deck, with no fill-ins at joist band.
3. Plywood decking:
- a. Install decking with the long dimension perpendicular to support members. End butt joints to be staggered and centered over support members, aluminum H-clips to be used between truss spaces.
  - b. Joint spacing shall be in accordance with manufacturer's recommendations.
4. Siding and Soffits:
- a. Siding shall be accurately fit into position without springing or otherwise forcing the siding in place. Ends of horizontal siding shall occur over framing members. The shorter pieces shall be uniformly distributed throughout each area. Nailing shall be in accordance with manufacturer's specific recommendations.
  - b. Install all soffit material as shown on drawings.
  - c. All sheathing and soffit material nailed in accordance with manufacturer's recommendations or City code where covered. Minimum nailing in any case shall be 12" on center.
5. Exterior trim: Install all exterior S4S and rough sawn structural members and exterior trim as called for on the drawings. Work in accordance with details. Materials shall be matched smoothly and driven up tight.
6. Aluminum Windows and Sliding Doors:
- a. Install all sliding glass doors and windows. Before drywall construction, adjust all sliding glass doors and windows to function smoothly and properly.
  - b. Install all SGD and windows square level and plumb with sufficient fasteners to hold securely in place.
7. Exterior Doors: Install all exterior doors as shown on drawings. Provide temporary closure if necessary as directed by Contractor.
8. Flashing and Waterproofing: Install all flashing and counter flashing as shown on drawings or as required to waterproof this work. Do not nail through flashing at areas where possible exposure to standing water. Apply "protecto-wrap" to all windows and 1 x 4 at brick flanges to seal to sheathing to prevent water penetration into building. Apply 12" strip of plastic 6-mill poly at outside corners, inside corners; change of materials and at brick-ledge. Wrap fireplace chimneys with 15# felt prior to stucco or siding application.



9. Rough Hardware:
  - a. Subcontractor will furnish all nails, staples, lag bolts, screws, and glue for sub-deck, joist hangers and other connectors needed for work. Fitch plates and miscellaneous steel items will be provided by Contractor. Bolts for fitch plates will be provided by Contractor.
  - b. Install all miscellaneous steel items required and used to support all wood members.
10. Furrdowns: Frame furrdowns level and true, providing opening for lighting and A/C registers.
11. Valances: Frame all valances true and level as shown on the drawings.
12. Blocking and Openings for Other Trades:
  - a. Framing Subcontractor shall provide openings other than drilling for pipes, etc., and backing and framing for all plumbing equipment in locations and of sizes as directed by the General Contractor.
  - b. Frame as required for support or installation of heating, air conditioning, electrical and other Work. Reframe if installation of heating or air conditioning or other Work requires the disassembling of prior framing.
  - c. Install blocking for gypsum board, exterior handrail, cabinets shelving finish carpentry items and grab bars at accessible units where required.
  - d. Install furring on exposed steel beams for Sheetrock.
13. Mailboxes: Frame openings and install mailboxes as shown on drawings and manufacturer's directions.
14. Cleaning: Sweep units and band materials to be moved forward. Subcontractor is responsible for unloading all rough carpentry material trucks and maintaining the on-site material in an organized manner as directed by the project Superintendent.

Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0620 FINISH CARPENTRY**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, connections and equipment necessary and proper to complete the finish carpentry shown on the drawings and specified herein or reasonably implied by same.

Materials - All finish carpentry materials to be furnished by the General Contractor. The Subcontractor shall furnish his own nails, staples, bolts, screws and other connectors.

1. Interior doors: Paint grade 1-3/8" thick "Classique" panel doors as manufactured by Masonite Corp.
2. Interior doors: At club - paint grade 1 3/4" thick classique panel doors as manufactured by Masonite Corporation.
3. Base: 3" colonial – finger joint White Pine at units, 9 1/4" minimum or per plans at Club.
4. Book Shelves: 1 x 12 #2, 3/4" B/C plywood with 1 x 2 edge or 3/4" bullnose particleboard. See drawings for special paint grade shelving. Wire shelving in all interior closets where normal size is appropriate.
5. Trim, window stool and Moldings: #1 white pine finger joint; see drawings.
6. #3 white pine cleats.

#### Execution

1. Install all base, apron, shelving, window stool, supports, rods and ceiling paneling including all moldings. Materials shall be closely fitted, level, plumb and secured rigidly in place.
2. Install all special trim as noted on plans to include chair rail, wallpaper stops, fireplaces and mantel molding. Materials shall be installed as in Execution #1 above.
3. Install all interior doors and frames to include, but not necessarily limited to, passage, bifold, louvered, folding accordion doors and mirrored bypass. Doors and frames shall be installed plumb, true shimmed and firmly nailed. Trim off bottom or sides of doors as required for fitting. After carpet, properly adjust to insure opening and closing with no binding.
4. Install all locksets, dead bolts, bifold knobs, doorstops, door closures, chain guards, peepholes and KV strip and brackets. All hardware to be installed to manufacturer's recommendations. Keys to be properly labeled and returned to General Contractor for filing and disbursement.
5. Install thresholds and weather-stripping to all exterior doors. (Bids as an alternate)
6. Install all air conditioning access doors, medicine cabinets, and toilet and bath accessories. All materials shall be secured rigidly in place.
7. Install all fire extinguisher and apartment or building numbers.
8. Install all kitchen and bath luminous ceilings to include metal recessed strips and plastic light lens.
9. Adjust glass doors and windows at time of lockout.
10. Subcontractor shall warrant workmanship for one (1) year specifically for failure of any connections and improper installations of any interior door and lockset.

11. Subcontractor shall pick up all debris and leftover material in and around each building first upon completion of trim out and again after lockout and return all material and debris to designated locations.

## **0641 CABINETS AND TOPS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the prefinished cabinet and top Work shown on the drawings and specified herein or reasonably implied by same. Unless otherwise noted on the drawings or specified, the cabinet top Work shall include all buildings.

Subcontractor is responsible for taking measurements and verifying job conditions required for the Work. Report any conditions which may interfere with performance of Work of this Section to the General Contractor.

Submittals - Provide shop drawings for approval prior to fabrication.

### Materials

1. Cabinet style shall be approved by the Owner/ Interior designer.
2. Prefinished:
  - a. All exposed wood to be hardwood veneer or plastic laminate, species and colors as selected from manufacturer's stock design, all cabinets to be prefinished.
  - b. Paint grade cabinet as shown on plans in living rooms or dining.
  - c. Drawers shall have dual drawer glides.
3. Tops and splashes will be high pressure laminated plastic, equal to Wilson Art or Formica.
4. Colors to be as shown on plans or Owner approved.

### Execution

1. Fasten cabinets and tops securely in place as per manufacturer's recommendations. This Subcontractor shall cut holes for lavatories and sinks and install same in tops. Lavatories and sinks to be supplied and distributed by plumber.
2. Floor cleats to be used on base cabinets as directed by the job Superintendent.
3. Shim, trim or adjust cabinets and tops to insure cabinets and tops are plumb and level at time of installation.
4. Cabinets will be complete with fillers, shelves, end panels, moldings and all accessories needed for installation.

5. This Subcontractor shall adjust all drawers and doors for proper operation.
6. This Subcontractor shall warrant all items furnished and installed for one (1) year following date of final completion.
7. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Broom clean all floors after installation. Paragraph 0113 of General Requirements will be strictly adhered to.

DIVISION 7 – MOISTURE AND THERMAL PROTECTION

**0700 BASIC MOISTURE & THERMAL PROTECTION MATERIALS AND METHODS**

**\*\*Austin Green Building Requirements\*\***

The site must meet ALL of the following requirements:

1. No vinyl wall coverings or other vapor barriers, such as fiber reinforced plastic or vinyl (FRP or FRV) may be installed as the finish material on the interior of exterior wall.
2. Tenant agreements state that no vinyl wall coverings or other vapor barriers may be installed as the finish material on the interior of any exterior wall.
3. Install building envelope drainage plane systems, including flashing and overhang systems.
4. For buildings with mechanical ventilation systems that bring in outside air, document building will be pressurized.

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the waterproofing and caulking as shown on the drawings and specified herein or reasonably implied by same.

All Work shall conform to local building codes and manufacturer's instructions.

**0710 SHEET WATERPROOFING (Breezeway and Patio Deck Underlayment)**

Materials

1. Caulking Compound – Carlisle PT 301 Silicone Sealant.
2. Waterproof deck flashing – Carlisle CCW-705, where indicated on plans.
3. Deck/balcony flashing - 26 gauge 3" x 5" galvanized sheet metal or black sheet metal. Exterior and interior corners to be manufactured bent.
4. 4" wide flexible flashing tape and primer. (For top of flashing vertical leg to wall)
5. Deck/balcony drip edge flashing - 26 gauge galvanized sheet metal.
6. Breezeway/Balcony Deck Membrane – Carlisle CCW-701 Sheet Membrane.
7. Bituthene Sealant – Carlisle CCW-704.
8. Breezeway/Balcony Deck Membrane Primer – Carlisle CCW-702

9. Balcony/deck/breezeway T-bar to be extruded aluminum and approved by the Architect and/or Owner. Submit shop drawing for approval prior to purchase or installation.

Manufacturers - Provide waterproofing materials as manufactured by:

1. Carlisle Coatings and Waterproofing Incorporated
2. W.R. Grace flexible flashing tape and primer. (For top of flashing vertical leg to wall)

#### Execution

1. Exterior breezeways, balcony, landings and walkway decks: waterproofing shall be installed per manufacturer's instructions to prevent water from entering the building from the exterior and as shown on the plans.
  - a. All exterior areas including balconies, breezeways, walkways and stair landings receiving light weight concrete topping.
  - b. Install 26 gauge 3" x 5" galvanized flashing at deck/wall perimeters. Overlap and seal joints with CCW-704 per plans. Seal vertical leg of deck flashing to sheathing/building wrap with minimum 4" wide flexible flashing tape. Overlap tape onto sheathing/building wrap minimum of 2". At interior and exterior corners a secondary piece of 4" square asphaltic tape applied over flexible flashing wall tape may be required to seal corners weather tight.
  - c. Install 26 gauge drip edge flashing at deck exterior perimeter over fascia. Joint overlaps to be 6" minimum and sealed with CCW-704.
  - d. Wipe down and clean all metals with manufacturer approved cleaning solution.
  - e. Apply sealer and bonding agent on plywood deck and metal flashing prior to applying CCW-701 sheet membrane.
  - f. Apply CCW-701 sheet membrane over deck/wall and drip edge flashing.
  - g. Install aluminum "T" bar at balcony/deck edge and over fascia. Install T-bar over 1/16" thick washers (or 2 pieces of CCW-701 sheet membrane) at 16" on center with fasteners.
  - h. T-Bar to be installed to be as continuous as possible. All exterior corners should butt together tightly with no gaps present. Face of T-bar needs to be pulled in front of fascia to allow water to escape past face of drip edge flashing on fascia. Do not seal gap between T-bar and drip edge flashing.
  - i. Protect surfaces from damage prior to installation of light weight concrete topping and before concrete topping has cured sufficiently to withstand foot traffic.
2. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## 0721 BUILDING INSULATION

General - Related documents; see DIV-0102.

Scope - Furnish all labor, material and equipment necessary to complete the insulation Work shown on the drawings and specified herein or reasonably implied by same. All Work shall conform to local building code and manufacturer's recommendations.

### Materials

1. Batt and blown insulation shall be manufactured by Owens-Corning fiberglass, Johns-Manville, or GAF.
2. Foam Urethane Sealant as manufactured by DAP, GAF, or Dow Chemical Corp.

### Execution

1. Kraft-paper faced R-15batt+3ci insulation or R-21batt in 2x6 walls: In all exterior walls from the bottom plate to top plate of each floor including fireplace chases.
2. Kraft paper faced R-38 @ attic access openings and within 24" of attic access opening. Per Austin Green Building.
3. Kraft-paper faced R-11 batt insulation:
  - a. On both sides of all Tenant Separation Walls.
  - b. In all knee walls of vaulted ceiling rooms as shown on plans.
  - c. All hard surface floor areas in units.
  - d. In voids between exterior door jamb and trimmer, including header.
  - e. All bath walls.
  - f. All utility room walls.
4. Kraft-paper faced R-30 batt insulation:
  - a. At floor space.
5. All batts shall be fitted snugly between studs, trusses or joists and attached securely in place. Where plumbing pipes occur in exterior walls, insulation shall be placed on the exterior side of the pipes. In odd shaped areas, the batts shall be cut and fitted carefully into the space and around pipes, conduits, etc.

6. R-38 blown insulation:
  - a. All floor space above heated area.
  - b. Install cardboard baffles for ventilation where required at exterior walls.
  - c. All Knee Walls.
7. Exterior joints in the building envelope shall be sealed with foam urethane sealant in the following locations:
  - Around window and door frames;
  - Between wall cavities and window or door frames;
  - Between walls and foundations;
  - Between walls and roof/ceilings and between wall panels;
  - Openings at penetrations of utility services through walls, floors, and roofs;

And all other such openings in the building envelope shall be caulked, gasketed, weather-stripped or otherwise sealed in approved manner.
8. All of the above Sections include the Clubhouse, Apartment Units, Public Laundries, maintenance Rooms, Mechanical Rooms, Public Restrooms and Information Center.
9. Certification of "R" values: Provide Contractor with certificate verifying "R" values of material installed upon completion and acceptance of all Work.
10. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

**\* PLEASE NOTE – Exterior Wall R-Value: Minimum R-15+3c.i. (wood frame) OR R-13+7.5c.i. (steel frame). Continuous insulation required.**  
**- Roof Insulation: Minimum R-38 for “attic and other” OR R-20c.i. for “insulation entirely above deck.”**  
**- Floor Insulation: Minimum R-30 for joist/framing OR R-8.3c.i. for mass.**

**0727 WEATHER RESISTIVE BARRIER (i.e. TYVEK)**

Materials

1. Weather resistant barrier/Building envelope wrap.
2. Tape for laps and tears as approved by manufacturer.
3. Staples/nails for attachment to sheathing as approved by manufacturer.



## Manufacturers

1. DuPont - Tyvek HomeWrap at siding and masonry, Stucco wrap under stucco finishes.
2. Protecto Wrap Dri-Shield.
3. GreenGuard Classic Wrap.

## Execution

1. Install building wrap over exterior sheathing per manufacturer instructions and recommendations.
2. Windows
  - a. Trim building wrap at window allowing 1½" gap between window frame projection and edge of building wrap.
  - b. Clean dust off exposed window flange tape to provide full building wrap tape adhesion to substrate. If required by building wrap and/or tape manufacturer, apply tape primer.
  - c. Tape building wrap to window flange tape (exposed below building wrap) using manufacturer approved tape. Install window sill tape first, followed by window jamb tape and then head tape.
  - d. Apply sufficient pressure to fully adhere building wrap tape to window tape completely. Bubbles, fish-mouths, tears, holes, etc... in building wrap tape are not acceptable.
3. Doors
  - a. At rough framed door openings cut building wrap per manufacturer's instructions and recommendations. Wrap rough door opening and trim excess building wrap as required.
  - b. Install pre-hung exterior door into opening per plans.
4. Window/Door head flashing over wood trim at siding condition
  - a. Install full length metal "z" flashing over head wood trim.
  - b. Clean dust off building wrap to provide full tape adhesion.
  - c. Tape vertical leg of flashing to building wrap with manufacturer approved tape allowing minimum 1½" tape adhesion on building wrap and flashing. Extend ends of tape to be a minimum 1½" away from edges of flashing.
  - d. Apply sufficient pressure to fully adhere tape to flashing completely. Bubbles, fish-mouths, tears, holes, etc... in tape are not acceptable.
5. Patch all tears/penetrations in building wrap per manufacturer's instructions prior to installation of exterior finish material.

6. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **074000 METAL ROOF AND WALL PANELS**

### **PART 1 GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Preformed, prefinished metal roof panels.
- B. Preformed, prefinished metal wall panels.
- C. Miscellaneous trim, flashing, closures and accessories.
- D. Fastening devices.

#### **1.2 RELATED SECTIONS**

- A. Section 05 12 16 - Fabricated Fireproofed Steel Columns.
- B. Section 05 40 00 - Cold-Formed Metal Framing.
- C. Section 05 40 00 - Cold-Formed Metal Framing.
- D. Section 06 10 00 - Rough Carpentry.
- E. Section 07 21 26 - Blown Insulation.
- F. Section 07 71 23 - Manufactured Gutters and Downspouts.
- G. Section 07 91 26 - Joint Fillers.

#### **1.3 REFERENCES**

- A. ASTM A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- B. ASTM A 480/A 480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
- C. ASTM A 606/A 606M - Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
- D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

- E. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- F. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- G. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- H. American Iron & Steel Institute (AISI) Specification for the Design of Cold formed Steel Structural Members.

#### 1.4 DESIGN / PERFORMANCE REQUIREMENTS

##### A. Design Requirements for Roof Systems:

1. System Design: Metal roof system as designed by the manufacturer shall be a complete system. All components of the system shall be supplied by the same manufacturer.
2. Roof Panels: Steel panels shall be designed in accordance with the AISI Cold-Formed Steel Design Manual.
3. Design Loads: Design load application shall be in accordance with local building code.
4. Wind Loads: The design wind loads shall be based on the wind criteria in accordance with local building code.
5. Deflection: Deflection requirements shall be in accordance with the applicable building code, or as a minimum,  $L/180$  for wind load (but not less than 10 psf (49 kg/sq m)).
6. Thermal Expansion and Contraction: Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability. Design temperature differential shall be not less than 200 degrees F.
7. Accessories and Fasteners: Accessories and fasteners shall be capable of resisting the specified design wind suction forces in accordance with local building code.

