



A Joint Powers Agency

MEMBERS

City of Sacramento

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Housing Authority of the  
City of Sacramento

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# Sacramento Housing and Redevelopment Agency

## Technical Specifications

**IFB No. 1973-DD**

Under \$10,000 Qualified Vendor List

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## SECTION 01010

### SUMMARY OF WORK

#### PART 1 – GENERAL

##### 1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Intent of Work of this Contract is specified by the Agency "Contract Documents", as shown in the Technical Specifications Manual, Drawings (if any), calculations, reports or any other information attached or referred to herein.
- B. The term "NIC" shall be construed to mean that construction work is not to be furnished, installed or performed by Contractor. The term shall mean "Not in this Contract".
- C. The Agency reserves the right for other divisions of the Agency to use this Contract after it has been fully executed.

##### 1.02 CONTRACTOR ACCESS TO AND USE OF SITE

- A. Agency Construction staff, if any, will designate an entrance to the Project site.
- B. Use of premises for work, storage and vehicular parking is limited to areas designated by Agency Construction staff, if any.
- C. All work on the Project should be performed during the times permitted by the local jurisdiction; provided no work shall be done on the Project by the Contractor between the hours of 7:00 p.m. and 7:00 a.m., nor on Sundays or legal Agency holidays (as listed below in Paragraph D) except work as is necessary for the proper care and protection of the Project or work directly associated with an emergency or special situation related to the Project, and in any case only with the prior permission of the Contracting Officer. It is understood, however, that after hours or non-working days work may be established as a regular procedure by the Contracting Officer. It is understood, however, that after hours or non-work days work may be established as a regular procedure by the Contractor if he, she, or it first obtains the written permission of the Contracting Officer and that such permission may be revoked at any time by the Contracting Officer, if the Contractor fails to maintain an adequate force and equipment for reasonable prosecution and inspection of the after hours or non-work days work.
- D. The following are Agency holidays:
  - New Year's Day
  - Martin Luther King, Jr. Day
  - Washington-Lincoln Day
  - Caesar Chavez Day
  - Memorial Day
  - Independence Day (Fourth of July)
  - Labor Day
  - Veterans Day
  - Thanksgiving Day (Thursday & Friday)
  - Christmas Eve (after 12:00 noon)
  - Christmas Day
  - New Year's Eve (after 12:00 noon)

### 1.03 WORKPLACE BEHAVIOR

- A. This Work will be accomplished in a family type neighborhood. Appropriate behavior will be required. Specifically:
1. No loud music will be allowed in the work place;
  2. Language should be suitable to be heard by children;
  3. Appropriate work clothing will be required at all times.
  4. Residents will be treated with respect at all times.
  5. Smoking is prohibited on property.
- B. The Contractor shall employ only persons who are competent and skilled in their respective trades, and whenever the Contracting Officer shall notify the Contractor that any person working on the Project is, in his or her opinion, incompetent, unfaithful or disorderly, or refuses to carry out the provisions of the Contract Documents, or uses threatening or abusive language to any person at the Project representing the Agency or is otherwise unsatisfactory, the Contractor shall remove the person from the Project and such person shall not be returned to the Project without the Contracting Officer's consent based upon the Contractor's assurance that proper workmanship and proper conduct can be expected from such person.

### 1.04 AGENCY FURNISHED PRODUCTS (IF ANY)

- A. Agency Construction staff or Architect, if any, responsibilities:
1. Arrange for and deliver the required Shop Drawings, Product Data and Samples to the Contractor.
  2. Arrange and pay for product delivery to the Project site, in accordance with the construction schedule, as requested.
  3. Deliver suppliers' bills of materials to Contractor.
  4. Inspect deliveries jointly with Contractor.
  5. Submit claims for transportation damage.
  6. Arrange for replacement of damaged, defective and missing items.
  7. Arrange for manufacturer's guarantees, warranties, and bonds.
- B. Contractor's Responsibilities:
1. Designate delivery date for each product required in the Work Order Request.
  2. Review Shop Drawings, Product Data and Samples, and return to Agency Construction staff or Architect, if any, within ten (10) days, with notification of discrepancies or problems anticipated in the installation of the product or its being placed in service.

3. Receive and unload products at the site. Promptly inspect products jointly with Agency Construction staff or Architect, if any, record shortages and damaged or defective items.
4. Handle products at the site, including uncrating and storage. Protect products from exposure to the elements, and from other damage.
5. Assemble, install, connect, adjust and finish products as specified in the applicable Specification Sections.
6. Repair or replace, as required, items damaged subsequent to inspection with Agency Construction staff or Architect, if any.

#### **1.05 SURROUNDING SITE CONDITION SURVEY**

- A. Prior to commencement of Work, Contractor and Agency Construction staff or Architect, if any, shall jointly survey the site and existing buildings, paving, plant life, and other items, noting and recording existing damage such as cracks, sags, loose materials and other existing damage.
- B. This record shall serve as a basis for determination of subsequent damage to these items due to settlement or movement due to demolition and construction operations.
- C. Such damage, as noted, shall be suitably marked on the item, if possible, and the parties making the survey shall sign the official record of existing damage.
- D. Cracks, sags or other damage to the site and adjacent buildings, paving and other items not noted in the original survey but subsequently observed shall be reported immediately.

#### **1.06 INTERPRETATION OF SPECIFICATIONS, SCOPE OF WORK AND WORKING DRAWINGS (IF ANY)**

NOTE: Be advised: do not bid this project unless you read and understand the following.

- A. Project Manual  
Technical Specifications  
Scope of Work  
Drawings, if any  
Working drawings, if any (Working drawings suitable for obtaining any and all necessary permits and for the proper prosecution of the work for each project are to be provided by the contractor.)
- B. As no specific portion of work in this project is independent of all others, each trade shall be responsible for reviewing and understanding ALL sections of the scope of work, working drawings, if any, and specifications to determine how they will influence their particular portion of work. The Prime Contractor shall be responsible for assuring proper coordination and exchange of information between the trades as to how each relates to and is influenced by the others.
- C. The intent of the scope of work, working drawings, if any, is to indicate critical dimensions, position, and kind of construction, and the specifications indicate qualities and methods. Any work in the scope of work or on the working drawings, if any, not mentioned in the specifications, or any work described in the specifications and not detailed in the scope of work or working drawings, if any, shall be constructed as if they were fully detailed and

described in both. Work not detailed, marked, or specified, shall be the same as similar parts that are detailed, marked, or specified. See Item G below.

The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both.

In the event of a conflict between the specifications or the drawings, the Contractor is to refer to and follow the document containing the most specification, detail, higher quality or most restrictive document. All the contract documents are essential parts of the Contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be cooperative and to describe and provide information to complete the work of the Project. If there is a discrepancy or ambiguity, the matter shall be promptly submitted in writing to the Contracting Officer who shall promptly make a determination in writing.

The Contractor must provide written notice of any ambiguity to the Contracting Officer. Should the Contractor not provide such notice and prepare its bid or commence with work without resolution of the ambiguity by the Contracting Officer, the Contractor proceeds at its own risk and expense.

- D. All work is new "unless otherwise noted" (U.O.N.).
- E. Critical dimensions (i.e. dimension required by code or regulation) shall be denoted as "clear". "Clear" denotes dimensions required between finished walls, components, etc. All other dimensions will be from face of stud to face of stud, centerline to centerline, or outside face of stud to outside face of stud. Should any question arise concerning the dimensions, the Prime Contractor shall call the Agency immediately for clarification or proceed at his/her own risk. Due to production processes, under no circumstances should the working drawings, if any, be scaled.
- F. The Contractor should visit the site prior to submitting a bid for the work. Failure to visit the site will not release the Prime Contractor from the responsibility of knowing the site, its existing conditions, and how it will influence his/her bid. At the site, the Prime Contractor shall acquaint him/herself with the existing conditions and how they will influence the scope and the intent of, and the subsequent bid for, the Work.
- G. When reviewing the scope of work, working drawings, if any, or specifications prior to the bid, the Prime Contractor shall notify the Agency in writing of any discrepancies, unclear instructions, errors, etc. that he/she believes will influence the outcome of their bid and/or the construction of the work. This includes typical errors or ambiguities in the scope of work, the specifications or notational errors in the working drawings, if any, where the interpretation is doubtful or where the error or ambiguity is sufficiently apparent as to alert a responsible and responsive Prime Contractor that he/she should obtain clarification of the matter prior to completing his/her bid. The Agency and/or contractor shall issue clarifications, in the form of an addendum, to all plan holders to within ten days of the bid date. No verbal clarification shall be valid. With this exchange of information, it shall be assumed that the Contractor thoroughly understands the scope and intent of the scope of work, working drawings, if any, and specifications in relationship to all aspects of the Work. Claims of not understanding the scope and intent of the scope of work, working drawings, if any, or specifications SHALL NOT be considered reasonable grounds for any increase in the contract amount after the bid is awarded.

### **1.07 ACCOMPLISHING THE WORK**

- A. Due to the nature of this work, the Prime Contractor will assume that when accomplishing a detailed portion of the work, if another portion is damaged or otherwise affected, the contractor shall repair and/or correct the affected portion and return it to its original or better condition at no additional cost to the Agency.
- B. Should a discrepancy be discovered in: 1. Work done by others; or, 2. Work done by one trade that affects work to be done by another or other trades, the Prime Contractor shall notify the Contracting Officer at once and in writing. If the Contractor proceeds with the work so affected without having given such written notice and without receiving the necessary approval, decision, or instructions in writing from the Contracting Officer, then he/she shall have no valid claim against the Agency for the cost of so proceeding and shall make good any resulting damage or defect. No verbal approval, decision, or instruction shall be valid or be the basis for any claim against the Agency, its officers, employees, or agents.
- C. If rehabilitation work is part of the Project, the Contractor shall be responsible for securing and preventing damage or thefts from the Agency's tenants within the Project site property during work in progress, and shall resolve all claims from such occurrence.
- D. The Contractor shall give the Contracting Officer full information in advance of his, her or its plans for carrying on any part of the Project. If, at any time before the beginning or during the progress of the work, any part of the Contractor's plant, or equipment, or methods of execution of the work, appear to the Contracting Officer to be unsafe, inefficient, or inadequate, to insure the required quality or rate of progress of the work, the Contracting Officer may order the Contractor to increase or improve the Contractor's facilities or methods, and the Contractor shall promptly comply with such orders; but neither compliance with such orders nor failure of the Contracting Officer to issue such orders shall relieve the Contractor's obligation to secure the degree of safety, the quality of the work, and the rate of progress required by the Contract Documents. The Contractor alone shall be responsible for the safety, adequacy and efficiency of his, her or its plant, equipment and methods used for the Project.

### **PART 2 – PRODUCTS**

Not Used.

### **PART 3 – EXECUTION**

Not Used.

**END OF SECTION**



## SECTION 01500

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Contractor shall furnish, install, and maintain temporary facilities and controls as required to perform the Work.
- B. Materials for temporary facilities and controls shall be adequate for the purposes specified.
- C. Materials, installation and maintenance of temporary facilities and controls shall be in compliance with applicable regulatory requirements.
- D. Remove temporary facilities and controls, including associated materials and equipment, when their use is no longer required.
  - 1. Restore and recondition areas of the site damaged or disturbed by temporary facilities and controls or their installation.
  - 2. Remove and properly dispose of debris resulting from removal and reconditioning operations.

##### 1.02 TEMPORARY UTILITIES

- A. The Contractor, at its expense and in a manner satisfactory to the Agency Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the Agency, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.
- B. Adjacent occupied spaces: Where existing tenants will continue to occupy spaces adjacent to the location of work associated with this contract, utility service to those spaces shall not be disrupted as a result of the Contractor's activities.
- C. Electric Power and Lighting:
  - 1. Distribute electric power and lighting as required for the performance of the Work.
- D. Heat and Ventilation:
  - 1. Provide temporary heat as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions.
  - 2. Portable heaters shall be standard units complete with controls.

3. Provide adequate forced ventilation of enclosed areas as required for proper installation and curing of materials, to disperse humidity and to prevent hazardous accumulations of dust, fumes, vapors and gases.
  4. Pay the costs of installation, maintenance, operation and removal of temporary heat and ventilation, including costs for fuel consumed.
- E. Water:
1. Contractor will determine the availability of and provide the necessary water for construction purposes.
  2. The contractor, if necessary, shall install temporary branch piping with taps located so that water for construction purposes is available throughout the Work by the use of hoses.
  3. Make potable water available for human consumption and hand washing.
- F. Sanitary Facilities:
1. Agency will not provide restroom facilities on the site. To be provided at contractors expense.
  2. Restrooms must be neat in appearance and kept in a sanitary condition, adequately maintained and supplied.
- G. Telephone Service:
1. Contractor shall provide on site telephones for his use.
- H. Fire Protection:
1. Provide and maintain fire extinguishers, fire hoses and other equipment as necessary for proper fire protection during the progress of the Work. Such equipment shall be designated for use for fire protection only.

### **1.03 CONSTRUCTION AIDS**

- A. Scaffolds and Runways:
1. Furnish, erect and maintain for duration of Work, as required, scaffolds, runways, guardrails, platforms and similar temporary construction necessary for the performance of the Work. Such facilities shall be of type and arrangement required for their specific use, structurally sound and well secured.
  2. Connect the several levels of the structure by means of suitable ladders, ramps and temporary stairs, as necessary; or permanent stairways may be used as specified. Enclose open wells and shafts to prevent injury and damage to persons and adjacent construction and improvements.
- B. Temporary Enclosures and Protection of Work in Place:
1. Provide temporary, weather-tight enclosures as required to provide acceptable working conditions, to provide weather protection for interior materials, to allow for

effective temporary heating, to prevent entry of unauthorized persons, and to prevent injury and damage to persons and adjacent construction and improvements.

- a. Provide temporary exterior doors with self-closing hardware and padlocks.
- b. Provide removable enclosures as necessary.

#### **1.04 BARRIERS AND ENCLOSURES**

##### **A. General:**

1. Provide and maintain suitable temporary barriers as required to prevent public entry; protect the Work and existing facilities, persons, and trees and plants from damage or injury from construction operations.
2. Should regulatory requirements necessitate the construction of temporary barriers, barricades, or pedestrian walkways not indicated or specified, construct same at no increase in Contract Amount. Paint such items with primer and finish coat in color selected by the Agency Construction staff.
3. Maintain temporary barriers in a structurally sound condition, with an orderly, neat appearance.
4. Relocate as required by the progress of the Work.

##### **B. Tree and Plant Protection:**

1. Preserve and protect existing trees and plants that are not designated or required to be removed and those adjacent to the site.
2. Consult with the Agency Contracting Officer prior to removal of roots and branches that interfere with construction operations.
  - a. Only those items agreed upon with the Agency Contracting Officer shall be removed.
  - b. Employ a qualified tree surgeon to perform the removal and to treat cuts.
3. In the proximity of root zones of trees and plants:
  - a. Prohibit vehicular traffic and parking.
  - b. Prohibit storage of materials and equipment.
  - c. Prevent dumping of refuse and chemically injurious materials and liquids.
  - d. Prevent puddling and continuous running water.
4. Carefully supervise excavating, grading and filling and subsequent construction operations, to prevent damage.

5. At no increase in Contract Amount, replace or suitably repair, trees and plants designated to remain which are damaged or destroyed as a result of construction operations.
6. Remove soil that has been contaminated during the performance of the Work by oil, solvents and other materials which could be harmful to trees and plants and replace with suitable soil, at no increase in Contract Amount.

#### **1.05 SECURITY**

##### **A. General**

1. Secure, maintain and protect the Work, stored materials, equipment and temporary facilities until time of acceptance or such earlier time as the Agency may choose to assume such responsibility.
2. Security and protection methods shall be subject to the Agency Contracting Officer's approval.

#### **1.06 TEMPORARY CONTROLS**

##### **A. Dust and Dirt:**

1. Conduct Construction operations to prevent windblown dust and dirt from interfering with the progress of the Work.
2. Periodically water construction areas to minimize the generation of dust and dirt.
3. To additionally minimize the generation of dust and dirt, hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins.
4. Prevent dust and dirt from accumulating on walks, roadways, parking areas and planting and from washing into sewer and storm drain lines.

**B. Water:** Surface and subsurface water and other liquids shall not be permitted to accumulate in or about the Project site and vicinity thereof. Should such conditions develop, control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping drainage lines, troughs, ditches, dams or other methods approved by the Agency Contracting Officer or Agency Construction staff.

##### **C. Pollution:**

1. Burning of refuse, debris or other materials is not permitted.
2. Comply with regulatory requirements and anti-pollution ordinances during the conduct of construction and disposal operations.

#### **1.07 PROJECT IDENTIFICATION AND SIGNS**

##### **A. General:**

1. Signs will not be permitted, unless otherwise approved in advance by the Agency Contracting Officer.

## **1.08 FIELD OFFICES AND STORAGE SHEDS**

- A. Contractor's Field Office: Provided at full expense by the Contractor.
- B. General:
  - 1. Obtain Agency Construction staff's approval of locations for field offices and storage sheds prior to commencing site preparation for the structures.
  - 2. Fill and grade sites for field offices and storage sheds to facilitate surface drainage.
  - 3. Construct field offices and storage sheds on proper foundations and provide connections for utility services.
    - a. Secure portable or mobile buildings against seismic and wind overturning.
    - b. Provide steps and landings at entrance doors.
  - 4. Perform periodic maintenance and cleaning for field offices and storage sheds, including associated furnishings, equipment and services.
  - 5. Remove field offices and storage sheds from the site as soon as, in the opinion of the Agency Construction staff, the progress of the Work permits. Removal shall include foundations, steps, landings and utility services.
  - 6. Grade and restore the portions of the site occupied by the field offices and storage sheds to a condition acceptable to the Agency Construction staff.
  - 7. Properly remove from the site and dispose of debris resulting from removal and reconditioning operations.

### **PART 2 – PRODUCTS**

Not Used.

### **PART 3 – EXECUTION**

Not Used.

**END OF SECTION**

## SECTION 01535

### PROTECTION OF INSTALLED WORK

#### PART 1 – GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. Protection for products including new items and the Agency provided products after installation.
- B. Protection of existing utilities and interference.

##### 1.02 EXISTING UTILITIES

- A. Information shown relative to existing utility services is based upon available records and data but shall be regarded as approximate only. Minor deviations found necessary to conform with actual locations and conditions shall be made without an increase in the Contract Sum and without an extension of the Contract Time.

#### PART 2 – PRODUCTS

Not used.

#### PART 3 – EXECUTION

##### 3.01 PROTECTION

- A. Adequately protect all equipment and materials and landscape plant materials until completion and acceptance by the Agency Contracting Officer. Water existing plant materials until completion and acceptance by the Agency Contracting Officer.
- B. Protect installed products and control traffic in immediate area to prevent damage from subsequent operations.
- C. Provide protective coverings at walls, projections, corners, jambs, sills, and soffits of openings in and adjacent to traffic areas.
- D. Protect floors and stairs from dirt, wear, and damage.
  - 1. Secure heavy sheet goods or similar protective materials in place in areas subject to foot traffic.
  - 2. Lay planking or similar rigid materials in place in areas subject to movement of heavy objects.
  - 3. Lay planking or similar rigid materials in place in areas where storage of products will occur.

- E. Protect waterproofed and roofed surfaces.
  - 1. Restrict use of surfaces for traffic of any kind.
  - 2. When an activity is mandatory, obtain recommendations for protection of surfaces from manufacturer. Install protection and remove on completion of activity. Restrict use of adjacent unprotected areas.
- F. Restrict traffic of any kind across planted lawn and landscape areas.
- G. Care shall be exercised to prevent damage to adjacent off- site facilities including, but not limited to, sidewalks, curbs, and gutters; where equipment will pass over these obstructions suitable planking shall be placed, and damaged facilities, due to Contractor operations, shall be removed and replaced by the Contractor without an increase in the Contract Sum and without an extension of the Contract Time.
- H. Contractor shall be responsible for overloading of any part or parts of structures beyond their safe calculated carrying capacities by placing of materials, equipment, tools, machinery, or any other item thereon. No loads shall be placed on floors or roofs before they have attained their permanent and safe strength.
- I. Where existing utilities are damaged or disrupted on account of any act, omission, neglect or misconduct in the manner or method of executing the work, or due to non-execution of work, such damage shall be immediately repaired to maintain operation regardless of the time of occurrence. Such repairs shall be performed without an increase in the Contract Sum and without an extension of the Contract Time.
- J. Provide temporary construction necessary for protection of the building and its parts including adjacent off-site improvements and landscape plant materials.
- K. Protect doors, millwork, mill counters, cases, and hardware from damage, including abrading and scratching of finishes.
- L. Protect doors, frames, and hardware from mechanical damage and damage to anodic coatings.
- M. Remove protective coatings, wrappings, temporary coverings, etc., as required to leave work in condition for painting and finishing, final cleaning, etc.
- N. Protect all exterior work, including existing off-site asphalt paving, landscaping, and building.
- O. Repair or replace all damaged work promptly as directed by Agency Construction staff without increase to the Contract Sum and without an extension of the Contract Time.
- P. Provide a temporary mat, carpet, or floor covering as approved by Agency Construction staff for project entrances/exits. Item to be of sufficient material and size to allow people exiting project site to clean debris and dust from their shoes. Tracking dust and debris through occupied areas of the building shall not be acceptable. The Contractor shall clean any dust or debris tracked out of construction site, either by foot traffic or by debris-hauling vehicles, at the Agency's option.
- Q. Care shall be exercised to prevent damage to adjacent off-site facilities including walks, streets, curbs, and gutters. Where equipment will pass over these obstructions, suitable planking shall be placed and damaged facilities, due to the Contractor operations, shall be removed and replaced without an increase in the Contract Sum and without an extension of

the Contract Time. Replacement shall be equivalent to the original. The Agency Project Manager or Architect, if any, shall judge acceptability of repairs/replacements.

- R. All existing improvements and facilities shall be protected from damage of any type resulting from the operations, equipment or workmen of the Contractor during the course of construction.
- S. All damaged work shall be replaced, repaired and restored to the satisfaction of the Agency without an increase in the Contract Sum and without an extension of the Contract Time.

**END OF SECTION**



## SECTION 01600

### MATERIAL AND EQUIPMENT

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Material and equipment incorporated in the Work shall be new, unless otherwise specified; in a condition acceptable to the Agency Contracting Officer if any, and suitable for the use intended.
- B. No material or equipment shall be used for any purpose other than that for which it is designed or specified.
- C. Reuse of Existing Material and Equipment:
  - 1. Material and equipment intended for reuse in the Work (if any) is indicated on the Drawings, if any, the Scope of Work and in the Specifications.
  - 2. Use special care in removal, handling, storage and reinstallation to assure proper function in the completed Work.
  - 3. Arrange for transportation, storage and handling of items which require off-site storage, restoration or renovation and pay the costs for such Work.
- D. Whenever a product is identified in the Contract Documents by reference to manufacturer's name, trade name, catalog number or the like, it is so identified for the purpose of establishing and maintaining a standard. Products of other manufacturers may be equally acceptable, provided the proposed products are determined to be equal to the specified product.

##### 1.02 TRANSPORTATION AND HANDLING

- A. Manufactured products shall be delivered in the manufacturer's original, unbroken containers or packaging, with identifying labels intact and legible.
- B. Immediately on delivery, inspect shipments to assure compliance with the requirements of the Contract Documents and approved submittals and to verify that products are properly protected and undamaged.
- C. Handle products in a manner to avoid soiling and damaging the products and their packaging.
- D. Promptly remove damaged and defective products from the site and replace at no increase in Contract Amount.

##### 1.03 STORAGE

- A. Store manufactured products in accordance with the manufacturer's instruction, with seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weather tight enclosures.

2. Maintain temperature and humidity within the ranges specified by the manufacturers.
- B. Exterior Storage:
1. Store fabricated products above the ground, on blocking or skids, to prevent soiling and staining.
  2. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
  3. Store loose granular material in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Arrange storage to facilitate inspection.
- D. Periodically inspect stored products to assure that products are maintained under specified conditions and free from damage and deterioration.
- E. Protection after Installation:
1. Provide substantial coverings as necessary to protect installed products from damage from traffic and construction operations. Remove coverings when no longer needed.
  2. Maintain temperature and humidity conditions for interior equipment and finish products in accordance with the manufacturer's instructions.

#### **1.04 SUBSTITUTIONS**

- A. In requesting approval for a substitution, the Contractor represents that he:
1. Shall coordinate the installation of an accepted substitution into the Work and make such other changes as required to make the Work complete and in compliance with the Contract Documents and applicable regulatory requirements.
  2. Waives claims for additional costs which may subsequently become apparent, associated with the substitution.
- B. Requests for approval for a substitution shall be submitted in writing. Such request shall be clearly labeled a substitution request and be accompanied by sufficient information to enable proper evaluation to be made. Submit those materials required in the Submittals section for the material proposed (see Section 01300: Submittals).
- C. The Agency Construction staff will review requests for substitutions with reasonable promptness and the Contracting Officer will notify the Contractor in writing, of its decision to accept or reject proposed substitutions.
- D. Agency Contracting Officer will be the sole judge of the acceptability of proposed substitution and its determination will be final.
- E. Approval of a substitution shall not relieve the Contractor from responsibility for the proper execution of the Work and any other requirements of the Contract Documents.

- F. If a substitution is not approved, the contractor shall resubmit an alternate product to be considered by the Agency Contracting Officer.
- G. No substitution shall be purchased or incorporated in the Work without the Agency Contracting Officer's prior written approval.

#### **1.05 PRODUCT OPTIONS**

- A. For products indicated or specified only by reference standard, select any product meeting such standard.
- B. For products indicated or specified by naming one or several products or manufacturers, select any one of the products which complies with the specified requirements, or submit a request for and "or equal" evaluation of a different product to the Agency Construction staff.
- C. For products indicated or specified by naming only one product and manufacturer, followed by the words "*no substitution or "or equal" submittal shall be allowed*", then this product is a required sole source product of the Agency. Substitutions for products identified as such in the Contract Documents may be proposed only if the specified items subsequently become unavailable.

### **PART 2 – PRODUCTS**

#### **2.01 SAMPLES**

- A. Samples: When required by the specifications or the Agency Construction staff, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise property mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.
- B. Approval of a sample shall not constitute a waiver of the Agency's right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected, if, after installing the product, it does not perform or meet the design specifications even though samples have been approved.
- C. Prohibition against use of lead-based paint. The Contractor shall comply with the prohibition against the use of lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.