##### B. Design Requirements for Wall Systems:

1. System Design: Metal wall a system as designed by the manufacturer shall be a complete system. All components of the system shall be supplied by the same manufacturer.
2. Wall Panels: Steel panels shall be designed in accordance with the AISI Cold-Formed Steel Design Manual.
3. Design Loads: Design load application shall be in accordance with local building code.
4. Wind Loads: The design wind loads shall be based on the wind criteria in accordance with local building code.
5. Deflection: Deflection requirements shall be in accordance with the applicable building code, or as a minimum,  $L/180$  for wind load (but not less than 10 psf (49 kg/sq m)).
6. Thermal Expansion and Contraction: Completed metal wall and flashing system shall be capable of withstanding expansion and contraction of components caused by

changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability. Design temperature differential shall be not less than 200 degrees F.

7. Accessories and Fasteners: Accessories and fasteners shall be capable of resisting the specified design wind suction forces in accordance with local building code.

## 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Installation methods.
- C. Shop Drawings: Elevations and plans showing layout of roof and wall panels, sections and details, fastening and joint details, trim, flashing, vents, openings, sealant and accessories. Show details of interfaces with adjacent products, weatherproofing, terminations, and penetrations of metal work.
- D. Design Loads: Submit manufacturer's minimum design load calculations according to ASCE 7, Method 2 for Components and Cladding. In no case shall the design loads be taken to be less than those specified herein.
- E. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
  1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post consumer and preconsumer recycled content
    - a. Include statement indicating costs for each product having recycled content.
  2. Product Data for Credit SS 7.2: Heat Island effect - Roof for having a solar reflectance index that meets the credit requirements for the majority of the roof surface, including printed statement of SRI rating.
  3. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
    - a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- G. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (305 mm) square, representing actual product, color, and texture.
- H. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- I. Closeout Submittals:
  1. Provide executed copy of manufacturer's warranty as applicable.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in factory production with fixed based roll forming equipment for the profiles and s type specified with a minimum 10 years documented experience and a documented, standardized quality control program such as ISO-9001 approval.
- B. Installer Qualifications: Company specializing in installation of Metal Roof and Wall Panel Products of the type specified with a minimum 5 years documented experience.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver panels to job site properly packaged to provide protection against transportation damage.
- B. Store products in manufacturer's unopened and undamaged packaging with label intact in a clean, dry indoor location until ready for installation.
- C. Stack all materials to prevent damage and to allow for adequate ventilation. Elevate one end to promote drainage.
- D. Panels with strippable film must not be stored in the open, exposed to the sun.
- E. Protect panels from contact with materials that could cause staining or discoloration of the finish.

## 1.8 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

## 1.9 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. Do not install panels over wet or frozen substrate.

## 1.10 WARRANTY

- A. Provide Paint finish with the manufacturer's limited 20 five year warranty against cracking, peeling and fade (not to exceed 5 N.B.S. units).

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Corrugated Metals Inc., which is located at: 6550 Revlon Dr.; Belvidere, IL 61008; Toll Free Tel: 800-621-5617; Fax: 815-323-1317; Email: [request info \(info@corrugated-metals.com\)](mailto:request_info@corrugated-metals.com); Web: [www.corrugated-metals.com](http://www.corrugated-metals.com)

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

## 2.2 PREFORMED METAL ROOF AND WALL PANELS

- A. Sinewave: Corrugated metal panels designed for horizontal and vertical applications.
  - 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Sinewave 2.67 by 1/2 inches:
    - a. Roofing Coverage of 40 inches and an overall width 44-1/2 inches, or coverage of 24 inches and an overall width 27-1/2 inches.
    - b. Siding Coverage of 42-2/3 inches.
    - c. Corrugated profile 2.67 inches o.c.
    - d. Depth 1/2 inch.
  - 4. Sinewave 2.67 by 3/4 inches:
    - a. Roofing Coverage of 37-1/3 inches and an overall width 41-3/4 inches.
    - b. Siding Coverage of 40 inches and an overall width 41-3/4 inches.
    - c. Corrugated profile 2.67 inches o.c.
    - d. Depth 3/4 inch.
  - 5. Sinewave 2.67 by 7/8 inches:
    - a. Roofing Coverage of 34-2/3 inches and an overall width 39-1/8 inches.
    - b. Siding Coverage of 37-1/3 inches and an overall width 39-1/8 inches.
    - c. Corrugated profile 2.67 inches o.c.
    - d. Depth 7/8 inch.
- B. Bold Rib: Ribbed metal panels designed for horizontal and vertical applications.
  - 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Bold Rib I:
    - a. Coverage of 31-1/2 inches and an overall width 33-1/2 inches.
    - b. Ribbed profile 10-1/2 inches o.c. with top rib 1-7/16 inches wide and bottom profile 5-5/8 inches wide.
    - c. Depth 2-11/32 inches.
  - 4. Bold Rib II:

- a. Coverage of 42 inches and an overall width 44 inches
  - b. Ribbed profile 10-1/2 inches o.c. with top rib 5-5/8 inches wide and bottom profile 1-7/16 inches wide.
  - c. Depth 2-11/32 inches.
- C. V-Beam: V-Beam ribbed metal panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. V-Beam:
    - a. Coverage of 34-1/8 inches and an overall width 37-1/2 inches.
    - b. Ribbed profile 4-7/8 inches o.c. with top rib 3/4 inches wide and bottom profile 3/4 inches wide.
    - c. Depth 1-3/4 inches.
- D. Box Rib: Ribbed metal panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Box Rib 4 inch:
    - a. Coverage of 36 inches and an overall width 38-1/2 inches or Coverage of 44 inches and an overall width 45-5/8 inches.
    - b. Ribbed profile 4 inches o.c. with top rib 1-5/8 inches wide and bottom profile 1-3/8 inches wide.
    - c. Depth 1 inch.
  - 4. Box Rib 8 inch:
    - a. Coverage of 40 inches and an overall width 41-5/8 inches or Coverage of 48 inches and an overall width 49-5/8 inches.
    - b. Ribbed profile 8 inches o.c. with top rib 5-5/8 inches wide and bottom profile 1-3/8 inches wide.
    - c. Depth 1 inch.
- E. B-Deck: Ribbed metal panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:

- a. Aluminum Sheet with gauge as required by Design Requirements.
  - b. Steel Sheet with gauge as required by Design Requirements.
  - c. Stainless Steel Sheet with gauge as required by Design Requirements.
  - d. Weathering Steel Sheet with gauge as required by Design Requirements.
3. B-Deck:
- a. Coverage of 36 inches and an overall width 36-5/8 inches.
  - b. Ribbed profile 6 inches o.c. with top rib 1-1/8 inches wide and bottom profile 3-1/2 inches wide.
  - c. Depth 1-1/2 inch.
- F. R-Panel: Large and small ribbed metal panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. R-Panel:
    - a. Coverage of 36 inches and an overall width 39 inches.
    - b. Ribbed profile with tall ribs 1 inch wide and 12 inches o.c. and shallow ribs 4 inches o.c. between tall ribs.
    - c. Depth 1-1/4 inch.
- G. Cor-Rib: Ribbed metal panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Cor-Rib:
    - a. Coverage of 40 inches.
    - b. Ribbed profile with ribs 3/4 inch wide and 2.67 inches o.c.
    - c. Depth 9/16 inch.
- H. Exterior Architectural Wall Panels: Flush metal liner panels designed for horizontal and vertical applications.
- 1. Application:
    - a. Exterior Wall Liner Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.



- c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. FAP Exterior Wall Panel:
    - a. Coverage of 12 inches.
    - b. Depth 1-1/2 inches.
- I. Interior Wall Liner Panel: Flush metal liner panels designed for horizontal and vertical applications.
  - 1. Application:
    - a. Interior Wall Liner Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. FL 24 Interior Wall Liner Panel:
    - a. Coverage of 24 inches.
    - b. Depth 1-7/16 inch.
  - 4. FL 224 Interior Wall Liner Panel:
    - a. Coverage of 24 inches.
    - b. Depth 2-7/16 inch.
- J. Box Beam: Ribbed metal panels designed for horizontal and vertical applications.
  - 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Box Rib 5.33 inch:
    - a. Coverage of 32 inches and an overall width 35-1/2 inches.
    - b. Ribbed profile 5.33 inches o.c. with top rib 2-1/8 inches wide and bottom profile 2-1/8 inches wide.
    - c. Depth 1-1/2 inches.
- K. RS 7.2: Perforated ribbed metal panels designed for horizontal and vertical applications.
  - 1. Application:
    - a. Metal Roof Panels.
    - b. Metal Wall Panels.
  - 2. Material:
    - a. Aluminum Sheet with gauge as required by Design Requirements.
    - b. Steel Sheet with gauge as required by Design Requirements.
    - c. Stainless Steel Sheet with gauge as required by Design Requirements.
    - d. Weathering Steel Sheet with gauge as required by Design Requirements.
  - 3. Box Rib 7.2 inch:

- a. Coverage of 36 inches and an overall width 38-7/8 inches.
- b. Ribbed profile 7.2 inches o.c. with top rib 2 inches wide and bottom profile 2 inches wide.
- c. Depth 1-1/2 inches.

## 2.3 ACCESSORIES

- A. Metal Components:
  1. Provide accessories and other items essential to a complete roof or wall panel installation including panel clips, trim, closures, fascia, soffits, caps and similar metal components.
  2. Metal components fabricated from same gauge and finish as metal panels, unless otherwise noted.
  3. Flashing: Provide the same gauge and finish as the exterior panel, unless otherwise noted.
- B. Fasteners:
  1. Exposed fasteners shall be hex head self-drilling screws with bonded washers and color to match panels. Screws may be either plated steel or stainless steel as noted on the Drawings.
  2. Exposed stainless steel rivets shall match color finish of panel.
- C. Closure Strips: EPDM rubber to match configuration of the covering.
- D. Sealants:
  1. Exposed Sealants: One component silicone based as recommended by panel manufacturer; field applied.
  2. Concealed Sealants: Non-curing, non-skinning butyl, polyisobutylene or polybutane tape as recommended by panel manufacturer; field applied.

## 2.4 MATERIALS

- A. Prefinished Aluminum Sheet:
  1. Base Metal: ASTM B 209, Alloy 3004, 3003, 3105, 5052, 5083, 3004/7072 Alclad.
  2. Thickness: Available in .019 inch to .125 inch sheet thickness.
  3. Material Finish:
    - a. Bare mill finish.
    - b. Stucco embossed.
    - c. Paint Finish:
      - 1) Polyvinylidene Fluoride: Coranar two coat PVDF resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils.
      - 2) Siliconized Polyester: Corasil two coat resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils..
      - 3) CMI Corasol Plastisol Coil Coating: Corasol two coat SMP resin system with a total Dry Film Thickness (DFT) of 2.1 to 10.2 mils.
    - d. Color:
      - 1) Color as selected from the manufacturers standard range.
      - 2) Custom Color as selected.

- B. Galvanized Steel Sheet: ASTM A 653/A 653M, G90/Z275 zinc coated, coil coated:
1. Base metal: Commercial quality.
  2. Thickness: Available in 28 gauge to 11 gauge sheet thickness.
  3. Material Finish:
    - a. Bare mill finish.
    - b. Stucco embossed.
    - c. Paint Finish:
      - 1) Polyvinylidene Fluoride: Coranar two coat PVDF resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils.
      - 2) Siliconized Polyester: Corasil two coat resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils..
      - 3) CMI Corasol Plastisol Coil Coating: Corasol two coat SMP resin system with a total Dry Film Thickness (DFT) of 2.1 to 10.2 mils.
    - d. Color:
      - 1) Color as selected from the manufacturers standard range.
      - 2) Custom Color as selected.
- C. Galvalume: ASTM A 792/A792M, AZ50, aluminum-zinc alloy coating.
1. Base metal: Commercial quality.
  2. Thickness: Available in 28 gauge to 14 gauge sheet thickness.
  3. Material Finish:
    - a. Bare mill finish.
    - b. Stucco embossed.
    - c. Paint Finish:
      - 1) Polyvinylidene Fluoride: Coranar two coat PVDF resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils.
      - 2) Siliconized Polyester: Corasil two coat resin system with a total Dry Film Thickness (DFT) of 0.9 to 1.1 mils..
      - 3) CMI Corasol Plastisol Coil Coating: Corasol two coat SMP resin system with a total Dry Film Thickness (DFT) of 2.1 to 10.2 mils.
    - d. Color:
      - 1) Color as selected from the manufacturers standard range.
      - 2) Custom Color as selected.
- D. Galvalume-Plus: ASTM A 792/A792M, AZ55, aluminum-zinc alloy coating.
1. Base metal: Commercial quality.
  2. Thickness: Available in 28 gauge to 14 gauge sheet thickness.
  3. Material Finish:
    - a. Bare mill finish.
    - b. Stucco embossed.
- E. Stainless Steel: ASTM A 240, Type 304, 3042B, 316.
1. Base metal: Structural quality.
  2. Thickness: Available in 26 gauge to 16 gauge sheet thickness.
  3. Finish:
    - a. Mill.
    - b. Stucco embossed.

- F. Weathering Steel: ASTM A 606.
  - 1. Base metal: Structural quality.
  - 2. Thickness: Available in 22 gauge to 14 gauge sheet thickness.
  - 3. Finish:
    - a. Naturally oxidized.

## 2.5 FABRICATION

- A. Form and fabricate panels to the profiles and configurations indicated on the Drawings.
- B. Factory form panels and components on a stationary industrial rolling mill.
- C. Mark panels with custom metallic finishes with proper panel orientation for field erection.
- D. Fabricate panels to full length indicated.
- E. Fabricate flashings in 10 foot lengths.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Inspect framing to verify that installation tolerance is in conformance with AISC Code, Section 7.
- C. Verify primary and secondary framing members are installed and fastened, properly aligned and sloped where required.
- D. Verify openings, curbs, pipes, sleeves, ducts, or vents through panels are solidly set, properly framed and located.
- E. If framing or substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. Install roofing and siding systems in accordance with approved shop drawings and manufacturer's printed installation instructions.
- B. Install panels properly aligned, level and plumb.
- C. Panels shall be in full and firm contact with supports and with each other at side and end laps.

- D. Attach panels using manufacturer's fasteners, spaced in accordance with approved shop drawings.
- E. Install panels weather tight.
- F. Do not allow panels or trim to come into contact with dissimilar materials.
- G. Installation shall provide for expansion and contraction of panels and flashings waves, warps, buckles, fastening distress or distortions.
- H. Provide underlayment for roofing panels where required by the manufacturer.
- I. Provide closures at all panel openings.
- J. Coordinate flashing and seals at intersections with adjacent work as required for a watertight installation.
- K. Use tape sealant at side and end laps of all through fastened roof assemblies with a slope of 4:12 or less.
- L. Coordinate with installation of insulation as specified in Section 07 25 00 - WeatherBarriers.
- M. Install metal roofing accessories in accordance with the manufacturer's instructions and the approved shop drawings.

### 3.4 CLEANING

- A. Clean any grease, finger marks or stains from the panels per manufacturer's recommendations.

### 3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Remove and replace any panels or components, which are damaged beyond successful repair.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

### 3.6 SCHEDULES

- A. :
- B. :

## **0746 FIBER CEMENT SIDING (Hardi plank and panels)**

General - Related documents; see DIV-0102.

Scope - Furnish all labor and equipment necessary to rough frame and exterior trim all floors, roofs, partitions, walls, blocking, nailers, trusses, beams and incidentals to receive finishes as shown on the drawings and specified herein or reasonable implied by same.

All Work performed under this Section of the specifications shall be in strict accordance with all state and local codes, more specifically 2012 IBC with City of Austin amendments.

Protect adjacent installed or stored materials from damage. Any damaged material will be repaired or replaced at expense of this Subcontractor. Particular attention will be paid to Paragraph 0117 of the General Requirements.

#### Materials

1. Furnish and install fiber-cement siding with a 30 year residential construction warranty, fascia, moulding, and accessories where shown on drawings or as specified herein.
2. Coordinate this section with interfacing and adjoining work for proper sequence of installation. Stack fiber-cement siding on edge or lay flat on a smooth, level surface with shipping wrap left in place till use.
3. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.
4. Nominal 2" x 4" wood framing selected for minimal shrinkage and complying with local building codes, including the use of weather-resistive barriers and/or vapor barriers where required. Minimum 1½" face and straight, true, of uniform dimensions and properly aligned.
5. Install weather-resistive barriers and claddings to dry surfaces.
6. Repair any punctures or tears in the weather-resistive barrier prior to the installation of the siding.
7. Protect siding from other trades.

#### Products

1. Non-asbestos fiber-cement siding to comply with ASTM Standard Specification C1186 Grade II, Type A.
2. Siding to meet the following building code compliance National Evaluation Report No. NER 405 (BOCA, ICB0, SBCCI); City of Los Angeles, Research Report No. 24862, Metro Dade County, Florida Acceptance No. 94-1234.04; US Department of Housing and Urban Development Materials Release 1263a; California DSA PS-019; and City of New York MEA 223-93-M. Non-asbestos fiber-cement siding to be non-combustible when tested in accordance with ASTM test method E136.

#### Fasteners

1. Wood framing: 0.089" shank x 0.221" head x 2" corrosion resistant siding nails; or

2. Wood framing: 0.093" shank x 0.222" head x 2" corrosion resistant siding nails.
3. When fastening through maximum one (1") inch thick foam insulation, increase the length of the fastener by the thickness of insulation.

#### Execution

1. Correct conditions detrimental to timely and proper completion of work.
2. Fiber-cement fascia and moulding: Install flashing around all wall openings. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate a minimum of  $\frac{3}{4}$ " or full thickness of sheathing. Additional fasteners may be required to ensure adequate security. Place fasteners no closer than  $\frac{3}{4}$ " and no further than two (2") inches from side edge of trim board and no closer than one (1") inch from end. Fasten maximum 16" on center. Maintain clearance between trim and adjacent finished grade. Trim inside corner with single board.
3. Install single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten fiber-cement board to fiber-cement board. Allow 1/8" gap between trim and siding. Seal gap with paintable, siliconized, acrylic latex sealant with minimum 40 year guarantee. Shim frieze board as required to align with corner trim. Install fiber-cement fascia over structural subfascia.
4. Installation - fiber-cement siding. Local building code may permit the use of "water-repellent panel sheathing" instead of a "building paper type" weather-resistive barrier. However, the manufacturer recommends the use of a "building paper type" weather-resistive barrier in all siding applications. A vapor barrier may also be required. Fiber-cement siding may be installed either directly to the structural framing or up to 9½" siding may be face nailed on minimum 7/16" OSB or equivalent sheathing.
5. Install a minimum  $\frac{1}{4}$ " thick lath starter strip at the bottom course of the wall. Apply planks horizontally with minimum  $1\frac{1}{4}$ " wide laps at the top. The bottom edge of the first plank overlaps the starter strip.

Allow minimum one (1") inch vertical clearance between roofing and bottom edge of siding. Face nail to sheathing. Locate splices at least 12" away from window and door openings.

Wind Resistance: Where a specified level of wind resistance is required fiber-cement lap siding is installed to framing members and secured with fasteners described in Table No. 2 in National Evaluation Service Report No. NER-405.

6. Use off-stud metal joiner when vertical joints occur between framing members. Position metal joiner so that the bottom lip is resting on the solid course of planks. Fasten plank to the framing. Position and fasten abutting plank into place insuring that the lower edges of the two (2) planks align. Locate metal joiner centrally behind the joint. Locate off-stud splices a

minimum of two (2) stud cavities from wall corners and stagger all subsequent course splices at minimum 24" intervals when located in the same wall cavity.

## **0753 ELASTOMERIC MEMBRANE ROOFING (Single Membrane Flat Roofing)**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the roofing Work shown on the drawings and specified herein or reasonably implied by same.

Prior to all Work of this Section, carefully inspect the roof deck and the installed Work of the other trades and verify that all Work is complete to the point where roofing installation may commence and that the completed installation will be in strict accordance with the design as shown on the drawings and these specifications.

All roof penetrations to be waterproofed. All Work by others that penetrates roofing shall be inspected and made waterproofed by this Subcontractor. In the event of a dead valley, valley is to be built up to achieve positive drainage and made waterproof by this Subcontractor.

Manufacturer's specifications shall be supplied as submittal for Architects approval.

Protect adjacent material to prevent damage to any surface as a result of Work by this trade. All material or surface damaged or ruined shall be repaired or replaced at the expense of this Subcontractor. Particular attention will be paid to Paragraph 0117 of the General Requirements.

Contractor shall supply a 4' x 4' sample panel for approval of color.

### **Materials**

1. Membrane:
  - a. Duro-last, Inc. membrane roofing single-ply roofing system.
  - b. Color to be approved by Architect and Owner. Must meet minimum COA SRI requirements.
  - c. Energy Star labeled.
2. Duro-last 2-way breather vents - Pre-fabricated. Vents installed according to the Duro-last specifications.
3. 1/4" dens-deck tapered insulation over roof sheathing.

### **Execution**

1. Membrane Roofing:
  - a. Install insulation batts in accordance with manufacture's recommendations, and per roofing warranty requirements.
  - b. Care should be taken to install insulation and membrane to insure secure and waterproof assembly.



- c. Foreign particles must be cleaned from all interlocking areas to prevent breakage, tearing and water damming.
  - d. Torn or improperly placed insulation should not be installed or allowed to remain on the roof. Every insulation batt in every other row shall be staggered 50%.
  - e. Form all parapet wall flashings, scuppers and curbs for all types of roof penetrations, i.e. HVAC units, vents, chimneys, roof hatches, etc. accurately to the dimensions and shapes required, finishing all molded and broken surfaces with true, sharp, and straight lines and angles and, where intercepting other members, coping to an accurate secure fit.
  - f. Form, fabricate and install all membrane roofing skirts so as to adequately provide for expansion and contraction in the finished Work.
  - g. Flashing for plumbing pipes will be provided by the plumbing Contractor and installed by this Subcontractor. Lead flashings for plumbing vents shall be turned down into tops of vents, but not fitting tightly over the vent, so that if the roof settles, the lead will not be torn loose from the roofing.
  - h. Coordinate as required with all other trades to insure completely watertight installation of all roof flashings.
  - i. Causes for rejection of this Work shall be: water running over edge, bypassing flashing and going behind fascias, or any leaking of the roof itself.
  - j. Gutters and downspouts - refer to Section 0771 Roof Specialties
2. Sealant and sealers shall be recommended by metal manufacturer for waterproof/weatherproof performance.
  3. Fasteners shall be approved by the membrane roofing manufacturer. Fasteners shall be concealed wherever possible. Finish of any exposed fasteners shall match finish of metal being fastened.
  4. Warranty: Within thirty (30) days after completion of the entire roofing installation, and prior to its acceptance by the General Contractor, submit four (4) signed copies of the following, "Certificate of Guarantee", signed by an authorized representative of the roofing company. This warranty shall cover all labor and materials performed under this Section for a period of fifteen (15) years from the date of completion of all Work. Installation shall be inspected and approved by the manufacturer with provisions noted to provide for warranty requirements. Provide manufacturer's extended warranty to Owner upon completion of the Work.
  5. Cleaning:
    - a. When all Work has been completed, clean all adjacent surfaces of tar, mastic, grime, paint, and dirt. Abrasive cleaning agents shall not be used.

- b. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0760 FLASHING and Sheet Metal**

General - Related documents; see DIV-0102 and DIV-0792 Joint Sealants

Scope - Furnish all labor, materials and equipment necessary and proper to complete the flashing Work shown on the drawings and specified herein or reasonably implied by same.

Materials (size, profile and gauge per plans or related specification)

1. Roof flashing
2. Deck/balcony, breezeway and landing flashing
3. Wood trim flashing
4. Horizontal joint panel to panel
5. Stucco flashing
6. Flexible flashing tape

Manufacturers

1. Flexible flashing tape: W.R. Grace, Vycor + with manufacturer recommended primer.

Execution

1. Wall to deck and door sill flashing 90 degree angles to be shop fabricated, 26 gauge galvanized metal.
2. Wood trim head "z" flashing to be one piece, 26 gauge, galvanized metal over windows and doors. Horizontal "z" flashing laps/joints to be as minimal as possible. Use longest running lengths as provided.
3. Deck flashing end should terminate over fascia material below. Apply one part polyurethane sealant behind flashing to create end dam at finish material. Do not seal face of flashing. Do not leave sharp exposed ends within reach public.
4. Install roof flashing (and counter flashing as required) per plans and latest addition of the SMACNA manual.
5. Install "z" type flashing at horizontal panel to panel joints with gaps and tolerances per manufacturer recommendations. Flashing laps/joints to be as minimal as possible. Use longest running lengths as provided.

6. Install stucco flashing per plans and stucco thickness.
7. Cleaning:
  - a. When all Work has been completed, clean all adjacent surfaces of tar, mastic, grime and dirt. Abrasive cleaning agents shall not be used. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0765 FLEXIBLE FLASHING (DuPont™ FlexWrap and DuPont™ StraightFlash Flashing)**

### General

#### Section Includes:

1. Self-Adhering elastic flexible flashing tape.

#### Related Sections

1. Section 04910 – Unit Masonry Assemblies: Flashings installed with masonry.
2. Section 05810 – Expansion Joint Cover Assemblies: Elastic flashings installed in conjunction with manufactured expansion joint cover assemblies.
3. Section 0610 - Rough Carpentry: Flashings at windows, doors, and other openings.
4. Section 0727 – Weather Resistant Barriers, for flashings installed in conjunction with weather resistant barriers and accessories.
5. Section 0760 – Sheet Metal Flashing and Trim, for elastic flashings installed in conjunction with field or shop formed sheet metal flashing and trim assemblies.

#### References

1. ASTM D1079 for Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.
2. ASTM D1970 for Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
3. ASTM D6221 for Standard Specification for Reinforced Bituminous Flashing Sheets for Roofing and Waterproofing.

#### Submittals

1. Product Data: Manufacturer's data sheets on each product to be used, including:
  - a. Preparation instructions and recommendations.
  - b. Storage and handling requirements and recommendations.
  - c. Installation methods.

2. Shop Drawings: Show layouts of flexible flashings, including isometrics relating to window and door head, sill and jamb details.
  - a. Identify material, thickness, and basis weight for each item and location in Project.
  - b. Indicated details for installing flashings, including profiles, shapes, seams and dimensions.
  - c. Indicate details for fastening, joining, supporting, and anchoring flexible flashing tape, including fasteners, clips, and attachments to adjoining work.
  - d. Indicate details of coordination with expansion joint covers, sheet metal flashing and trim assemblies, and roof expansion assemblies, including 3-dimensional directions of expansion and contraction movements.
3. Samples: Actual pieces of materials specified, not less than six (6") inches (150 mm) square.

#### Delivery, Storage, and Handling

1. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
2. Storage and Protection: Protect materials from rain and physical damage. Provide cover on top and on all sides, allowing for adequate ventilation. Store flashing where temperatures will not exceed 90 degrees F (32 degrees C) for extended periods. Store all products in a dry area away from high heat, flames or sparks.
3. Store products in manufacturer's unopened packaging until ready for installation and dispense the needed amounts of materials from the manufacturer box.

#### Project Conditions

1. Environmental Limitations: Do not install DuPont™ FlexWrap™ on wet or damp surfaces. Surfaces should also be free from dirt, oils, lubricants or other debris that may inhibit adhesion of the flashing tape to the substrate. After precipitation, allow a minimum of 24 hours for drying before installing the flashing tape. For optimal performance, install DuPont™ FlexWrap™ at temperatures above 40 degrees F (or 4 degrees C).

#### Products

1. Manufacturers:
  - a. Acceptable Manufacturer:  
DuPont Weatherization Systems  
4417 Lancaster Pike  
Building 728  
Wilmington, DE 19805  
800-448-9835  
www.tyvek.com

#### Materials

1. Proprietary Products/Systems: Self-Adhering Flexible flashing tape, DuPont™ FlexWrap™
2. Elasticized flexible flashing tape complying with the following:
  - a. Face Material composition: Elasticized polyethylene laminate.
  - b. Face color: White.
  - c. Adhesive composition; Butyl adhesive containing non-halogen fire retardant additive.
  - d. Thickness: > 60 mils.
  - e. Release liner: 2 part siliconized paper.  
Elastic Elongation , MD (length @ Full Extension/ Length @ Relaxed): >230% @ 70 F.
3. Proprietary Products/Systems: Self Adhering Straight flashing tape, DuPont™ StraightFlash™ Durable Polyethylene Laminate Flashing Tape complying with the following:  
Face Material composition: Polyethylene laminate  
Face color: White  
Adhesive composition: Butyl adhesive containing fire retardant additive  
Thickness: 30 mils  
Release liner: 1 piece siliconized paper

#### Accessories

1. Sealing Tape:
  - a. Material: Pressure sensitive, polypropylene substrate with acrylic based adhesive.  
Provides permanently elastic, nonsag, nontoxic, nonstaining tape, which is compatible with Tyvek® Weatherization Systems products.
  - b. Finish Product Brand Name: DuPont™ Tyvek® Tape.
2. Fasteners:
  - a. Material: One (1") inch diameter plastic cap, nail length (1", 1 1/2", 2") for wood frame construction, or 2" diameter plastic cap with 1 5/8" drill point self tapping screw for metal stud applications, designed to withstand designed loads.
  - b. Finish Product Brand Name: DuPont™ Tyvek® Wrap Caps for wood frame construction and DuPont™ Tyvek® Wrap Cap Screws for steel frame construction.
3. Sealants:
  - a. ASTM C 920, elastomeric polymer sealant, of type, grade, class, and use classifications required to seal joints and remain watertight and is compatible with DuPont™ Tyvek®.
  - b. Available Products:
    1. OSI® Quad Pro-Series®; solvent release butyl rubber sealant.  
DAP® DynaFlex 230™.  
Other products as approved and recommended by the flashing tape manufacturer.

4. Primer:  
Available products:  
3M High Strength 90  
Other products as approved and recommended by the flashing tape manufacturer

#### Execution

2. Examination
  - a. Do not begin installation until substrates have been properly prepared to receive, constructed to fully support flashing, and sloped where required to provide positive drainage of water to building exterior.
  - b. Verify that surfaces to receive flashing are thoroughly dry, free from loose materials, and reasonably smooth.
  - c. Do not proceed with installation until unsatisfactory conditions are corrected.

#### Preparation

1. Protection: Protect adjacent surfaces, fixtures and equipment from damage.
2. Surface Preparation: Substrate must be smooth, clean, dry and free of voids, spalled areas, loose substrate, loose nails, other sharp protrusions or other matter that will hinder the adhesion or regularity of the flashing tape installation. Clean loose dust or dirt from surface wherever flashing tape is to be applied by wiping with a clean dry cloth or brush.
3. Remove existing weather barriers, flashings, carrier or protective films and similar materials that would impede adhesion from substrates indicated to receive elasticized flexible flashing tape. Clean surfaces thoroughly prior to installation.

#### Installation

1. Install window/door flashings AFTER installation of Weather Resistant Barrier (recommended), as follows:
  - a. Prepare weather resistant barrier for window or door installation.
  - b. Make a modified "I-cut" in the Weather Resistant Barrier(Tyvek® Homewrap®, Tyvek® StuccoWrap®, Tyvek® CommercialWrap®.)
  - c. Cut a flap above the rough opening to allow head flashing installation.
  - d. Fold side and bottom flaps into rough opening and secure. Flip head flap up and temporarily secure.
  - e. Cut FlexWrap™ flashing tape at least 12" longer than width of rough opening sill

- f. Remove first piece of release paper, align edge of sill flashing with inside edge of sill, and adhere into rough opening across sill and up jambs (minimum 6"). Sill flashing should not wrap onto interior surface of framing.
  - g. Remove second release paper.
  - h. Fan FlexWrap™ at bottom corners onto face of wall
  - i. Firmly press sill flashing to insure full adhesion
  - j. Secure edges of bottom corners with approved sealing tape or mechanical fasteners.
  - k. Apply continuous bead of caulk to wall or backside of window mounting flange across jambs and head. Do not apply caulk across sill
  - l. Install window/door according to manufacturer's instructions
  - m. Remove release paper and install StraightFlash™ jamb flashings overlapping entire mounting flange of both jambs. Extend jamb flashings 6-inches above top of rough opening to below bottom of sill flashing.
  - n. Remove release paper and install StraightFlash™ as head flashing overlapping entire mounting flange. Head flashing should extend beyond outside edges of both jamb flashings.
  - o. Flip head flap down over the head flashing
  - p. Secure flap above window with approved sealing tape
  - q. Caulk (using backer rod if necessary) to seal rear of window/door frame to rough opening
2. Round-Top Window or Door Head Flashing:
- a. Cut head flashing at least 12" longer than the arc length of circle-top window
  - b. Remove both release papers and install conforming around top of window, covering entire mounting flange. Head flashing should overlap jamb flashings at least 6".
  - c. To facilitate installation to round-top window or door heads, remove short lengths of release papers, begin installation, and repeat to work flashing into position and complete installation.
  - d. Secure outer edges of head flashing with approved sealing tape or mechanical fasteners.
  - e. Secure flap above window with approved sealing tape.

3. Other Openings and Penetrations: Provide flashings for other openings as required to provide weather tight barrier. Install lapped components to direct water to exterior of building.

### **0771 ROOF SPECIALTIES (Gutters & Downspouts)**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the rain gutter system Work shown on the drawings and specified herein or reasonably implied by same.

#### Materials

1. Aluminum gutters, end caps, downspouts, diverting plates, elbows, support straps, brackets, nails, splash blocks and accessories.
2. Gutters and downspouts shall be .040" aluminum formed to shape. Verify with Owner profiles prior to ordering or installation.
3. Finish shall be baked-on enamel in color as selected by Owner.

#### Execution

1. Provide a complete installation of all necessary gutters, downspouts and required accessories.
2. All gutters and down spouts should direct water to drain away from building foundation.
3. Gutter Systems must be installed at all building entrances roofs. Do not direct or shed water from gutters onto sidewalks.
4. Verify with Owner direction of splash blocks.
5. Provide expansion joints for gutter runs over forty (40') feet in length.
6. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

### **0792 JOINT SEALANTS (Caulk and Silicone Sealants)**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the waterproofing and caulking as shown on the drawings and specified herein or reasonably implied by same. Verify with Owner all color selections.

All Work shall conform to local building codes and manufacturer's instructions.



## Materials

1. Caulking Compound – Carlisle PT 301 Silicone Sealant.
2. Exterior grade, paintable siliconized acrylic latex caulking compound with minimum 20 year guarantee.
3. Exterior grade, paintable, siliconized acrylic latex caulking compound with lifetime limited warranty.
4. Bituthene Sealant – Carlisle CCW-704.
5. Exterior stud wall pressure treated bottom/sill plate adhesive/sealant to concrete foundation.
6. One part polyurethane sealant. Verify color selection with owner.

## Manufacturers

Provide waterproofing materials as manufactured by:

1. GE silicone
2. GE acrylic latex caulk
3. Red Devil acrylic latex caulk
4. D.A.P. acrylic latex caulk
5. NP-1 one part polyurethane sealant
6. PL400 construction adhesive under exterior wall bottom/sill plates.

## Execution

1. Exterior building envelope shall be sealed to prohibit weather or temperature infiltration and shall be installed per manufacturer's instructions to prevent such from entering the building from the exterior and as shown on the plans.
2. Exterior p.v.c. and other pipe penetrations; wood trim to window frame: Seal perimeter with exterior grade, paintable silicone acrylic latex caulking compound.
3. Exterior stud wall pressure treated bottom/sill plate adhesive/sealant to be applied in two (2) 3/8" diameter continuous beads between bottom plate and concrete slab. Remove dirt/dust from concrete slab to be covered by bottom plate prior to installation of bottom plate with sealant to achieve bonding and fill all voids.
4. Masonry expansion joints. Use one part polyurethane sealant with closed cell neoprene backing rod as required.