### **PART 3 – EXECUTION**

#### **3.01 TESTING**

- A. Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as the established technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Agency Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Agency Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of re-testing materials that fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.

**END OF SECTION**

## SECTION 01630

### PRODUCTS OPTIONS AND SUBSTITUTIONS

#### PART 1 – GENERAL

##### 1.01 REQUIREMENTS INCLUDED

- A. Substitutions
- B. Requests for substitution of products.

##### 1.02 RELATED REQUIREMENTS

- A. General Conditions: Equivalent materials and equipment.

##### 1.03 SUBMITTALS

- A. Wherever catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with a designated material, product, thing, or service mentioned in these Specifications, a substitution is allowed.
- B. When materials are specified by first manufacturer's name, the first manufacturer named shall be the "Basis of Design". The second manufacturer named and subsequent manufacturers named shall constitute substitutions. Manufacturers proposed by the Contractor as an "or equal" item (that is, equal to the "Basis of Design") shall also constitute a substitution.
- C. Substitutions which are equal in quality, performance, utility, appearance, warranty, and any other substantive features to the "Basis of Design" shall be reviewed by the Agency Contracting Officer/Agency Construction staff, and shall be subject to the following provisions:
  - 1. All substitutions must be accepted by the Agency Construction staff in writing.
    - a. For this purpose, the Contractor shall submit to the Agency Construction staff a typewritten list containing a description of each proposed substitute item or material.
  - 2. Sufficient data, Drawings, samples, literature, or other detailed information as will demonstrate to the Agency that the proposed substitute is equal in quality, utility, and appearance to the "Basis of Design" shall be appended to this list.
  - 3. The Agency may accept such proposed substitutions as are in the Contracting Officer's/Agency Construction staff's opinion, equal in quality, utility, and appearance to the "Basis of Design".
  - 4. The Agency's acceptance of a substitution shall not relieve the Contractor from complying with the requirements of the Scope of Work, Drawings, if any, and Specifications.

5. The use of materials other than the "Basis of Design" may require modifications in the project design and construction.
  - a. The Contractor shall be responsible for any changes resulting from the Contractor's proposed substitutions which affect other parts of the Contractor's own work or the work of others.
  - b. The Contract Sum shall not be increased and the Contract Time shall not be extended for any changes resulting from the acceptance of the Contractor's proposed substitution.
  - c. When the acceptance of the Contractor's proposed substitution requires the Agency Construction staff to evaluate modifications to the Project, the cost for the Agency's evaluation time shall be deducted from the Contract Sum and paid to the Agency (through the Change Order process).
- D. Failure of the Contractor to submit proposed substitutions for approval in the manner described above and within the time prescribed shall be sufficient cause for rejection by the Agency Contracting Officer of any proposed substitution.
- E. Failure of the Contractor to submit sufficient information for the Agency Construction staff to evaluate the Contractor's proposed substitution shall be sufficient cause for the rejection of the proposed substitution. The Contractor shall be solely responsible for the submission of sufficient information. The Agency is not obligated to request additional information.
- F. Wherever catalog numbers and specific brands or trade names are not followed by the designation "or equal" in conjunction with a designated material, product, thing, or service mentioned in these Specifications, no substitutions shall be permitted.
- G. Wherever catalog numbers and specific brands or trade names are followed by "no substitution", no substitution shall be permitted.
- H. If the Agency, its review of the list of materials and equipment, requires revisions or corrections to be made or Shop Drawings and/or supplemental data to be submitted, the Contractor shall promptly do so.
  1. If a proposed substitution is judged by the Agency Contracting Officer to be unacceptable, the "Basis of Design" shall be furnished and installed without an increase in the Contract Sum and without an extension of the Contract Time. Only one proposed substitution is permitted for each "Basis of Design".
  2. If more than one (1) submission of data is required to evaluate any one substitution, the Agency shall be compensated for reviewing the second and any subsequent submissions. These costs shall be deducted from the Contract Sum.
- I. Physical samples may be required. If tests for the determination of quality and utility are required by the Agency, they shall be made by a testing laboratory with acceptance of the test procedure first given by the Agency. The cost of the testing shall be the responsibility of the Contractor without an increase of the Contract Sum and without an extension of the Contract Time.

- J. In review of the data submitted in support of substitutes, the Agency Construction staff will use for purposes of comparison all the characteristics of the specified item, including aesthetic considerations/options, as they appear in the "Basis of Design" manufacturer's published data even though all the characteristics of the specified item may not have been particularly mentioned in the Specification.
- K. On contracts with a short performance time, the submittal period does not excuse Contractor from completing the project within the performance time stipulated in the agreement or excuse the Contractor from the payment of liquidated damages.

#### **1.04 REQUESTS FOR SUBSTITUTIONS**

- A. Substitutions shall be evaluated by the Agency after the execution of the Owner-Contractor Agreement and the issuance of the Notice to Proceed.
- B. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
- C. Identify product by Specifications Section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.
- D. Attach product data as specified in Section 01605: Product Substitution Form.
- E. Give itemized comparison of proposed substitution with specified product, listing variations and reference to Specifications Section and Article numbers.
- F. Give quality and performance comparison between proposed substitution and the specified product.
- G. List availability of maintenance services and replacement materials.
- H. State effect of substitution on construction schedule and changes required in other work or products.
- I. The Contractor is solely responsible for submitting sufficient information/data for a complete review of the proposed substitution. Insufficient information/data shall constitute sufficient cause for rejection of the proposed substitution. The Agency is not obligated to request additional information/data in order to complete review of proposed substitution.

#### **1.05 CONTRACTOR REPRESENTATION**

- A. Request for substitution constitutes a representation that Contractor has investigated proposed product and has determined that it is equal to or superior in all respects to the "Basis of Design".
- B. Contractor will provide same warranty for substitution as for the "Basis of Design".
- C. Contractor shall coordinate installation of accepted substitute, making such changes as may be required for Work to be complete in all respects without an increase in the Contract Sum and without an extension of the Contract Time.

- D. Contractor certifies that cost data presented is complete and includes all related costs under this Contract.

**1.06 SUBMITTAL PROCEDURES**

- A. Submit copies of each request for substitution.

**PART 2 – PRODUCTS**

Not Used.

**PART 3 – EXECUTION**

Not Used.

**END OF SECTION**



## **SECTION 01650**

### **STARTING OF SYSTEMS**

#### **PART 1 – GENERAL**

##### **1.01 REQUIREMENTS INCLUDED**

- A. Procedures for starting of systems.

##### **1.02 SUBMITTALS**

- A. Submit preliminary schedule listing times and dates for start-up of each item of equipment in sequence two weeks prior to proposed dates.
- B. Submit manufacturer's representative reports within one week after start-up, listing satisfactory start-up dates.

##### **1.03 PROJECT CONDITIONS**

- A. Building enclosure is complete and weather-tight.
- B. Interdependent systems have been checked and are operational.

#### **PART 2 – PRODUCTS**

Not Used.

#### **PART 3 – EXECUTION**

##### **3.01 INSPECTION**

- A. Verify that Project conditions comply with requirements.
- B. Excess packing and shipping bolts are removed.
- C. Verify that status of work meets requirements for starting of equipment and systems.

##### **3.02 PREPARATION**

- A. Coordinate sequence for start-up of various items of equipment.
- B. Notify Agency Construction staff, in writing, six (6) working days prior to start-up of each item of equipment.
- C. Have Contract Documents, Shop Drawings, product data, and operation and maintenance data at hand during entire start-up process.
- D. Verify that each piece of equipment has been checked for proper lubrication, drive rotation, belt tension, control sequence and other conditions which may cause damage.
- E. Verify that excess packing and shipping bolts are removed.
- F. Verify control systems are fully operational in automatic mode.
- G. Verify that tests, meter readings, and specific electrical characteristics agree with those

specified by electrical equipment manufacturer.

- H. Bearings: Inspect for cleanliness. Clean and remove foreign matter. Verify alignment; take corrective measures as necessary.
- I. Drives: Inspect for tension on belt drives, adjustment of varipitch sheaves and drives, alignment, proper equipment speed, and cleanliness. Take corrective action as necessary.
- J. Motors: Verify that motor amperage agrees with nameplate value. Inspect for conditions which produce excessive current flow and which exist due to equipment malfunction. Take corrective action as necessary.

### **3.03 STARTING SYSTEMS**

- A. Execute start-up under supervision of responsible Contractor personnel.
- B. Place equipment in operation in proper sequence in accordance with sequencing schedule.

**END OF SECTION**

## SECTION 01700

### CLOSEOUT

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This Section describes the requirements for Contract Closeout, including provisions for remedial Work and extra materials, damage and restoration, project Record Drawings, operating and maintenance data, instruction of Agency personnel, guarantees, warranties and bonds, substantial completion, service and maintenance contracts, preparation for final inspection, final cleaning, and warranty performance.

##### 1.02 REMEDIAL WORK

- A. Repair or replace defects resulting from faulty fabrication, installation or materials at no additional cost to the Agency.
- B. Coordinate work with the Agency Construction staff and minimize interruption and inconvenience to the Agency's operations.

##### 1.03 DAMAGE AND RESTORATION

- A. Restore or replace materials and finishes damaged from movement of equipment or other operations at no additional expense to the Agency.
- B. Restore damaged work to be equal to the original. Match the appearance of existing adjacent Work.

##### 1.04 EXTRA MATERIALS

- A. Furnish extra materials in the quantities and manners specified in the various sections of the specification. Deliver extra materials, clearly marked with the project number and name, to the Agency Construction staff, or location as identified by the Agency Construction staff.
- B. Deliver and certify extra materials prior to Substantial Completion.

##### 1.05 PROJECT RECORD DOCUMENTS

- A. Maintenance of Documents and Samples:
  - 1. Store project Record Documents and samples apart from documents used for construction.
  - 2. Maintain project Record Documents in a clean, dry, legible condition and in good order.
  - 3. Do not use Project Record Documents for construction.

- B. Recording:
1. Record information carefully and neatly, with red ink pens.
  2. Label each drawing "Record Drawing" in large, neat, printed letters. Label the record copy of other documents "Record".
- C. Record Drawings:
1. Record the following information on the record drawings.
    - a. Changes made by Change Orders and other modifications described in the Contract Documents.
    - b. Locations of Work buried under and outside the building, such as plumbing and electrical lines and conduits. Establish locations of underground Work by dimensions to column lines or walls, locating turns, and by centerline or invert elevations and rates of fall.
    - c. Locations of significant Work concealed inside the building whose general locations have been changed, as approved, from those shown on the Contract Documents. Give sufficient information to easily locate work concealed in the building.
    - d. Locations of items, not necessarily concealed, which have been changed, as approved, from the locations shown on the Contract Documents.
    - e. Nameplate data, description, and serial numbers of all equipment listed on equipment schedules.
    - f. In addition to the previously specified requirements for Record Drawings:
      - 1) Keep up to date during the entire progress of the Work and make available to the Agency Construction staff at any time.
      - 2) Furnish additional drawings as necessary for clarification.
      - 3) Record deviations from the sizes, locations and other features of installations shown in the Contract Documents.
      - 4) Drawing to scale:
        - a) Locate main runs of piping, conduit, ductwork and similar items by dimensions.
        - b) Locate other items either by dimensions or in relation to spaces within the building.
- D. Transmittal to the Agency:
1. At time of acceptance of the Work and prior to final payment, the contractor shall submit a clean, readable set of record drawings to the Agency Construction staff with the original record drawings, if any.

2. Sign and date the completed Project Record Documents and submit them to the Agency Construction staff for review and acceptance prior to any request for verification of Substantial Completion.

#### **1.06 OPERATING AND MAINTENANCE DATA**

- A. General: Where maintenance manuals, record data and operating instructions are required in the individual Specifications Sections, prepare such in three-ring, durable, plastic binders sized for 8-1/2 x 11-inch sheets and including at least the following:
  1. Identification on, or readable through, the front cover with the Project name and address and the general subject matter contained in the manual.
  2. Neatly typewritten index near the front of the manual furnishing immediate information as to locations in the manual of emergency data regarding the equipment included in the manual.
  3. Complete instructions regarding operation and maintenance of the equipment included in the manual.
  4. Complete nomenclature of replaceable parts, their part numbers, current cost and name and address of nearest source of parts.
  5. Copy of each guarantee/warranty and service agreement issued for the equipment included in the manual.
  6. Prepare and include additional data as required for the Instruction of the Agency's operating and maintenance personnel.
- B. Shop Drawings: With each copy of the manual, furnish one (1) set of applicable approved Shop Drawings showing changes made during construction.
- C. Number of Copies Required: Unless otherwise specified, submit four (4) copies of Mechanical and Electrical manuals and two (2) copies of other manuals.

#### **1.07 INSTRUCTION OF AGENCY PERSONNEL**

- A. Where specified in the individual Specifications Sections, furnish qualified personnel for on-the-job instruction of the Agency's operating and maintenance personnel.
- B. Furnish instruction, including special start-ups and running time, prior to Substantial Completion, at no additional expense to the Agency.

#### **1.08 GUARANTEES/WARRANTIES AND BONDS**

- A. General:
  1. Manufacturers' warranties notwithstanding, warrant the entire Work against defects in materials, fabrication, installation and operation for twelve (12) months from the date of the Certificate of Final Completion. Provide guarantee, warranty or bond as required in the individual Specification Sections in addition to the general warranty of construction.
  2. Warranties between Contractor and manufacturers, and the Contractor and suppliers, shall not affect guarantees/warranties between the Contractor and the Agency.

3. The Contractor shall not be held responsible for damage due to misuse, negligence, willful damage, improper maintenance or accident caused by others. Nor shall it be responsible for defective or failed parts whose replacement is necessitated by failure of the Agency's maintenance forces to properly clean and service them, provided the Contractor has furnished complete maintenance instructions to the Agency.
4. Compile the specified warranties and bonds, co-execute as required, review to verify compliance with Contract Documents, and submit to the Agency Construction staff for review and acceptance prior to any request for verification of Substantial Completion.
5. Guarantee/Warranty: Submit the guarantees, typed on the Contractor's letterhead for the entire Work or on the Subcontractor's letterhead for the Work of a Specific Specification Section. Submit duplicate signed originals.

### **1.09 SUBSTANTIAL COMPLETION**

- A. Preliminary Procedures: Before requesting inspection for Certification of Substantial Completion, complete the following. List exceptions in the request.
  1. In the Request and Certification for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Amount.
    - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
    - b. Include a list of deficiencies in completed work.
  2. Advise Agency Construction staff of pending insurance changeover requirements.
  3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  4. Obtain and submit releases enabling the Agency unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
  5. Submit record drawings, Operation & Maintenance manuals and similar final record information and obtain approval by the Agency Construction staff.
  6. Deliver tools, spare parts, extra stock, and similar items.
  7. Make final changeover of permanent locks and transmit keys to the Agency Construction staff. Advise the Agency's Construction staff of changeover in security provisions.
  8. Complete start-up, operation, and acceptance testing of systems, and instruction of the Agency's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements and obtain approval of test reports.

9. Complete final cleanup requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures:

1. The Agency Construction staff shall promptly inspect the work after receiving a request in writing from the Contractor for a Substantial Completion inspection.
2. Upon receipt of the request, the Agency Construction staff will determine whether or not the project is ready for a Substantial Completion inspection. If the Agency Construction staff is satisfied that the project is ready for a Substantial Completion inspection, the Agency Construction staff will promptly schedule an inspection.
3. Conditions for issuance of Notice of Final Completion:
  - a. The Agency Construction staff will make a preliminary inspection of the entire project or until the discovery of incomplete or defective work which, in the Agency Construction staff's opinion, prevents complete occupancy and use, at which time the Contractor will be notified that the inspection is terminated. The Agency Construction staff is not obligated to discover each and every incomplete or defective item during this inspection. If no impediment to occupancy is found as a result of the inspection, the Agency Construction staff will prepare the Certificate of Substantial Completion following the inspection. If the inspection is terminated, the Contractor will request a new preliminary inspection after correcting incomplete and defective items preventing complete occupancy and use.
  - b. If necessary, the Agency Construction staff, will repeat the inspection when requested to assure that the Work has been substantially completed. The cost of repeat inspections may be deducted from the Contract Amount as determined by the Agency Contracting Officer.
4. A punch list of the deficiencies identified in the inspection will form the basis of the requirements of Final Acceptance and will be issued to the contractor in writing in the form of a list of deficiencies.
5. When the Agency Construction staff is satisfied that all work has been done in accordance with the scope of work, contract drawings, if any, and these Specifications, the Agency Contracting Officer will execute and record a Certificate of Completion with the County Recorder's office.
6. The completion date, for purposes of computing "Time for Completion" and liquidated damages, if any, will be considered to be the date of the Certificate of Substantial Completion.

**1.10 TIME LIMIT FOR CORRECTION OF DEFICIENCIES**

- A. The Contractor shall have a period of thirty (30) days maximum from the date of Substantial Completion to complete all incomplete or defective items. If incomplete or defective work remains after this time limit, the Agency Contracting Officer reserves the right to:
1. Assess liquidated damages until all work is complete.
  2. Complete all remaining incomplete or defective work and to deduct the costs to complete the work from the balance remaining in the Contract.

**1.11 FINAL CLEANING REQUIRED PRIOR TO ISSUANCE OF CERTIFICATE OF FINAL COMPLETION**

- A. Remove temporary tapes, wrapping, coatings, paper labels and similar items. Dust mop, wash or wipe exposed and semi-exposed surfaces as necessary to leave the Work in a new, clean condition.
- B. Use cleaning materials which will not create hazards to health or property or cause damage to products or Work.
- C. Use cleaning materials and methods recommended by the manufacturers of the products to be cleaned.
- D. Schedule operations to prevent dust and other contaminants resulting from cleaning operations from adhering to wet or newly finished surfaces.
- E. Remove dust, dirt, grease, stains, fingerprints, labels, spilled and spattered and other foreign materials from interior and exterior surfaces exposed to view.
- F. Wash and shine glazing and mirrors.
- G. Polish glossy surfaces to a clear shine.
- H. Ventilating Systems:
  - 1. Replace filters of units operated during construction.
  - 2. Clean ducts, blowers and coils.
- I. Vacuum and wipe insides of electrical panels and cabinetwork.
- J. Broom-clean and wipe down interior spaces. Vacuum carpets.
- K. Remove sticks, rubbish and other debris from site and roof areas.
- L. Broom clean exterior paving.
- M. Rake clean ground surfaces.

**1.12 SERVICE AND MAINTENANCE CONTRACTS**

- A. Compile, review and submit specified service and maintenance contracts as specified for guarantees/warranties and bonds.

**1.13 FINAL INSPECTION AND ACCEPTANCE**

- A. Upon completion of the inspection punch list of deficiencies, the Contractor will notify the Agency Construction staff and schedule a final acceptance inspection. The Agency Construction staff will verify that all items have been corrected. The Agency Contracting Officer may deduct from the Contract Amount the cost for return inspections to further verify completion of any incomplete item remaining after the first final inspection.
- B. When the Agency Construction staff is satisfied that all work has been done in accordance with the scope of work, contract drawings, if any, and these Specifications,



the Agency Contracting Officer will execute and record a Certificate of Completion with the County Recorder's office.

- C. The Contractor shall provide all final building inspection sign-offs and permit folders before final payment will be made by the Agency.

**1.14 WARRANTY PERFORMANCE REVIEW**

- A. Review Meeting: Eleven (11) months following the date of the Certificate of Substantial Completion, the Agency Construction staff shall schedule with the Contractor a review of, and action upon, guarantees/warranties, bonds and service and maintenance contracts. Items deemed at this inspection to be covered within the 12-month warranty period, and that require action as part of that warranty, will be identified and submitted in writing to the Contractor. The Contractor shall have Thirty (30) days to correct the identified deficient items.

**PART 2 – PRODUCTS**

Not Used.

**PART 3 – EXECUTION**

Not Used.

**END OF SECTION**

## SECTION 02055

### SELECTIVE DEMOLITION

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Section includes: Requirements for performing selective interior and exterior demolition.

##### 1.02 QUALITY ASSURANCE

- A. Perform demolition in conformance with ANSI A10.6.

##### 1.03 EXISTING CONDITIONS

- A. Prior to start of demolition operations, conduct survey of existing conditions. On such survey, list items specified and indicated to be salvaged.
- B. Following performance of demolition, inspect and report defects and structural weaknesses of construction and improvements partially demolished, cut and removed; of construction and improvements remaining; and of adjacent construction and improvements. Where doubt exists as to the size, location, or method of cutting concrete or other structural elements, contact Agency representative before proceeding.
- C. Protection: Protect the structural integrity of existing construction and improvements that are to remain.

##### 1.04 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structure, safety of adjacent structures, dust control, service utilities, hazardous materials (see specifications for more information on hazardous materials), and resident safety.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. General:
  - 1. Remove and dispose of items and materials not designated to be salvaged. Other than hazardous material, coordinate debris disposal with local disposal services.
  - 2. If, in the course of removing designated items and materials, the condition of other materials or the structure so exposed appears to be damaged or of otherwise questionable condition, immediately notify the Agency representative, who will determine if the other materials or structure must be removed, and if so, to what extent.
  - 3. Nothing to be removed from the site shall be stored, sold, or burned on the site without the Owner's prior written consent.

4. Remove and dispose of debris found in work areas at start of work.
5. Follow directions of these specifications for removal of hazardous materials that are encountered.

### **PART 3 – EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that conditions are satisfactory for beginning selective demolition. If unsatisfactory conditions exist, do not begin demolition operations until such conditions have been corrected.

#### **3.02 PREPARATION**

- A. Prior to start of demolition operations, prepare a proposed layout and sequence for the work; coordinate with related work, which requires cutting and sawing.
- B. Review proposed layout and sequence with the Agency representative prior to starting demolition operations.
- C. If, during the process of cutting and/or removing existing work, conduits, piping, etc., are encountered, they shall be re-routed around the new work and reconnected to operate as before in strict accordance with the Mechanical, Plumbing and Electrical Specifications of the work.
- D. Provide, erect, and maintain temporary barriers and security devices.
- E. Protect existing landscaping materials which are not to be demolished.
- F. Erect and maintain weatherproof closures for exterior openings, including roofs prior to roofing.
- G. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise.
- H. Protect existing items which are not indicated to be removed.

#### **3.03 GENERAL**

- A. As demolition progresses, continuously inspect for damage. Should signs of damage arise, immediately notify the Agency representative and stop demolition operations in the affected location until advised as to how to proceed.
- B. Conduct demolition to minimize interference with adjacent structures.
- C. Conduct operations with minimum interference to public or private accesses.
- D. Remove items designated for demolition, and as required for the performance of the work. If in doubt as to whether an item is to be demolished, contact the Agency representative for a decision prior to proceeding with its demolition.
- E. Cease operations immediately if adjacent structures appear to be in danger. Notify Owner and Architect.
- F. Remove items carefully; provide for neat and structurally sound junctions between existing and new materials.

- G. As applicable, remove miscellaneous items and fastenings associated with items to be demolished.
- H. Disconnect and remove designated utilities.
- I. Demolish concrete in small sections.
- J. Clean surfaces affected by demolition operations of adhesives, bitumen, and other adhering materials, as required to afford suitable substrates for the application of new materials.

**3.04 CUTTING AND CORING**

- A. Make new openings neat, as close as possible to profiles indicated, and only to the extent required to accommodate new work.
- B. Do not cut or alter structural members without the prior written consent of the Agency representative or Engineer.
- C. At concrete, masonry, and other materials where edges of cuts and holes will remain exposed in the completed work, perform cutting and coring with power equipment.

**3.05 CLEAN UP**

- A. Remove and properly dispose of demolished materials from site as work progresses.
- B. Maintain lawns and other landscaping within the construction area during construction.
- C. Leave areas of work in clean condition.

**END OF SECTION**

## **SECTION 03100**

### **CONCRETE FORMWORK**

#### **PART 1 – GENERAL**

##### **1.01 DESCRIPTION**

- A. Scope
  - 1. Soils compaction.
  - 2. Formwork for cast-in-place concrete complete with shoring, bracing, and anchorage.
  - 3. Preformed construction joints.
  - 4. All work shall be as required and as shown on the Drawings and Specifications.
- B. Related Work Specified Elsewhere
  - 1. Section 03200: Concrete Reinforcement
  - 2. Section 03300: Cast-In-Place Concrete

##### **1.02 QUALITY ASSURANCE**

- A. American Concrete Institute (ACI)
  - 1. ACI-347: Recommended practice for concrete formwork.
  - 2. ACI-318: Building code requirements for reinforced concrete.
- B. United States Department of Commerce, National Bureau of Standards Product Standards (PS)
  - 1. PS-1: Construction and industrial plywood.

#### **PART 2 – PRODUCTS**

##### **2.01 FORM MATERIALS**

- A. Plywood: Exterior type, Grade B-B, per PS-1. Use maximum possible panel sizes.
- B. Other Forms: As approved by SHRA.
- C. Lumber: Construction grade or better, S4S, minimum 2X.
- D. Fasteners: Size and type as required to maintain formwork in place while pouring concrete.

## **2.02 ACCESSORIES**

- A. Chamfer Corner Fillets: Rigid foam plastic type in maximum possible lengths to form 3/4", 45 degree chamfer.
- B. Form Release Coating: Colorless mineral oil type which will not stain concrete or reduce bond of paints or other finishes.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Form concrete to shapes, sizes, lines, and dimensions shown.
- B. Form tolerances per ACI Standards (minimum) unless noted otherwise.
- C. All soils supporting concrete shall be compacted to 90% per ASTM D1557.

### **3.02 FORMS**

- A. Studs and wales shall be spaced to prevent deflection of form sheeting. Forms shall be sufficiently tight to prevent leakage of grout and cement paste during placing of the concrete.
- B. The bottom of forms shall be accurately fitted and securely attached to the preceding lift so as to assure smooth, completed surfaces free from irregularities and offsets.
- C. Joints between formwork panels shall be arranged vertically and horizontally to match architectural lines, vertical control joints, and construction joints.
- D. Forms shall be readily removable without impact or damage to the concrete.
- E. Obtain SHRA's review before framing openings in structural members not shown on Drawings.
- F. Provide chamfer corners at external corners.
- G. Apply form release coating per manufacturer's written instructions prior to placing reinforcement, anchors, and embedded items.
- H. No wood or steel stakes shall be allowed in areas to be concreted.

### **3.03 EMBEDDED ITEMS**

- A. Coordinate and verify location of embedded items.
- B. Embedding item shall be secured to formwork prior to placement of concrete.