5. Bottom/end of window head flashing to top of window frame head; bottom/end of flashing to top of stucco/masonry: Seal with a continuous bead of one part polyurethane sealant.
6. Window frame to stucco j-bead/masonry: Seal window frame perimeter with a continuous bead of one part polyurethane sealant.
7. Window frame fin to sheathing; door/window head flashing to sheathing/building wrap; flashing to sheathing/building wrap: Use flexible flashing tape and primer, tape widths/layers as shown in plans. Fish mouths in tape or incomplete adhesion to substrate not acceptable. Substrate should be as dust free as possible. Use primer as recommended by flexible flashing tape manufacturer.
8. Wood trim to siding; wood trim to ceiling/soffit; wood trim to wood trim/beam(s): Use continuous bead of exterior grade siliconized acrylic latex sealant/caulking compound with 40 year guarantee.
9. Exterior door sills/thresholds to be set in two (2) 3/8" diameter continuous beads of one part polyurethane sealant. Remove dirt/dust from concrete slab/door flashing to be covered by door sill, prior to installation of sill with sealant to achieve bonding and fill voids.
10. Cleaning: When all Work has been completed, clean all adjacent surfaces of sealant, tar, mastic, grime and dirt. Abrasive cleaning agents shall not be used. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 8 - DOORS, WINDOWS AND GLASS

### **0810 METAL DOORS**

General - Related documents; see DIV-0102.

Scope - Furnish all materials and equipment necessary and proper to complete the door Work shown on the drawings and specified herein or reasonably implied by same.

Installation shall be in conformance with all manufacturer's recommendations.

#### Materials

1. Apartment Entry Doors - 24 gauge steel, solid polyurethane core, 1¾", 20 minute rated doors minimum, or per plans, door to be factory finished on both sides with a durable, rust-inhibitive primer. Jambes to be finger jointed, kiln dried ponderosa pine. Integral compression or magnetic weather-stripping equal to Benchmark or Entergy by Ceco. Style as shown on the drawings. Include 180 Taymor viewer & knocker.
2. Miscellaneous Door - As specified on plans.
3. Club doors - see plans.
4. Tempered glass in French doors to be low-E 0.4 U-factor and 0.25 SHGC or better and meet IECC 2012 and City of Austin Amendments.

#### Execution

1. All doors shall be securely fastened according to manufacturer's recommendations.
2. This Subcontractor will warrant all items furnished and installed for a period of one (1) year following date of final completion.

### **0820 WOOD DOORS**

General - Related documents; see DIV-0102.

Scope - Furnish all materials and equipment necessary and proper to complete the work shown on the drawings and specified herein or reasonably implied by same.

#### Apartment Units:

1. 1-3/8" thick 6 panel hardboard doors to be selected by owner.

#### Club Interior Doors:

1. 1¾" thick white pine, "DoorCraft" "Morgan" or "Wenco" as shown per plans
2. 1¾" thick Masonite panel doors.

Installation shall be in conformance with all manufacturer's recommendations.

**0833 AUTO GATE (California/ Tilt)**

Install as shown on the drawings.

**08360 OVERHEAD DOORS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Sectional overhead doors of the following types:
  - 1. Full view aluminum doors. (Model 903)
  - 2. Electric door operator

**1.2 RELATED SECTIONS**

- A. Section 05500 - Metal Fabrications: Steel channel opening frame.
- B. Section 06100 - Rough Carpentry: Rough wood framing and blocking for door opening.
- C. Section 08710 - Door Hardware: Lock cylinders.
- D. Section 11150 - Parking Control Equipment: Remote door control.
- E. Division 16 Sections: Electrical service and connections for powered operators.

**1.3 REFERENCES**

- A. ASTM A 653/A 653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 924/A 924M - Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- C. ASTM B 209/209M - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- D. ASTM B 221/221M - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

**1.4 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.
4. Operation and maintenance data.
5. Nameplate data and ratings for motors.

- C. Shop Drawings: Include opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Selection Samples: For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

## 1.5 WIND PERFORMANCE REQUIREMENTS

- A. Design doors to withstand positive and negative wind loads as calculated in accordance with applicable building code.
  1. Design Wind Load: \_\_\_\_\_ lb/sf (\_\_\_\_\_ kPa).
  2. Safety Factor: 1.5 times design wind load.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of doors specified in this section, with not less than ten years of documented experience.
- B. Installer Qualifications: Company specializing in installing the types of products specified in this section, with minimum of five years of documented experience, and approved by the door manufacturer.

## 1.7 WARRANTY

- A. Finish Warranty: Provide manufacturer's standard finish warranty against cracking, checking and peeling.
  1. Warranty period: 10 years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Clopay Building Products Company, which is located at: 8585 Duke Blvd. ASD; Mason, OH 45040-3101; Toll Free Tel: 800-526-4301 prompt #3; Fax: 888-434-3193; Email: CIA@clopay.com Web: [www.clopaycommercial.com](http://www.clopaycommercial.com)
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 FULL VIEW ALUMINUM DOORS

- A. Door Construction:

1. Panel Sections: 2-1/8 inches (54 mm) thick extruded 6053-T5 aluminum, with integral reinforcing fin. Enclosed top and bottom rails 3-1/2 inches (89 mm) wide, meeting rails 2-13/16 inch (71.4 mm) wide, and end stiles 3-1/2 inches (89 mm) wide, with meeting rails meeting to form a tongue-and-groove joint and bottom rail configured to retain U-shaped flexible PVC astragal. Glazing and solid panels installed and sealed with butyl tape and locking retainer.

B. Heavy Duty 2.125 inches (54 mm) Door - Clopay Model 903:

1. Maximum Door Size: 20 ft, 2 inches (6.15 m) by 18 feet (5.5 m) high.
2. Windows: Full-view aluminum sections, pre-painted to match door finish.
  - a. Glazing: 1/8 inch (3 mm) DSB sheet glass glazing.
  - b. Glazing: 1/8 inch (3 mm) tempered sheet glass glazing.
  - c. Glazing: 1/8 inch (3 mm) acrylic glazing.
  - d. Glazing: 1/8 inch (3 mm) clear polycarbonate glazing.
  - e. Glazing: 1/4 inch (6 mm) DSB sheet glass glazing.
  - f. Glazing: 1/4 inch (6 mm) tempered sheet glass glazing.
  - g. Glazing: 1/4 inch (6 mm) acrylic glazing.
  - h. Glazing: 1/4 inch (6 mm) clear polycarbonate glazing.
  - i. Glazing: 1/4 inch (6 mm) wire glazing.
  - j. Glazing: 1/2 inch (13 mm) insulated glass glazing.
  - k. Glazing: 1/2 inch (13 mm) insulated tempered glass glazing.
3. Aluminum Finish: Factory pre-painted white.
4. Aluminum Finish: Factory pre-painted brown.
5. Aluminum Finish: Clear anodized.
6. Aluminum Finish: Bronze anodized.
7. Aluminum Finish: Black anodized.
8. Aluminum Finish: \_\_\_\_\_.
9. Locking: No Lock.
10. Locking: Inside spring loaded slide bolt lock on end stile that engages slot in track.
  - a. Provide one inside slide lock.
  - b. Provide two inside slide lock.
11. Weatherstripping: Provide complete perimeter seals. Provide flexible top seal, flexible jamb seal and U shaped bottom seal.
12. Tracks: Vertical tracks minimum 0.061 inch (1.55 mm) galvanized steel tapered and mounted for wedge type closing. Horizontal tracks minimum 0.075 inch (1.91 mm) galvanized steel, reinforced with minimum 0.0897 inch (2.28 mm) galvanized steel angles as required:
  - a. Track Width: 2 inches (50 mm).
  - b. Track Width: 3 inches (75 mm).
  - c. Provide standard lift tracks with 15 inches (381 mm) radius track as indicated.
  - d. Provide vertical lift tracks as indicated.
  - e. Provide high lift tracks as indicated.
  - f. Provide tracks that follow roof slope tracks as indicated.
  - g. Provide low headroom tracks as indicated.
13. Spring Counterbalance: Torsion spring counterbalance mechanism sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a

steel shaft; cable drum of die cast aluminum with high strength galvanized aircraft cable with minimum 7 to 1 safety factor.

- a. Standard Cycle Spring: 10,000 cycle.
- b. High Cycle Spring: 25,000 cycles.
- c. High Cycle Spring: 50,000 cycles.
- d. High Cycle Spring: 100,000 cycles.

## 2.3 ELECTRIC DOOR OPERATORS

- A. General: Provide electric door operator provided by door manufacturer for door with operational life specified complete with electric motor and factory pre-wired motor controls, starter, gear-reduction unit, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation. Comply with NFPA 70.
  1. Solenoid-operated brake.
- B. Disconnect Device: Provide hand-operated disconnect or mechanism for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- C. Design operator so motor may be removed without disturbing limit switch adjustment and without affecting emergency auxiliary operator.
- D. Provide control equipment complying with NEMA ICS1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V, AC or DC.
- E. Electric Motors: Provide high-starting torque, reversible, continuous-duty, Class A insulated, electric motor, complying with NEMA MG 1, with overload protection, sized to start, accelerate, and operate door in either direction, from any position, at not less than 2/3 fps (0.2 m/s) and not more than 1 fps (.03m/s), without exceeding nameplate ratings or considering service factor.
  1. Type: Mechanical.
  2. Type: Solid State.
  3. Type: Jackshaft.
  4. Type: Trolley.
  5. HP:
    - a. 1/3 hp (246 W).
    - b. 1/2 hp (373 W).
    - c. 3/4hp (559 W).
    - d. 1 hp (746 W).
  6. Power Characteristics:
    - a. 115 V.
    - b. 220 V.
    - c. 460 V.
    - d. 1 phase.

- e. 3 phase.
  - 7. Service Factor:
    - a. NEMA MG 1.
    - b. NEMA 4 watertight.
    - c. NEMA 9 waterproof.
    - d. NEMA 10 oil resistant.
    - e. NEMA 12 explosion resistant.
  - 8. Coordinate wiring requirements and electrical characteristics of motors with building electrical system.
- F. Remote Control Station: Provide momentary contact, 3-button control station with push - button controls labeled "Open", "Close" and "Stop".
- G. Remote Control Station: Provide continuous contact, 3-button control station with push - button controls labeled "Open", "Close" and "Stop".
- H. Provide interior units, fully guarded, surface mounted, heavy-duty type, with general-purpose NEMA ICS 6 enclosure in one of the following types:
  - 1. Enclosure Type: Type 1.
  - 2. Enclosure Type: Type 4.
  - 3. Enclosure Type: Type 12.
- I. Obstruction Detection Device: Provide each motorized door with indicated external automatic safety sensor able to protect full width of door opening. Activation of sensor immediately stops and reverses downward door travel.
  - 1. Sensor Edge: Provide each motorized door with an automatic safety sensing edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor immediately stops and reverses downward door travel. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cord. Sensing edge shall be operated by:
    - a. Electric.
    - b. Pneumatic.
    - c. Electric Fail safe.
    - d. Pneumatic Fail safe.
  - 2. Photo-electric control: Provide each motorized door with a photo-electric device that will stop and reverse the downward door travel if the light beam is broken or blocked. Device shall be:
    - a. NEMA Type 1.
    - b. NEMA Type 4.
- J. Limit Switches: Provide adjustable switches, interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.
- K. Radio Controls: Provide 3 button radio transmitter to provide remote open, close, stop functionality.
  - 1. Provide external antenna and coaxial wiring to receiver to enhance radio control reception.



- L. Provide auxiliary chain hoist: for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine wall and overhead areas, including opening framing and blocking, with installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work in this Section.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

### 3.4 PROTECTION

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

## **0850 METAL WINDOWS AND PATIO DOORS**

General - Related documents; see DIV-0102.

Scope - Furnish all materials and equipment necessary and proper to complete the window Work shown on the drawings and specified herein or reasonably implied by same.

### Materials

- 1. Windows shall be equal to Skotty, Champion, or approved equal; single hung, double glazed, painted white frame, with operable sash. (Screens to be aluminum rolled frames with fiberglass mesh screening, or solar screens per plans.) Windows to be low-E, 0.40 U-factor and 0.25 SHGC or better and meet 2012 IECC with Austin amendments.

2. Sliding doors shall be equal to Skotty, Champion, or approved equal - Fixed panel, with tempered glass in white or beige aluminum frames (inside slider). Frame where door enters shall be completely weather stripped with poly pile weather stripping to insure proper weather seal. Wool pile air barriers are provided at interlocking stiles. First floor units shall have extra security lock (pin-type), see plans. Patio and French doors to be low-E, .0.40 U-factor and 0.25 SHGC or better and meet 2012 IECC with Austin amendments.

Execution

1. All windows and doors shall be securely fastened according to manufacturer's recommendations.
2. This Subcontractor will warrant all items furnished and installed for a period of one (1) year following the date of final completion.

**0855 Storefront Window and ALUMINUM ENTRANCES (NARROW STILE DOORS)**

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents: Conditions of the Contract, Division 1 - General Requirements, and Drawings apply to Work of this Section.
- B. Section Includes:
  1. Aluminum doors complete with hardware.
- C. Products Furnished But Not Installed Under This Section:
  1. Anchoring devices which are built into masonry.
  2. Anchoring devices which are cast in concrete.
- D. Related Sections:
  1. Section 0135 - Mock-ups.
  2. Section 0511 - Metal Fabrications.
  3. Section 0610 - Rough Carpentry.
  4. Section 0792 - Joint Sealers.
  5. Section 0855 - All Glass Entrances.
  6. Section 0850 - Aluminum Windows.
  7. Section 0871 - Door Hardware.
  8. Section 0860 - Glass and Glazing.

1.02 REFERENCES

- A. Aluminum Association (AA):
  1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
  1. 501.2 Field Check of Metal Curtain Walls for Water Leakage.
  2. 2605 Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.

3. 606.1 Specifications and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum.
  4. 607.1 Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
  5. 608.1 Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.
  6. 701.2 Specifications for Pile Weatherstripping.
  7. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.
  8. SFM- 1 Aluminum Storefront and Entrance Manual.
- C. American National Standards Institute (ANSI):
1. A117.1 Safety Standards for the Handicapped.
- D. American Society for Testing and Materials (ASTM):
1. A36 Structural Steel.
  2. A123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  3. B209 Aluminum and Aluminum - Alloy Sheet and Plate.
  4. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
  5. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
  6. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
  7. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  8. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- E. Federal Specifications (FS):
1. TT-P-641G(1) Primer Coating, Zinc Dust-Zinc Oxide (For Galvanized Surfaces).
  2. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.
- F. Steel Structures Painting Council (SSPC):
1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

### 1.03 SYSTEM REQUIREMENTS

#### A. Design Requirements:

1. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage, or moisture disposal.
2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
3. Provide concealed fastening.
4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
7. Provide for expansion and contraction due to structural movement without detriment to appearance or performance.

#### 1.04 SUBMITTALS

- A. General: Submit in accordance with Section 0135.
- B. Product Data:
  - 1. Submit manufacturer's descriptive literature and product specifications.
  - 2. Include information for factory finishes, hardware, accessories, and other required components.
  - 3. Include color charts for finish indicating manufacturer's standard colors available for selection.]
- C. Shop Drawings:
  - 1. Submit shop drawings covering fabrication, installation and finish of specified systems.
  - 2. Include following:
    - a. Fully dimensioned plans and elevations with detail coordination keys.
    - b. Locations of exposed fasteners and joints.
  - 3. Provide detailed drawings of:
    - a. Composite members.
    - b. Joint connections for framing systems and for entrance doors.
    - c. Anchorage.
    - d. System reinforcements.
    - e. System expansion and contraction provisions.
    - f. Glazing methods and accessories.
    - g. Internal sealant requirements and recommended types.
  - 4. Schedule of finishes.
- D. Samples:
  - 1. Submit manufacturers standard samples indicating quality of finish.
  - 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
  - [3. Submit samples for each type of glass, 12 x 12 inch size.]
- E. Qualification Data:
  - 1. Submit installer qualifications verifying years of experience.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces as necessary to prevent damage.
- B. Do not use adhesive papers or sprayed coatings which become firmly bonded when exposed to sun.
- C. Do not leave coating residue on any surfaces.
- D. Replace damaged units.

#### 1.07 WARRANTY

- A. Provide written warranty in form acceptable to Owner jointly signed by manufacturer, installer and Contractor warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components which fail within 1 year from date of Substantial Completion.
- B. Warranty shall cover following:
  - 1. Complete watertight and airtight system installation within specified tolerances.
  - 2. System is structurally sound and free from distortion.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements indicated, provide products by one of the following:
  - 1. Oldcastle BuildingEnvelope™, Terrell, TX.
- B. Substitutions: Submit under provisions of Section 0135 a minimum of 10 days prior to bid date.
- C. Acceptable Entrance Systems:
  - Standard duty systems (0.125" wall thickness; 1-3/4" deep)
  - Model 212 -narrow stile (4-1/2" bottom rail, 2-3/4" top rail, 1-5/8" verticals)

Note that standard duty systems are available with the Nightwatch High Security Rotary Astragal and the VIP series panic mid rail device.

### 2.02 FRAMING MATERIALS AND ACCESSORIES

- A. Aluminum:
  - 1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H16 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.
- B. Internal Reinforcing:
  - 1. ASTM A36 for carbon steel; or ASTM B308 for structural aluminum.
  - 2. Shapes and sizes to suit installation.
  - 3. Steel components factory coated with alkyd type zinc chromate primer complying with FS TT-P-645.
- C. Anchorage Devices:
  - 1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
  - 2. Hot-dip galvanize steel assemblies after fabrication, comply with ASTM A123, 2.0 ounce minimum coating.
- D. Fasteners:
  - 1. Aluminum, non-magnetic stainless steel or other non-corrosive materials compatible with items being fastened.
  - 2. Provide concealed fasteners wherever possible.
  - 3. For exposed locations, provide Phillips flathead screws with finish matching item fastened.
  - 4. For concealed locations, provide manufacturer's standard fasteners.
- E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.
- F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.
- G. Touch-Up Primer for Galvanized Components: Zinc oxide conforming with FS TT-P-641.
- H. Glazing Gaskets:
  - 1. Compression type design, replaceable, molded or extruded, of neoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).
  - 2. Profile and hardness as required to maintain uniform pressure for watertight seal.
- I. Weatherstripping:

1. Wool pile conforming to AAMA 701.2.
2. Provide EPDM or vinyl-blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.

## 2.03 GLASS AND GLAZING ACCESSORIES

- A. Refer to Section 0860.

## 2.04 DOOR HARDWARE

### A. Hardware Set 1, each single door shall have:

1. 1-1/2 pair butt hinges.
2. 1 each deadlock.
3. 1 each closer.
4. 1 set push/pull bars.
5. 1 each stop.
6. 1 each threshold.

## 2.05 FABRICATION

### A. Coordination of Fabrication:

1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
2. Fabricate units to withstand loads which will be applied when system is in place.

### B. General

1. Conceal fasteners wherever possible.
2. Reinforce work as necessary for performance requirements, and for support to structure.
3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or preformed separators which will prevent contact and corrosion.
4. Comply with Section 0860 for glazing requirements.

### D. Entrance Doors:

1. Fabricate with mechanical joints using internal [steel] reinforcing plates and shear blocks attached with fasteners and by welding.
2. Provide extruded aluminum glazing stops of [square] [rounded and mitered] design, [permanently anchored on security side and removable on opposite side.]

### E. Hardware:

1. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
2. Comply with hardware manufacturer's templates and instructions.
3. Use concealed fasteners wherever possible.

### F. Welding:

1. Comply with recommendations of the American Welding Society.
2. Use recommended electrodes and methods to avoid distortion and discoloration.
3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

### G. Flashings: Form from sheet aluminum with same finish as extruded sections. Material thickness as required to suit condition without deflection or "oilcanning".

## 2.06 FINISHES

- A. Organic Coating (high performance fluorocarbon):
  1. Comply with requirements of AAMA 2605.
  2. Surfaces cleaned and given conversion coating pre-treatment prior to application of 0.3 mil dry film thickness of epoxy or acrylic primer following recommendations of finish coat manufacturer.
  3. Finish coat of [50%] [70%] minimum fluorocarbon resin fused to primed surfaces at temperature recommended by manufacturer, 1.0 mil minimum dry film thickness.
  4. Acceptable coatings are Trinar by Akzo Coatings, Inc.; Nubelar by Glidden Company; Fluoroceram by Morton International, Inc.; Duranar by PPG Industries Inc.; and Fluropon by Valspar Corporation.
  5. Provide in either a 2, 3, or 4 coat system as required for color selected.
  6. Custom colors as selected by Architect.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine conditions and proceed with Work.

#### **3.02 INSTALLATION**

- A. Erection Tolerances:
  1. Limit variations from plumb and level:
    - a. 1/8 inch in 10'-0" vertically.
    - b. 1/8 inch in 20'-0" horizontally.
  2. Limit variations from theoretical locations: 1/4 inch for any member at any location.
  3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch from flush surfaces not more than 2 inches apart or out-of-flush by more than 1/4 inch.
- B. Install doors and hardware in accordance with manufacturer's printed instructions.
- C. Set units plumb, level and true to line, without warp or rack of frame.
- D. Anchor securely in place, allowing for required movement, including expansion and contraction.
- E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or preformed separators to prevent contact and corrosion.
- F. Set sill members in bed of sealant. Set other members with internal sealants and baffles to provide weathertight construction.
- G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 0792.
- H. Glazing: Refer to requirements of Section 0860.

#### **3.03 ADJUSTING**

- A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

#### **3.04 CLEANING**

- A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
- B. Clean metal surfaces exercising care to avoid damage.

## **0871 DOOR HARDWARE**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, hardware, connections and equipment necessary and proper to install the finish hardware shown on the drawings and specified herein or reasonably implied by same.

Furnish and Install:

1. Finish Hardware – Refer to Interior design schedule.
2. Bath Accessories - Refer to Interior design schedule.
3. Rough Hardware (Connections)
4. Stocking
5. Warranty
6. Clean up
7. See Hardware Schedule - Refer to Interior design schedule.

Materials

1. Door closers - panic hardware @ club (all exterior doors).
2. Door Thresholds

Execution

1. Furnish and install all closet rods and shelf supports. Materials shall be level, plumb and secured rigidly in place.
2. Furnish and install all locksets, deadbolts, passage, privacy, bifold knobs, door stops, hinge stops, door closures, knocker viewers, and apartment numbers. All hardware to be installed to manufacturer's recommendations.
3. Furnish and install all towel bars and paper holders. All materials, bath accessories shall be secured rigidly in place.
4. Subcontractor shall warrant workmanship and materials for one (1) year, specifically for failure of any connections and improper installations of any locks, door knobs, bath accessories and any other hardware pertaining to the Contract.
5. Subcontractor shall pick up all debris caused by this Section of Work.



## **0883 MIRRORS**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the mirror work shown on the drawings and specified herein or reasonably implied by same.

Installation shall be in conformance with all manufacturer's recommendations.

### Materials

1. All mirrors to be 3/16" thick sheet glass with ground and polished edges.
2. Sizes and details are on the architectural drawings.
3. Outlets and switch plate covers (where required) mirrored.

### Execution

1. All mirrors shall be securely fastened by means of metal clips to gypsum wallboard.
2. All mirrors shall be installed flush and level to all surrounding walls and cabinets.
3. This Subcontractor will warrant all items furnished and installed for a period of one (1) year following date of final completion.
4. Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## **0890 FINISH HARDWARE**

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, hardware, connections and equipment necessary and proper to install the finish hardware shown on the drawings and specified herein or reasonably implied by same.

### Furnish and Install:

1. Finish Hardware - Refer to Interior design schedule.
2. Bath Accessories - Refer to Interior design schedule.
3. Rough Hardware (Connections)
4. Stocking
5. Warranty

6. Clean up

Materials

Refer to interior design schedule for all finish selections.

Execution

1. Furnish and install all closet rods and shelf supports. Materials shall be level, plumb and secured rigidly in place.
2. Furnish and install all locksets, deadbolts, passage, privacy, bifold knobs, door stops, hinge stops, door closures, knocker viewers, and apartment numbers. All hardware to be installed to manufacturer's recommendations.
3. Furnish and install all towel bars and paper holders. All materials, bath accessories shall be secured rigidly in place.
4. Subcontractor shall warrant workmanship and materials for one (1) year, specifically for failure of any connections and improper installations of any locks, door knobs, bath accessories and any other hardware pertaining to the Contract.
5. Subcontractor shall pick up all debris caused by this Section of Work.

## DIVISION 9 - FINISHES

### 0920 STUCCO/Portland Cement Plaster

#### General - Related Documents

1. Provisions established within the General and Supplementary General Conditions of the Contract, Division 1 – General requirements and the drawings are collectively applicable to this section.

#### Section Includes:

1. Portland cement plaster system

#### Quality Assurance

1. Applicator: Company specializing in cement plaster work with five (5) years documented experience, or approved Magna Wall, Inc.
2. Apply cement plaster in accordance with manufacturer's recommendations and as noted on plans.
3. Plastering shall be of highest quality and finish. Intersections of planes shall be sharp and accurate. Finished surfaces shall be uniform in texture and free from imperfections objectionable to the Owner.

#### Submittals – Magna Wall Fiber Reinforced Stucco/NER-459

1. Provide product data on plaster materials, characteristics and limitations of products specified.
2. Submit manufacturer's installation instructions per NER – 459.

#### Field Samples

1. Provide sample panel at jobsite.
2. Construct field sample per Architect or Owner requirements.
3. Locate where directed.
4. Accepted sample may remain as part of the work.

#### Environmental Requirements

1. Do not apply plaster when substrate or ambient air temperature is less than 35 degrees Fahrenheit unless sand and mixing water are heated to 70 degrees Fahrenheit and temporary protection is provided to keep minimum 35 degree Fahrenheit in plastered areas for 24 hours. Do not use frozen materials in mixes.
2. Protection:
  - a. Protect plaster from uneven and excessive evaporation during hot, dry weather by moist curing.

- b. Protect adjacent finished surfaces, including windows, doors, roof, etc., installed prior to plastering by covering with suitable methods.
- c. Plaster application should be stopped a minimum of six (6) hours before expected freezing temperatures.

#### Coordination

- 1. Openings and chases for heating, plumbing and electrical ducts, pipes and conduits shall be built into plaster work as required. Consult other trades in advance and make provisions for their work to avoid cutting and patching. All items penetrating through substrates and lath must be caulked before plaster is applied.

#### Products

- 1. Manufacture of Plaster Materials:  
Magna Wall, Inc., PO 847, Boerne, Texas 78006 800-626-4391
- 2. Plaster Material Mixture
  - a. One (1) 80 lb. bag of plaster concentrate with fine fiber additive. Course fibers are not recommended and may cause fibers protruding through finish coat to be removed by burning off.
  - b. 180-220 pounds or a maximum of 2-1/2 cubic feet of ASTM C-144 plaster sand.
  - c. Use potable water (4-7 gallons) for a sprayable or trowelable working mix.
  - d. Do not retemper or use material that has partially set. Do not use frozen, caked or lumpy materials. Clean mixer or mixing boxes of set or hardened materials before materials for a new batch are loaded. Mix each separately.
  - e. Mix only as much plaster as can be used prior to initial set.
  - f. Protect mixtures from frost, contamination and evaporation by curing per NER – 459, Section 4.6.3.
- 3. Substrates
  - a. Acceptable substrates for the Magna Wall Fiber Reinforced Stucco Systems include but are not limited to:
    - 1. Exterior grade gypsum sheathing meeting requirements of ASTM C-79-95.
    - 2. Dens-Glass Gold sheathing.
    - 3. Fiberboard shall comply with ANSI/AHA A 194-85.
    - 4. Plywood complying with US DOC PS 1-95.
    - 5. Expanded Polystyrene complying with ASTM C-578 with nominal density 1.5 PCF.

6. Extruded Polystyrene.
  7. Foam Plastics.
  8. Oriented Strand Board complying with US DOC PS 2-95.
  9. Other Substrates to be approved by Magna Wall prior to installation.
  10. Concrete Masonry Units.
4. Weather resistive Membrane
    - a. Grade D building paper complying with Federal specification UUB 790a or asphalt saturated rag felt complying with UL standard No. 55-A.
    - b. One or two layers as required by appropriate building code.
  5. Lath
    - a. 20 gauge 1" galvanized steel woven wire abbric (maximum coating thickness is ½").
    - b. Metal lath: the lath shall comply with ASTM C 847-93, furring and self-furring requirements shall be as set forth for wire-fbric lath. Minimum weight is 1.75 pound per square yard.
    - c. Other laths – welded comply with ASTM C933-80 or woven ASTM C 1032-86.
  6. Trim
    - a. All casing beads, corners and control joints shall be installed in accordance with drawings and as required by NER-459. All trim to be corrosion resistant or approved plastic by the Architect or Owner.

#### Execution

1. Examination and Preparation
  - a. Verify that surfaces and site conditions are ready to receive Work, if not, notify the Project Superintendent.
  - b. Masonry: Verify joints are cut flush and surface is ready to receive Work of this Section. Verify no bituminous, water repellent coatings, or other foreign water exists on masonry surface.
  - c. Grounds and Blocking Accessories: Verify items within walls, and other areas receiving plaster for other Sections of Work have been installed.
  - d. Verify that furring, lathing and control/expansion joints are complete and tightly secured in place, caulk and protrusions through lath before plaster.
2. Application – General

- a. Apply plaster in accordance with manufacturer's instructions per NER-459.
  - b. Apply plaster by machine or hand. Interrupt plaster only at junctions of plaster planes, at opening or at control joints.
  - c. Layout to permit completion of an entire surface in one application. Maintain a wet edge. Work to corners and joints and do not allow material to set up within a distinct wall area.
  - d. Base Coat:
    - 1. Thickness of base coat: Minimum 3/8" to 1/2" maximum in one coat application.
    - 2. Moist cure two (2) to three (3) times daily for two (2) to three (3) days to insure total cement hydration per NER-459.
  - e. Allow to cure four (4) to six (6) days before applying paint, elastomeric finishes.
    - 1. Color Finish Coat:
      - 2. Paint – Exterior acrylic or latex.
      - 3. Elastomeric coating is recommended in 12 mil dry thickness.
      - 4. Colored cement stucco.
  - f. Texture Coat (optional):
    - 1. Non-fibered Magna Wall or a job mix of one sack of Portland cement, 1/2 sack Type S Lime and graded sand to meet the finish requirements.
    - 2. Cement texture/finish (knock-down, sand, dash, etc.) may be applied as soon as base coat is set sufficiently to not be disturbed.
- 3. General and Miscellaneous
    - a. Attach accessories at each end and eight (8") inches on center maximum.
  - 4. Tolerances
    - a. To be determined by Architect or Owner.
  - 5. Patching
    - a. Patch defects in workmanship and materials. Patches in finished areas shall match adjacent surfaces.
  - 6. Cleaning
    - a. Remove plaster and protective materials from control beads and metal accessories. Remove plaster splatters and debris from other surfaces. Remove rubbish, debris and scaffolds from completed areas.

- b. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## 0925 GYPSUM DRYWALL

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the gypsum drywall shown on the drawings and specified herein or reasonably implied by same. All Work performed under this Section of the specifications shall be in strict accordance with all local governmental codes.

### Materials

1. All materials involved shall be new and quality specified.
2. Gypsum board: Fire-rated in accordance with approved assemblies shown in the plans ½" type "X", "C", 5/8" type "X", "C" tapered edge sheetrock, ½" or 5/8" M.R. gypsum board at tubs and showers equal to United States Gypsum. Non-fire rated gypsum and fire rated gypsum shall bear labels showing UL approval. Thickness locations as shown on the plans.
3. Fasteners: Nails, 5d, 6d or screws recommended, by United States Gypsum, or as required by Wall and Ceiling Assemblies shown on plans.

### Execution

1. Gypsum Wallboard:
  - a. Drywall Subcontractor will deliver and distribute gypsum wallboard in the building. Weather protect materials at all times taking caution to not overload any floor system when stocking. Protect concrete floors from damage resulting while stocking sheetrock.
  - b. Install gypsum board to walls, ceiling, cased openings, window openings, storage closets, exterior soffits, heating and air conditioning closets and furrdowns, wood framing, firewalls, fireplace chases, fire stops, behind tubs in party walls per local code. Install all wallboard with long dimension perpendicular to framing members or truss/rafters. Install metal furring channel at ceilings where shown on the drawings. All butt joints staggered and centered in framing members. Joints shall break over the top of windows, not at sides. Generally all installation is according to U.S. Gypsum Drywall Handbook, fit and snug.
2. Fasteners: Install all nails and/or screws in accordance to United States Gypsum Drywall Construction Handbook.
3. Warranty: This Subcontractor shall warrant the complete drywall installation for one (1) year following date of final completion of all units, against defects in material and workmanship.
4. Cleaning:

- a. Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site as buildings are completed. Floors will be left broom clean and smooth. Paragraph 0113 of General Requirements will be strictly adhered to.
- b. This Subcontractor shall be responsible for the protection of the Work of others from any damage resulting from the Work of this Section.

0927            TAPE, BED AND TEXTURE

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the tape, bed and texture Work shown on the drawings and specified herein or reasonably implied by same.

This Subcontractor shall carefully examine all walls and ceilings and determine that prior Work will not result in unsatisfactory finish. Once this Subcontractor accepts and proceeds with this Work, he shall assume all responsibility for producing an acceptable finish on the drywall.

Materials

1. Tape: Reinforced, perforated paper tape with feather thin edges as recommended by wallboard manufacturer.
2. Joint cement: Vinyl base as recommended by manufacturer of wallboard.
3. External Corner Beads: Nailing type galvanized steel.

Execution

1. Wall and ceiling angles and inside vertical corner angles shall be reinforced with tape folded to form a straight true angle.
2. Traffic corners shall be covered with metal corner bead. All other outside corners will be reinforced with perforated tape. Fasten as recommended by manufacturer.
3. The final coat and subsequent sanding shall leave all gypsum wallboard and treated areas uniformly smooth and ready to receive texture and paint.
4. Texture: All finished gypsum ceilings shall have medium "Knock-down" texture. All finished gypsum wallboard shall have applied "Splatter" texture. Texture shall be approved by Owner.
5. Warranty: This Subcontractor shall warrant the complete drywall installation for one (1) year following date of final completion of all units, against defects in material and workmanship.
6. Cleaning: Clean up debris caused by Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site as buildings are completed. Floors will be



scraped of joint compound, texture, and left broom clean and smooth. Paragraph 0113 of General Requirements will be strictly adhered to.

0930 CERAMIC TILE

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the ceramic tile Work shown on the drawings and specified herein or reasonably implied by same.

Provide samples of tiles for approval prior to installation.

Manufacturer

1. Units: Dal-Tile. See Interior Designer's Interior finish Schedule if provided.
2. Clubhouse: See Interior Designer's Interior finish Schedule if provided.
3. Grouts shall be L & M Dry cure or approved equal white drywall grout.