### **3.04 EARTH FORMS**

- A. Permitted where shown on the Drawings.
- B. Hand trim sides and bottom. Remove loose debris.
- C. In general, earthform foundations shall be 2" (minimum) wider than shown on Drawings.

**3.05 FIELD QUALITY CONTROL**

- A. Notify SHRA when formwork is complete and cleaned.
- B. SHRA shall observe forms for conformity with shape, lines, and dimensions of members.
- C. SHRA's observation shall not relieve the Contractor of his responsibility to furnish adequate and safe forms and shoring. Support bracing, shoring, and stabilizing of all concrete forms is the sole responsibility of the Contractor, who shall adhere to all requirements of the Division of Industrial Safety.

**3.06 REMOVAL OF FORMS**

- A. Notify SHRA six working days prior to removing formwork.
- B. Do not remove forms, shores, and bracing until concrete has gained sufficient strength and has been tensioned to sufficient strength to carry its own weight and construction and design load which are liable to be imposed upon it. Verify strength of concrete by compressive test results.
- C. Remove formwork progressively and in accordance with code requirements so that no shock loads or unbalanced loads are imposed on structure.
- D. Forms shall be removed in a manner that will prevent damage to the concrete and insure complete safety.
- E. Reshore structural members where required due to design requirements or construction conditions and as required to permit progressive construction.
- F. No backfill is permitted for twenty-one days after removal of forms.

**END OF SECTION**

## **SECTION 02110**

### **SITE CLEARING**

#### **PART 1 – GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Removal of surface debris, miscellaneous concrete, grass, soil, and miscellaneous bushes as necessary to allow for new construction. See also Landscape drawings and specifications for more information.

##### **1.02 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for disposal of debris.
- B. Coordinate clearing work with utility companies.

#### **PART 2 – PRODUCTS**

Not Used.

#### **PART 3 – EXECUTION**

##### **3.01 PROTECTION**

- A. Identify and protect utilities and existing irrigation lines from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.

##### **3.02 CLEARING**

- A. Remove concrete paving and grass at units as necessary for construction.

##### **3.03 CLEAN UP**

- A. Remove debris and extracted plant life from site.

**END OF SECTION**



## **SECTION 02200**

### **EARTHWORK**

#### **PART 1 – GENERAL**

##### **1.01 SUMMARY**

- A. Work Included: Perform earthwork necessary and required for the construction of the project as indicated. Such work includes but is not necessarily limited to the following:
  - 1. Excavation.
  - 2. Fill and backfill.
  - 3. Aggregate base for concrete walks.
  - 4. Aggregate base for flexible pavements.
- B. Related Sections:
  - 1. Section 02740, Flexible Pavement.
  - 2. Section 03300, Cast-In-Place Concrete.

##### **1.02 PROTECTION**

- A. Furnish, place and maintain supports and shoring which may be required for the sides of the excavations or for protection of adjacent existing improvements. The adequacy of such systems shall be the complete responsibility of the Contractor.
- B. Maintain benchmarks, monuments and other reference points. If disturbed or destroyed, replace as directed.
- C. Expose and verify location of underground utilities prior crossing existing utilities. Protect existing underground facilities.

##### **1.03 SUSPENSION AND RESUMPTION OF OPERATIONS**

- A. Suspend fill placing when, in the opinion of the Agency representative, conditions for such operations are unsatisfactory due to rain or other reasons.

##### **1.04 CONTRACTOR RESPONSIBILITIES**

- A. Examine the technical specifications and construction drawings to be aware of conditions at the site, affecting execution of the work.
- B. Be responsible for the design and strength of temporary supports and shoring which may be required for the sides of the excavations, or for protection of adjacent existing improvements. The adequacy of such systems shall be the complete responsibility of the contractor, and shall conform to current OSHA standards.
- C. Applicable safety and health regulations.

## **PART 2 – PRODUCTS**

### **2.01 AGGREGATE BASE FOR ON-GRADE SLABS AND FLEXIBLE PAVEMENTS**

- A. Aggregate Material: Crushed stone or uncrushed gravel, free of adobe, vegetable matter, loam and deleterious matter. Grade material as follows:

<u>Sieve Size</u>	<u>Percentage Passing Sieves</u>
3/4 n	90 - 100
No. 4	25 - 60
No. 8	18 - 45
No. 200	0 - 3

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Inspect the site for conformance of Drawings to actual grades and levels and the true conditions under which the work is to be performed. Provide written notice to the Agency representative where Drawings and site conditions do not match.

### **3.02 SITE PREPARATION**

- A. Perform site preparations within limits delineated in the construction drawings to receive the proposed improvements. These shall commence with clearing operations including, but not limited to, removal of pavements, old foundations, rubbish, abandoned pipelines, cutting trees and stumps to approximately ground level, and followed by removal of growth, stumps, brush, roots, and similar organic and deleterious matter within excavation and fill area limits delineated in the construction drawings, and to the satisfaction of the Agency representative/Engineer. Remove cleared material from site prior to commencement of mass excavation operations.
- B. Follow clearing operations with stripping. Stripping shall consist of removal and stockpiling of top soil down to suitable material as determined by the Agency representative. Remove the stripped material from the stripped area and place in the topsoil stockpile from which it may later be reclaimed for landscape use. The topsoil stockpile area will be determined by the Owner.

### **3.03 EXCAVATION**

- A. Following stripping, excavate the site as required to achieve the lines and grades shown on the drawings. The resulting depression subgrade from excavated parking areas shall be scarified to a minimum 6 inch depth and recompacted. Prior to compaction efforts, the scarified surface shall be moisture conditioned to near optimum and compacted to a minimum of 95% Modified Proctor density. Areas deemed soft or unsuitable by the Engineer, shall be over-excavated to accomplish a firm, uniform foundation and backfilled in accordance with the aforementioned criteria.
- B. Excavations shall be graded and properly maintained to provide adequate drainage at all times. Work shall be suspended when the site is wet, muddy, or in a condition in which the area cannot be properly maintained.

### **3.04 PREPARATION FOR FILL PLACEMENT**

- A. After areas designed to receive fill have been approved by the Agency representative, as specified in Section 2.01 fill shall be placed on the compacted subgrade in loose lifts not exceeding 8 inches in thickness. These materials should be moisture conditioned to near optimum and compacted to a minimum of 95% Modified Proctor density. Boulders in excess of 6 inches, or greater in size than 3/4 the thickness of the lift, whichever is smaller, shall be removed. All fill should be evenly brought up. Lifts shall be uniform in thickness and moisture shall be evenly mixed throughout the fill. Any portions of previous lifts will be removed or reworked to the satisfaction of the Engineer, at the contractor's expense.
- B. Fill placed which is found to not comply with compaction specifications will be removed or reworked to the satisfaction of the Engineer, at the contractor's expense.

### **3.05 PLACING AND COMPACTING FILL MATERIAL**

- A. After areas designated to receive fill have been approved by the Agency representative, as specified in Section 2.01, fill shall be placed on the compacted subgrade in loose lifts not exceeding 8 inches in thickness. These materials should be moisture conditioned to near optimum and compacted to a minimum of 95% Modified Proctor density. Boulders in excess of 6 inches, or greater in size than 3/4 the thickness of the lift, whichever is smaller, shall be removed. All fill should be evenly brought up. Lifts shall be uniform in thickness and moisture shall be evenly mixed throughout the fill. Any portions of previous lifts exhibiting pumping or yielding shall be removed and replaced prior to placement of subsequent lifts.
- B. Any fill placed which is found not to comply with compaction specifications will be removed or reworked to the satisfaction of the Agency representative, at the contractor's expense.

### **3.06 COMPACTION**

- A. Where compaction is referred to within these specifications or on the design drawings, it shall mean the relative compaction as determined by comparing the in-place dry density to the laboratory maximum dry density as determined by ASTM Test Method D-1558 (Modified Proctor). The field in-place dry density shall be as determined by either ASTM D-1557 (sand cone) or ASTM D-2922 (nuclear) methods.
- B. During the compaction operation of all fill material, the surface of the fill and the material being placed will be maintained within the moisture content range required (+1-3%) to permit proper compaction to the specified density. The moisture shall be uniformly distributed throughout each layer.
- C. Compaction tests will be made by the Testing Agency during the placement of the fill, the optimum moisture content and the maximum dry density will be determined.
- D. Furnish and operate the necessary types of equipment required to obtain the specified dry density. After each layer of fill is placed and uniformly wetted, it will be compacted by passing compaction equipment over the entire surface a sufficient number of times to obtain the density specified. The compactive effort shall be uniform and consistent.
- E. The degree of compaction of the placed fill will be determined by comparing field density test results to the Laboratory Maximum Dry Density as obtained by the ASTM D-1557 Test Method. A minimum of 1 compaction per 200 cubic yards of in-place fill, is recommended. More frequent testing may be justified if deemed necessary by the Engineer, due to special circumstances.

### **3.07 TREATMENT AFTER COMPLETION OF GRADING**

- A. After grading is completed and the Testing Agency had finished his observation of the work, no further excavation or filling shall be done except with the approval of and under the observation of the Testing Agency. If, after the grading is complete the subgrade is disturbed or an extended period of time has elapsed, the Geotechnical Engineer should be notified to re-evaluate the subgrade conditions prior to construction of overlying baserock or structures.
- B. It shall be the responsibility of the Grading Contractor to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

### **3.08 UTILITY TRENCH BACKFILL**

- A. Materials for trench backfill shall consist of imported materials meeting the criteria specified in the drawings and approved by the Agency representative, and native materials that are free of organics, rocks exceeding 4 inches in their greatest dimension, or other deleterious substances.
- B. Compact to the following maximum densities at optimum moisture content:
  - 1. Backfill or fill not occurring under slabs or foundations: 90 percent
  - 2. ABC: 95 percent
  - 3. Backfill or fill occurring under slabs: 95 percent
- C. Prior to pipe installations, the proper bedding shall be provided in accordance with the City of Pleasanton standards, but shall be a minimum of 6 inches thick that meets the above reference import material specifications. A minimum of 1-1/2 inches of protective cover implementing imported materials shall be provided prior to commencement of compaction efforts. Subsequent lifts may employ native materials.
- D. The Testing Agency shall observe and periodically test the backfill compaction during the underground construction phase to assess compliance with these specifications.

### **3.09 EARTHWORK UNDER AGGREGATE BASE AND CONCRETE WALKS**

- A. Scarify the subgrade surface to a minimum of 6 inches, to properly moisture condition the soil and compact it to a minimum 95 percent of maximum dry density.
- B. Provide the necessary uniform gradient to the subgrade, to prevent ponding of water beneath the pavement, and weep holes to catch-basins at the subgrade/baserock level, to allow infiltrated waters to be discharged into the basin.
- C. Place the baserock in lifts that are within the compaction capabilities of the compaction equipment, and compact to 95 percent of maximum density.

### **3.10 DEWATERING**

- A. Should wet areas be encountered during grading, the installation of subdrains may be required to intercept shallow perched ground water. The decision to use these drains should be made in the field by a qualified geotechnical engineer.

### **3.11 FIELD QUALITY CONTROL**

- A. Placing and compaction of structural fills shall be performed under the direct observation of the Testing Agency. Areas to receive structural fills and all structural excavations shall be approved by the Testing Agency before covering or filling.
- B. Cost of testing and inspection will be paid for by the Owner except that fees for additional testing made necessary by improper excavation, inadequate compaction, replacement of unacceptable material, or other work not complying with the Drawings and Specifications or Soils Report, will be deducted from the Contract Price. Costs resulting from excessive inspection time shall likewise be deducted from the Contract Price. Notify Soils Engineer at least 48 hours prior to commencing operations to allow for proper scheduling of inspections and testing required.

**END OF SECTION**

## **SECTION 03200**

### **CONCRETE REINFORCING**

#### **PART 1 – GENERAL**

##### **1.01 DESCRIPTION**

- A. Scope: Furnish and install reinforcement bars, tie wires, accessories, and any other miscellaneous items required for cast-in-place concrete and as shown on Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 03100: Concrete Formwork
  - 2. Section 03300: Cast-In-Place Concrete

##### **1.02 QUALITY ASSURANCE**

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM A82: Cold drawn wire for concrete reinforcement.
  - 2. ASTM A615: Deformed and plain billet, steel bars for concrete reinforcement.
  - 3. ASTM A185: Welded wire fabric for concrete reinforcement.
  - 4. ASTM A706: Low-alloy steel deformed bars for concrete reinforcement.
- B. American Concrete Institute (ACI)
  - 1. ACI 315: Manual of standard practice.
  - 2. ACI 318: Building code requirements for reinforced concrete.
- C. Concrete Reinforcing Steel Institute (CRSI)
  - 1. CRSI 63: Recommended practice for placing reinforcing bars.
  - 2. CRSI 65: Recommended practice for placing bar supports, specifications, and nomenclature.
- D. American Welding Society (AWS)
  - 1. AWS D1.4-79: Welding reinforcing steel, metal inserts, and connections in reinforced concrete construction.

##### **1.03 SUBMITTALS**

- A. Shop Drawings: Showing details of reinforcement, location, quantities, spacing, sizes and grades of reinforcement, bending and splicing details, and support and spacing devices.
- B. Submittals shall clearly identify any variations from Contract Documents.

#### **1.04 PRODUCT STORAGE**

- A. Store delivered materials off the ground and protected from weather.
- B. Identification: Tagged, whole unbroken bundles, in segregated sizes. Tags to identify project, bar size, heat number, and testing laboratory.

### **PART 2 – PRODUCTS**

#### **2.01 MATERIALS**

- A. Condition: Free from flaking, heavy rust, mill scale, grease, oil, or other coatings which would reduce bonding qualities.
- B. Bars: ASTM A-615, deformed unless otherwise indicated, Grade 60.
- C. Welded Wire Fabric: ASTM A185, cold drawn steel wire with electrically welded intersections.
- D. Tie Wire: ASTM A-82, black annealed steel wire. 16 gauge minimum.
- E. Accessories: Metal spacers, chairs, spacers, supports and ties; size and shape as necessary.

#### **2.02 FABRICATION**

- A. Fabricate concrete reinforcing in shape and dimensions shown and as per ACI 315.
- B. Welding: Welding of reinforcing steel shall be permitted only where indicated on Drawings. Weld in accordance with AWS-D1.4-79.

### **PART 3 – EXECUTION**

#### **3.01 GENERAL**

- A. Concrete reinforcement detail and placement shall be per CRSI-63 and 65.
- B. Clean reinforcing before placing concrete.
- C. Minimum concrete coverage, laps, and bending radius shall be as indicated on Drawings.

#### **3.02 REINFORCEMENT**

- A. Reinforcing steel shall not be bent or straightened in a manner injurious to steel or to the concrete.
- B. Bars with kinks or bends not shown on the Drawings shall not be placed.
- C. The use of heat to bend or straighten reinforcing steel will not be permitted.
- D. In slabs, beams, and girders, reinforcing steel shall not be spliced at points of maximum stress unless otherwise indicated.

- E. Laps or splices shall conform to ACI 318.
- F. Accurately place bars, securely supported and fastened to prevent movement during placing of concrete. Tie splices and intersections with 18 gauge black annealed wire. Point wire tie ends away from forms.

**3.03 SUPPORTS**

- A. Supports shall be of spacing, number, and type conforming to ACI 315. Supports for bars on grade shall be pre-cast concrete blocks.

**3.04 PLACING WELDED WIRE FABRIC**

- A. Use maximum possible lengths.
- B. Lap end splices 12"; offset adjacent widths.
- C. Lap side splices one mesh.
- D. Wire tie mesh together at all splices.
- E. Mesh shall be supported at mid-depth of slab thickness prior to placement of concrete.

**END OF SECTION**



## SECTION 02315

### TRENCHING AND BACKFILLING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Section Includes: Excavating trenches, holes and pits for constructing the Work.
  - 1. Compacted fill from top of utility bedding to subgrade or finish grade elevations.
  - 2. Backfilling and compaction.
- B. Related Sections:
  - 1. Section 02200, Earthwork.
  - 2. Section 02630, Storm Drainage.
  - 3. Division 15, Plumbing and Mechanical.
  - 4. Division 16, Electrical.

##### 1.02 REFERENCES

- A. ASTM D-1557, Standard Test Methods for laboratory Compaction Characteristics of Soil Using Modified Effort.

##### 1.03 DEFINITIONS

- A. Utility: A buried or above ground pipe, conduit, cable, associate device or appurtenance, or substructure pertaining thereto.

##### 1.04 PROJECT CONDITIONS

- A. Coordinate Work with owner.
- B. Verify that the location of existing utilities have been indicated at work site by utility authorities and owner.
- C. Existing Utilities: Where the Drawings indicate the location of main and trunkline utility facilities that may affect the Work, be advised that the locations of said facilities shall be considered approximate only, until exposed by the Contractor.
  - 1. Service laterals and appurtenances have also been shown where information was available as to their location. The locations of said facilities, therefore, shall be considered approximate only, until exposed by the Contractor.
  - 2. At new work location, expose by hand methods existing utilities along the route of the new work prior to using mechanical equipment. If mechanical equipment is allowed at a particular location, it may only be used after the completion of a successful exhaustive search by hand methods to locate the existing facilities as indicated on the Drawings and/or by Underground Service Alert (USA) or other such utility location service.

3. Maintain existing utility mains and service piping and conduit in constant service during construction of the Work.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

- A. Fill Materials: On site excavated materials may be used for fill. Materials as approved by utility companies for fill of utility trenches.
- B. Utility Warning Tape: Low-density polyethylene plastic, nominally 3 inches wide and 4 mils thick imprinted continuously along its length with a warning message per PG&E requirements.
  1. Tape color codes:
    - a. Electric: RED per PG&E.
    - b. Gas: Yellow per PG&E.
    - c. Water: Blue
    - d. Telephone/Signal: See Division 27, Communications.
- C. Utility Detector Wire: Furnish and install vinyl-coated, 16-gauge min. copper wire. Match the above color codes for each respective utility as required by local utility and plumbing code.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Protect plant life, lawns, trees, shrubs, and other features not authorized for removal.
- B. Protect existing structures, fences, sidewalks, paving, curbs, and other improvements from excavation equipment and vehicular traffic.
- C. Maintain and protect above and below grade utilities that are to remain.
- D. Comply with applicable provisions of the Construction Safety Order and General Safety Orders of the California Division of Industrial Safety, as well as other applicable regulations as they pertain to the protection of workers from the hazard of caving ground in excavations.

### **3.02 CONSTRUCTION**

- A. Excavation:
  1. Excavate soil required to locate existing utilities and install the Work.
  2. Use hand methods of excavation to locate existing utilities, and to excavate trenches, pits and holes in congested areas.
  3. Employ equipment and methods appropriate to the work site. Small mechanical excavators may be used only in areas where there is sufficient space so as not to

damage adjacent improvements, and where the locations of all existing utilities have been determined by hand methods of excavating.

4. Cut trenches as required by the various utility companies or as a minimum just wide enough to enable installation and proper backfill and allow inspection.
  5. Do not interfere with 22.5 degree bearing splay of foundations.
  6. Hand trim excavations. Hand trim for bell and spigot pipe joints. Remove loose matter.
  7. Excavate trenches, pits or holes bottoming in hardpan to a minimum of 6" below the grade for the bottom of the pipe and couplings, and then backfill to the pipe grade with USCS Class II clean sand and gravel thoroughly compacted.
  8. In trenches or excavation sites where a firm foundation is not encountered, such as soft, spongy, or otherwise unsuitable material, remove the material to a minimum of 12 inches, or to a depth determined by the Geotechnical Engineer, below the bottom of the proposed pipe or structure, and backfill the space with USCS Class II clean sand and gravel containing sufficient moisture to produce maximum compaction.
  9. Excavate trenches to provide the minimum cover required.
  10. Stockpile excavated material to be returned to trench adjacent thereto in a location that will not be detrimental to existing improvements, or pedestrian or vehicular traffic. Remove unsuitable or excess material not being used, from site, at no additional cost to the Owner.
  11. When excavating through tree roots, perform work by hand and cut roots with a saw.
- B. Tolerances:
1. Top Surface of Backfill Under Paved or Concrete Areas: Plus or minus 0.05 feet from required elevations.
  2. Top Surface of General Backfilling: As required for finish surface to match adjacent improvements or ground.
- C. Progress and Prosecution: Open and Backfill excavations on the same day.

### **3.03 FIELD QUALITY CONTROL**

- A. Perform compaction testing in accordance with ASTM D-1557.
- B. If tests indicate Work does not meet specified requirements, recompact and retest at no additional cost to Owner.

**END OF SECTION**

## SECTION 02810

### LANDSCAPE IRRIGATION

#### PART 1 – GENERAL

##### 1.01 WORK INCLUDED

- A. The Contractor shall furnish all labor, materials, tools, and equipment as required to perform and complete the installation of an automatic sprinkler and/or drip irrigation system, including all piping, sprinkler heads and/or drip line piping, controls, connections, testing, etc. as shown on the Construction Drawings, and as specified herein.

##### 1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Landscaping: Section 02900.

##### 1.03 QUALITY CONTROL

- A. Reviews: Contractor shall specifically request the following reviews prior to progressing with the work: (1) Layout of system (2) Points of connection excavation (3) Coverage adjustment of all heads (4) Valve boxes inspection (5) Pressure testing if necessary, and (6) Operation and Layout of system (prior to covering).

##### 1.04 PROTECTION

- A. Contractor shall be responsible for protection of all existing utilities within construction area; and repair any damages to utility lines that occur as a result of operations of this work.

##### 1.05 SUBMITTALS

- A. Submittals of Irrigation Controls and Materials: Contractor shall submit: product data on all valves, irrigation devices, etc. that comprise a complete system.

##### 1.06 OPERATION AND MAINTENANCE MANUALS

- A. Two (2) complete sets of manufacturer's warranties, guarantees, instruction sheets, parts lists and operational manuals shall be delivered to the owner before acceptance of the Contract. Final inspection shall not be made until sets are approved.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. The materials will be specified. All materials shall be new. Any deviation from the drawings and specifications must first be approved by the Owner in writing.
- B. Automatic Controllers:
  - 1. Hunter XC Series Automatic Irrigation Controller;

2. All irrigation controllers shall be wall mounted on an inside garage wall or if required to be mounted on the exterior of the wall, in an Orbit Irrigation Products, Inc. Mod. # 57095 box.
  3. See Landscape Sheets of drawings for additional information.
- C. Remote Control Valves and controls: Rainbird #PEB series; see drawings for additional information.
- D. Shut-off Valve: PEPCO ball valve.
- E. Pipe and Fittings:
1. Plastic Pipe: Class 200 PVC, solvent weld for any lateral line; Class 315 PVC, solvent weld for main line.
  2. PVC fittings: High impact, standard weight, Schedule 40 PVC, molded PVC as manufactured by Sloane, Lasco, or Borg-Warner.
  3. Copper Pipe and Fittings: see specification Section 15050, Basic Materials, and Methods, for pipe and fitting requirements.
- F. Sprinkler heads:
1. For lawn areas: Rainbird 1800 Series, pop-up type: sized depending on placement.
  2. For pop-up bubbler: Rainbird #1806-5-CSTB, see drawings for placement.
- G. Valve Boxes:
1. For Remote Control Valves: Brooks #1419 Series, rectangular, with Pent-A-Head bolts, green locking cover.
  2. For all other valves: Brooks series, 6" round.
- H. PVC Primer: P-70 Weld-on or approved equivalent.
- J. Sleeves: All lines under walks shall be placed in 3" PVC sleeves.

## **2.02 LANDSCAPE DRIP IRRIGATION AND MICRO-SPRAY PRODUCTS:**

- A. Hunter Industries Inc., Rainbird Inc., or Toro Inc.. Low Volume Control Zone Kits, Landscape Dripline, Fittings, Emitters, and Micro-Spray Devices. All components shall be compatible.
1. Control Zone Kit: assemblies for drip irrigation must include a valve, filter, and pressure regulation to meet the flow requirements of the zone. Components shall be sized according to hydraulic demands of the system.
  2. 5/8-in Polyethylene Drip Irrigation Distribution Tubing. Use as supply line and feeder line to any low-flow and drip-watering device. All 5/8-in tubing is .690-in - .710-in O.D., 18mm
  3. Landscape dripline shall have factory installed, pressure-compensating, inline emitters installed every 12, 18, or 24 inches. The flow rates from each installed emitter shall be consistent. Emitter tubing shall be installed as per manufacturer's

specifications.

4. All fittings and adapters as per manufacturer's specifications, sized accordingly.
5. Emitting Devices shall be pressure-compensating and provide a consistent flow rate. Emitters shall be self-flushing to minimize clogging. Emitters shall be UV-resistant and color-coded on inlet side to identify flow rate.
6. Micro-Spray Devices shall be externally UV-resistant, shall be available with pop-up heights of 4,6, or 12 inches. The flow rate and radius of each device shall be adjustable.

### **PART 3 – EXECUTION**

#### **3.01 EXISTING SITE CONDITIONS**

- A. Location of existing utilities and other improvements shown on the Construction Drawings are approximate. Existing conditions shall be verified; should any utilities be encountered that are not indicated on the plans, the owner shall be notified immediately. The Contractor shall be held responsible for any damages caused to existing services.

#### **3.02 GRADING**

- A. Contractor shall verify layout with the owner prior to installation. Contractor shall be responsible for installing all irrigation features to their finished grade and at depths indicated.

#### **3.03 LAYOUT**

- A. Contractor shall not make any changes from the original contract drawings and specifications without receiving written permission from the Owner. All changes must be recorded on the record "As-built" drawings prepared by the Contractor.

#### **3.04 TRENCHING**

- A. All trenches shall be open, vertical construction sufficiently wide enough to provide ample working space and depths as specified. PVC pipe may be made up on the surface, then laid in the trench.
- B. Minimum depth of cover: Main pipe shall be a minimum depth of 12 inches below finish grade, unless otherwise indicated on sprinkler irrigation details. Drip irrigation lines shall be a minimum depth of 4" below finish grade.

#### **3.05 BACKFILLING**

- A. All work must be inspected and approved prior to covering. Notify the Owner in writing a minimum of 48 hours prior to filling trenches. Backfill shall be thoroughly compacted in 8 inch layers. All debris and rocks shall be removed from the trenches. Pipe shall have a firm, uniform bearing for the entire length of each pipe line to prevent uneven settlement.