Materials

All materials shall be of manufacturer and shall conform to the following requirements:

1. Dry set mortar shall comply with the requirements of the American National Standards Institute specification for Dry set Portland Cement Mortar.
2. Organic adhesive (no VOC) shall comply with the requirements of the American National Standards Institute Specification for Organic Adhesive.
3. Wall tile grouts shall be L & M Dry cure or approved equal white drywall grout. Verify color with Owner. Grout should be sanded with 1/8" wide joints. Maximum allowable joint width 3/8". Verify with Owner any requirements for sealing grout joints. Any grout sealer must have a maximum VOC limit of 100 (g/L).

Please submit revised specs indicating low VOC requirement for these products. Also if you plan to use any site applied stains or sealers for interior woodwork (cabinets, etc...) those product also need to meet the low VOC requirements.

4. Apartment units tub/shower surrounds: Ceramic tile shall be Dal-Tile Leader or an approved equal. Walls shall be 4¼" x 4¼" tile, cushion edge, Owner approved color and finish. Furnish with edge spacers, caps, and trimmers which shall match above (2" x 6" trim with 2" x 2" corners). At interior corners of tile to tile and tub to tile provide 1/8" wide joint gap which will be filled with white (or color to match grout) siliconized acrylic latex sealant with a minimum 40 year warranty. See Interior Designer's Interior finish Schedule if provided.
5. Apartment units Entry/Foyer vinyl tile: Vinyl wood plank. Refer to Interior Designer's Interior finish Schedule.

6. Floor tile at club: Installed per manufacturer's recommendations. See Interior Designer's Interior finish Schedule if provided.

#### Execution

1. Examine surfaces to receive tile. Surfaces shall be firm, level and plumb. Report any defective surface to the General Contractor before commencing to lay tile.
2. Ceramic wall tile to be applied to moisture resistant gypsum wallboard to a uniform height of six feet, six inches (6'-6") from the floor.
2. Ceramic wall tile at tub shelves/horizontal surfaces to be applied to minimum ¼" thick cementitious tile backing board on 15# weight felt paper over ½ " thick O.S.B. panel.
3. Installation shall meet the requirements of the current American National Standards Institute specifications for installation of ceramic tile with Dryset Portland Cement Mortar at shower, tub seats, or with Organic Adhesive (no VOC) at tubs, fireplace fronts, hearths and unit entry floors. Coordinate with Interior Designer and Owner for specialty floors in clubhouse and miscellaneous buildings. Installation shall be in accordance with manufacturer's recommendations.
4. All Mortars shall be mixed as specified and in accordance with manufacturer's directions, to uniform colors and proper consistencies. Mortars shall not be retempered nor shall tile be set in mortar that has reached its initial set.
5. This Subcontractor shall warrant all labor and materials furnished for a period of one (1) year from the date of final completion of all units.
6. This Subcontractor will clean all tile Work after completion of this Section. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

#### 0965 RESILIENT FLOORING

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the resilient floor covering Work shown on the drawings and specified herein or reasonably implied by same.

Samples shall be submitted to the General Contractor for approval. Subcontractor must obtain written approval prior to commencing Work of this Section.

#### Materials

1. Refer to interior designer finish schedule.
2. Vinyl thickness shall be 1/8" gauge.

3. Adhesive (no VOC) shall be a mastic cement for cold application and be approved by tile manufacturer or as approved by General Contractor.

#### Execution

1. Floor tile will be installed on all floors where noted. Floor tile will also be installed in the laundry room, public toilets and other area as scheduled or noted on plans.
2. Commencement of Work in any area shall constitute acceptance of subfloor in the area. This Subcontractor shall do reasonable amount of preparation of floor for the tile, such as floor stone or scraping.
3. Tile shall be thoroughly embedded in adhesive to eliminate movement of units when subjected to traffic. Tile arrangements in each room shall be paralleled with walls.
4. Joints shall be closely fitted to walls and any fixtures or penetration through the subfloor.
5. Floor tile shall be flush cut to cabinets, base, and other fixtures, which rest on the subfloor. Shoe will **not** be used to cover tile at walls.
6. This Subcontractor shall warrant all labor and materials furnished for a period of one (1) year from date of final completion.
7. This Subcontractor will remove surplus mastic from tile and surrounding areas, and remove all excess debris. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

#### 0968 CARPET AND PAD

General - Related documents; see DIV-0102.

Scope - Furnish all labor, materials, equipment necessary and proper to complete the carpet and pad Work shown on the drawings and specified herein or reasonably implied by same.

#### Materials

1. Carpet - 25-28 oz., World "Versatility" or approved equal continuous filament nylon yarn. See Drawings for Interior finish Schedule. 2 standard colors.
2. Pad - 3/8" rebond of 3½# density. To be made of 50% recyclable material.
3. Miscellaneous - Tack strip, seaming tape and plastic face strip as recommended by manufacturer for proper installation.

#### Execution

1. This Subcontractor will scrape floors, patch all defects with floor stone, smooth and sweep floor clean before installing padding and carpet.

2. Remove doors necessary for execution of Work and place them in an orderly fashion to prevent damage. After completion replace doors in original location and in original condition.
3. All area under carpet will be completely covered with pad and no trafficable concrete surfaces will be allowed to wear against carpet. Subcontractor may turn carpet only in doorways.
4. Seams may be hand sewn or hot ironed in keeping with manufacturer specifications. Special care will be taken at all seams to prevent them from being visible from the top side.
5. Carpet will be stretched tightly and attached securely to take strip at walls to prevent bubbles, wrinkled or loose carpet.
6. Carpet stops to be plastic strips. Bend over all tacks where exposed to foot traffic.
7. This Subcontractor shall warrant all items furnished and installed for one (1) year following date of final completion.
8. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Broom clean all floors after installation. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

0991 PAINTING

General - Related documents; see DIV-0102.

Scope - Furnish all labor, material and equipment necessary and proper to complete the exterior and interior painting shown on the drawings and specified herein or reasonably implied by same.

Colors shall be selected by the Architect and Owner. Architect will furnish Subcontractor with color selections and Finish Schedule indicating where various colors shall be used. Subcontractor shall submit Contractor a brand of paint to be used for approval. Subcontractor shall prepare panels if requested for color matching.

All painted or stained finishes, both exterior and interior, shall comply with local code flame spread code requirements.

Materials

1. All materials used shall be new and quality specified.
2. Exterior Paint:
  - a. All exterior paints shall be equal to PPG, Sherman Williams, Kwal or approved Green Seal equal.

- b. Soffits shall receive acrylic latex.
  - c. Rough sawn fascia and beams shall receive acrylic latex.
  - d. Siding and trim shall receive one (1) coat primer and (1) coat acrylic latex.
  - e. Stair treads unfinished.
  - f. Exposed metal flashing, fascia or detailing shall receive acrylic latex to match background materials.
  - g. Metal stairs, railing and exposed structural steel shall receive approved oil base paint.
  - h. Exterior doors and frames shall receive two (2) coats of exterior acrylic latex semi-gloss enamel.
  - i. Galvanized metals - Wash with phosphoric acid. One (1) coat zinc dust primer; one (1) coat exterior oil.
  - j. Stucco one (1) coat primer and one (1) coat of elastomeric.
  - k. All electrical and mechanical fixtures to receive one (1) coat acrylic latex to match background color.
3. Interior Paint:
- a. All interior paints shall be equal to PPG, Sherman Williams, Kwal , or approved Green Seal equal.
  - b. Interior wood doors and frames shall receive flat latex undercoat and semi-gloss enamel. Prior to painting, nail holes must be puttied and sanded smooth. Kitchen and bath walls shall receive approved flat or semi-gloss enamel. Bath ceilings shall receive enamel.
  - c. Shelving, base and miscellaneous trim shall receive flat latex; undercoat and semi-gloss enamel.
  - d. All other wall trim shall be coated as shown on plans.
  - e. Textured gypsum board walls and ceilings shall receive sealer and flat latex paint.
  - f. All interior paint shall have a low VOC content and meet or exceed the City of Austin Green Building requirements.
1. Flat paint  $\leq$  50 g/l.
  2. Non-flat paint  $\leq$  100 g/l..
  3. Primer or undercoat  $\leq$  100 g/l
  4. Anti-corrosive coating  $\leq$  250 g/l.

- g. All coatings to meet or exceed SCAQMD Rule 1113.
  - h. Anti-corrosive paints shall meet or exceed Green Seal GC-03. Refer to DIV 0, 0060.
4. Caulk - White acrylic siliconized latex caulk, five (5) year warranty.

#### Execution

1. All surfaces to be painted or stained shall be cleaned of loose dirt and dust before commencing Work. Subcontractor shall cover concrete at exterior.
2. Exterior Paint: Exterior painting shall not be done while the surfaces are damp, or when the temperature drops below the manufacturer's specifications. Stucco shall be painted in accordance with manufacturer's recommendations.
3. Interior and Exterior Painting is based on complete coverage of surfaces and not on a specific number of coats or applications of material. Complete coverage is full and consistent application of material. Exception is exterior doors that will achieve two (2) coats of material on all six (6) sides.
4. Caulking
  - a. Items to be caulked:
    1. At joint between vinyl floor covering and base, between vinyl floor covering and cabinet base, water closets and bathtubs.
    2. Drywall to window and sliding glass door frames, base and door trim.
    3. Door trim to door jamb.
    4. Any other wood to wood or wood to drywall joints except for shelving and cleats.
  - b. Caulking procedure:
    1. Joints indicated to be caulked in details and where required on the building interior to provide for neatly finished jointing.
    2. Joints shall be raked clean before Work is started.
    3. Apply with gun to fill joints and recesses to present a smooth and unbroken surface.
    4. Care shall be exercised to prevent caulking from adhering to surfaces other than that intended to receive this material.
  - c. Items to be puttied:
    1. Nail and staple holes in base, door trim, jambs, shelving, cleats and any other wood trim.
    2. Joints in door trim and base and any other wood trim.

- d. Sand all wood items to provide for smooth appearance particularly puttied holes.
- 5. Touch-up: After all trades have finished their Work, touch-up and restore finish where damaged and remove all paint where it has been spilled, splashed, splattered or over-sprayed.
- 6. Warranty: This Subcontractor shall warrant the entire exterior and interior paint for one (1) year following date of final completion of all units against defects in material and workmanship.
- 7. Cleaning:
  - a. Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. All debris is to be removed from buildings as they are completed. Paragraph 0113 of General Requirements will be strictly adhered to. Floors will be scraped of paint and left broom clean after all painting is complete.
  - b. The finished Work surfaces of other trades shall be protected during painting and shall have these surfaces cleaned where damaged by paint. Where it is impossible to satisfactorily clean these surfaces, they shall be replaced by the applicable trade and charged to this Subcontractor.

0996 STAINED CONCRETE

Part 1 - General

- 1. Section Includes
  - a. Concrete floor stain.
- 2. Related Sections
  - a. Section 03300 - Cast-in-Place Concrete.
  - b. Section 09930 - Stains and Transparent Finishes.
- 3. Submittals
  - a. Comply with Section 01330 - Submittal Procedures.
  - b. Product Data: Submit manufacturer's product data, including surface preparation and application instructions.
  - c. Color Samples: Submit manufacturer's standard color chart.
  - d. Installer's Project References: Submit list of successfully completed projects, including project name and location, name of architect, and type and quantity of concrete floor stain applied.
  - e. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.
- 4. Quality Assurance
  - a. Single Source Responsibility: Concrete floor stain materials shall be products of a single manufacturer.
  - b. Installer's Qualifications:

1. Successful experience in application of similar concrete floor stains.
  2. Employ persons trained for application of concrete floor stains.
  - c. Preinstallation Meeting: Convene a preinstallation meeting before start of application of concrete floor stain. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and applicator. Review surface preparation, application, protection, and coordination with other work.
5. Delivery, Storage, And Handling
- a. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying manufacturer, product name, and concrete floor stain color.
  - b. Storage: Store materials in a clean, dry area indoors in accordance with manufacturer's instructions. Keep containers sealed until ready for use.
    1. [Concrete Floor Wax] [Concrete Floor Sealer]: Keep away from ignition sources. Do not allow to freeze.
  - c. Handling: Protect materials during handling and application to prevent damage or contamination.
6. Environmental Requirements
- a. Do not apply concrete floor stain when air or surface temperature is below 40 degrees F.
  - b. Concrete Floor Wax: Do not apply when air or surface temperature is below 55 degrees F.
  - c. Concrete Floor Sealer: Do not apply when air or surface temperature is below [55 degrees F]
  - d. Exterior Surfaces: Do not apply materials in wet weather.
  - f. Concrete Stain and Sealer must meet the City of Austin Green Building requirements regarding VOC content. All product must have a maximum VOC limit of 50 (g/L).
7. Sequencing
- a. Prepare surface and apply concrete floor stain after other interior finish work is completed and before baseboards are installed.

## Part 2 - Products

1. Manufacturer
  - a. Kemiko Concrete Products, PO Box 1109, Leonard, Texas 75452. Phone (903) 587-3708. Fax (903) 587-9038. Web Site [www.kemiko.com](http://www.kemiko.com). E-Mail [sales@kemiko.com](mailto:sales@kemiko.com). Or Scofield
2. Concrete Floor Stain  
Refer to landscape specs to match courtyard.

## Part 1 - Execution

1. Examination



- a. Examine surfaces to receive concrete floor stain. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.
2. Surface Preparation
    - a. Protection:
      1. Protect walls and surrounding surfaces not to receive concrete floor stain.
      2. Do not allow stain to come in contact with wood or metal surfaces.
    - b. Prepare concrete surface in accordance with manufacturer's instructions.
    - c. Concrete shall be as specified in Section 03300. Ensure concrete is a minimum of 28 days old.
    - d. Ensure concrete surface is clean, dry, structurally sound, and free from dirt, dust, oil, grease, solvents, paint, wax, asphalt, concrete curing compounds, sealing compounds, surface hardeners, bond breakers, adhesive residue, and other surface contaminants.
    - e. Do not acid wash or use heavy alkali cleaners.
3. Application
    - a. Apply concrete floor stain in accordance with manufacturer's instructions at locations indicated on the drawings.
    - b. Control depth of color by adjusting volume of stain applied to floor.
    - c. Apply 2 coats of concrete floor stain. Allow floor to completely dry after each coat. Do not scrub clean between coats.
    - d. After floor has completely dried, scrub off stain residue in accordance with manufacturer's instructions. Allow floor to completely dry.
    - e. Concrete Floor Wax: Apply concrete floor wax over interior concrete floor stain in accordance with manufacturer's instructions.
    - f. Concrete Floor Sealer: Apply concrete floor sealer over concrete floor stain in accordance with manufacturer's instructions.
    - g. Keep material containers closed when not in use to avoid contamination.
4. Protection
    - a. Protect stained concrete floor from damage during construction.
    - b. Protect concrete surfaces from foot traffic for a minimum of 24 hours.
    - c. Avoid washing concrete surfaces for a minimum of 48 hours.

## DIVISION 10 - SPECIALTIES

### **1055 POSTAL SPECIALTIES**

General - Related Documents; see DIV-0102

Work Included: Furnish and install all postal specialty items as shown on the drawings and specified herein.

Regulatory Requirements comply with all applicable codes, ordinances and Postal regulations.

Submit samples of specialty items as required by the Owner.

Submit to the Owner brochures of all specialty items showing sizes of members, methods of construction and mounting techniques.

Verify all dimensions shown on the Drawings by taking field measurements. Proper fit and attachment of all parts is required.

Coordinate and cooperate with all trades whose work relates in any way to items specified herein so Work progresses smoothly and without delay.

Deliver and store all items in dry, protected areas. Keep free of corrosion or other damage. Replace any damaged items, or parts, at no cost to the Owner.

#### Products

1. Mail Boxes: As manufactured by Auth-Florence, Landrum, South Carolina, or equal, and meeting U.S. Postal regulations.
2. Identifying Devices: As selected by the Owner. Size requirements, location and numbering system as per Fire Department and City codes and ordinances.

#### Execution

1. Inspection: Examine all sub surfaces to receive more and report in writing to the Contractor, any conditions detrimental to the Work. Commencement of installation will be construed as acceptance of all sub surfaces.
2. Installation: All installation shall be performed by skilled workers, at locations indicated on Drawings, as directed and/or as specified herein.
3. Items shall be installed in strict accordance with details on the Drawings; as required by regulating authorities; as recommended by the manufacturer of each item, as directed by the Owner, and as follows:
  - a. Plumb, level, true and in correct planes.
  - b. Securely anchored.

c. Properly finished.

4. Smoke Detectors: As required by City code.

## 1067 RECEPTACLES

General - See related documents: See DIV – 0102.

Scope - Furnish all labor and equipment necessary to perform the Work shown on the drawings and specified herein or reasonably applied by same.

### Materials

1. LRD32 model -  $\frac{3}{4}$ " #9 expanded steel mesh. The 32 gallon x m (expanded metal) receptacle uses a  $\frac{1}{4}$ " diameter steel rod joining the ends of the fabricated metals to form the seam of their diameter. Expanded metal receptacles use  $\frac{1}{2}$ " diameter steel rod to add support at the top. Expanded metal receptacles use  $\frac{1}{8}$ " x  $1\frac{1}{2}$ " strip steel to add support at the bottom. Mounting plates at the bottom of receptacles are 14 gauge sheet metal.

## DIVISION 11 – EQUIPMENT

### 1145 APPLIANCES

General - Related Documents; see DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the appliance Work shown on the drawings and specified herein or reasonably implied by same. Manufacturer's specifications and standard colors shall be supplied as a submittal for General Contractor, Architect and Owner approval. It is the General Contractors responsibility to verify all appliances selected by Owner will fit in opening provided and will not intrude on adjacent doors, windows, cabinetry or clear floor space requirements. Carefully examine all equipment for damage upon receipt with Construction Superintendent and replace all items damaged or defective.