#### **3.06 INSTALLATION OF CONTROLLERS, VALVES, AND FILTERS**

- A. Automatic Irrigation Controller to be installed as shown on the drawings. Final power connection is to be hardwired to 120v AC supply.
- B. All other valves are to be installed per manufacturer's instructions.

### **3.07 INSTALLATION OF PIPING SYSTEM**

- A. Handling of PVC pipe and fittings: The Contractor is cautioned to exercise care in handling, loading, unloading, and storing PVC pipe; beds on which materials are stored must be full length to avoid damage.
- B. Laying of PVC pipe:
  - 1. Trenches shall be padded with dirt and sand if the soil is extremely rocky.
  - 2. PVC pipe should never be laid when the trench contains water; or when the temperature is 32 degrees Fahrenheit or below.
  - 3. All foreign matter or dirt shall be removed from inside the pipe before welding, and piping shall be kept clean by approved means during and after laying of pipe.
- C. Threaded Connections: On PVC to metal connections, the Contractor shall work the metal connections first.
- D. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.
- E. Solvent Weld Joints: Solvent weld joints shall be made with manufacturer's recommended solvent, applied in accordance with manufacturer's recommendations. Pipe fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent with a non-synthetic brush. Use primer, on pressure pipe only, prior to applying solvent.

### **3.08 INSTALLATION OF PIPING, SPRINKLERS, AND CONTROLS**

- A. Sprinkler heads (bubblers): Locate as shown on Construction Drawings except where existing conditions prohibit, or slight changes are approved, and to achieve as good or better coverage under the same conditions. Sprinkler head spacing shall not exceed the maximum shown on the Construction Drawings.
- B. Handling, Assembly of Pipe, Fittings and Accessories: Handling and assembly of pipe, fittings and equipment shall be accomplished by skilled tradesmen. Interior of pipes, fittings and accessories shall be kept clean at all times. Close ends of pipe immediately after installation; leave closure in place until removal is necessary for completion of installation. Bending of pipe will not be permitted.
- C. Flushing: Remove end heads and operate system at full pressure until all rust, scale, and sand is removed. Divert water to prevent ponding or damage to finished work.

### **3.09 FIELD QUALITY CONTROL**

- A. Visual Inspection: Pipe shall be homogenous throughout and free from visual cracks, holes, or foreign materials. Inspection shall be made on each length of pipe. All materials are subject to discretionary impact test.

### **3.10 GUARANTEE**

- A. All workmanship and materials hereunder shall be guaranteed for one year, from date of final acceptance, against defective workmanship and materials. The Contractor is not responsible for vandalism or theft after date of final acceptance.

**END OF SECTION**

## SECTION 03300

### CAST-IN-PLACE CONCRETE

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish all labor, equipment, and material for the installation of cast-in-place concrete and accessories as shown on Drawings and specified herein.
- B. Related Work specified Elsewhere
  - 1. Section 02830: Wrought Iron Railing
  - 2. Section 03100: Concrete Formwork
  - 3. Section 03200: Concrete Reinforcement
  - 4. Section 05400: Miscellaneous Metals

##### 1.02 QUALITY ASSURANCE

- A. Federal Specifications (Fed Spec)
  - 1. Fed Spec TT-S-0227E: Sealing compound, elastomeric type, multi-component (for caulking, sealing, and glazing in buildings and other structures).
- B. United States Army Corps of Engineers Handbook for Concrete and Cement
  - 1. CRD-C-621-81: Nonshrink grouts.
- C. American Concrete Institute (ACI)
  - 1. ACI 211.1-77: Recommended practice for selecting proportions for normal weight concrete.
  - 2. ACI 318.89: Specifications for structural concrete for buildings.
- D. American Society for Testing and Materials (ASTM)
  - 1. C 33: Concrete aggregates.
  - 2. C 143: Slump of portland cement concrete.
  - 3. C 150: Portland cement.
  - 4. C 309: Liquid membrane forming compounds for curing.
  - 5. C 494: Chemical admixtures for concrete.
  - 6. D 1751-73: Preformed expansion joint fillers for concrete paving and structural construction (nonextruding and resilient bituminous type).



7. D 1752-67 (Revised 1978): Preformed sponge rubber and cork expansion joint fillers concrete paving and structural construction.
- E. Truck Mixer Manufacturers Bureau (TMMB): Truck mixer and agitator standards (November 1, 1971; ninth revision, 1980 printing).
- F. National Ready Mixed Concrete Association (NRMCA): Certification of ready mixed concrete production facilities (January 1, 1976, third revision).
- G. Records: Contractor shall keep records of time, date, and location of each pour. Keep records on job site open to review of SHRA.

### **1.03 SUBMITTALS**

- A. Certificate of Compliance: Certificate of compliance, accompanied by manufacturer's literature, attesting that floor hardener and premolded joint filler meet the requirements specified herein. Certified copies of laboratory test reports, including all test data, shall be submitted for aggregate, admixtures, cement, reinforcement, curing compound and joint sealer. These tests shall be made by an approved commercial laboratory or by a laboratory maintained by the manufacturer of the materials.
- B. Concrete Mix Design: Identify materials and proportions, admixtures, design compressive strength, source of cement, placement method and construction type (location of concrete).
- C. Samples: Stair Warning Strip with standard colors.
- D. Submittals shall clearly identify any variations from Contract Documents.

### **1.04 PROTECTION AND STORAGE**

- A. Protection: Materials shall be stored in such a manner as to prevent deterioration or intrusion of foreign matter. Any material that has deteriorated or has been contaminated shall not be used.
- B. Storage of Aggregates: Shall be separate groups of fine, small, and large.

### **1.05 JOB CONDITIONS**

- A. Do not place concrete that could be damaged or could not be properly finished during conditions of wind, dust, rain, excessive heat, freezing, or limitations of Contractor's facilities, except as otherwise specified.

## **PART 2 – PRODUCTS**

### **2.01 CONCRETE MATERIALS**

- A. Portland Cement: ASTM-C150, Type II, low alkali.
- B. Aggregates: ASTM-C33, non-shrinking aggregates.
  1. Fine Aggregates: Washed sand, minimum 12% passing 50 mesh screen, remainder varying from fine to aggregates passing 3/8" screen.
  2. Coarse Aggregates: Uniformly graded from 3/4" minimum to 1-1/2" maximum.

3. Gravel Fill: Clean crushed rock or graded gravel, 1" maximum size with no material passing #4 sieve.

## **2.02 CURING MATERIALS**

- A. Materials shall conform to ASTM-C309.

## **2.03 FLOOR HARDENER**

- A. Floor hardener shall be colorless aqueous solution containing not less than two pounds of zinc and/or magnesium fluosilicate per gallon, or sodium silicate solution having a specific gravity of 16.7 degrees Baume, or an approved proprietary hardener of proven satisfactory performance delivered ready to use in the manufacturer's original containers.

## **2.04 JOINT FILLER STRIPS**

- A. Contraction joint filler shall consist of hard pressed fiberboard.
- B. Expansion joint filler, premolded, shall conform to ASTM D 1751-73 (revised 1978) or ASTM D 1752, 3/8" thick minimum, unless otherwise indicated.

## **2.05 JOINT SEALERS**

- A. Two part urethane sealer conforming to Fed Spec TT-S-227E, Type 1, Class A.

## **2.06 AIR ENTRAINMENT**

- A. Air entrainment shall be per ASTM-C260.

## **2.07 BONDING AGENTS**

- A. Burke Bondcrete S.
- B. Larsen Weldcrete.
- C. Or equal.

## **2.08 NONSHRINK GROUT**

- A. Premixed compound of nonmetallic aggregate, cement, water reducing agent, and plasticizing agents.
- B. Minimum compressive strength of 2400 psi in two days, 7000 psi in twenty-eight days.

## **2.09 SAND**

- A. Clean sand, moistened prior to placement of concrete.

## **2.10 STAIR WARNING STRIPS**

- A. Embedded Warning Strips: American Safety Tread Co., Inc. "Type 24" (or equal); color as selected by SHRA.

**2.11 CONCRETE MIXES PER ASTM-C94**

Location	Strength psi in 28 Days	Coarse Aggregate Size	Maximum Slump	Minimum Number of Cement Sacks (94 lb/sack)
Exterior Slab on Grade, Landing, Steps	2500	1"	3"	5.0

- A. Use accelerating admixtures in cold weather only with prior acceptance of SHRA. Use of admixture will not modify cold weather placement requirements. Do not use calcium chloride.
- B. Use set retarding admixtures in hot weather only with prior acceptance of SHRA.
- C. Add air entraining agent to concrete mix for concrete exposed to exterior.

**PART 3 – EXECUTION**

**3.01 GENERAL**

- A. Notify SHRA six working days in advance for observation prior to placement of concrete.
- B. Embedded and Built-In Items: Verify that all items to be embedded or built into concrete are at correct locations and securely held.
- C. Water shall be removed from the excavation before placing concrete. Any flow of water shall be diverted through side drains without washing over freshly deposited concrete. Hardened concrete, debris, and foreign materials shall be removed from the interior of forms. Runways shall be provided for wheeled concrete handling equipment; such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement. Reinforcement and embedded items shall be inspected and forms shall be retightened and checked before placing concrete.
- D. Bonding to Hardened Concrete: Horizontal construction joints shall be prepared by roughening the surface of the concrete in an approved manner which will expose the aggregate uniformly and will not leave laitance, loosened particle of aggregate, or damaged concrete at the surface. The surfaces shall be moist but without free water when concrete is placed.
- E. Runways: Provide suitable runways. Do not run equipment over reinforcement nor support runways on reinforcement.
- F. Conduit diameter greater than 1/4 of slab thickness shall not be permitted unless specifically shown on Drawings.
- G. Place conduit within middle 1/2 of concrete slab thickness.

- H. Finish neatly and accurately at edges, around columns, at walls, around pipe, drains, and floor drain with allowance for floor covering.
- I. Maximum free fall of concrete shall be 6'-0".

### **3.02 BATCHING, MIXING, AND TRANSPORTING CONCRETE**

- A. Ready mixed concrete shall be batched, mixed, and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and nonagitating units shall comply with TMMB "Truck Mixer and Agitator Standards". Plant equipment and facilities shall conform to NRMCA "Certification of Ready Mixed Concrete Production Facilities".

### **3.03 CONCRETE PLACEMENT**

- A. Conform to ACI-305 for hot weather concreting.
- B. Conform to ACI-306 for cold weather concreting.
- C. Place concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours thus creating cold joints.
- D. Compaction
  - 1. Thoroughly compact each layer with mechanical vibrator within fifteen minutes after placement.
  - 2. Do not vibrate excessively as to cause separation of ingredients.
  - 3. Concrete shall be thoroughly compacted to produce dense, smooth surfaces free of honeycombing or air bubbles.
- E. Screed horizontal surfaces level, flat, and to grades shown.

### **3.04 JOINTS**

- A. Contraction Joints
  - 1. Contraction joints may be constructed by inserting zip strips into the plastic concrete, or, with the approval of SHRA, by cutting the concrete with an approved concrete sawing machine after the concrete has set.
  - 2. Unless otherwise indicated or directed, the joints shall have a width of 1/8" and a depth of approximately 1/4 the slab thickness or the maximum size of the coarse aggregate, whichever is greater.
- B. Construction and Expansion Joints: Construction and expansion joints shall be finished with an edging tool having a 1/8" radius, except where a floor covering will be applied.
- C. Sealing Joints: Joints in slabs shall be filled with Fed Spec SS-S0227E joint sealant, except where floor covering is required. Joint surface shall be clean, dry and free of oil or other foreign material. Joint sealant shall be applied as recommended by the manufacturer of the sealant. All joints shall be completely filled with sealer, which shall be well bonded to the concrete and free from voids.

- D. Premolded Expansion Joint Filler: The filler shall extend the full slab depth, unless otherwise indicated. The edges of the joint shall be neatly finished with an edging tool of 1/8" radius, except where a resilient floor surface will be applied. Where a joint is to receive a sealant, the filler strips shall be installed at the proper level below the finished floor with a slightly tapered, dressed and oiled wood strip temporarily secured to the top thereof to form a recess 3/4" deep to be filled with sealant. The wood strip shall be removed after the concrete has set.
- E. Metal Joint Strips: 1/8" thick stainless steel terrazzo strips at exposed aggregate concrete walks where shown on Drawings.

### 3.05 TOLERANCES

- A. Complete construction accurate within 1/4" in 10'-0" for plumbness, level and alignment compensated (not accumulative) so that maximum deviation in the overall structure does not exceed a total of 3/8".
- B. Surfaces of interior concrete floor slabs and exterior concrete slabs shall be true to plane or true to grades shown within 1/8" in 10'-0" tolerance.

### 3.07 CONCRETE WALKS

- A. General
  - 1. Construction shall be to the lines and grades shown on the Drawings.
  - 2. Contractor is solely responsible for determining the local jurisdiction's requirements.
  - 3. Where concrete walk requirements specified and shown on the Drawings conflict with the local jurisdiction requirements, the local jurisdiction's requirements shall govern.
  - 4. Concrete walks shall conform with local jurisdiction requirements without an increase of the Contract Sum and without an extension of the Contract Time.
- B. Subgrade
  - 1. Unless otherwise shown on the Drawings, subgrade and aggregate base for concrete for sidewalks shall be compacted to 90%.
  - 2. At the Contractor's option, curbs and curb gutters may be placed on compacted subgrade or on compacted aggregate base.
- C. Sidewalk Construction
  - 1. Provide keyed joints between driveway and adjacent concrete walks or slabs.
  - 2. Unless otherwise shown on the Drawings, provide contraction joints at 5'-0" maximum spacing and expansion joints at 20'-0" maximum spacing and where walks ends at a curb.
  - 3. Expansion joint filler shall be 1/2" thick, preformed asphalt impregnated board conforming to ASTM D994.

4. The expansion joint filler shall extend the full depth of the concrete less a 1/2" recess below the finished surface.
5. Thickness:
  - a. Concrete Walks: Unless otherwise shown, or required by local jurisdiction, concrete thickness shall be 3-1/2" minimum.

### **3.08 SURFACE FINISHES**

- A. Exterior Concrete
  1. Broom finish concrete typical unless noted otherwise on Drawings.
  2. Steel trowel to smooth finish.
  3. Broom finish with strokes perpendicular to direction of traffic.
  4. Completed finish shall be clean, uniform color, free of blemishes and tool marks.

### **3.09 CURING AND PROTECTION**

- A. Immediately after placement, protect concrete from premature drying, excessive temperatures, and damage.
- B. Apply curing materials conforming to ASTM-C309 in accordance with manufacturer's written instructions.

### **3.10 DEFECTIVE CONCRETE**

- A. Excessive honeycomb (in the judgment of the SHRA) and embedded debris is not acceptable.
- B. Concrete not conforming to tolerances for required lines, details, grade, elevations, or surface finish is not acceptable.
- C. Patch, repair, or replace unacceptable concrete.
  1. Patching of exposed surfaces will be permitted only if appearance is not impaired (in the judgment of the SHRA).
  2. Do not patch, repair, or replace exposed concrete without prior authorization of SHRA.
- D. Defective concrete shall be repaired or replaced as directed by the SHRA without an increase in the Contract Sum and without an extension of the Contract Time.

**END OF SECTION**

## SECTION 02822

### REDWOOD FENCES & GATES

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This Section includes the following: Redwood fencing and gates.

##### 1.02 PROJECT CONDITIONS

- A. Field Measurements: Contractor shall field verify lengths of fencing prior to bidding. Plans are schematic and are intended to show general locations of fence replacement only.
- B. Demolition: Contractor shall remove and dispose of existing wood fencing and post footings in areas of fence replacement.

#### PART 2 – PRODUCTS

##### 2.01 REDWOOD FENCE MATERIALS

- A. Boards: To be 1X6 X 6' dog-eared redwood, merchant grade or better (no holes in material).
- B. Steel Posts (where existing may be re-used): Verify structural integrity before re-using, including
- C. Douglas Fir Posts (if indicated): To be 4X4 X 8' pressure treated Douglas Fir.
- D. Hardware: To be post/rail brackets of galvanized steel, as required for a complete installation. All fasteners shall be galvanized.
- E. Rails: To be 2X4 redwood.

##### 2.02 GATES

- A. Gate Frame: 2x4 redwood with diagonal brace. Frame to be mounted to 4x4 posts at each side of gate opening.
- B. Hardware: Stanley Home Designs #824342 Self-closing Gate Kit (hinges and latch).
- C. Size: As specified on the drawings. If none specified, inside post-to-post dimension (framing gate opening) shall be 3'-6" clear.

#### PART 3 – CERTIFICATION/EXECUTION/INSTALLATION

##### 3.01 CERTIFICATION

- A. None required.

### **3.02 EXECUTION**

- A. Examination and Preparation:
  - 1. The Contractor shall be responsible for verifying dimensions, by field check, before fabrication or ordering of materials.
- B. Procedure:
  - 1. All designated fabrication and installation work shall meet and be subject to Section 3.03 - Installation - described below.

### **3.03 INSTALLATION**

- A. Posts are to be eight (8) feet on center and set in a 36" deep X 10" diameter hole and surrounded in concrete to grade. Spread all excess soil evenly.
- B. Top rails and bottom rails are to be set on edge between posts.
- C. Boards are to be even at the top, and the bottom is to have at least 1" clearance between the bottom of boards and grade.
- D. All sections are to be boarded solid and are to alternate, when possible, for a "good neighbor" type pattern.
- E. All vertical boards are to be double nailed (two each in the top rail and two each in the bottom rail) with 6D galvanized nails only.

### **3.04 CLEAN UP**

- A. Remove all excess materials and debris resulting from this work from site. Protect all previously existing items at the each job site from damage until acceptance of work.

**END OF SECTION**



## SECTION 02900

### LANDSCAPING

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. Applicable Requirements: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work of this Section.
- B. The Contractor shall furnish all labor, equipment, and materials necessary to perform the following work as indicated on the Construction Drawings and specified herein:
  - 1. Finish Grading
  - 2. Soil Preparation and Fertilization
  - 3. Planting
  - 4. Weed Control
  - 5. Shredded Bark Mulch
  - 6. Clean-up
  - 7. Establishment & Maintenance Period
  - 8. Guarantee

##### 1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Irrigation: Section 02810

##### 1.03 QUALITY CONTROL

- A. Reviews: Contractor shall specifically request the following reviews prior to progressing with the work:
  - 1. Plant material approval and plant layout on site (including preliminary finish grade);
  - 2. Substantial completion (Pre-final);
  - 3. Final.

Requests for reviews must be received in writing at least 48 hours in advance.

##### 1.04 SUBMITTALS

- A. Submittals Plant Material: Contractor shall submit notice certifying the quantity, species or seed mixture, source, height, spread and caliper of plant material for approval. See specifications Section 01300, Submittals, for submittal requirements.
- B. Plants are to be installed to accepted industry standards for premium level work.

## 1.05 PROTECTION

- A. Contractor shall be responsible for the protection of all existing utilities within the construction area and shall repair any damage to these utility lines that might occur as a result of operations of this work.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Materials to be used shall be in new and perfect condition. Materials will be as specified; any deviation or substitution from the Construction Drawings and Specifications must first be approved by the Architect/Owner in writing.
- B. Fertilizer/Soil Conditioner for Groundcover: Shall be Gro Power Plus or approved equivalent.
- C. Fertilizer/Soil Conditioner for Lawns: Shall be Gro Power Plus or approved equivalent.
- D. Fertilizer for Trees and Shrubs: Shall be 21-gram Agriform Planting Tablets (20-10-5) or approved equivalent. Two (2) tablets shall be used for one to five gallon material, four (4) for fifteen gallon material and eight (8) for twenty-four inch box material and larger.
- E. Plant Materials: Shall consist of all trees and shrubs listed on the Construction Drawings. All plants shall be healthy, shapely, well-rooted, not pot-bound, free from insect pests or plant diseases, properly hardened-off before planting. Plants not alive and in satisfactory growing condition, as determined by the APM, shall be replaced without cost to Owner. All plants shall be true to name. Plants may be rejected before or after planting.
- F. Soil Amendment: Shall be nitrogen-impregnated bark product, 90% bark base, .02"-.12 particle size, 1/2-0-0, or approved equivalent.
- G. Iron Sulfate: Ferric Sulfate or Ferrous Sulfate in pellet or granular form containing not less than 18.5% iron expressed as metallic iron.
- H. Tree Stakes and Ties: 2" diameter lodge pole stake (two (2) required for 15 gallon, one (1) required for 5 gallon); cinch ties, two (2) required. See Detail C on Sheet L2.0 of drawings for Standard Tree Detail.
- I. Vitamin B-1: Shall be Superthrive, Liquinox Start, Cal-Liquid, or approved equivalent.
- J. Pre-emergent Weed Control: Shall be Treflan, Eptam, Surflan, or approved equivalent.
- K. Lawn sod: Shade tolerant -Bluegrass - fescue blend. Contractor shall submit sample spec and cut sheet from supplier listing seed blend.
- L. Imported Soil: (If any) Imported soil shall be fertile, friable soil of loamy character having a normal amount of natural humus. It shall be reasonably free from subsoil, refuse, roots, rocks, weeds, noxious seeds, brush, nematodes, or other deleterious matter. It shall be free from toxic amounts of either acid or alkaline elements and be capable of sustaining plant life. It must be capable of sustaining plant life. It must be tested prior to delivery on the site.
- M. Shredded Bark Mulch to 2" size - submit sample for approval..
- N. Landscape Fabric: "Sta-Green" Premium Landscape Fabric.

## **PART 3 – EXECUTION**

### **3.01 FINISH GRADING**

- A. Coordinate with grading Contractor. Rough grading leveling to within 1/10th of a foot is by grading Contractor (except for any berming). The Landscape Contractor shall:
  - 1. Grade all finish surfaces smooth and even.
  - 2. Insure that finish grades shall be 1" below surface of paved areas.
  - 3. Eliminate any existing erosion or construction scars.
  - 4. Shape slopes and swales without any abrupt change of gradient to assure a natural and pleasing appearance.
  - 5. Slope drainage patterns away from buildings at 2% minimum slope. Import topsoil as necessary to create positive drainage away from buildings.

### **3.02 SOIL PREPARATION**

- A. Soil in all planting areas, except on slopes greater than 3:1 gradient, shall be loosened to a depth of six inches below finish grade. All debris, foreign matter, and stones over one inch in diameter shall be removed prior to the placing of any fertilizers or conditioners.
- B. Upon completion of finish grading, inspection and approval of the APM shall be obtained prior to commencement of planting.
- C. Fertilizer/soil conditioner: Broadcast 20 pounds of Gro Power Plus per 1,000 square feet in all planting areas and rototill to a depth of 6 to 8 inches.
- D. Apply soil amendment to all planting areas at the rate of three cubic yards per 1,000 square feet.
- E. Iron Sulphate shall be used for all shrubs and trees in quantities as follows: 1 gallon size - 1/4 pound; 5 gallon size - 1/2 pound; 12 gallon size or larger - 1 pound. Mix thoroughly in hole with other soil amendments and native soils.
- F. Placing and finishing Imported Soil: Place imported soil in areas and to depth indicated. Spread soil in layers not to exceed 6 inches in depth. Compact by rolling with grading equipment or other means to produce required results. Areas shall be left smooth, even and hard surfaced to finished contours and grades indicated.

### **3.03 GROUND COVER**

- A. Groundcover plants shall be planted in moist soil and in neat, straight rows parallel to the nearest paving or header board at the intervals specified on the legend.
- B. Groundcover plants shall not be allowed to dry out before or during planting. The first row of groundcover plants adjacent to walks, buildings, mow strips or header boards shall be one-half of the specified spacing given.
- C. Rooted cuttings shall remain in flats or containers until transplanting. The soil shall contain sufficient moisture so that it shall remain intact when lifting plants. Each plant shall be planted in a manner that will insure a minimum of disturbance to the root system. The Cuttings shall be planted sufficiently deep enough to cover all roots, but never shall

the depth be less than two nodes. To avoid drying out, plantings shall be immediately sprinkled to entire depth of each hole.

### **3.04 TREES AND SHRUBS**

- A. Shall be planted in holes twice the diameter and twice the depth of their containers. Place the tree so that the crown of the trunk shall be two inches higher than the immediate soil level. Backfill around roots shall be firmed to prevent settling. See staking or guying detail (Sheet L2.0 of drawings). Provide a berm or watering basin for each tree. Add Vitamin B-1, in the proper solution as recommended by the manufacturer, to the second watering of the basin. Scarify root ball prior to planting.
- B. Contractor shall request inspection by the APM after locating, but prior to planting, all trees and shrubs. Under the direction of the APM, Contractor shall make slight adjustments to plant material location to reflect original intention of Construction Drawings.

### **3.05 WEED CONTROL**

- A. Apply weed control to all planting areas (except lawn) after completion of all planting and on complete watering. Follow manufacturer's directions. After applying weed control, do not over-water groundcover or shrub areas, to prevent washing away of weed control. Do not allow any weed control into lawn areas. Any existing noxious weeds, such as Bermuda or Johnson grass, shall be treated with Round-up (or approved equivalent) in successive treatments until all roots are destroyed. Then remove all grass and roots.

### **3.06 SHREDDED BARK MULCH**

- A. Apply Shredded Bark Mulch a minimum of 2" thick in all planter areas, after planting and weed control are completed.

### **3.07 CLEAN UP**

- A. During construction , the Contractor shall keep the site free of rubbish and debris, and shall clean up the site promptly when notified to do so. Care should be taken to prevent spillage on streets over which hauling is done and any such spillage and debris deposited on streets due to the Contractor's operations shall be immediately cleaned up.
- B. During all phases of the construction work, the Contractor shall take all precautions to abate dust nuisance by cleaning, sweeping, sprinkling with water, or other means as necessary.

### **3.08 ESTABLISHMENT AND MAINTENANCE PERIOD**

- A. The establishment and maintenance period begins on the first day after all planting in this project is complete and has been accepted by the APM, and continues thereafter for not less than 60 continuous days.
- B. The Contractor shall continuously maintain all areas of the Contract during the progress of the work and during the establishment and maintenance period until final acceptance. During this period, all planting and seeded areas shall be kept in a healthy growing condition by watering, weeding, cultivating, pruning, mowing, edging, spraying, fertilizing, mulching, trimming, and by performing any other necessary operation for their upkeep and maintenance. All settlement of lawn areas shall be corrected to provide a uniform surface. Contractor shall not be responsible for mowing turf outside of fenced-in areas.
- C. Improper maintenance or poor condition of the plant material at the termination of the scheduled establishment and maintenance period may cause postponement of the final

completion date of the project. Maintenance shall be continued until all work is acceptable.

- D. All areas shall be kept free of debris and all planted areas shall be weeded and cultivated at intervals of not more than ten days.
- E. Re-fertilize all lawn areas with Gro Power Plus at the rate of 25 pounds per 1,000 square feet on day 45 and day 85 (if applicable) after turf establishment (first mowing).
- F. Reapply Vitamin B-1 to all trees and shrubs during the first week of the establishment and maintenance period, per section 3.4.A.
- G. Contractor shall request 48 hours in advance, on-site visits by the APM, to determine the beginning and end of establishment and maintenance period.
- H. Watering:
  - 1. Immediately after planting, apply water to each tree and shrub by means of a hose. Apply water in a moderate stream in the planting hole until the material surrounding the root is completely saturated from the bottom of the hole to the top of the ground.
  - 2. Apply water in sufficient quantities and as often as seasonal conditions require to keep the planted areas wet at all time, well below the root system of grass and plants. Plants which cannot be watered efficiently with the existing water system shall be watered by means of a hose.

### **3.09 GUARANTEE PERIOD**

- A. The Contractor shall guarantee all plant materials as indicated below. The guarantee period shall commence upon notice of final acceptance
- B. APM may reject any plant material which is damaged, diseased, in a state of decline, or dead. During installation and until final acceptance, the Contractor shall immediately replace any rejected material. Contractor shall replace all plants that die after final acceptance (during the guarantee period) unless negligence by the Owner or Owner's representative can be determined. Negligence shall be determined through field inspection by the APM and consultation with the parties involved. Replacements shall be of like-kind and size; and shall be guaranteed for one-half of the initial guarantee period.
- C. Initial guarantee period shall be one year from final acceptance, not including vandalism or theft.

**END OF SECTION**

## SECTION 05500

### MISCELLANEOUS METALS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install miscellaneous metals as shown on Drawings and specified herein.

##### 1.02 QUALITY ASSURANCE

- A. American Institute of Steel Construction (AISC): Specifications for the design, fabrication, and erection of structural steel for buildings (1978 November 1 with commentary).
- B. American Society for Testing and Materials (ASTM)
1. ASTM-A6a: General requirements for rolled steel plates, shapes, sheet piling, and bars for structural use.
  2. ASTM-A36a: Structural steel.
  3. ASTM-A307: Carbon steel externally threaded standard fasteners.
  4. "Code for Arc and Gas Welding in Building Construction" of the American Welding Society, AWS D1.1, latest edition with current supplements, revisions and addenda. Welded connections; use standard AWS A2.0 welding symbols. Indicate net weld lengths.
  5. "Pipe Railing Manual", published by National Assn. of Architectural Metal Manufacturers (NAAMM).
  6. "Metal Bar Grating Manual", published by National Assn. of Architectural Metal Manufacturers (NAAMM).
  7. Steel Structures Painting Council (SSPC) Surface Preparation Specifications (Vol. 2, Painting Manual).
- C. American Welding Society (AWS)
1. D1.1: Structural Welding Code, Steel
- D. Responsibility for Errors: Contractor shall be responsible for all errors in detailing, fabrication, and the correct fitting of all miscellaneous metals.

### 1.03 SUBMITTALS

- A. Shop Drawings
  - 1. Drawings shall, in general, consist of plan or plans, elevations, sections, details, dimensions, joints, fasteners, anchors, materials, welded connections using standard AWS weld symbols, and finishes of the product or assembly specified herein.
  - 2. Drawing shall show existing adjacent conditions for Wrought Iron Gate, anchorage to existing Building, hardware, provisions for Finish Hardware, materials and sizes.
- B. Certificate of Compliance: A manufacturer's certificate or affidavit showing conformance to the applicable standard or publication as specified herein.
- C. Submittals shall clearly identify any variations from Contract Documents.

### 1.04 PRODUCT STORAGE

- A. Protect materials against rusting.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Standard structural steel shapes, bars and plates: ASTM A-36a.
- B. Steel Tubing: ASTM A 500, latest edition (cold formed) Grade B.
- C. Steel pipe: ASTM A 53, latest edition, Type E or S for structural pipe; Grade B.
- D. Steel pipe: Sheet steel: ASTM A 446, grade B, structural quality with galvanized coating.
- E. Steel pipe Fastenings (General): Furnish bolts, nuts, screws, clips, washers and other fastenings necessary for proper erection of items specified herein. Use stainless steel or hot dip galvanized on exterior. On interior, match adjacent material. Bolts, ASTM Grade A 307, or ASTM A325 as shown on plans.
- F. Perforated Metal: 20 gauge galvanized sheet metal with 1/16 inch diameter holes at 3/32 inch staggered spacing, as manufactured by McNichols or equal. Provide single width metal sheet between top and bottom horizontal rails.
  - 1. McNichols Co.: 19226 Cabot Boulevard, Hayward, California, 1-800-237-3820, [www.mcnichols.com](http://www.mcnichols.com).
- G. Stainless Steel: Type-304, satin finish, eased side edges.
- H. Welding Materials: Types as required for position and type of weld, current used, and coating, in conformance with AWS D1.1.
- I. Paint: Metal primer paint and as specified under Specification Section 09900.
- J. Paint: Non-Shrink Grout: Sauereisen No. F-100, Sonneborn-Contech "Fondag", Upco "Upcon", 5-Star, Master Builders "Masterflow 713", or approved equal, non-metallic, non-staining, premixed grout having a min. compressive strength of 6,800 psi (28 days).

- K. Miscellaneous: Furnish and install all miscellaneous items required for a complete installation.

## **2.02 ANCHORAGE**

- A. Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place.
- B. Anchorage not otherwise specified or indicated shall include slotted inserts, expansion shields, and powder driven fasteners when approved for concrete; toggle bolts and through bolts, lag bolts, and screws for wood.

Slotted inserts shall be of types required to engage with the anchors and shall be approved.

## **2.03 FINISHES (except as otherwise noted on the drawings or specified)**

- A. Exterior Ferrous Metal: Welds, burrs, and rough surfaces ground smooth after fabrication and completed assembly given one shop prime coat of paint.
- B. Exposed Fastenings: Match color and finish of adjacent material.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication.
- B. Welding to or on structural steel shall be in accordance with AWS D1.1.
- C. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot dipped galvanized after fabrication.
- D. Galvanizing shall be in accordance with ASTM A-123, A-386, or A-525, as applicable.
- E. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied.
- F. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included.
- G. Poor matching of holes for fasteners shall be cause for rejection.
- H. Fastenings shall be concealed where practicable.
- I. Thickness of metal and details of assembly and supports shall give ample strength and stiffness.
- J. Joints exposed to the weather shall be formed to exclude water.



### **3.02 WORKMANSHIP**

- A. Miscellaneous metal work shall be well formed to shape and size, with sharp lines and angles and true curves.
- B. Drilling and punching shall produce clean true lines and surfaces.
- C. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth.
- D. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush.
- E. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment.
- F. Work shall be accurately set to established lines and elevations and securely fastened in place.
- G. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.
- H. Bolted, Screwed, and Riveted Connections:
  - a. In general, use bolts for field connections only and then only as detailed. Provide washers under heads and nuts bearing on wood. Draw nuts tight and upset threads of permanent connections to prevent loosening. Use beveled washers where bearing is on sloped surfaces.
  - b. Where screws must be used for permanent connections in ferrous metal, use flat head type, countersunk, with screw slots filled and finished smooth and flush.

### **3.03 DISSIMILAR MATERIALS**

- A. Where dissimilar metals are in contact, or where aluminum is in contact with concrete, mortar, masonry, wet or pressure treated wood, or absorptive materials subject to wetting, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

### **3.04 WELDING**

- A. Perform welding in accordance with AWS Code D 1.1.
- B. Welds shall be made only by operators experienced in performing the type of work indicated.
- C. Welds normally exposed to view in the finished work shall be uniformly made and ground smooth.
- D. Where welding is done in proximity to glass or finished surfaces, such surfaces shall be protected from damage due to weld sparks, spatter, or tramp metal.
- E. Electric shielded arc process, unless otherwise indicated. Equipment shall be provided with suitable devices to regulate speed and manually adjust operating amperage and voltage. Capacity of equipment shall be suitable for providing the amperage, voltage, and welding

heat to conform with AWS D1.1 requirements for the specific types of welding and electrodes to be employed and to overcome line drop.

- F. Fillet welds shall be continuous full fillets. Groove welds shall be continuous full penetration welds. Grind butt welds exposed to view.

### **3.05 SHOP PAINTING**

- A. **Cleaning:** Clean all surfaces to be painted, using effective means, of all loose mill scale, rust, oil, grease, foreign matter, slag, and burned material at welds and flame cut edges.
- B. **Shop Painting:** Paint all miscellaneous metals (except portions that will be encased in concrete). One coat typically, two coats for parts inaccessible after assembly (using different shade for each coat). Do not paint contact surfaces. Avoid runs, sags, laps, and intrusion of foreign material. Protect freshly painted work against damage to coating.
- C. **Field Touch Up:** Touch up bolts, rivets, welds, connections, mars after erection. Avoid runs, sags, laps, and intrusion of foreign material.

### **3.06 PROTECTION AND CLEANING**

- A. Remove soil and foreign matter from finished surfaces and apply such protective measures as may be required to prevent damage or discoloration until acceptance of project. Protection of work and initial cleaning shall be the responsibility of each installer or erector until the installation is completed, whereupon the responsibility for subsequent protection and final cleaning shall pass to the General Contractor for the entire project. Remove protective Coverings prior to acceptance of Work.

**END OF SECTION**

## SECTION 06100

### ROUGH CARPENTRY

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install all rough carpentry work as shown on Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 06200: Finish Carpentry
  - 2. Section 07200: Insulation
  - 3. Section 07460: Siding
  - 4. Section 09250: Gypsum Board
- C. Definitions: Rough carpentry includes carpentry work not specified as part of other sections. Type of work in this section generally includes the following.
  - 1. Wood framing.
  - 2. Structural plywood.
  - 3. Nailers, blocking.

##### 1.02 REFERENCES

- A. Federal Specifications (Fed Spec)
  - 1. FF-N-105B with Amendments: Nails, brads, staples, and spikes.
- B. United States Department of Commerce Product Standard (PS)
  - 1. PS-1: Construction and industrial plywood.
  - 2. PS-20: American softwood lumber standards.
- C. Redwood Inspection Service (RIS): Standard specifications for grades of California Redwood lumber.
- D. West Coast Lumber Inspection Bureau (WCLB) Standard No. 16: Standard grading and dressing rules.
- E. Western Wood Products Association (WWP): Western lumber grading rules.
- F. Grade Markings: Legible grade marks of the association having jurisdiction to appear on each piece of framing lumber and plywood.
- G. California Code of Regulations Title 24 (CCR T-24).
- H. Uniform Building Code (UBC) Standards.

- I. American Wood Preservers Bureau (AWPB) Standard C20-70: Lumber chemical pressure treatment.
- J. American Society for Testing and Materials (ASTM) Standard E-84: Pressure treated fire retardant lumber.

### **1.03 QUALITY ASSURANCE**

- A. Lumber and plywood shall be grade or quality marked by WWPA, WCLIB, APA, AWPB or by other grading and inspection agencies acceptable to the Architect. Grade marks shall include the designation "S-DRY"(or "MC-15" as applies) where applicable. Grade and quality marks shall not be apparent on surfaces exposed in the finished work.

### **1.04 SUBMITTALS**

- A. Affirmation: A letter signed by the Contractor attesting quality of material specified herein.
- B. Submittals shall clearly identify any variations from Contract Documents.

### **1.05 PRODUCT DELIVERY AND STORAGE**

- A. Materials shall be delivered to site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.
- B. Store kiln dried materials in enclosed areas, protected from moisture and separated from contact with concrete or soil.

## **PART 2 – PRODUCTS**

### **2.01 MATERIALS**

- A. Framing Lumber: Douglas Fir, S4S.
  - 1. 2X Structural Framing: Number one or better.
  - 2. Other Structural Framing: Number one.
- B. Sill Plates, First Floor Lumber, First Floor Plywood: Construction grade Douglas Fir preservative pressure treated with chromated copper arsenate or equal.
- C. Structural Plywood (SP): 5-ply, C-D, exterior type glue group 1.
- D. Rough Hardware: Furnish all items of rough hardware, connections to metal studs, bolts, and other miscellaneous items as required to complete the work. Bolts, nuts, and washers shall be hot dipped galvanized, conforming to ASTM A153.
  - 1. Nails
    - a. Typical: Common wire. Use galvanized nails for all exposed framing.
    - b. Pressure Treated Wood and Plywood: Hot-dipped galvanized or stainless steel; size and type to suite conditions.
  - 2. Bolts: Standard mild steel, square or hexagonal head machine bolts with matching nuts and cut washers as indicated.

3. Lag Bolts and Screws: Conform to Fed Spec FF-B-561B, of sizes as indicated.
  4. Framing Anchors: Timber Fasteners, Incorporated, Universal Anchors Company, Simpson Company, or equal, galvanized framing connectors and joist hangers as detailed, not less than 16 gauge before galvanizing, having minimum design and load capacity noted.
  5. Furring Strip Anchors to Concrete Block: Hilti (or equal) Kwik Con II 14-314TFH.
- E. Building Paper: ASTM D 226-77, #15 unperforated.
- F. Miscellaneous Items: Rough carpentry work and miscellaneous items and their related components which are to be furnished and/or installed under this Section are not necessarily individually described. The most important features and those requiring detailed descriptions are mentioned. Rough carpentry work and miscellaneous items not mentioned or described will be furnished and/or installed in accordance with the intent of Drawings and Specifications and as required to complete the work.

## **2.02 MOISTURE CONTENT**

- A. 19% maximum for 2x thickness and less; 19% maximum for thickness greater than 2x and less than 4x; and 22% maximum for thickness greater than 4x.

## **2.03 SURFACING**

- A. All wood materials exposed in the finished work shall have resawn surfaces of clean natural color unless noted or specified otherwise. Concealed framing lumber shall be S4S.

## **PART 3 – APPLICATION**

### **3.01 GENERAL**

- A. Install all wood framing, making proper provisions for work of other trades. Do all cutting of wood required to accommodate other trades. Fit neatly around all exposed items such as outlet boxes, conduit, pipes, and ducts.
- B. Furring strip anchors shall be install per manufacturer's instructions at 48" on center into pre-drill holes.
- C. Wood shall be pre-drilled for nails, bolts, etc. where required to avoid splitting of wood.

### **3.02 CASEWORK**

- A. Determine locations and install all wood framing, blocking, etc. as required for anchorage of casework (base cabinets and wall cabinets).

### **3.03 PLASTIC LAMINATE FACED PANELS BACKING**

- A. Install Backing and treat joints/corners as recommended by Plastic Laminate Faced Panel manufacturer (refer to Specification Section 06420).
- B. Furnish and install all blocking required for installation of Backing.

**END OF SECTION**

## SECTION 08200

### INTERIOR WOOD DOORS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install non-rated flush interior wood doors as indicated in the Drawings, if any, Scope of Work and specified herein, including installation of finish hardware.

##### 1.02 QUALITY ASSURANCE

- A. National Woodwork Manufacturers Association (NWMA) Industry Standard: I.S. 1-80 "Wood Flush Doors".
- B. Tolerances
  - 1. 1/8" at sides and top.
  - 2. 1/8" bottom clearance unless otherwise shown.
- C. All interior wood doors shall be by single manufacturer.

##### 1.03 SUBMITTALS

- A. Manufacturer's Data: Manufacturer's data consists of specifications and engineering data printed and provided by the manufacturer of the specified item and provide complete descriptive information.

##### 1.04 PRODUCT STORAGE

- A. Store in fully covered areas, protected from extreme changes in temperature and humidity.

#### PART 2 – PRODUCTS

##### 2.01 MANUFACTURER

- A. Kolbe and Kolbe
- B. Craft-Master
- C. ReliaBilt
- D. Or approved equal.

##### 2.02 PRE-HUNG WOOD DOOR, HOLLOW-CORE

- A. Paint Grade Door: Hardboard veneer, six-panel Colonial Style door (textured), hollow-core construction with honeycomb core.
- B. Frame: Paint-grade, finger joint pine.

### **2.03 SOLID CORE DOORS**

- A. 1-3/4" thick unless otherwise noted. Flush type, unless otherwise noted on drawings. Cores may be either of the following at Contractor option.
  - 1. Glued Block Core: NWWDA I.S.
  - 2. Particleboard Core: NWWDA I.S., minimum density: 25 pcf.

## **PART 3 – EXECUTION**

### **3.01 DOOR INSTALLATION**

- A. All doors shall be expertly hung and shall fit snug against all stops.
- B. Fit accurately and hang free from hinge bind.
- C. Undercut doors for carpeting and ventilating purposes where required.
- D. Fire-Rated Door installation shall conform with requirements of NFPA-80.
- E. Door Clearances: 3/4" at bottom. Where carpet is noted or scheduled to be installed under door swing, doors shall clear carpet by 1/4". Side and top clearance shall be 1/8". Bevel lock stiles 1/8" in 2". Ease edges.

### **3.02 FINISH HARDWARE INSTALLATION**

- A. Install accurately and securely without marking or defacing hardware or finish work.
- B. When hardware is installed on site-finished doors prior to final finishing, remove hardware except prime coated items and hinges until completion of painting work.
- C. Test to assure correct alignment and operation.
- D. Items of finish hardware shall be fastened at all points where fasteners are indicated or required.
- E. Protect finish hardware with suitable coverings until completion of building.
- F. Leave all hardware in perfect working order. Clean and polish.

**END OF SECTION**

## SECTION 06200

### FINISH CARPENTRY

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install all finish carpentry, millwork, and related items, including installation of building specialties as shown on the Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 06100: Rough Carpentry
  - 2. Section 09250: Gypsum Wallboard
  - 3. Section 09900: Painting

##### 1.02 QUALITY ASSURANCE

- A. Millwork shall conform with the Woodwork Institute of California's "Manual of Millwork" (WIC-MM) for custom grade, unless otherwise noted.

##### 1.03 SHOP DRAWINGS

- A. Submit detailed Shop Drawings of all finish carpentry and millwork. Include profiles and dimensions, anchorage, and locations.

##### 1.04 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 1, Manual of Millwork, "Recommended Care and Storage of Architectural Woodwork". Make no deliveries of interior millwork until areas are completely enclosed and wet work completed.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. Paint Grade Wood (No MDF will be allowed):
  - 1. Casing at Interior Doors: 5/8" x 2-1/4" "Colonial" profile pine molding.
  - 2. Ledgers at Shelving: 1x4 pine (Ledgers shall not extend past front most edge of supported shelf).
  - 3. Shelving: 1x12 pine.
  - 4. Window stools: 1x pine or MDF.



5. Closet poles: 1 5/16" finger joint pine.
6. 3 1/4" pre-primed pine or MDF "Colonial" baseboard.
7. All other trim: solid stock (may be finger joint if sanded).

## **2.02 NAILS**

- A. Bright finishing nails for interior work.

## **2.03 MISCELLANEOUS**

- A. Furnish and install all other items as required for a complete installation.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Installation of finish carpentry and millwork shall conform to the applicable requirements of the WIC-MM, sections 10, 11, 12, and 13 for interior work. In general, all work to receive stain or transparent finish shall conform to "Custom" grade requirements.
- B. Interior millwork and finish shall not be installed until the building is thoroughly dry.
- C. Hammer or tool marks or marred surfaces and edges will not be acceptable on any exposed finished surfaces and, as evidence of inferior workmanship, may be cause for rejection of such work.
- D. All end splices exposed in finished members shall be accurately and neatly mitered or scarified. Install members in as long lengths as possible.
- E. All work shall be installed to details shown, plumb, level, true to line, and securely anchored. Exterior corner joints shall be mitered. Interior corner joints may be coped. Where molded members adjoin other molding or plain sections, the molded members shall be carefully and accurately scribed to the other members. All exposed edges shall be eased.
- F. Set all nails for putty at exposed finish work.
- G. Prepare all woodwork installed hereunder by cleaning and sanding as required to receive finished specified in Section 09900, "Painting".

### **3.02 INSTALLATION OF BUILDING SPECIALTIES**

- A. Install all items specified under Division 10 which are not specified to be installed by the manufacturer or supplier or under other Sections of the Specifications. Install in accordance with the details shown on the Drawings, the manufacturer's printed installation instructions, and any additional requirements specified under Division 10. All wall mounted items shall be securely fastened to solid backing or blocking.
- B. Install all other miscellaneous specialty items not specified to be installed under other Sections and complete all on site finish carpentry work required to produce a complete and finished installation.

**3.03 INSTALLATION OF ACCESS DOORS AND PANELS**

All access doors and panels specified to be furnished under Divisions 15 and 16 or in other Sections shall be installed under this Section in accordance with the Drawings, approved Shop Drawings, and manufacturer's installation instructions and recommendations.

**3.04 FINISH**

- A. Finish Carpentry shall receive paint/stain finish as specified under Specification Section 09900.
- B. Exterior Finish Carpentry shall be back primed and cuts shall be primed prior to installation.

**END OF SECTION**

## SECTION 06410

### CASEWORK AND COUNTERTOPS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Fabricate and install wood casework and plastic laminate countertops as indicated on the Drawings and includes, but is not necessarily limited to, cabinets, cabinet hardware, installation and delivery.
- B. Related Work Specified Elsewhere
  - 1. Section 06100: Rough Carpentry
  - 2. Section 09250: Gypsum Board
  - 3. Section 09900: Painting

##### 1.02 SUBMITTALS

- A. Shop Drawings (required for shop-built cabinets)
  - 1. For cabinets and countertops, include plans and elevations. Show materials, finishes, filler panels, hardware, edge and backsplash profiles.
- B. Samples
  - 1. Manufacturer's samples showing proposed laminates and selected laminates.
  - 2. One full-size, finished base cabinet complete with hardware, doors and drawers, but without countertop.
    - a. Where above-described cabinet is determined by SHRA to be acceptable, that cabinet may be installed into the Project.

##### 1.03 REFERENCES

- A. American National Standards Institute (ANSI).
- B. Builders Hardware Manufacturers Association (BHMA).
- C. Hardwood Plywood & Veneer Association (HPVA).
- D. Kitchen Cabinet Manufacturers Association (KCMA).
- E. Laminating Materials Association (LMA).
- F. National Electrical Manufacturers Association (NEMA).

##### 1.04 DEFINITIONS

- A. Exposed Surfaces of Casework: Surfaces visible when doors and drawers are closed, including visible surfaces in open cabinets or behind glass doors.

- B. Semi-exposed Surfaces of Casework:
  - 1. Surfaces visible when behind opaque doors and drawer fronts are open, including interior faces of doors and interiors and sides of drawers.
  - 2. Bottoms of wall cabinets are defined as semiexposed.
- C. Concealed Surfaces of Casework
  - 1. Surfaces not usually visible after installation, including sleepers, web frames, dust panels, bottoms of drawers, and ends of cabinets installed directly against and completely concealed by walls or other cabinets.
  - 2. Tops of wall cabinets and utility cabinets are defined as concealed.

#### **1.05 QUALITY ASSURANCE**

- A. Source limitations for Cabinets: Obtain cabinets through one source from a single manufacturer.
- B. Product Designations: Drawings indicate size, configurations, and finish material of casework by referencing designated manufacturer's catalog numbers. Other manufacturer's casework of similar sizes, similar door and drawer configurations, similar finish materials, and complying with the Specifications may be considered. Refer to Division 1 Section Substitutions.
- C. Quality Standards: Unless otherwise indicated, comply with the following standards:
  - 1. Cabinets: KCMA A161.1.
  - 2. Plastic Laminate Countertops: KCMA A161.2.

#### **1.06 PRODUCT STORAGE AND HANDLING**

- A. Store such items inside building, off the floor, in a space which is thoroughly dry, sash is glazed, and other exterior openings covered.

#### **1.07 JOB CONDITION**

- A. Environmental Limitations: Do not deliver or install residential casework until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Established Dimensions: Where residential casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that the actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting.

- C. Field Measurements:
1. For cabinets: Where residential casework is indicated to fit existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide filler and scribe if necessary.
  2. Field Measurements For Countertops: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

## PART 2 – PRODUCTS

### 2.01 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. KraftMaid Cabinetry, Inc.
  2. American Woodmark
  3. Other approved manufacturers, including custom cabinet manufacturers

### 2.02 CABINET MATERIALS

**Note: No particle board shall be used for any cabinet components**

- A. Exposed materials: Comply with the following
1. Exposed Wood Species: Unless otherwise indicated, do not use two adjacent exposed faces that are noticeably dissimilar in color, grain, figure, and or natural character markings.  
  
Species: Red Oak
  2. Solid Wood: Clear hardwood lumber of species indicated above, free of defects, selected for compatible grain and color, kiln dried to 7 percent moisture content.
  3. Plywood: Hardwood plywood complying with HPVA HP – 1 face veneer of species indicated, selected for compatible color and grain with Grade A faces and Grade C backs of same species as faces.
    - a. Edge band exposed edges with minimum 1/8 inch (3 mm) thick, solid-wood edging of same species as face veneer.
- B. Semi-exposed materials: Unless otherwise noted, provide the following:
1. Plywood: Hardwood plywood complying with HPVA HP-1 with Grade C faces and backs stained to be compatible with exposed surfaces.

- C. Concealed Materials: Comply with the following:
  - 1. Plywood: Any hardwood or softwood species, with no defects affecting strength or utility.

### 2.03 CABINET CONSTRUCTION

- A. Face Style: Reveal overlay: door and drawer faces partially cover body or face frame.
- B. Face Frames: 3/4" x 1 1/2" solid wood.
- C. Drawer Faces: 3/4" thick, solid wood slab.
- D. Doors: Solid wood stiles and rails, 3/4" thick, with 5/8" thick, solid-wood center panels.
- E. Cabinet Ends: 3/4" thick A2 plywood with wood veneer (exposed and semi-exposed).
- F. Cabinet Tops and Bottoms: 1/2" thick natural birch veneer-faced plywood; supported by and secured in rabbits in end panels and front face frame.
- G. Base Unit Top Rails: 3/4" x 2 3/4" solid wood, interlocking with end panels, and secured under pressure with glue and with mechanical fasteners.
- H. Wall-Hung Unit Top and Bottom Rails: 1/2" x 2 1/2" solid wood, interlocking with end panels, and secured under pressure with glue and with mechanical fasteners.
- I. Cabinet Backs: 1/4" thick luan with 3/4" x 2" anchor strips of fir plywood.
- J. Front Face Frame Drawer Rails: 3/4" x 1 1/2" solid wood fastened into face frame.
- K. Drawer Boxes: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  - 1. Join subfronts, backs, and sides with glued dovetail joints.
  - 2. Subfronts, backs, and sides: 3/4-inch (19mm)-thick solid wood.
  - 3. 1/4" thick luan plywood at bottoms.
- L. Cabinet Shelves: 3/4" thick AC or BC fir plywood with edge banding to match doors or face frames.
- M. Drawer Guides: Undermount, self-closing drawer guides, designed to prevent rebound when drawers are closed; with nylon-tired, ball bearing rollers; and complying with BHMA A1569, type B05091.
  - 1. Standard extension runners with easy-release mechanism.
- N. Hinges: Concealed European-style, 6-way adjustable.
- O. Shelf Supports: Hole and metal pin, 1/4" offset.