Take special care in installing appliances to prevent damage to adjacent materials, including flooring. All materials damaged will be replaced or repaired by this Subcontractor at no extra charge. Provide serial number of each appliance in each apartment on a per building basis. **Refrigerator, dishwasher and clothes washer must be Energy Star.**

Install appliances per the following:

1. Connect all plumbing supply and waste connections per manufacturers' instructions, National Plumbing Code and local codes/ordinances and amendments.
2. Connect all electrical connections per manufacturers' instructions, National Electrical Code and local codes/ordinances and amendments.
3. General Contractor shall verify with the Owner the disposition of all manuals/instructions, serial numbers and removable accessories (i.e. oven broiler pan, appliance bulbs, racks, etc...).

#### Materials

1. Free Standing 30" wide electric Range, Standard-Clean Oven with window:
  - a. Apartment units: One (1) 8" diameter/three (3) 6" diameter cooktop elements, "Clean-Well" cooktop system, 5.0 cubic foot standard clean oven. GE model # JBS07.
  - b. Handicapped designated apartment units: One (1) 8" diameter/three (3) 6" diameter cooktop elements with front mounted controls, 5.0 cu. ft. standard clean oven. GE model # JBS15
2. Refrigerators:
  - a. Apartment units: 17.9 cubic foot, frost free freezer, ice maker, two (2) adjustable split/one (1) full width wire shelves, three (3) fixed door shelves. GE model # GTH18DCDBB.
  - b. Clubhouse:
    - i. Resource room: 21.8 cubic foot, frost free freezer, ice maker, two (2) split/one (1) full width adjustable glass shelves, three (3) door shelves. GE model # GTH21KCXBB.
  - c. Ice maker box, escutcheon and valve "Oatey" model # 38810.

- d. Ice maker with flexible, non-kink hose long enough to pull refrigerator clear of cabinetry/walls.
- 3. Dishwasher:
  - a. Apartment units: GE model # GDWF100VBB.Energy Star
  - b. Clubhouse GE model # GDWF100VBB.Energy Star
- 4. Disposal: 1/3 HP continuous feed, 1900rpm grinding action GE model # GFC320. (With attached power cord GE Model # GFC325F).
- 5. Microwave Oven/Vent Hood:
  - a. Apartment units: GE model # JNM1731D (color selected by Owner) 1.6 cu. ft. capacity, 1000 watts, two (2) speed 300cfm recirculating vent, night light, turntable on/off feature.
  - b. Handicap designated apartment units: GE model #PEM31D (microwave, color selected by Owner) GE model # JN327H non-standard vented range hood (color selected by Owner)
- 6. Washer:
  - a. Apartment units: GE model # GTWN5450DWW
  - b. Handicap designated apartment units: front load GE model # GFWN1100LWW.
- 7. Dryer:
  - a. Apartment units: XL, 7.0 cuft., 6 cycles, GE model #DWSR463EGWW
  - b. Handicap designated apartment units: 27" front load, 4 temp, GE model # DSXH43EFWW

#### Execution

- 1. Ranges:
  - a. Deliver, uncrate and install ranges in space provided in each individual apartment unit.
  - b. Connect range to energy source provided by General Contractor.
  - c. Install range level, flush and stable with all accessories attached properly. Verify anti-tilt mechanism in place and works properly.
- 2. Refrigerators:
  - a. Deliver, uncrate and install refrigerators in space provided in each individual apartment unit.
  - b. Connect refrigerator to energy source provided by General Contractor.
  - c. Install refrigerator level, flush and stable with all accessories attached properly.
  - d. Refrigerators with ice makers: water supply line must not be kinked or constricted, allowing refrigerator to be moved for cleaning/servicing.
- 3. Dishwashers:
  - a. Deliver and set dishwasher in front of space provided in each individual apartment unit.
  - b. Install dishwasher level and plumb in cabinetry. Adjust appliance feet and kick panel as required.
  - c. Secure dishwasher box/cabinet to bottom of counter top with screws. Space between bottom of counter top and top of dishwasher shall be 1/4" maximum.
- 4. Disposal:

- a. Deliver to plumber in "building" increments.
  - b. Connect disposal to plumbing waste line per manufacturer's instructions.
  - c. Connect disposal to energy source provided by General Contractor.
5. Microwave Oven/Vent Hoods:
- a. Deliver, uncrate and install microwave oven/vent hood in space provided in each individual apartment unit.
  - b. Connect microwave oven/vent hood to energy source provided by General Contractor.
  - c. Install microwave oven/vent hood securely, level and plumb within cabinetry, with all accessories attached properly.
6. Cleaning:
- a. When all Work has been completed, remove all operating instructions and product information and place in nearest kitchen cabinet (verify with Owner). Remove all packing tape and debris from appliance and dispose of the debris off of the site.
  - b. Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 12 - WINDOW TREATMENT

### **1249 MINI AND VERTICAL BLINDS**

General - Related Documents; See DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the blinds shown on the drawings and specified herein or reasonably implied by same.

#### Materials

1. Vertical blinds as manufactured by Allied Extrusions or equal, solid vinyl, flat 3½" valance. Ivory #03 color.
2. Colors to be as per interior finish schedule.
3. Tension pulleys shall be medium duty standard to the industry.
4. Window blinds to be inside mount equal to Levolor #112, 1" Alum, (Alabaster), Hunter Douglas, or Graber.
5. Colors to be as per interior finish schedule in plans.
6. Wood screws to be 1½" or an appropriate molly bolt and anchor.

#### Execution

1. Sizes for blinds shall be confirmed by field measurement at each opening at the site.
2. Vertical blinds for all sliding doors shall operate in the same direction as active leaf.
3. Install center supports on all center draw rods and cord pulls attached to draw cord ends.
4. Blinds shall be installed as per manufacturer's recommendations.
5. Install all blinds level and plumb.
6. Wood screws shall be used to fasten brackets and supports or molly bolts and wall-anchors if attached to hollow walls.
7. This Subcontractor shall warrant the work of this Section for a period of one (1) year following the date of final completion and acceptance.
8. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 13 – SPECIAL CONSTRUCTION

### **1311 SWIMMING POOL**

General - Related Documents; See DIV.-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the swimming pool work shown on the drawings and specified herein or reasonably implied by same.

All work shall be accomplished in accordance with all applicable codes.

Provide for final inspection of the pools by the Health Department prior to the acceptance by the Owner and Award of Certificate of Approval from said Health Department to the Owner if required.

Submit shop drawings for all structural, mechanical and plumbing for the swimming pool.

#### Materials

1. All equipment shall be delivered to the jobsite in undamaged, new condition. Store undercover in well-ventilated spaces. Protect from damage, dirt, stains, and moisture.
2. Pipe Materials: Pipe lines used in recirculating lines, and raw water lines shall be of PVC. Where plastic pipe is shown, it shall be "Carlon" PVC and shall bear the seal of the National Sanitation Foundation. In every case, the pipe, fittings and valves used shall be in accordance with the prevailing codes and it shall be the responsibility of the Contractor to insure the fact that these materials are in accordance with the prevailing codes.
3. Alternate Plaster: The base bid plaster shall be standard white plaster as specified above. An alternate shall be to use a natural colored plaster of gray green color using green marble dust for coloration.
4. All other materials and equipment shall be as listed on the plans. Submit shop drawings and equipment cut sheets for all proposed materials and mechanical devices.

#### Execution

1. Excavation: The pool shape shall be machine excavated and hand trimmed to the shape shown and all excess material shall be removed from the jobsite by this Contractor. All excavations shall be true to their shape and elevations shown.
2. Pool Shell:
  - a. Proper engineering of the reinforcing prior to bidding shall be accomplished to the satisfaction of the Architect, and shop drawings in four (4) copies submitted for his approval prior to excavation and installation.
  - b. All concrete walls shall be placed accurately and with thorough compaction to allow for proper bonding to the reinforcing. No expansion joints shall be allowed except where noted



and these only shall include a three (3") inch waterstop as detailed. Pours shall be broken up as detailed.

- c. All steel, stairs, grabs and pool accessories shall be grounded and inspected by the local city electric inspector prior to the pouring of the pool shell.

3. Finishes:

- a. This Subcontractor shall install coping where detailed. The sidewalk apron around the pool shall be as detailed on the plans.
- b. Provide and install plaster (white) over the entire bottom and sides of pool shell to underside of tile edging and on tops and outside edges where detailed. Wet plaster base for these shall be by the pool contractor.
- c. Provide frost proof tile edging below coping and at all water levels all around pool waterline and at stepdowns as indicated.
- d. This Subcontractor shall provide the pool ladders and grabs where detailed and seating shelf with plaster finish and tile edges where indicated.

4. Accessories:

- a. Provide pairs of manufacturers' standard stainless steel grab rails and recessed three each, toe holes with fiberglass inserts where detailed at each step.
- b. Provide 300 or 500 watt underwater lights located as detailed. Provide and install ground to the reinforcement as per local city code. These lights shall have UL approval, and shall have electrical inspection by the local city inspector prior to pouring of the concrete shell.

5. Pool Plumbing and Filter Equipment

- a. Work included: The Contractor shall supply and install all piping, pipe fittings, and valves from the pool fittings and the main pool drain, from surface skimmers to the drain disposal point; and chemical feed lines, all fresh water lines, valves, tees, and other material as specified hereafter.

- 6. Pipe Trench Excavation and Backfill: The Contractor shall make the required pipe trench excavations and backfill, but no backfill or pipe trenches shall be made until piping has met proper pressure tests. All pool, filter, and water line piping shall be given a gravity test.

- 7. Drainage Lines: Drainage lines shall include surface skimmers, backwash lines and drain lines.

- 8. Recirculating Lines: Recirculating lines shall include pool main outlet lines, return lines, inlets all of which shall be installed and connected from the pool fittings to the filter.

- 9. Completion: Upon completion of the pool, provide for 30 days operation and maintenance of the fully completed pool by this Contractor. When this 30 day period is up, turn over to the

Owner, the cleaning apparatus and testing equipment and thoroughly explain operating and cleaning procedures to the Owner's representatives.

10. Warranty: The pool Contractor shall provide a one (1) year guarantee on the equipment installed and a five (5) year guarantee on the pool shell.
11. Cleaning: Clean up all debris caused by the Work of this Section keeping site and buildings neat at all times. Debris is to be removed from job site. Paragraph 0113 of General Requirements will be strictly adhered to.

## DIVISION 15 - MECHANICAL

### 1500 WET AUTOMATIC SPRINKLER SYSTEMS

General - Related Documents; See DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the building plumbing Work shown on the drawings and specified herein or reasonably implied by same.

#### Description

1. The Work performed under this Section of the specifications shall be in strict accordance with all state and local codes. Obtain and pay for plumbing permit required by local ordinance. The Work covered under this section of the specifications consists of furnishing all labor, equipment, materials, and performing all operations in connection with the installation of a complete, hydraulically designed, wet dry automatic fire sprinkler system as specified, for the entire project. The work shall include, but not be limited to the following:
  - a. Complete design and working drawings meeting all the requirement outlines in Division 15 of these specifications. Manufactured by Grinnel, Lawler, or Central Brass.  
Wet pipe automatic sprinkler system  
Sprinkler heads  
Water distribution system  
Valves
  - b. Fire protection system shall comply with all applicable City, State, and National codes and ordinances, and the codes, ordinances, and regulations of all other ruling authorities having jurisdiction. The system shall meet all applicable requirements of the City Fire Department.
  - c. The Contractor shall state in his bid the number of sprinkler heads in the system, and list the extra charge or credit for each sprinkler that may be added or deducted from this number.
  - d. Contractor shall arrange sprinkler heads referenced to room centerlines and axes to establish a pattern complimentary to the finished ceiling.
  - e. Sprinkler piping shall be concealed in all but strictly mechanical or utility areas.

#### Materials

1. Sprinkler Heads shall be white flush heads in areas with finished ceilings. Sprinkler heads in utility or mechanical areas shall be standard white finish, side wall, pendant, or upright heads as required. Heads shall be manufactured by Star, Grinnel, Lawler, or Central Brass.
2. Piping shall be schedule 40 black steel pipe using screw thread joints. If allowed by local codes, other types of piping may be used, but only those listed for fire sprinkler service.

#### Execution

1. Furnish and install complete piping system.

2. Furnish and install all valves and accessories required by the ruling authorities.
3. System test and drain valves shall be coordinated with the architect by specifically calling to the architect's attention the location of these subsystems.
4. System shall be thoroughly cleaned by flushing out with water or compressed air until it is free from sand, oil, or other foreign matter, prior to the installation of heads and orifices.
5. Upon award of the contract for the fire protection system, the Contractor shall prepare preliminary drawings and secure the approval of the Architect. On approval of the Architect, the Contractor shall prepare detailed working drawings for the system and secure the approvals of the local Fire Marshal, the Owner's insurance carrier, and any other approvals required. A copy of the approval letters shall be delivered to the Architect before the Work is started.
6. On completion of the Work, the Contractor shall prepare a letter of guarantee, which shall guarantee the Work against defects in materials and installation as outlined under the general conditions.
7. Secure the approval or seal of the State Rating Bureau and provide this document to the Architect.

1510 FIRE ALARM SYSTEM

General - Related Documents; See DIV-0102.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the building plumbing Work shown on the drawings and specified herein or reasonably implied by same.

Description

1. Furnish all labor, materials, tools, equipment, and related items required for complete installation of fire alarm system as manufactured by Notifier, Simplex, or Pyrotronics, Inc.
2. The Contractor shall be responsible for all engineering and design of the system.
3. The fire alarm system shall provide supervision of the flow switch and tamper valve of each fire sprinkler system; shall provide general alarm, and communicate signals to a constantly attended station via two (2) telephone lines.
4. System shall conform to requirements of all local, city, and state codes, designed and installed under supervision of licensed person.
5. Submit five (5) copies of proposed system design consisting of drawings, specifications, and catalog data covering all systems and equipment.

## Materials

1. System shall include, but not be limited to the following:
  - a. Fire alarm control panel with annunciator, standby battery, and signal lights.
  - b. Flow and tamper switches.
  - c. Audible and visual devices.
  - d. Wiring of all components.
  - e. Surge Protector, approved by Owner and Architect.
2. All components shall bear the UL label and shall comply with all requirements of the Owner's insurance carrier.
3. Contractor shall determine locations for all devices and coordinate such location with the Architect and the local authority.
4. Contractor shall arrange for the electrical contractor to install needed boxes, conduit, and 120 volt wiring.

## 1520 BUILDING PLUMBING

General - Related Documents; See DIV-0102. Refer to Division 0 – 0060.

Scope - Furnish all labor, materials and equipment necessary and proper to complete the building plumbing Work shown on the drawings and specified herein or reasonably implied by same.

All Work performed under this Section of the specifications shall be in strict accordance with all state and local codes. Obtain and pay for plumbing permit required by local ordinance.

### General Requirements

1. The drawings for the buildings plumbing Work shall be considered diagrammatic showing the location, type and size of piping, plumbing fixtures and equipment. The Subcontractor shall furnish all fittings necessary for proper installation of the complete Work.
2. All plumbing lines and equipment shall be installed in locations indicated. Subcontractor in starting assumes responsibility for having verified lines and equipment will fit in the spaces allocated.
3. Framing Subcontractor shall provide openings, other than drilling for pipes, etc., backing and framing for all plumbing equipment in locations and of sizes as directed by General Contractor.
  - a. Where piping passes through or interferes with slabs, beams, or any structural members, or where cutting of structure is required, the Contractor representative shall be consulted. No structural members shall be cut without submission of an approval from the Contractor.

4. Protect adjacent material, such as VC tile, to prevent damage to any surface while performing Work of this trade. Particular attention will be paid to Paragraph 0117 of General Requirements.
5. Submittals - Subcontractor is to submit base bid on strict basis that all fixtures bid will be equal in quality to those specified or risk having bid reject. Proposals for substitutions of higher or lower quality materials must be clearly shown separately and with base bid additions or deductions itemized. Four (4) copies of manufacturer literature, brochures, etc., must be submitted at the time for bids of each fixture or piece of equipment bid.
6. Building water use shall exceed plumbing code by 15% for indoor water consumption.

Materials

1. All materials involved shall be new and quality specified.
2. All plumbing fixtures to be selected by owner and meet all City of Austin Green Building requirements.

Each dwelling includes **ALL** of the following:

1. Lavatory fixtures (max. 1.0 gpm)
2. Showerheads (max. 2.0 gpm) (no more than one showerhead installed per shower)
3. Kitchen fixtures (max. 1.8 gpm)
4. Toilets (max. 1.28 gpf)
5. Energy Star Dishwasher
6. Either no clothes washer is installed in each unit OR washer uses fewer than 28 gallons / regular cycle.

**Requirements: (Non Residential)**

Meet ALL of the following:

1. Public Lavatories (max. 0.5 gpm)
2. Public Showers (max. 2.0 gpm)
3. Public Kitchen fixtures (max 1.8 gpm)
4. Toilets (max. 1.28 gpf)
5. Urinals (max. 0.5 gpf)

3. All waste lines to include site drainage and vent piping, to be schedule 40 PVC-DWV.
4. Water supply lines below grade, type L, soft temper copper or pressure PVC as a Contractor's option. Pipe above grade to be type "M" hard copper or CPVC, (as a contractor option) insulated a minimum of 12" below finish grade where exposed. Verify minimum code requirement.
5. Gas system shall use polyethylene pipe approved by City codes. Sizing of all gas lines and regulators to meet local codes. All gas pipe fittings shall be pressure type.

6. Electric and gas fired water heaters equal to manufacturer's specified in plans. Size, gallonage, wattage and BTU rating to be as specified in plans.
7. Fire Caulk; "Flame-Stop" – as shown per plans.