### 2.04 KITCHEN COUNTERTOP MATERIALS

- A. Granite: 3/4" min. thick granite over 5/8" ACX plywood subtop with 4" backsplash. Color: TBD

## **2.05 CULTURED MARBLE COUNTERTOPS (BATHROOMS)**

- A. Vanity tops: ¾" thick sheet or slab of polyester resin composite over self-supporting structural members, with dripless edge at front and both sides.
- B. Materials: Natural Marble, Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISSFA-2 and NEMA LD 3; polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
- C. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E 84.
- D. NSF approved for food contact.
- E. Sinks: Integral castings, with at least 3/4 inch wall thickness; comply with ANSI Z124.3.
- F. Color and Pattern: As selected from standard color palette.
- G. Back and End Splashes: Integral with vanity top. Height: 4 inches high, unless noted otherwise.

## **2.06 MISCELLANEOUS**

- A. Items not specifically noted but required to complete the work of this Section shall be furnished hereunder.
- B. Provide all end panels, knee space rails, filler panels, and any other materials required for a complete installation. Exposed and semi-exposed surfaces shall have plastic laminate finish.

## **2.07 CONSTRUCTION**

- A. Fixtures: Prepare all work for equipment or fixtures to be installed in casework such as sinks, etc., and verify all dimensions of such items.
- B. Cabinet Doors: Doors and hinges shall be installed by the cabinet manufacturer.
- C. Attach tops to base cabinet structures with concealed fasteners. Install laminate on base shelf of sink cabinets.
- D. Scribe Allowance: Provide in all portions of work, abutting other work.

## **2.08 FINISH**

- A. All face frames, drawer faces and doors shall receive semi-transparent finish as stipulated for hardwood under Specification Section 09900.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Install casework with no variations in flushness of adjoining surfaces; use concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.

- B. Install casework without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated.
- C. Install casework and countertop level and plumb to a tolerance of 1/8-inch in 8 feet.
- D. Fasten cabinets to adjacent units and to backing.
  - 1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches on center.
- E. Casework and countertop shall not be installed until the building is thoroughly dry.

**3.02 CLEAN UP**

- A. Hammer or tool marks and marred surfaces or edges will not be acceptable on any exposed finished surfaces and may be cause for rejection of such work.
- B. Repair or replace damaged cabinet work, including warped or loose members.
- C. Clean all surfaces to manufacturer's intended finish. Clean all adjacent surfaces of marks, abrasions, etc., resulting from work specified above. Remove all excess materials and debris resulting from this work from site. Protect all items specified above from damage until acceptance of project.

**END OF SECTION**



## SECTION 08220

### FIBERGLASS ENTRY DOORS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install exterior fiberglass doors with wood door frames as indicated by the Drawings, if any, Scope of Work and specified herein, including installation of finish hardware.

#### PART 2 – PRODUCTS

##### 2.01 GENERAL REQUIREMENTS FOR DOORS AND FRAMES

- A. Doors and frames shall be prepared to receive hardware conforming to the templates and information provided under Section 08705, "Door Hardware". Rubber silencers shall be installed on door frames.

##### 2.02 MANUFACTURER

- A. Therma-Tru
- B. Or approved equal.

##### 2.03 FIBERGLASS ENTRY DOOR

- A. Faces: 1/16" thick fiberglass faces, each side
- B. Door edges: shall be machinable kiln-dried pine, primed to match color of faces, lock edge reinforced with engineered lumber core, lockset area reinforced with solid backing for hardware backup.
- C. Door bottom edge: moisture-proof and decay-proof composite.
- D. Core: Foamed-in-place polyurethane, CFC-free, density 2.0 pcf minimum, K-factor of 0.14 for minimum thermal transmittance.
- E. Style: "Classic-Craft Mahogany" Model CCM60, 6-panel Entry door.

##### 2.04 WOOD FRAME

- A. Milled from 5/4 kiln-dried pine, profiled with 1/2" stop, minimum depth 4-9/16".
- B. Sill anchors shall be furnished for attaching door sills/thresholds to floor.

##### 2.05 MISCELLANEOUS

- A. Furnish and install all accessories and other items required for a complete installation.

- B. Door viewer: Prime Line 200-degree door viewer.
  - 1. One (1) at Entry door, mounted at 54" A.F.F.
  - 2. At Accessible unit: Add another door viewer at +48" A.F.F., max.

### **PART 3 – EXECUTION**

#### **3.01 APPLICATION**

- A. General: Install doors and frames in accordance with ANSI/SDI-100.
- B. Frames
  - 1. Frames shall be set accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
  - 2. The bottom of frames shall be anchored securely to floors with expansion bolts or with powder driven fasteners.
- C. Hanging Doors: All doors shall be expertly hung and shall fit snug against all stops. Fit accurately and hang free from hinge bind with uniform clearance of 3/32" at heads and jambs. After hanging, make all adjustments and then remove lockset hardware for finish painting. Reinstall hardware after finish painting.
- D. Finish Hardware
  - 1. Install accurately and securely without marking or defacing hardware or finish work. Hardware shall be fastened with machine screws or bolts. Sheet metal screws shall not be permitted for attaching hardware. Protect finish hardware with suitable coverings until completion of building. Leave all hardware in perfect working order. Clean and polish.

#### **3.02 FINISH**

- A. Door and doorframe shall receive paint finish as specified under Specification Section 09900.

**END OF SECTION**

## SECTION 07200

### INSULATION

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install all building and sound insulation as shown on Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 06100: Rough Carpentry
  - 2. Section 09250: Gypsum Wallboard

##### 1.02 QUALITY ASSURANCE

- A. All insulation batt shall be from one manufacturer.
- B. Federal Specifications (Fed Spec)
  - 1. HH-I-521F: Insulation blankets, thermal (mineral fiber, for ambient temperatures).

##### 1.03 SUBMITTALS

- A. Manufacturer's Data: Manufacturer's data provided by the manufacturer of the specified item and provide complete descriptive information.

##### 1.04 PRODUCT DELIVERY AND STORAGE

- A. Materials will be delivered to the site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.
- B. Deliver insulation materials in labeled packages bearing manufacturer's name, 'R' value and fiber material.
- C. Store materials on the site in a dry area protected from the weather and moisture.

##### 1.05 PROJECT CONDITIONS

- A. Do not install insulation until construction has progressed to the point that inclement weather will not wet or damage the insulation.

#### PART 2 – PRODUCTS

##### 2.01 MANUFACTURER

- A. Owens-Corning Fiberglass Corporation
- B. Manville
- C. Or equal.

## 2.02 MATERIALS

- A. Exterior Wall Insulation
  - 1. Typical: R-13, flame spread 25 (FS-25) Kraft-faced inorganic fiber thermal batt building insulation.
- B. Attic Insulation: R-38, un-faced inorganic fiber thermal batt or blown-in building insulation.
- C. Soffits: R-19 Kraft-faced inorganic fiber thermal batt building insulation
- D. Sound Insulation: At interior walls provide and install one layer in single walls and two layers in double framed walls of flexible batt or blanket type, mineral or glass fiber, friction fit foil faced with stapling flanges, sized to fill framing space, 5.5 inch or 7.5 inch nominal thickness.
- E. Batt type insulation shall have a maximum flame spread 25 and a maximum smoke density of 450.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. General: Insulation will be installed only when construction has advanced to the point that remaining construction operations will not damage the insulation. Installation, except as otherwise specified, will be in accordance with the manufacturer's approved instructions.
- B. Install blanket and batt type insulation without voids or open spaces in insulated space. Fully insulate small areas between closely spaced framing members. Where end joints are required, butt tightly or overlap.
- C. Comply with manufacturer's instruction for particular conditions of installation in each case.
- D. Between Wood Studs: Friction-fit unfaced insulation between studs after cover material has been installed on one side of the cavity. When unfaced insulation is used, and in applications without a cover material, use wire or metal straps to hold insulation in place. When faced insulation is used staple attachment flanges to face or side of stud every 8 to 12 inches to prevent gaps along the edge of the vapor retarding facing.
- E. Attic Insulation: Install between ceiling joists within attic space unless otherwise noted on the Drawings.
- F. Cut and fit insulation around pipes, conduits, outlet boxes and similar equipment to maintain integrity of insulation. Where pipes occur, place insulation between exterior wall surface and pipe, compressing insulation where required.
- G. Insulate non-standard width spaces by cutting insulation at least one inch wider than space to be filled.
- H. Install friction fit (faced) insulation in stud framing with insulation extended fully into stud cavities. Staple to back of wallboard and/or stud where required to maintain position.

**END OF SECTION**

## SECTION 07311

### ASPHALT SHINGLES

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This Section includes:
  - 1. Asphalt shingles.
  - 2. Underlayment.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 7 Section "Flashing and Sheet Metal" for roof penetration flashings, drip edges, gutters and downspouts, and other sheet metal work.

##### 1.02 DEFINITION

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

##### 1.03 SUBMITTALS

- A. Product data for each type of product specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.
- B. Samples for initial selection in the form of manufacturer's sample finishes showing the full range of colors and profiles available for each type of asphalt shingle indicated.
- C. Samples for verification in the form of 2 full-size units of each type of asphalt shingle indicated showing the full range of variations expected in these characteristics and underlayment, 12 inches square.
- D. Maintenance Data: For each type of asphalt shingle to include in maintenance manuals.
- E. Warranties: Sample of special warranties.

##### 1.04 QUALITY ASSURANCE

- A. Fire-Test-Response Classification: Where products with a fire-test-response classification are specified, provide asphalt shingles identical to those tested according to ASTM E 108 or UL 790 and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify each bundle of asphalt shingles with appropriate markings indicating fire-test-response classification of applicable testing and inspecting agency.
- B. Wind-Resistance-Test Characteristics: Where wind-resistant asphalt shingles are indicated, provide products identical to those tested according to ASTM D 3161 or UL 997 and passed. Identify each bundle of asphalt shingles with appropriate markings of applicable testing and inspecting agency.
- C. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intact.
- B. Handle and store materials at Project site to prevent water damage, staining, or other physical damage. Store rolled goods on end. Comply with manufacturer's recommendations for job-site storage, handling, and protection.
- C. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

### **1.06 PROJECT CONDITIONS**

- A. Weather Limitations: Proceed with installing asphalt shingles only when existing and forecasted weather conditions will permit work to be performed according to manufacturers' recommendations and warranty requirements, and when substrate is completely dry.

### **1.07 WARRANTY**

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by manufacturer agreeing to repair or replace asphalt shingles that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, deformation or deterioration of asphalt shingles beyond normal weathering.
  - 1. Warranty Period: Lifetime Warranty, where the word "lifetime" means as long as the original individual owner of a single family detached residence (or the second owner in certain circumstances) owns the property where the shingles are installed. For owner/structures not meeting above criteria, warranty term is 40 years.

## **PART 2 – PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Manufacturers: Provide the following asphalt shingles:
  - 1. GAF Building Materials Corporation's Timberline HD, Lifetime High Definition Shingles.
    - a. Color: As selected by Agency.
  - 2. Or equal.

## 2.02 ASPHALT SHINGLES

- A. Three-Dimensional, Fiberglass, Laminated Strip Shingles: Mineral-surfaced, self-sealing, laminated, multi-ply overlay construction, fiberglass-based, strip asphalt shingles, complying with both ASTM D 3018, Type I, and ASTM D 3462. Provide shingles with a Class A fire-test-response classification that pass the wind-resistance-test requirements of ASTM D 3161.
- B. Hip and Ridge Shingles: Manufacturer's standard, factory-precut units to match asphalt shingles.

## 2.03 ACCESSORIES

- A. Felt: ASTM D 226 or ASTM D 4869, Type I, asphalt-saturated organic felts, nonperforated.
- B. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- C. Roofing Nails: ASTM F 1667; aluminum, stainless steel, or hot-dip galvanized steel, 0.120-inch diameter barbed shank, sharp-pointed, conventional roofing nails with a minimum 3/8-inch diameter head and of sufficient length to penetrate 3/4 inch into solid decking or at least 1/8 inch through plywood sheathing.
  - 1. Where nails are in contact with flashing, prevent galvanic action by providing nails made from the same metal as that of the flashing.
- D. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch minimum diameter.

## 2.04 METAL FLASHING AND TRIM

- A. General: Comply with requirements in Division 07 Section "Sheet Metal Flashing and Trim."
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item.
  - 1. Apron Flashings: Fabricate with lower flange a minimum of 4 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
  - 2. Open-Valley Flashings: Fabricate in lengths not exceeding 10 feet with 1-inch high, inverted-V profile at center of valley and equal flange widths of 10 inches.
  - 3. Drip Edges: Fabricate in lengths not exceeding 10 feet with 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.
- C. Vent Pipe Flashings: ASTM B 749, Type L51121, at least 1/16 inch thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches from pipe onto roof.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrate for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of asphalt shingles. Do not proceed with installation until unsatisfactory conditions have been corrected.
  - 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provision has been made for flashings and penetrations through asphalt shingles.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Clean substrates of projections and substances detrimental to application. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with noncorrosive roofing nails.
- B. Coordinate installation with flashings and other adjoining work to ensure proper sequencing. Do not install roofing materials until all vent stacks and other penetrations through roof sheathing have been installed and are securely fastened against movement.

### **3.03 INSTALLATION**

- A. General: Comply with manufacturer's instructions and recommendations but not less than those recommended by ARMA's "Residential Asphalt Roofing Manual" or "The NRCA Steep Roofing Manual."
  - 1. Fasten asphalt shingles to roof sheathing with nails.
- B. Underlayment: Install one layer of 30lb. roofing paper on roofs with pitches at 4-in-12 or greater, and two layers of 30 lb. roofing paper on roofs with pitches between 2-in-12 and 4-in-12. Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with felt underlayment nails or roofing nails. A minimum of 1 layer of underlayment is recommended for roofs with a slope of 4 inches per foot (1:3) or more. Install fasteners at no more than 36" o.c.
- C. Flashing: Install metal flashing and trim as indicated and according to details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual" and ARMA's "Residential Asphalt Roofing Manual."



- D. Install asphalt shingles, beginning at roof's lower edge, with a starter strip of roll roofing or inverted asphalt shingles with tabs removed. Fasten asphalt shingles in the desired weather exposure pattern; use number of fasteners per shingle as recommended by manufacturer. Use vertical and horizontal chalk lines to ensure straight coursing.
  - 1. Cut and fit asphalt shingles at valleys, ridges, and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap asphalt shingles at ridges to shed water away from direction of prevailing wind.
  - 2. Use fasteners at ridges of sufficient length to penetrate sheathing as specified.
- E. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

### **3.04 ADJUSTING**

- A. Replace any damaged materials installed under this Section with new materials that meet specified requirements.

**END OF SECTION**

## SECTION 08361

### SECTIONAL OVERHEAD DOORS

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Provide sectional overhead doors.

##### 1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

##### 1.03 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers that have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. Manufacturers: Overhead Door Corp. or pre-approved equal.
- B. Sectional Overhead Doors:
  - 1. Frame and Panels: Galvanized steel frame and steel panels. Overhead Door Corp. Series 281 or pre-approved equal.
  - 2. Panel Profile: Classic Raised Panel.
  - 3. Track Type: Standard track, as needed.
  - 4. Track Type: Low-overhead track, as needed.
  - 5. Electric door operator (as applicable): Overhead Door Corp. Legacy Series Premium Chain Drive Opener or pre-approved equal.
  - 6. Steel Finish: Factory finished.
  - 7. Color: White.
- C. Auxiliary Materials:
  - 1. Lifting handles and locking bars.
  - 2. Automatic reversing control for electrically operated sectional overhead doors. Overhead Door Corp. Save-T-Beam system or pre-approved equal.

**PART 3 – EXECUTION**

**3.01 INSTALLATION**

- A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- B. Install assemblies complete with all hardware, anchors, inserts, supports and accessories. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

**END OF SECTION**

## SECTION 07620

### GUTTERS, SHEET METAL FLASHING AND TRIM

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Roof and roof/wall flashings.
- B. Counterflashings over base flashings, and vent stacks.
- C. Rake edge metal.
- D. Gutters

##### 1.02 QUALITY ASSURANCE

- A. Perform Work in accordance with the following:
  - 1. NRCA (National Roofing Contractor Association) - Roofing Manual.
  - 2. American Society for Testing and Materials (ASTM):
    - a. A123-78: Zinc (hot galvanized) coatings on products fabricated from rolled, pressed, and forged steel shapes, plates, BURS, and strips.
    - b. A525-81: Sheet steel, zinc coated (galvanized) by the hot dip process.
  - 3. Sheet Metal and Air Conditioning Contractors' National Association, Incorporated (SMACNA): Architectural Sheet Metal Manual, Volume One (Third Edition - August, 1979; Second Printing - April, 1980).

##### 1.03 STORAGE AND HANDLING

- A. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation.

##### 1.04 SUBMITTALS

- A. Data indicating size, type and gauge of gutter material. For pre-finished gutters (if indicated in drawings), submit manufacturer's standard color range for selection by Agency.

#### PART 2 – PRODUCTS

## 2.01 FLASHING AND SHEET METAL MATERIALS

- A. General: Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123, A 386, or A 525, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to the weather shall be formed to exclude water.
- B. Galvanized Sheet Metal (for termite shields, flashing, sheet metal, and reglets): Prime finish, 24 gauge galvanized iron, typical, unless otherwise noted (including 22 ga. or heavier at caps and parapets). Where exposed and to be painted, use mill phosphatized material. Use lock forming quality (ASTM A 527) where so required by nature of fabrication.
- D. Solder: ASTM-B32 or B486 as required for materials to be joined.
- E. Electrolysis Barrier: Bituminous paint or asphalt varnish.
- F. Anchorage: Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include slotted inserts, expansion shields, and powder driven fasteners when approved for concrete; toggle bolts and through bolts, lag bolts, and screws for wood. Slotted inserts shall be of types required to engage with the anchors.

## 2.02 GUTTERS, DOWNSPOUTS AND GUTTER GUARDS

- A. Gutters: 22 gauge steel; Fascia Gutter type. 5" gutter for 2x4 rafter tails and 7" gutter for 2x6 rafter tails.
- B. Downspouts and leaders: 22 gauge.
- C. Gutter guard: Ramco Gutter Guard, or equal by Royal-Apex Manufacturing Co., Inc. (908) 753-6414.

## 2.03 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal.
- B. Underlayment: No. 30 asphalt saturated roofing felt.
- C. Sealant: Specified in Section 07900, Joint Sealers.
- D. Reglets: Surface mounted galvanized steel.

## 2.04 FABRICATION

- A. Form components true to shape, accurate in size, square, and free from distortion or defects. Form pieces in longest practical lengths.
- B. Hem exposed edges on underside 1/2"; miter and seam corners. Fabricate vertical faces with bottom edge formed outward 1/4" and hemmed to form drip.

- C. Fabricate flashings to allow toe to extend 2" under roofing. Return and brake edges.

### **PART 3 – EXECUTION**

#### **3.01 EXAMINATION AND PREPARATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.

#### **3.02 APPLICATION**

- A. General
  - 1. Field verify all critical dimensions prior to submission of Shop Drawings and fabrication.
  - 2. Material thickness, anchors, expansion joints, hangers, and other detail requirements shall conform to SMACNA Architectural Sheet Metal Manual recommendations, and as specified herein.

#### **3.03 WORKMANSHIP**

- A. All workmanship shall be good quality in every respect, the sheet metal being assembled and secured with locked seams, soldered, and made watertight. The various sections shall be uniform, the joints at corners and angles being mitered, and the different sections accurately filled and rigidly secured. All exposed edges shall be soldered and beaded or hemmed as required for strength and appearance, and the sheet metal shall be fitted closely and neatly to the framework. Contractor shall provide all cleats and stiffeners required to make all sections rigid.
- B. All flashings and counterflashings of various kinds necessary at all points likely to leak shall be supplied and installed.
- C. All work so required must be perfectly weather and watertight. All sheet metal shall be riveted or lock jointed, blind nailed or screwed and soldered in a secure and strong manner.
- D. Broken places in metal coating made in forming shall be completely soldered over.
- E. All joints in manufactured sheet metal which are to be soldered shall be dove tailed together. Solder shall be sweated and shall completely and thoroughly fill in all joints.

#### **3.04 SEAMS**

- A. Seams shall conform to the following requirements.
  - 1. Flat lock seams shall finish not less than 1" wide.
  - 2. Soldered lap seams shall finish not less than 1" wide.
  - 3. Unsoldered plain lap seams shall lap not less than 3", unless otherwise specified.
  - 4. Flat seams shall be made in the direction of the flow.

**3.05 TERMITE SHIELDS**

- A. Termite Shields shall be fabricated from galvanized steel.
- B. Joints shall be lapped 3/4" minimum and soldered or flat locked.
- C. Corners shall be notched, filled and soldered.

**3.06 INSTALLATION**

- A. Conform to drawing details T-1, T-2, T, and V included in NRCA manual.
- B. Install starter and edge strips, and cleats.
- C. Apply plastic cement compound between metal work and felt flashings.
- D. Fit components tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Seal metal joints watertight.
- F. At fascia and rake edge metal, apply flashing over felt underlayment and under roofing material.

**3.07 FINISH**

- A. Exposed portion of termite shields, flashing, sheet metal, etc. shall receive paint finish as specified under Section 09900.

**END OF SECTION**

## SECTION 07900

### SEALANTS AND CAULKING

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install all sealants, sealant back up material, and mastics as required for a weathertight building and as specified herein.

##### 1.02 QUALITY ASSURANCE

- A. Federal Specification (Fed Spec) TT-S-00227E and Amendment- 2: Sealing compound, elastomeric type, multi-component.
- B. Fed Spec TT-S-001543A: Sealing compound, silicone rubber base.
- C. Fed Spec TT-S-00230C and Amendment-2: Sealing compound, elastomeric type, single component.
- D. Fed Spec TT-S-001647: Sealing Compound-Single Component, Butyl Rubber Based, Solvent Release Type (for Buildings and Other Types of Construction).

##### 1.03 DELIVERY AND STORAGE

- A. Materials shall be delivered to the job in the manufacturer's original unopened containers. The containers shall include the following information on the label: Supplier, name of material, formula or specification number, lot number, color, date of manufacture, mixing instructions, shelf life, and curing time, when applicable at the standard conditions for laboratory tests. Caulking compound or components outdated as indicated by shelf life will not be used. Materials shall be carefully handled and stored to prevent inclusion of foreign materials or exposure to temperatures exceeding 90 degrees Fahrenheit. Sealant tape shall be handled and stored in a manner that will not deform the tape.

##### 1.04 ENVIRONMENTAL REQUIREMENTS

- A. The ambient temperature shall be within the limits specified by the manufacturer.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. General: Caulking and sealants, primers and accessories shall be non-staining to adjacent exposed materials. Products having similar application and usage shall be of the same manufacturer and type. Unless otherwise specified, colors will be selected from approved manufacturer's standard range. Use gun consistency compounds unless otherwise required by project conditions.
- B. Primer: Primer shall be as recommended by the sealant manufacturer. Primer shall have been tested for durability with the sealant to be used and on samples of the surfaces to be sealed.
- C. Backing Material: Backing material shall be resilient urethane or polyvinyl chloride foam, closed cell polyethylene foam, closed cell sponge of vinyl or rubber, polychloroprene tubes



or beads, polyisobutylene extrusions, oilless dry jute, or rope yard. Backing material shall be nonabsorbent, nonstaining, and compatible with the sealant used. Tube or rod stock shall be rolled into the joint cavity.

D. Sealants

1. Exterior: One or two component polysulfide liquid polymer base rubber compounds, which cure at normal temperature to a flexible firm rubber, tack free, paintable, in gun grade consistency, conforming to Fed Spec TT-S-00230C, Type II, Class A or B, or Fed Spec TT-S-001543A, Class A or B (for one component), and Fed Spec TT-S-00227E, Type II, Class A or B (for two components). Use "DAP Flexiseal Polysulfide Polymer Sealer", Presstite Number 1176 "Strucsureseal," or A.C. Horn's "Hornflex LP-32" polysulfide sealant, or equal. Color of sealants shall match color of adjacent work.
2. Interior: Butyl based compound, smooth flowing, single component, architectural grade, synthetic, general purpose caulking compound, composed of 80% to 100% solids, butyl, nonoily, nonhardening, curing to a tack free surface, paintable, in gun grade consistency conforming to Fed Spec TT-S- 001657, Type I or II. Use "DAP Butyl Flex Caulking Compound", Presstite Number 432 "Butyl Caulk", A.C. Horn's "Vulcatex Elastic Caulking Compound", or equal. Color of caulking and sealants shall match color of adjacent work.

E. Mastic: Where mastic is shown or noted, it shall be the general purpose butyl based caulking compound hereinbefore specified, except that it shall be knife or trowel consistency. Exterior applications exposed to weather shall be the polysulfide sealant hereinbefore specified in knife or trowel consistency.

F. Firestopping

1. Penetrations in fire-rated assemblies shall be treated with a firestopping system equal to each fire-rated assembly.
2. Firestopping system shall have UL Design Number (listed in the Underwriters Laboratories, Inc. "Fire Resistance Directory") for required fire-rating.

G. Miscellaneous: Furnish and install all materials required to provide a weathertight and watertight installation. All sealants and caulking materials shall be compatible with adjacent surfaces.

## PART 3 – EXECUTION

### 3.01 SURFACE PREPARATION

- A. General: The surfaces of joints to be sealed shall be dry. Oil, grease, dirt, chalk, particles of mortar, dust, loose rust, loose mill scale, and other foreign substances shall be removed from all joint surfaces to be sealed. Oil and grease shall be removed with solvent and surfaces shall be wiped with clean cloths.
- B. Steel Surfaces: Steel surfaces to be in contact with sealant shall be sandblasted, or, if sandblasting would not be practical or would damage adjacent finish work, the metal shall be scraped and wire brushed to remove loose mill scale. Protective coatings on steel surfaces shall be removed by sandblasting or by a solvent that leaves no residue.
- C. Aluminum Surfaces: Aluminum surfaces of windows in contact with sealants shall be cleaned of temporary protective coatings. When masking tape is used for a protective cover, the tape and any residual adhesive shall be removed just prior to applying the

sealant. Solvents used to remove protective coatings shall be as recommended by the manufacturer of the aluminum work and shall be nonstaining.

### **3.02 APPLICATION**

- A. Paper Masking Tape: Paper masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or compound smears. Masking tape shall be removed within ten minutes after the joint has been filled and tooled.
- B. Backing: The back or bottom of joints constructed deeper than indicated shall be packed tightly with backstop material to provide a joint of the depth indicated. Where necessary to provide a backstop for caulking compound, the joint shall be packed tightly with rope yarn.
- C. Primer: Primer shall be used on concrete masonry units, wood, or other porous surfaces in accordance with instructions furnished with the sealant. Primer shall be applied to the joint surfaces to be sealed. Surfaces adjacent to joints shall not receive primer.
- D. Sealant: Compound shall be gun applied with a nozzle of proper size to fit the width of joint indicated and shall be forced into grooves with sufficient pressure to expel air and fill the groove solidly. Sealant shall be uniformly smooth and free of wrinkles. Joints shall be tooled slightly concave after sealant is installed. When tooling white or light color sealant, dry or water wet tool shall be used.

### **3.03 FIRESTOPPING**

- A. Install firestopping systems in accordance with manufacturer's written instructions and UL Design requirements.

### **3.04 CLEANING**

- A. The surfaces adjoining the caulked and sealed joints shall be cleaned of smears and other soiling resulting from the caulking and sealing application as work progresses. Remove wet material before it "sets". Follow manufacturer's recommendations for cleaning procedures. Cleaning agents shall not stain or be injurious to exposed surfaces nor shall they be potentially dangerous to glass and metal surfaces due to wash-off by rain.

**END OF SECTION**

## SECTION 08640

### VINYL WINDOWS

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install vinyl frame windows with dual-pane insulating units and accessories as shown on Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 06100: Rough Carpentry
  - 2. Section 06067: Plastic Laminate Face Panels
  - 3. Section 07920: Sealants and Caulking
  - 4. Section 09250: Gypsum Wallboard

##### 1.02 QUALITY ASSURANCE

- A. AAMA Publication 101V-86 for types of windows specified.

##### 1.03 SUBMITTAL

- A. Manufacturer's Data: Manufacturer's data consists of specifications and engineering data printed and provided by the manufacturer of the specified item and provide complete descriptive information.
- B. Manufacturer's Written Instructions: Manufacturer's written instructions shall consist of data printed and provided by the item manufacturer which provide installation and maintenance information of the product specified herein.
- C. Shop Drawings:
  - 1. Drawings shall show elevations of units, full size sections, thicknesses of metal, reinforcing, fastenings, methods of installation and anchorage, size and spacing of anchors, method of glazing, locations of hardware, mullion details, method and material for weatherstripping, details of installations, connections with other work and window schedule showing locations.
  - 2. Shop Drawing shall incorporate both window and window actuator (at locations shown on Drawings).
- D. Samples: 12" long section of extrusion in specified finish.
- E. Certificate of Compliance: AAMA label certifying performance of window for rate of air infiltration (per ASTM E283), water resistance (per ASTM E547) and structural performance (per ASTM E330) as indicated in AAMA publication 101V-86.
- F. Submittals shall clearly identify any variations from Contract Documents.

#### 1.04 PRODUCT STORAGE

- A. Materials shall be stored out of contact with ground and under weathertight cover.

### PART 2 – PRODUCTS

#### 2.01 GENERAL, WINDOWS

- A. Air Infiltration: No more than 0.15 cfm per square foot of overall frame area at an inward test pressure of 1.57 psf.
- B. Water Penetration: No water penetration as defined in test method at an inward test pressure of 3.0 psf.
- C. Structural Performance: No glass breakage, damage to hardware, permanent deformation that impairs operation of window, or residual deflection at a positive (inward) and negative (outward) test pressure of 37.5 psf.
- D. Material: Extruded, high impact resistant, rigid polyvinyl chloride (PVC).
- E. Welds: Dressed and finished to match surround frame area.
- F. Finish
  - 1. Color shall be solid (homogeneous) frame color.
  - 2. Color: **White.**
- G. Weatherstripping
  - 1. All operable sash members shall be double weatherstripped with extruded EPDM.
  - 2. Weatherstripping shall be replaceable without the use of special tools.
- H. Hardware: Manufacturer's standard hardware fabricated from non-corrosive material.
- I. Glazing Stops
  - 1. Screw applied or snap-on glazing stops (beads) coordinated with glass section.
  - 2. Finish glazing stops to match exterior window finish.

#### 2.02 WINDOW MANUFACTURER

- A. Manufacturer
  - 1. Milgard Vinyl Windows
  - 2. Alpine Windows

### **2.03 WINDOWS**

- A. Milgard "Styline Series"
- B. Alpine "70 Series"
- C. Cascade "WinPro Series"
- D. Approved equal.

### **2.04 GLAZING**

- A. Insulated Glass Units: ASTM E 774, Class A, 7/8 inch.
- B. Glazing Type: Clear over Low-E.
- C. Insect Screen.
  - 1. Removable Screen required at each operable sash.
  - 2. Frame: Cambered aluminum, reinforced with rigid plastic corner clips.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Field verify dimensions prior to fabrication.
- B. Determine locations and provide tempered glass where required.

### **3.02 INSTALLATION**

- A. Install windows in accordance with Shop Drawings. Ensure assemblies are plumb, level, and free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- B. Use sufficient anchorage devices to securely and rigidly fasten door and frame assemblies to building.
- C. Install perimeter sealant and related backing materials in accordance with workmanship and installation requirements indicated in Section 07920.

**END OF SECTION**

## SECTION 08710

### FINISH HARDWARE

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish all finish hardware complete as shown on the Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 08200: Wood Doors
  - 2. Section 09900: Painting

##### 1.02 QUALITY ASSURANCE

- A. American National Standards Institute (ANSI) Standards
  - 1. A156.1-1981: Butts and hinges.
  - 2. A156.2-1976: Locks and lock trim.
  - 3. A156.4-1980: Closers.
  - 4. A156.6-1979: Architectural door trim.
  - 5. A156.7-1981: Template hinge dimensions.
  - 6. A156.16-1981: Auxiliary hardware.
- B. Builders' Hardware Manufacturers Association (BHMA) Standards
  - 1. Directory of Certified Locks and Latches (effective through June 1983).
  - 2. 1301-1982: Materials and finishes.
- C. Door and Hardware Institute (DHI) Publication
  - 1. Keying - Procedure, Systems, and Nomenclature (January 1978).
  - 2. Recommended locations for Builders' Hardware for standard steel doors and frames (1975).
  - 3. The installation of commercial steel doors and steel frames, insulated steel doors in wood frames, and Builders' Hardware (1977).

##### 1.03 PRODUCT DELIVERY

- A. Hardware shall be delivered to the project site in the manufacturer's original packages.
- B. Each article of hardware shall be individually packaged in the manufacturer's standard commercial carton or container, properly marked or labeled so as to be readily identifiable with the approved hardware schedule.

- C. Each change key shall be tagged or otherwise identified with the door for which its cylinder is intended.
- D. Where double cylinder functions are used or where it is not obvious which is the key side of a door, appropriate instructions shall be included with the lock and on the hardware schedule.

#### **1.04 FINISH**

- A. The finish of all hardware, unless otherwise noted, shall be US3 "Polished Brass".

### **PART 2 – PRODUCTS**

#### **2.01 FASTENINGS**

- A. Fastenings of proper type, size, quantity, and finish shall be supplied with each article of hardware.
- B. Machine screws and expansion shields shall be used for attaching hardware to concrete, stone, or other masonry.
- C. Fastenings exposed to the weather in the finished work shall be of brass, bronze, or stainless steel, as applicable.
- D. Sex bolts, through bolts, or machine screws and grommet nuts, where used on reverse bevel exterior doors equipped with half surface or full surface hinges, shall employ one way screws or other approved tamper proof screws.

#### **2.02 HINGES, BUTTS AND PIVOTS**

- A. Templates: Except for hinge/butts and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template produced units.
- B. Screws: Furnish and install Phillips flat-head all purpose or machine screws for installation of units, except furnish Phillips flat-head all purpose or wood screws for installation of units into wood. Furnish screws heads to match surface of hinge/butt or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
  - 1. Steel Hinges: Steel pins.
  - 2. Non-Ferrous Hinges: Stainless steel pins.
  - 3. Exterior Doors: Non-removable pins; set screw in the barrel.
  - 4. Interior Doors: Non-rising pins.
  - 5. Tips: Flat button and matching plug, finished to match leaves.
  - 6. Number of Hinges: Furnish and install number of hinges/butts indicated but not less than 3 hinges per door leaf for door 90 inches or less in height.

## **2.03 LOCKS, LATCHES AND BOLTS**

- A. Strikes
  - 1. Furnish manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.
  - 2. Furnish standard (open) strike plates for interior doors of residential units where wood door frames are used.
- B. Lock Throw
  - 1. Deadlock bolts at exterior doors shall have one inch minimum throw.
  - 2. Other latches shall have 1/2 inch minimum throw.

## **2.04 MANUFACTURER**

- A. Locksets, Latchsets, Padlocks, and Cylinders
  - 1. Kwikset or approved equal.
- B. Deadbolts
  - 1. Kwikset or approved equal.
- C. Butts
  - 1. Stanley
  - 2. Hager
  - 3. McKinney
  - 4. Approved equal.
- D. Door Stop (Bumper)
  - 1. Ives
  - 2. Builders Brass Works
  - 3. Stanley
  - 4. Approved equal.

## **2.05 HARDWARE**

- A. The following schedule established the hardware headings required for the various items and locations.
- B. For locations of these headings on the individual doors, refer to the Drawings.
- C. The following schedule is not necessarily all inclusive.
  - 1. All doors shall be furnished complete with appropriate hardware.



2. Contractor shall establish a complete list of all doors from the Drawings.
3. All items required for the operation of doors not specified under other Specification Sections shall be furnished and install under Specification Section 08710.

## 2.06 HARDWARE SCHEDULE (QUANTITIES PER LEAF)

### A. Hardware Group "A" Exterior Doors

1 Deadbolt & Entry Lever	Kwikset Balboa Satin Nickel Model 690BL 15 CP K6
1-1/2 pair butts	Stanley 3.5"x3.5" Satin Nickel
1 wall bumper	Ives 406 1/2 with wood screw, satin.
1 door viewer	Prime Line 200-degree door viewer (Entry door only)

### B. Hardware Group "B" Typical Interior Door

1 latchset (passage)	Kwikset Balboa Satin Nickel passage door lever
1-1/2 pair butts	Stanley 3.5"x3.5" Satin Nickel
1 wall bumper	Ives 406 1/2 with wood screw, satin

### C. Hardware Group "C" Interior Bathroom Doors

1 latchset (privacy)	Kwikset Balboa Satin Nickel bed/bath lever
1 pair butts	Stanley 3.5"x3.5" Satin Nickel
1 wall bumper	Ives 406 1/2 with wood screw, satin

## PART 3 – EXECUTION

### 3.01 GENERAL

- A. Hardware shall be located on doors in accordance with DHI publication "Recommended Locations for Builders' Hardware for Standard Steel Door and Frames", State of California Code of Regulations (CCR) Title 24 "Disabled Access Regulations" and the Americans with Disabilities Act (ADA).
- B. Application shall be in accordance with DHI publication "The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames, and Builders' Hardware".
- C. Hardware shall be installed in compliance with the manufacturer's written instructions and recommendations.
- D. Where cutting and fitting is required to install hardware onto or into surfaces which are subsequently to receive a paint or other type of finish, coordinate removal, storage and reinstallation or application of hardware after application of finish. Do not install hardware until finishes are completely dried.
- E. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate (solid blocking) as necessary for proper installation and operation.
- F. Drill and counter sink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with the manufacturer's written instructions.

**3.02 ADJUST AND CLEAN**

- A. Adjust and check each operating item of hardware and each door to ensure proper operation and function.
- B. Replace hardware which cannot be adjusted to operate freely and smoothly.
- C. Final Adjustment: When hardware is installed one month (or longer) prior to Substantial Completion, Contractor shall check, adjust or replace hardware as a part of the Project Closeout Procedures.

**END OF SECTION**

## SECTION 09201

### LATHING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Work Included: Lathing work required for the project including:
  - 1. Installation of plaster frames furnished under other Sections and which occur in plaster base surfaces.
- B. Related Work Specified Elsewhere:
  - 1. Section 06100 Rough Carpentry.
  - 2. Section 07600 Sheet Metal.
  - 3. Section 09205 Plastering.
  - 4. Section 09900 Painting.

##### 1.02 REFERENCES

- A. The following references, codes and standards are hereby made a part of this Section. Lathing work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work which is contrary to code requirements.
  - 1. "Specifications for Metal Lathing and Furring", and "Technical Bulletins", published by Metal Lath/Steel Framing Association, latest editions.
  - 2. "Reference Specifications for Lathing, Furring and Plastering in California", published by California Lathing and Plastering Contractors' Association, Inc., latest edition.
  - 3. California Building Code.

##### 1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, bundles, or rolls as applies, properly labeled or identified as to contents and manufacturer. Protect metal items from rusting.

#### PART 2 – PRODUCTS

##### 2.01 MATERIAL

- A. Expanded Metal Lath: Bostwick, Milcor, National Gypsum Co., USG, Western, or approved equal, and conforming to Fed. Spec. QQ-L-101.
  - 1. Expanded Diamond Mesh: 3.4# diamond steel mesh, coated with rust inhibitive paint for interior applications and galvanized for exterior use.

2. Flat Rib Lath: 3.4# flat rib steel mesh, coated with rust inhibitive paint for interior applications and galvanized for exterior use.
  3. 3/8" Rib Lath: 3.4# herringbone steel mesh, coated with rust inhibitive paint for interior applications and galvanized for exterior use.
- B. Paper Backing: Grade "D", 60 min. Waterproof paper per UBC Standard or approved equal - 2 layers minimum over solid sheathing.
- C. Wire Lath (Stucco Netting): Self-furring, galvanized welded wire fabric, 1-1/2" x 2" mesh, 16 x 16 ga. Keystone "Keymesh", or approved equal self-furring, galvanized woven wire, 1-1/2" x 17 ga. mesh with 18 ga. horizontal line wires at 6" c-c and Grade "D" waterproof paper backing. Provide two (2) layers of Grade "D" paper over solid sheathing. Grade "D" paper shall be 60 minute.
- D. Accessories:
1. Wire: Fed. Spec. QQ-W-462, Class 1, galvanized and annealed steel.
    - a. Hangers: As per recommendations of listed References, Codes and Standards documents for runner spans and spacings used (in general, 8 gage).
    - b. Tie wire not otherwise specified: 18 ga. or heavier.
    - c. Tie wire for attaching ceiling furring channels and for stud shoes at partitions: 16 ga.
  2. Casing Beads: 24 ga. expanded flange, square unless otherwise indicated, galvanized.
  3. Corner Beads: Keystone "Key Corner", galvanized.
  4. Screeds: 26 ga. expanded or short flange as required, galvanized. Use drip screed or mould at bottom of vertical cement plaster surfaces.
  5. Aluminum Plaster Mouldings: Extruded aluminum with clear finish.
    - a. As manufactured by Fry Corporation, or Superior Metal Trim.
    - b. Manufacturer numbers are used on Drawings to indicate profiles required.
    - c. Runs shall be made up of longest metal lengths possible.
    - d. Field paint before application: See Section 09900, Painting.
  6. Drip screed with vent (at stucco soffits): Flannery Drip Screed DS-875 with Vent Slots, Fry Reglet DS-375-V875, or approved equal.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Inspect surfaces to receive lathing materials and report defects. Commencing work implies acceptance of surfaces.

### 3.02 PREPARATION

- A. Coordinate lathing work with other work supporting, adjoining, or fastening to same.
- B. Coordinate with trades responsible for access doors and plaster frames with exact locations subject to Architect's approval.
- C. Plaster moldings, reveal expansion joints, ventilating screeds and other similar trim items embedded in plaster surfaces shall be repainted prior to installation. Coordinate with Painting Section.

### 3.03 INSTALLATION

- A. Except where modified herein, conform to requirements of listed References, Codes and Standards and to approved manufacturer's specifications. In event of conflict, assume most stringent requirements and secure instructions from Architect before proceeding.
- B. Include non-structural welding required for proper installation of lathing work.
- C. Install accessory trim with pieces straight, aligned, plumb, and level, corners mitered and smooth. Provide outside corners in Portland cement plaster with corner beads. Provide metal plaster grounds at edges of plasterwork. Cut lath full length at expansion and control joints. Hold metal lath 1/4" clear of items such as electrical boxes, columns, etc., projecting through plaster surfaces. Install aluminum mouldings level or plumb and aligned without offsets. Fasten with concealed galvanized fasteners at each bearing point (24" o.c. max.). Lap felt over flanges to prevent direct contact between lath and molding.
- D. Lathing: Where not otherwise noted or specified, weights and types of expanded metal lath shall be in accordance with requirements of the listed References, Codes and Standards documents for sizers, spacings, and types of framing and furring members used.
  - 1. Types and Locations:
    - a. Vertical Cement Plaster on Framing: Paper-backed stucco netting. Provide two (2) layers, grade D minimum, over solid sheathing.
    - b. Horizontal Cement Plaster (Wood Supports): Expanded diamond mesh for supports spaced 12" cc max.; 3/8" rib lath for supports spaced 24" cc max; flat rib lath for supports.
    - c. Nail expanded metal and rib lath to wood frame ceiling and soffits at 6" intervals along each support with 1-1/2" x 11 ga. barbed and galvanized roofing nails with 7/16" head or 1 1/4" x 16 ga. power driven galvanized staples at 6" cc or at ribs.
    - d. Attach stucco netting to wood framing at 6" intervals with 1-1/2" x 11 ga. galvanized and barbed, 7/16" head roofing nails, or 7/8" leg x 16 ga. power driven, galvanized staples, attachments at furring crimps.
    - e. Apply expanded metal lath over solid wood surfaces exceeding 6" in width over two ply of felt.

**END OF SECTION**

## SECTION 10186

### TUB/SHOWER SURROUNDS CULTURED MARBLE

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Labor, materials and equipment necessary to provide and install cultured marble 3-piece tub and shower wall surrounds with required adhesives and trim to ensure a watertight installation, as shown on the drawings or as otherwise specified.
- B. Work included in this Section includes but is not necessarily limited to the following:
  - 1. Field Measurement
  - 2. Fabrication
  - 3. Installation
  - 4. Caulking
  - 5. Coordination with other trades
  - 6. Cleaning

##### 1.02 SUBMITTALS

- A. Product Data: Indicate product description, fabrication information and compliance with specified performance requirements. Include information on accessories, sealants and adhesives.
- B. Selection Samples: Submit 2" x 2" actual samples of surfacing materials to illustrate full range of colors, patterns, and finishes available.
- C. Maintenance information: Submit manufacturer's care and maintenance data, including repair and cleaning instructions.
- D. Warranty: As specified elsewhere in this Section.

##### 1.03 REFERENCES

- A. ANSI Z-124.1 - American National Standard for Plastic Fabrications; American National Standards Institute.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association.

#### **1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Member of International Cast Polymer Alliance (ICPA), with not less than five years of experience in manufacturing products similar to those required for this project.
- B. Use skilled workmen who are trained and experienced in the necessary trades and crafts and familiar with the specifications and methods needed to properly perform the work of this section.

#### **1.04 PROJECT CONDITIONS**

- A. Field Measurements: Verify bathroom dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.

#### **1.04 DELIVERY, STORAGE AND HANDLING**

- A. Do not deliver cast marble materials until painting and similar operations that could damage the cast marble have been completed in installation areas.
- B. Packing and Shipping: Pack countertops, tub and shower surrounds, and other flat products in wooden crates to minimize shipping damage. Palletize other components.
- C. Check for shipping damage during unloading at site and notify manufacturer immediately of any obvious damage.
- D. Store products under shelter, off the ground, and protected from moisture. Materials must be at room temperature prior to installation. Handle products to prevent physical damage. Protect surfaces from staining, scratching, and other damage during handling and installation.

#### **1.05 WARRANTY**

- A. Provide manufacturer's 5-year Limited Warranty on wall panels and trim kits.

### **PART 2 – PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Cultured Marble Products, Ltd., Sacramento. <http://www.cmpltd.com>
- B. Approved equal.

#### **2.02 STYLE**

- A. Tub surrounds: 3-piece Tub Surround
- B. Shower surrounds: 3-piece Shower Surround
- C. Color: To be chosen from manufacturer's standard palette.

#### **2.03 MATERIALS**

- A. Materials shall be new, free of defects impairing their strength, durability or appearance, and of the best commercial quality for the purposes noted. Adhesives used shall be fire-, water- and mildew resistant in their cured state.

- B. Accessories: Supply materials for installation of products as specified in manufacturer's printed installation instructions, including color matched silicon sealant and adhesives where applicable.
- C. Caulking: Watertight, mildew resistant silicone or sealant equal to or better than the requirements of Federal Specification TT-S-001543A and ASTM-C920, Type -S, NS, Class 25.

### **PART 3 – EXECUTION**

#### **3.01 FABRICATION**

- A. Use molds materials, methods, and procedures that will result in proper texture and finish.
- B. Fabricate to required profiles and dimensions. Wherever possible, fabricate each unit as a continuous piece, without joints, while minimizing on-site cutting or other modifications.
- C. Hand sand all edges smooth; provide uniform finish on all exposed surfaces.
- D. Label each side panel to identify finished edges for ease of install. i.e. "Left Hand Side Panel Finished Edge" and "Right Hand Side Panel Finished Edge".

#### **3.02 INSTALLATION**

- A. Install system level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to other adjacent construction.
- B. Apply sealant per sealant manufacturer's recommendations at joints, wipe excess, and leave exposed sealant surfaces clean and smooth for watertight construction.
- C. Securely fasten to existing walls using system adhesive, in compliance with manufacturer's instructions.
- D. Cut trim pieces on site for exact fit. Scribe to adjacent finishes. Install in compliance with manufacturer's instructions.
- E. Remove all dust and other contaminants from back of panels. Do not use water or denatured alcohol to clean back of panel. Use dry cloth.

#### **3.03 PROTECTION**

- A. Protect installed product and finished surfaces from damage during construction, until completion of project.

**END OF SECTION**



## SECTION 09205

### PLASTERING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Work Included: Plastering work required for the project to receive a paint finish.
- B. Related Work Specified Elsewhere:
  - 1. Section 06100 - Rough Carpentry – Sheet Flashings.
  - 2. Section 07600 - Sheet Metal.
  - 3. Section 07920 - Caulking and Sealants.
  - 4. Section 09201 - Lathing.
  - 5. Section 09900 - Painting.

##### 1.02 REFERENCES

- A. The following references, codes and standards are hereby made a part of this Section. Plastering work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work which is contrary to code requirements.
  - 1. "Reference Specifications for Lathing, Furring and Plastering in California" published by California Lathing and Plastering Contractors' Assn., Inc., latest edition.
  - 2. California Building Code.

##### 1.03 SYSTEM DESCRIPTION

- A. Fire rated plaster assemblies, including materials and methods of application used, shall be approved by the ICBO.

##### 1.04 SUBMITTALS

- A. Comply with requirements of Shop Drawings, Product Data and Samples Section.
- B. Samples: Submit samples for approval of textured plaster finishes, 12" x 12" minimum size for each sample.

##### 1.05 DELIVERY AND STORAGE OF MATERIALS

- A. Only unopened packages of material (except aggregates) bearing manufacturer's and brand names will be permitted. Store cement and lime under watertight cover away from sweating walls and damp surfaces until ready for use. Remove from site damaged or deteriorated materials.

## 1.06 PROTECTION

- A. Protect adjacent finishes and surfaces from damage or stains during plastering operations. Where machine application of plaster is employed, adjacent surfaces shall be masked or similarly protected and overspray and droppings removed before material sets. Particular attention shall be paid to protection of glass and metal surfaces against etching caused by alkaline materials and moisture runoff or drainage therefrom.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Stucco Finish Coat: Texture TBD
- B. Lime: ASTM C 206, Type "S" finishing hydrate.
- C. Portland Cement: ASTM C 150, Type II. Plastic cement not acceptable.
- D. Aggregates: Sand for Portland Cement Plaster: ANS A 42.2, natural or manufactured sand graded as follows:

1. Percent Retained Each Sieve (By Weight)

Sieve Size	Min.	Max.
#4	-	0
#8	0	10
#16	10	40
#30	30	65
#50	70	90
#100	95	100

- E. Water: Clean and potable, free of silt and impurities detrimental to plaster.
- F. Bonding Agent: Larsen Products Corp. "Weld-Crete", or approved equal.

### 2.02 MIXES

- A. Portland Cement Plaster Proportions:
- Scratch and Brown Coats (By Volume): 1 part Portland Cement, 3-1/2 to 4-1/2 parts sand, 1/10 part maximum dry hydrated lime or equivalent in lime putty. On expanded metal lath, 1 lb. of fiber per sack of cement will be permitted for scratch coat.
  - Finish Coat: Prepared finish coat requiring addition of water only, texture to be determined by Housing Authority. It is essential that proportions of water material be kept constant to produce an even, uniform surface.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

- A. Inspect surfaces to receive plaster finishes and report defects. Starting work implies acceptance of surfaces as satisfactory.
- B. Apply no plaster to concrete or masonry surfaces which have been coated with bituminous compounds or other detrimental waterproofing agents.

- C. Examine grounds, beads, screeds, etc., and determine that they are straight, curved, plumb, level or square as required.

### 3.02 PREPARATION

- A. Properly prepare surfaces to receive plaster in accord with manufacturer's directions and the requirements of the listed References, Codes and Standards documents.