#### Execution

1. Excavation and backfilling: Fine textured soil or sand will be used around and under all underground lines. A solid well compacted bed shall be provided for all gravity drainage piping so that no settling can occur to disrupt the lines. Backfilling shall be compacted so there is no uneven settling of finish grade.
2. Sanitary Sewer System: Install a complete sanitary drainage piping, fixture traps, vents and lead cap flashing, building sewers and connections to site sewer lines.
  - a. Cleanouts, both exterior and interior, will be installed in the drainage system to provide cleanability to the system over its entire length. In general, cleanouts will be installed at points where lines change direction 90 degrees or more and in any case, according to City code. Install special cleanouts as noted on the plans.
  - b. Subcontractor shall inspect all stubbed up drainage lines after Work of other trades, i.e. framing, slabs and lightweight decks before continuing stacks or setting fixtures to insure lines are free of debris and blockage.
  - c. Care shall be taken to insure rapid drainage from all fixtures. Adequate grading and venting shall be maintained on all lines of the drainage system both interior and exterior. Bathtubs and Washer Drains especially shall be required to drain rapidly. Drain pans piped to the exterior shall be used on all upper floor hot water heaters.
  - d. Trapped PVC condensate lines at Washer drain shall be provided by the plumbing Subcontractor to a minimum height of 5 feet at horizontal air handlers. At vertical air handlers install deep seal trap drain in furnace closet.
3. Hot and Cold Water System:
  - a. Furnish and install complete water supply system as required for all fixtures, hydrants and laundry equipment. The system shall include the cold water supply and hot water supply lines as shown on drawings.
  - b. All pipes installed will be properly sized to give adequate service at all times. Install protective metal strips if pipes are 1" or less from surface of framing members.
  - c. Piping for shower heads shall be securely fastened to a framing member by means of "drop ear elbows." The complete elimination of water hammer shall be the responsibility of this Subcontractor.
  - d. Cutoff valves to be supplied at each lavatory, sink, washer, dishwasher, icemaker and water closet in an easily accessible location, except as approved by the Contractor.
  - e. An insulation gate valve will be installed on the cold water service to each building.

- f. Provide cold water line with check valve and cutoff to each swimming pool freshwater fill device where detailed on the pool plans.
  - g. Hot and cold water service is to be stubbed out in public laundry areas at each machine location for installations of recessed laundry connector boxes.
4. Install firestop caulking in accordance with plans.
5. Gas Service: Provide and install gas lines with stop valves to all gas water heaters, laundry areas, gas furnaces and heated spas as shown on plans.
6. Plumbing Fixtures and Trim:
- a. Furnish and install all plumbing fixtures shown and scheduled under materials section.
  - b. All fixtures shall be squarely set and properly supported and adjusted properly for operation.
  - c. Chrome escutcheons to be required at all wall penetrations.
  - d. Place water closets in space shown or with 15" minimum clearance from center of closet to adjacent vertical surfaces.
  - e. Install shower head 75" from finished floor and centered on end wall at tub.
7. Hot Water Heaters: Furnish and install electric or gas hot water heaters with drain pans of sizes and in locations as shown on drawings. All hot water heaters shall be installed per code and manufactured specifications.
8. Water lines in attics shall be insulated with material as specified on the plans or a minimum of ½" armafex.
9. Set and Hook Up Dishwashers and Disposals:
- a. The dishwasher and disposals are furnished by others. The plumbing Subcontractor shall uncrate and set these appliances and shall connect all plumbing services to them according to manufacturer's written instructions. The dishwasher shall be delivered by others crated to each apartment. The building plumbing Subcontractor will pick up disposals from Contractor as required.
  - b. The sanitary drain and vent piping shall be proved tight by temporarily plugging all outlets and filling the system with water. Test in accordance with local code. This test does not relieve responsibility for inspection of waste lines for obstructions as called for herein.
10. Tests, Guarantee and Warranty:
- a. This Contractor shall warrant the complete plumbing system for one (1) year following date of certificate of occupancy on last building against defects in material and workmanship.



He shall also pass on to the Owner all extended warranties, such as those for warranty required of the water heater liner. Warranty program will be in effect on a 24 hour basis, Monday, 8:00 a.m. to Friday, 8:00 p.m. In an emergency situation, the warranty shall be in effect 24 hours a day, 7 days a week. The emergency situation shall be defined as a broken water line, broken commode tank, flooding, stopped up sewer line or if a health hazard exists.

- b. The sanitary drain and vent piping shall be proved tight by temporarily plugging all outlets and filling the system with water. Test in accordance with local code. This test does not relieve responsibility for inspection of waste lines for obstructions as called for herein.
- c. Test hot and cold water piping system hydraulically to a pressure of 100 psi for a minimum period of 4 hours. Repair any and all leaks, replacing material as necessary, and retest until systems are proven tight. All tests are to be conducted before sheetrock and lines are to be under City water pressure during sheetrock to detect leaks due to nailing.
- d. The entire gas piping system shall be tested according to the requirements of the local gas company before covering the pipe.

11. Cleaning:

- a. Clean up all debris caused by Work of this Section keeping site and buildings neat at all times. Subcontractor will remove dishwasher cartons and all such large debris from this Work. Paragraph 0113 of General Requirements will be strictly adhered to.
- b. After plumbing work has been completed and all systems and fixtures are ready for use, leaving every part in acceptable condition and ready for use.

1580 HEATING, VENTILATING AND AIR CONDITIONING - (All systems in this section will be commissioned. Refer to Division 0, Section 0060 & 0070)

General - Related documents; see DIV-0102.

Scope - Furnish all permits, labor, materials and equipment necessary and proper to complete the heating, ventilating and air conditioning work shown on the drawings and specified herein or reasonably implied by same.

This Subcontractor shall submit shop drawings upon contract award. These drawings shall be complete working drawings prepared in a neat reproducible form and shall indicate the air conditioning and heating work as required for other trades. Shop drawings shall be prepared for individual apartment units, ductwork and piping diagrams. The air conditioning load calculations for each of these must be submitted. These drawings with all applicable submittal data on equipment shall be submitted to the Contractor with all applicable submittal data on equipment shall be submitted to the Contractor with not less than five (5) copies. Checking of the submittals will then be provided as an aid to the Subcontractor. Approval of this submittal shall in no way relieve the Subcontractor of the responsibility for any errors or omissions in the submittals nor shall it relieve the Subcontractor of total responsibility for the proper and complete execution of the Work.

All vents are to be installed so they do not appear obtrusive from the street scene; coordinate with the Owner and Architect.

Locate all compressors in locations as shown on the drawings.

All lines from compressors to buildings shall be run so as to be as unobtrusive as possible and sealed at building wall penetration.

#### Materials

1. All materials shall be new and quality specified.
2. Vertical and Horizontal air Handler - Equal to "Arcoaire", "First Company", "Chinook", or approved equal. Unit shall consist of fan motor assembly, DX coil package and heat strip element completely factory wired. Heating element shall be interlocked with fan circuit to prevent operation of element unless fan is also operating.
3. Condensers - air cooled condenser equal to "Trane", "Bryant" or "Arcoaire" with output as specified on plans.
4. Ductwork
  - a. HVAC - the duct to be equal to 1" "Owens-Corning" or "Johns Mansville" fiberglass, round sheet metal duct; insulated flex or insulated metal flex.
  - b. Exhaust Fans - 3" sheetmetal per manufacturer's recommendations.
  - c. Dryer vents - 4" sheet metal per appliance manufacturer's recommendations.
5. Grilles and Registers - shall be equal to "Airmate" 160, 170, 200 and 500 series.
6. Piping and Lines: as recommended by manufacturer of condensing equipment.
7. All other materials shall be specified herein as recommended by the manufacturer of the units.

Filters - install filters of proper size and type when units are started up and when building is accepted for occupancy. Filters installed in ventilation systems shall have a minimum efficiency reporting value (MERV) rating of 7 or greater

Fire dampers/ceiling radiation damper at register as required when penetrating 1 hour rated floor ceiling assemblies.

**\* PLEASE NOTE – All split mechanical systems shall be rated at a minimum 15 SEER cooling efficiency AND be heat pumps where the heating source is electric.\***

#### Execution

1. Fan coil and Condensers: The air conditioning system shall be a recessed vertical wall mount consisting of fan coil unit with DX coil package and air cooled condensing unit.
  - a. The fan coil unit shall consist of a galvanized steel cabinet enclosing the fan motor assembly, DX coil package and a heating strip element. The fan coil units must be rigidly

mounted to framing according to manufacturers recommended procedure. Mark blocking locations for carpentry Subcontractor.

- b. Internal refrigerant connections shall be factory installed, leak tested, dehydrated and sealed.
  - c. Install vertical cabinets plumb and level to provide for proper condensate pan drainage and to prevent excessive vibration of unit.
  - d. Guarantee minimum temperature differential of 25° for cooling and 70° for heating.
2. Ductwork:
- a. Duct system to be installed in accordance with approved shop drawings and the manufacturer's instructions.
  - b. Duct will be securely anchored to the building and flanged metal frames using approved type hangers and will be installed so as to be completely free from vibrations when the system is in operation.
  - c. Insulated flex duct will be double strapped to boot. Metal flex duct will be secured with a single strap. Sheetmetal duct to be secured with screws and taped. Fiberglass duct will be taped.
  - d. Connections to be tightly sealed with the proper material.
  - e. Subcontractor to install all bath, dryer and kitchen vent/microwave oven ductwork and weatherproof terminations.
3. Grilles, Registers and Frames: All grille and registers shall be a white finish. Maximum duct velocity at registers and grilles to be 600 FPM. Sizing shall be based on this air velocity and noise control.
4. Piping and Lines:
- a. Dehydrated refrigerant copper piping is to be used with wrought copper fittings made up with silver solder. Install protective metal strips where piping occurs one inch or less from framing members. Pump down refrigerant lines to eliminate contamination and check for leaks.
  - b. Condensate lines are to be installed as required to drain the units. Drains shall extend to connection provided by plumbing Subcontractor. Provide auxiliary condensate drain if required by code.
5. Insulation:
- a. Insulate all ductwork in areas subject to condensation.
  - b. Suction refrigerant lines shall be insulated with 3/8" "Armaflex".

- c. Where refrigerant liquid or suction lines come in contact with the structure at walls, under floor or at fire stops, the piping shall be cushioned with flexible form plastic insulation material to prevent vibration noises and hammering of pipes.
6. Drilling: Drilling of holes necessary to facilitate installation of piping and wiring will be done in manner as not to weaken structural framing members. Install protective metal straps where piping and wiring are 1" or less from surface of framing members.
7. Electrical Wiring and Controls:
  - a. All control wiring or low voltage wiring shall be furnished by this Subcontractor.
  - b. All line voltage wiring or power wiring shall be furnished by electrical Subcontractor. All air conditioning and heating strips shall be wired with copper conductors.
  - c. Temperature controls or thermostats are to be furnished by this Subcontractor in location shown on plans, level and attached securely to wall. At all accessible ground floor unit's controls or thermostats shall be at a minimum of 15" A.F.F. and a maximum of 48" A.F.F.
8. Labeling: Each air conditioning system shall be plainly labeled as to type of equipment, unit number and part description.
9. Warranty: Subcontractor shall guarantee all equipment and workmanship for a period of one (1) year from the completion of 100% of the units except compressors, which shall be guaranteed for five (5) years. Subcontractor shall maintain the entire system for one year following date of final unit completion with warranty service available from 8:00 a.m. to 5:00 p.m. seven days a week. All service calls shall be answered within 12 hours of the time service is requested.
10. Cleaning: Clean up all debris caused by Work of this Section keeping site and building neat at all times. Paragraph 0113 of General Requirements will be strictly adhered to.
11. Balancing and testing:
  - a. Upon completion of the installation, the Contractor shall test and adjust the systems for proper operation. This shall consist of balancing of airflow by means of anemometer or velometer and by temperature, and verifying air quantity being handled by the exhaust systems. The temperature control system shall be adjusted to the season in effect and again at a later date for the ensuing season.
  - b. The Subcontractor shall, at the completion of the tests, submit a written report to the Architect showing all testing, and balancing operations including air quantities being delivered at each outlet or inlet, temperature readings, etc., air quantity being handled by the air conditioning units.

## DIVISION 16 - ELECTRICAL

1600 BUILDING ELECTRICAL – (All systems in this section will be commissioned. Refer to Division 0, Section 0060 & 0070)

General - related documents: see DIV-0102. Refer to Division 0, Section 0060.

Scope - Furnish all permits, labor, material and equipment necessary and proper to complete the building electrical Work shown on the drawings and specified herein or reasonably implied by same. Unless otherwise noted on the drawings or specified, the building electrical Work shall include all building electrical Work inside the building shell.

### Code Jurisdiction

1. All codes, ordinances and statues shall be considered minimum and shall be strictly adhered to.
2. All Work done under this Section of the specifications shall be in strict conformity with the requirements of the National Electrical Code and local regulations.

It shall be the responsibility of the electrical Subcontractor to report and include in his bid allowances for any discrepancy in specifications and drawings so there will be no additional cost to the General Contractor.

Subcontractor shall prepare his own load calculations and not depend solely on the calculations in the plans. The calculations in the plans are meant to be used as a guideline and to furnish specific load information for the range and heating equipment.

3. The building lighting and envelope energy use shall be reduced by 15% compared to Austin Energy Code.

### Materials

1. All materials shall be new and quality specified.
2. Feeders from exterior building panels to individual unit load centers may be wired in aluminum. All other wiring to be copper with copper ground rod. All wiring shall be sized in accordance with the National Electrical Code and City requirements.
3. All convenience outlets, switches and plates shall be white color. All switches shall be silent type (G.F.I. outlets as shown and required by code.)
4. All sub distribution panels and load centers shall be equal to GE Load center face panels and shall be prefinished gray.
5. Smoke sensors shall be white in color, direct wired, BRK-769AC-1 or equal.
6. Telephone Jacks to be modular type.

## Execution

1. This Subcontractor may size the entire electrical system in conformance to the National Electrical Code, applicable local codes and the principles outlined herein.
  - a. Provide and install a complete building electrical distribution system.
  - b. Cutting: In general, conduits or nonmetallic wiring shall be run concealed in the construction. Any necessary cutting through construction of any kind shall be done only after receiving permission of General Contractor. This Subcontractor shall do all fitting necessary for the proper installation of his Work.
  - c. Install protective metal strips if wires are 1" or less from surface of framing members.
2. The Subcontractor shall furnish and install all light switches, receptacles, outlets and nonmetallic outlet boxes as shown on electrical plans. Install all interior lights on switches as detailed. At all accessible ground floor unit electric outlets, switches, television jacks, telephone jacks, and controls shall be at a minimum of 15' A.F.F. and a maximum of 48" A.F.F. All outlets, switches and controls shall be at a uniform height.
3. Furnish and install electrical connections for:
  - a. Air conditioning and heating
  - b. Plumbing (hot water heaters.)
  - c. Dishwasher connections.
  - d. Garbage disposal with wall switch.
  - e. Install range exhaust hood/microwave.
  - f. Laundry rooms (all equipment.)
  - g. Smoke sensor system and install the smoke sensors.
  - h. Telephone and television.
  - i. Doorbell.
  - j. Miscellaneous heaters, exhaust fans, power vents, etc. as shown on plans.
  - k. Fire alarm system as required and shown on plans.
  - l. Stereo wiring at club.

**\* PLEASE NOTE - 90% of indoor lights must be Energy Star rated.\***

4. Electrical Subcontractor shall install lighting fixtures on every outlet shown and shall install lamps for every lighting fixture installed. Install all fixtures plumb straight and properly aligned. Replace all fixtures damaged after acceptance.

5. Provide waterproof outside panel box at building sub distribution location. Install waterproof outlet at second floor entries.
6. Post lights shall be set in concrete.
7. Swimming pool grounding to be in accordance with local code, or if no code exists, use #8 copper wire and circle pool. Attach ground wire in a minimum of 8 locations to structure reinforcement, underwater lights, ladders and handrails. Continue from this grid to power supply panel, pumps, etc. as required by ordinance.
8. Properly size all junction boxes, wiring to junction boxes from electrical panel for pool lights and disconnects from power supply to pool equipment. Make all electrical connections to equipment. Coordinate this Work with swimming pool Subcontractor.
9. Install and/or connect equipment, fixtures and appliances:
  - a. Air conditioning and heating (power wiring connection.) Make-up breakers for heat strip and fan prior to trim out if temporary power is obtained from power service company to provide for heat during winter months.
10. Telephone Conduit and Boxes: Telephone prewire and boxes to be by the electrical Subcontractor and to meet local codes and telephone company regulations. Install bridge outlet with cord.
11. Tests: This Subcontractor shall conduct all tests necessary to prove that this system is left in a complete and operating condition. He shall test all circuits for ground.
12. Labeling:
  - a. Each panel board and starter relay, main breakers, switches, heating and air conditioning control devices, terminal boxes and other equipment shall be labeled for identification.
  - b. Label all individual load center circuit directories.
13. Guarantee: This Subcontract shall guarantee all equipment installed and furnished by him to be free from mechanical defects or faulty workmanship for a period of one (1) year from completion and acceptance of all work. Warranty program will be in effect on a 24 hour basis, seven days a week.
14. Cleaning: Clean up all debris caused by the Work of this Section, keeping site neat at all times. Debris encompasses light fixture boxes or cartons provided by the General Contractor as well as range hood boxes also provided by General Contractor. Paragraph 0113 of General Requirements will be strictly adhered to.
15. Protect adjacent material such as VC tile to prevent damage to any surface while performing Work of this Section. Particular attention will be paid to Paragraph 0117 of General Requirements.

16. Sub-contractor Provided Material Storage:
  - a. Provide storage facility for contractor - provided light fixtures, ceiling fans and range vent hoods, 2-3 buildings of these materials per shipment. Contractor's and Subcontractor's representative will be jointly responsible for receiving and signing supplier delivery tickets.
  - b. Subcontractor will be responsible for loss of and damage to these materials while in his storage facility and until materials have been properly installed.
  - c. Any damage to these materials should be promptly reported to Project Superintendent.