### 3.03 INSTALLATION

- A. General:
  - 1. Methods of mixing and application of plaster shall conform to requirements of the listed References, Codes and Standards documents and the specifications of approved manufacturers of particular products or systems.
  - 2. Measure material for plastering work in calibrated measuring boxes. Shovel measurement is not acceptable.
  - 3. Make overnight jointing at natural breaking points such as vertical arrises, expansion joints, angles, and changes in plane. Each coat of plaster for an entire surface from top to bottom and between natural breaking points shall be applied in one day.
  - 4. Where basecoat plaster finishes flush with metal frames, etc., cut plaster free from such materials before "set". Neatly groove finish coat at such junctions.
- B. Application - Portland Cement Plaster:
  - 1. Unless otherwise noted, apply plaster on metal lath in 3 coats with a minimum thickness of 7/8", finished face to back of lath.
  - 2. Do leveling of scratch and brown coats of Portland Cement plaster surfaces with a straightedge (rod) only and not with a darby or float.
  - 3. Not less than 48 hours shall elapse between application of scratch and brown coats and not less than 7 days between application of brown and finish coats.
  - 4. Moist cure each base coat of plaster for not less than 48 hours. In hot, dry, windy weather, fog spray periodically as required to prevent dryouts, glazed areas and bloom.
  - 5. Apply finish coats over uniformly damp surfaces free of surface water.
  - 6. Separate structural members, outlet boxes, frames, louvers, and similar penetrations from the plaster by a neat trowel cut.
- C. Surfaces and Tolerances: Finish exposed surfaces true and even, without objectionable waves, cracks, or imperfections. Provide plaster suitable to form proper foundation for trim, moldings, paint and other finishing materials.

**3.04 ADJUSTING**

- A. Prior to acceptance of the project, damage, cracks, checks, discolorations and other imperfections in the work, including damage caused by other trades and damage due to shrinkage and minor structure movements of the building, shall be cut out full depth and patched to match adjoining surfaces. Costs for repair of damage caused by other trades shall be borne by those responsible for the damage.

**3.05 CLEANING**

- A. During the course of the work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave work in clean condition.

**END OF SECTION**

## SECTION 09250

### GYP SUM BOARD

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

- A. Scope: Furnish and install gypsum board, accessories, treat joints and corners and finish texture as shown on Drawings and specified herein.
- B. Related Work Specified Elsewhere
  - 1. Section 06100: Rough Carpentry
  - 2. Section 07200: Insulation
  - 3. Section 09900: Painting

##### 1.02 QUALITY ASSURANCE

- A. Single Source: Gypsum board products to be from a single manufacturer or from manufacturers as recommended by the manufacturer of gypsum boards.
- B. United States Gypsum's (USG) Gypsum Construction Handbook (1982).
- C. American Society for Testing and Materials (ASTM)
  - 1. ASTM-C36: Gypsum wallboard.
  - 2. ASTM-C442: Gypsum backing board.
  - 3. ASTM-C475: Joint treatment materials.
- D. California Code of Regulations (CCR) Title 24.

##### 1.03 SUBMITTALS

- A. Manufacturer's Data: Manufacturer's data consists of specifications and engineering data printed and provided by the manufacturer of the specified item and provide complete descriptive information.
- B. Manufacturer's Written Instructions: Manufacturer's written instructions shall consist of data printed and provided by the item manufacturer which provide installation information of the product specified herein.
- C. Samples: 24" x 24" samples of gypsum board with specified finish texture.
- D. Submittals shall clearly identify any variations from Contract Documents.

##### 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

- B. Store materials inside under cover and in a manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion, and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends, or surfaces. Protect metal corner beads and trim from being bent or damaged.

#### **1.05 ENVIRONMENTAL CONDITIONS**

- A. In cold weather (outdoor temperatures less than 55 degrees Fahrenheit), controlled heat in the range of 55 degrees to 70 degrees Fahrenheit must be provided. Heat must be maintained both day and night, twenty-four hours before, during, and after entire gypsum panel and joint treatment application and until the permanent heating system is in operation or the building is occupied.
- B. Ventilation shall be provided to eliminate excessive moisture. Under slow drying conditions, allow extra drying time between coats of joint compound. Avoid drafts during hot, dry weather to prevent too rapid drying.

### **PART 2 – PRODUCTS**

#### **2.01 MANUFACTURER**

- A. United States Gypsum (USG).
- B. Gold Bond Building Products.
- C. Or equal.

#### **2.02 GYPSUM BOARD**

- A. Typical Interior Gypsum Board: 1/2" thick at walls, and 5/8" thick at ceilings, unless otherwise noted on Drawings, 4'-0" wide, tapered edges in lengths as long as practicable.
- B. Interior Bathroom Backing Board and Bathroom Wall Gypsum Board: 1/2" thick at walls, 5/8" thick at ceilings, unless otherwise noted on Drawings, Moisture and Mildew Resistant per ASTM C36, 4'-0" wide, tapered edges in lengths as long as practicable.
- C. Infill Gypsum Board: Interior Gypsum Board, Interior Gypsum Backing Board and Bathroom Wall Gypsum Board in thickness matching existing adjacent gypsum board.
- D. Accessories
  - 1. Manufacturer: USG Inc. or equal.
  - 2. Corner Bead: USG "Beadex", "Dur-A-Bead" or equal .
  - 3. Edge Trim USG 200-A, National Gypsum No. 100, or equivalent, where board edge is exposed; where edge is not exposed, USG 200-B, National Gypsum No. 00, or equivalent, may be used
  - 4. Other accessories as shown on Drawings and as required for complete installation

### **2.03 FASTENERS**

- A. Fasteners shall be as recommended by Gypsum Board Manufacturer for Project conditions and fire-rating requirements.

### **2.04 JOINT TREATMENT PER ASTM-C475**

- A. Taping and embedding compound specifically formulated and manufactured for use in embedding tape at gypsum board joints and fastener heads completely compatible with tape and substrate.
- B. Joint Tape: Perforated reinforcing tape as recommended by gypsum board manufacturer.
- C. Finishing Compound: Specifically formulated and manufactured by gypsum board manufacturer for use as finishing compound.

### **2.05 SEALER FOR WATER RESISTANT GYPSUM BOARD**

- A. As recommended by Gypsum Board Manufacturer.

### **2.06 MISCELLANEOUS ITEMS**

- A. Furnish all miscellaneous components not specified but required to complete the installation.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Install gypsum board and metal trim, treat corners and joints. Apply texture in accordance to USG's "Gypsum Construction Handbook", the manufacturer's written instructions, and UBC Table 47A and 47B.
- B. Installation shall conform with Underwriters Laboratory Test Design for fire-rated assemblies.

### **3.02 GYPSUM BOARD**

- A. Lay out gypsum board in accordance with manufacturer's recommendation. Panel joints shall be staggered 2'-0" between faces. Fastener heads shall provide a slight depression below the surface of the board without breaking the face.
- B. Miscellaneous Sections: Furnish and install any miscellaneous steel sections shown or required to complete the work.

### **3.03 JOINTS AND CORNERS**

- A. All joints and corners shall be treated in accordance with manufacturer's recommendations. Exposed joints, screw head depressions, or any defects incurred during installation of gypsum board shall be finished with tape and cement. External corners shall be protected and finished with a metal corner bead (Beadex B-1) and joint compound. Internal corners shall be finished with Beadex B-2 and joint compound.

**3.04 METAL EDGE TRIM**

- A. Install metal edge trim (BeadeX B-4) at intersection of gypsum board and dissimilar material and elsewhere as shown.
- B. Tape and feather smooth surface of metal edge trim with surface of gypsum board. Typical unless otherwise noted.

**3.05 GYPSUM BOARD FINISHES**

- A. All exposed gypsum board surfaces shall receive a medium orange peel texture.
- B. Concealed areas shall have joints and fastener heads taped and covered with joint compound.

**END OF SECTION**



## SECTION 10800

### TOILET AND BATH ACCESSORIES

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Toilet paper dispensers; towel bars; shower curtain rods; tub/shower enclosures, and medicine cabinets.

##### 1.02 SYSTEM DESCRIPTION

- A. Conform to applicable code for installing work in conformance with ANSI A117.1.

##### 1.03 SUBMITTALS

- A. Product Data: Provide data on accessories describing size, finish, details of function, attachment and installation methods.
- B. Samples: Submit two (2) samples of each component illustrating color and finish.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. Manufacturers:

1. Bobrick Washroom Equipment, Inc.
2. Kohler "Willamette" available from Home Depot
3. Zenith Medicine Cabinets.
4. Contractors Wardrobe, Inc.

See project manual "General Conditions for the Contract for Construction" (Form HUD 5370, Clause II - Material and Workmanship).

- B. Tubing: 18-8, type 304, 18 gauge.
- C. Fasteners, Screws, and Bolts: Hot dip galvanized steel.
- D. Anchor Plates: 12 gauge steel plate with 1/4 - 20 threaded holes and 1/4 - 20 x 1-1/2 inch stainless steel machine screws.
- E. Tub/shower enclosures:
  1. Bottom track: Open L shape.
  2. Rub rail guard: Metal.
  3. Glazing: Obscure tempered glass.
  4. Sealer: GE clear silicone, 1200 series.

**2.02 FINISHES**

- A. Stainless Steel Tubing: Peened surface with satin finish ends.

**PART 3 – EXECUTION**

**3.01 EXAMINATION AND PREPARATION**

- A. Verify exact location of accessories for installation.
- B. Deliver inserts and rough-in frames to site. Provide templates and rough-in measurements as required.

**3.02 INSTALLATION**

- A. Install fixtures, accessories and items in accordance with manufacturers' instructions. Confirm all sizes for mounting clearance.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Tub/shower enclosures: Install per manufacturer's instructions. Affix metal Rub Rail Guard to bottom open track with screws.

**3.03 SCHEDULES**

	<b>ITEM</b>	<b>MODEL #</b>	<b>FINISH</b>
A.	Toilet Paper Dispenser	Kohler R99803-BN	Brushed Nickel
B.	Towel Bars	Kohler R99801-BN	Brushed Nickel
C.	Shower Curtain Rod	Bobrick B-207	Satin Stainless Steel
D.	Medicine cabinet (surface or recessed)	Zenith #105	Stainless Steel Frame Plastic Body
E.	Tub/shower enclosures frame#2000 Series	Contractors Wardrobe	Bright clear (silver) "Rain" finish at glazing

**END OF SECTION**

## SECTION 09650

### RESILIENT FLOORING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Resilient sheet vinyl flooring.
- B. Luxury Vinyl plank flooring.
- C. Stair treads and risers.

##### 1.02 SYSTEM DESCRIPTION

- A. Flammability: Exceed .50 watts/cm. sq. (ASTM E648 Class 1)
- B. Smoke Density: Less than 450 (ASTM E662)
- C. PSI Rating: Short term -- 2,800 lb/in sq.  
Long term -- 700 lb/in sq.

#### PART 2 – PRODUCTS

##### 2.01 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
- B. Supply two (2) sample sets of tiles and sheet goods illustrating properties of materials and color selection for approval by Owner.

##### 2.02 FLOORING MATERIALS

- A. Luxury Vinyl "Plank" flooring
  - 1. Manufacturers:
    - a. Karndean – (888) 266-4343. Email [info@karndean.com](mailto:info@karndean.com)
    - b. Other approved manufacturers with products meeting design criteria below.
  - 2. Style: "K-Trade" Commercial Plank
  - 3. Size: 7" x 36" planks.

4. Thickness: 2.5mm (minimum)
  4. Wear Layer Thickness: 0.5 mm (20 mil) minimum.
  5. Adhesive: Per Manufacturer's instructions for wood subfloor or concrete slab installations.
  6. Warranty: 15 year residential warranty.
- B. Resilient Vinyl Sheet (N/A): Homogeneous, non-directional through chip sheet.
1. Manufacturer: Tarkett "iQ Optima"
  2. Wearlayer Thickness: 0.080"
  3. Total Thickness: 0.080"
  4. Color: TBD

### **2.03 BASE MATERIALS**

- A. Rubber Base (where specified): Top set covered:
1. Manufacturer: Burke #502
  2. Height: 4"
  3. Thickness: 1/8"
  4. Color: TBD
- B. Wood Base (where specified): 3 1/4" Colonial style.
- C. Base Accessories: Premolded end stops, of same material, size, and color as base. Ease base around radiused corners using one (1) continuous piece.

### **2.04 UNDERLAYMENT (at wood subfloors)**

- A. "Halex" Corporation: 3/8" (9mm) thick plywood underlayment. Install per manufacturer's instructions.

### **2.05 STAIR TREADS AND RISERS (where applicable)**

- A. Vinyl; raised tread design, two-piece tread and riser; round-nose
1. Manufacturer: Roppe
  2. Light Duty Tread, Type No. 11
  3. Thickness: 1/8"

4. Color: Dark Brown

## 2.06 ACCESSORIES

- A. Subfloor (Concrete) Filler: Type recommended by floor material manufacturer.
- B. Underlayment (At all floors over wood subfloor/framing systems): ½" +/- APA underlayment: C-C plugged Group 2 exterior (fully sanded face), install per VCT sheet vinyl manufacturers' recommendations. Caulk underlayment at bathtub.
- C. Primers and Adhesives: Waterproof, type recommended by floor material manufacturer.
- D. Sealer and Wax: Types recommended by floor material manufacturer.

## 2.07 EXTRA ("ATTIC") STOCK

- A. For LVP and sheet products: Provide 7 percent of total area in additional stock (from same dye lot as installed product).

## PART 3 – EXECUTION

### 3.01 EXAMINATION AND PREPARATION

- A. At concrete slabs:
  1. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.
  2. Fill minor or local low spots and other defects with subfloor filler.
  3. Vacuum clean substrate.
- B. At all floors over wood subfloor/framing systems:
  1. Install underlayment per manufacturer's guidelines (6" O.C. at perimeter/no more than 1" from edge & 8" O.C. in the field). Screw or ring shank onto subfloor (See Attachment #A at end of section).
  2. Cut underlayment to jambs at doors. Shorten casing so that underlayment (and flooring) will slip beneath casing.
  3. Clean underlayment prior to installing flooring.

### 3.02 INSTALLATION – TILE (PLANK) MATERIAL

- A. Install in accordance with manufacturer's instructions.
- B. Spread adhesive and set flooring in place. Press with heavy roller to attain full adhesion.
- C. Install tile flooring with joints and seams parallel to building lines. Allow minimum 1/2 full size tile width at room or area perimeter.

- D. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.
- E. Scribe flooring to appurtenances to produce tight joints.

**3.03 INSTALLATION – VINYL SHEET**

- A. Install in accordance with manufacturer's instructions.
- B. Install sheet flooring parallel to length of room. Provide minimum 1/3 full roll width. Double cut sheet and butt joints hairline.
- C. Terminate flooring at centerline of door opening where adjacent floor finish is dissimilar. Install edge strips where flooring terminates.
- D. Scribe flooring to appurtenances to produce tight joints.
- E. Slip flooring under door casing to butt to door jamb.

**3.04 INSTALLATION – BASE MATERIAL**

- A. Adhere base tight to wall and floor surfaces.
- B. Fit joints tight and vertical. Miter internal corners. At external corners, ease base around bullnose radius corners. Do not splice base at or within 6" of corners.

**3.05 CLEANING**

- A. Remove excess adhesive from surfaces without damage.
- B. Clean and seal surfaces in accordance with manufacturer's instructions.

**END OF SECTION**

## SECTION 09680

### CARPET

#### PART 1 – GENERAL

##### 1.01 SECTION REQUIREMENTS

- A. Submittals: Product Data and color Samples.

##### 1.02 DESCRIPTION

- A. Scope: Carpet and pad, with miscellaneous items and accessories as shown on Drawings, if any, the Scope of Work and specified herein.

##### 1.03 SUBMITTALS

- A. Product Data: Submit product data for specified products. Include documents showing compliance with specified performance characteristics and physical properties, and Manufacturer's installation instructions.
- B. Samples: Submit selection and verification samples for material and color.

##### 1.04 QUALITY ASSURANCE

- A. Adhesives: All adhesives and materials used in the installation shall meet CAL-OSHA requirements for flammability and toxicity levels. Adhesives shall also be used in accordance with CAL-OSHA guidelines.

##### 1.05 PRODUCT DELIVERY AND STORAGE

- A. Deliver carpet materials in protective wrapping with mill register numbers intact and store inside, protected from weather, moisture, and soiling. Environment conditions to be as approved by manufacturer.

##### 1.06 WARRANTY

- A. The manufacturer shall warranty the carpet against defects for a period of two years from the date of installation.
- B. The manufacturer shall warranty the carpet against excessive wear for a period of ten years from the date of installation. Excessive wear shall be defined as the loss of more than 10% of the face fiber (fiber above the primary backing) in any given area.

#### PART 2 – PRODUCTS

##### 2.01 STANDARD CARPET (WITH PAD)

- A. Manufacturers: Properties by Mohawk or approved equal.
  - 1. Style "PM154 / Preferred Choice"
  - 2. Fiber : 100% Polyester

3. Color: TBD
4. Fabric Type: Textured cut pile
5. Pile Weight: 25.30 oz.
6. Density: 1447

B. Pad

1. 7/16" Bonded Polyurethane Foam Cushion (six pound).
2. Particle size: 1/2" average
3. Backing: Polyethylene
4. Gauge: 3/8" minimum

**2.03 BASE**

- A. 3 1/4 " colonial wood base (painted).

**2.04 CONCRETE FILLER (as required)**

- A. Noncrumbling, nonstaining, premix latex patching compound mixed with water to produce a cementitious paste.

1. Fixall or equivalent.

- B. Concrete Filler shall be compatible with Carpet and Pad.

**2.05 MISCELLANEOUS**

- A. Furnish and install all miscellaneous items required for a complete installation. All items shall be as recommended by carpet manufacturer.

**PART 3 – EXECUTION**

**3.01 PRE-INSTALLATION REQUIREMENTS**

- A. Verify suitability of structure and substrate to accept installation, including moisture content of substrate at concrete. Start of installation constitutes acceptance of responsibility for performance.
- B. Before the carpet may be installed, all debris, droppings, and other foreign matter shall be removed. The floor shall be swept clean of dirt and dust. After sweeping, the floor shall be vacuumed with a commercial vacuum unit and shall be damp mopped. A suitable cleaning agent, compatible with adhesive, shall be used to remove paint, grease, wax, oil, etc.
- C. Sequence carpet with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period.
- D. Contractor shall notify the Architect, if any, or the Agency Project Manager of any conflict between manufacturer's installation instructions and instructions contained herein. Contractor shall resolve conflicts prior to installation of broadloom carpet.



### **3.02 INSPECTION**

- A. Carpet shall not be installed on surfaces that are unsuitable and will prevent a proper installation
- B. Before any work under this Section has begun, all defects such as rough or scaling concrete, low spots, high spots, and uneven surfaces shall have been corrected and all damaged portions of concrete slab are to be repaired as recommended by the flooring manufacturer without an increase in the Contract Sum and without an extension of the Contract Time.
- C. All repairs to concrete floor slab cracks and joints shall be cleaned and filled with concrete filler.
- D. All repairs to concrete floor slab shall be in conformance with the carpet manufacturer's recommendations. Repair procedures and materials shall not prevent proper adhesion of carpet to concrete floor slab.

### **3.03 MOISTURE BARRIER**

- A. Moisture Barrier/concrete sealer shall be applied only when required by field conditions (high moisture content of slab).
- B. Verify compatibility of Moisture Barrier with carpet and pad.

### **3.04 CARPET INSTALLATION**

- A. Contractor shall Comply with recommendations of Carpet and Rug Institute "Specifier's Handbook".
- B. Prepare surfaces and install materials in accordance with manufacturer's instructions and approved submittals. Clean, patch, and level substrate. Install materials in proper relation with adjacent construction and with uniform appearance.
- C. Install edge guards and reducer strips as required; clean and protect.
- D. Completed installation shall be free of tacks, ripples, scallops and puckers, tread pieces and yarn pieces.
- E. Fill strips shall not be less than 9" wide and 36" long.

### **3.05 CLEANING AND PROTECTION**

- A. Remove debris, sorting pieces to be saved from scraps to be disposed.
- B. Vacuum broadloom carpet using commercial tank type machine with power and attachment. Remove spots and replace carpet where spots cannot be removed.
- C. Protect installation from deterioration and damage.

**END OF SECTION**

## **SECTION 11450**

### **RESIDENTIAL EQUIPMENT**

#### **PART 1– GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Range, Microwave/Vent Hood, Garbage Disposer, and Dishwasher.

##### **1.02 SUBMITTALS**

- A. Product Data: Provide data on equipment, accessories, and warranties.
- B. Operating and Maintenance Instructions: Include relevant instructions.
- C. Submit manufacturer's installation instructions.

#### **PART 2 – PRODUCTS**

##### **2.01 MATERIALS**

- A. Manufacturers:
  - 1. Frigidaire.
  - 2. Insinkerator.

##### **2.02 RANGE, VENT HOOD, AND REFRIGERATOR**

- 1. Range: Frigidaire 30" Free Standing Gas Range (stainless steel), Model FFGF3047LS
- 2. Range: Frigidaire 30" Free Standing Electric Range (stainless steel), Model FFEF3043LS
- 3. Microwave / Vent Hood: Frigidaire (stainless steel), Model LFMV164QF
- 4. Garbage Disposer: Insinkerator "Badger 5" 1/2 horsepower.
- 5. Dishwasher: Frigidaire Built-in dishwasher (stainless steel) Model LFBD2409LF.

#### **PART 3 – EXECUTION**

##### **3.01 EXAMINATION AND PREPARATION**

- A. Verify that openings and utility services are ready to receive work and opening dimensions are as instructed by the manufacturer.

##### **3.02 INSTALLATION**

- A. Install equipment in accordance with manufacturer's instructions.
- B. Set and adjust units level and plumb.
- C. Activate units to confirm correct operation.

**END OF SECTION**

## SECTION 09900

### PAINTING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. The qualified painting contractor shall furnish all labor, materials, equipment, services, and facilities necessary for the satisfactory completion of the project.
- B. All interior and exterior surfaces (except brick) of buildings must be painted prior to reoccupation.
- C. General Requirements: Materials for the project shall be of the best grade products regularly manufactured by the paint manufacturer and conforming to the paint specifications outlined below. Paint materials shall be delivered in sealed containers that plainly show the designated product name, batch number, color, manufacturer's directions for application, and name of manufacturer. The paint shall be free of lead pigments and other materials which will be toxic to personnel under normal conditions of use.

##### 1.02 SUBMITTALS

- A. Product Data: Provide data on all finishing products, identifying which product is to be applied to which surface or material.

##### 1.03 ENVIRONMENTAL REQUIREMENTS

- A. Store and apply materials in environmental conditions required by manufacturer's instructions.

#### PART 2 – PRODUCTS

##### 2.01 MATERIALS

- A. Materials necessary to complete painting as herein specified & listed by material numbers & names are standards for kind, quality, and function taken from:

##### **Kelly-Moore Paint Company**

- 1. Kelly-Moore Paint Company – Store #203  
5101 Raley Blvd. Sacramento, CA 95838 Ph. 916-921-0165
- B. Color selections will be provided by the **Agency** Project Manager prior to the application of any material.
- C. Materials for undercoats and finish coats of paint shall be ready-mixed and shall not be changed, except thinning of undercoats (when required), reinforcing, or coloring; any of which shall be in strict accordance with the recommendations of the manufacturer.
- D. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.

- E. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners, and other materials required to achieve the finishes specified.
- F. Manufacturers.
  - 1. **Kelly-Moore Paint Company.**
  - 2. Prior approved equal.

## 2.02 FINISHES

- A. Refer to schedule at end of section.

## PART 3 – EXECUTION

### 3.01 EXAMINATION AND PREPARATION

- A. Verify that substrate conditions are ready to receive work.
- B. Report in writing to the Agency Project Manager any condition that may potentially effect proper application. Do not commence work until all such defects have been corrected.
- C. Correct all defects and clean all surfaces prior to commencing work.
  - 1. Zinc alloy and/or zinc coated (galvanized) metal work shall be cleaned with solvent or a commercial pretreatment as recommended by the paint manufacturer.
  - 2. Any surface showing mildew must be completely sterilized before painting with the following solution:

Trisodium phosphate (TSP)	2/3 cup
Household bleach (Clorox)	1 quart
Powdered detergent	1/3 cup
Add warm water to make one (1) gallon.	
  - 3. A fungicide or mildewcide shall be added to the primer and paint to be used for coating surfaces treated in the above manner.
- D. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing. Do not install new door hardware until door is painted.
- E. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.
- F. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust, hand power tool clean, clean surfaces with solvent. Prime bare steel surfaces.
- G. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- H. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied. Back prime all exterior trim.
- I. Exterior Cementitious Siding: Verify all butt joints are properly sealed with flexible sealant.

- J. Surface Acceptance: No painting or finishing shall be done under conditions which jeopardize the quality or appearance of painting or finishing. The Contractor shall examine all surfaces to be painted.

### 3.02 PAINT APPLICATION AND WORKMANSHIP

- A. All work shall be of a quality that will give the best possible finish and which will provide the maximum durability which can be reasonably expected from a painted surface. The finished surfaces shall be free from "holidays", runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The coverage shall be complete, and when necessary, a second coat or more shall be applied to provide complete coverage and to produce a uniform thickness. All paint materials shall be applied in accordance with manufacturer's instructions and local regulations. Special attention shall be given to ensure that all surfaces including edges, corners, and crevices receive a firm thickness equivalent to that of adjacent painted surfaces.
- B. If proper lighting does not exist in the unit, the Contractor shall be responsible for providing adequate lighting.
- C. Care shall be exercised to prevent paint from being spattered on to surfaces which are not to be painted. Surfaces from which such paint cannot be satisfactorily removed shall be repaired/replaced or painted, as required, to produce a finish equal to the quality specified for newly painted or finished surfaces (at no additional cost to the Agency).
- D. Surfaces from which the paint has been removed down to the original wood or metal surface shall be properly primed before new paint is applied.
- E. All moving parts shall be left in proper working order. This includes but is not limited to the following: door hinges and cabinet drawers.
- F. Sufficient time, as recommended by the manufacturer, shall elapse between successive coats to permit proper drying. This period shall be modified as necessary to suit adverse weather conditions. Paints shall be considered dry for re-coating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause lifting or lose adhesion of the undercoat.
- G. All electrical fixtures, glass covers, switch and outlet plates, and door hardware shall be installed after painting.

### 3.03 MIXING AND THINNING

- A. Paint shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Where necessary to suit conditions of surface, temperature, weather, and method of application, packaged paint may be thinned immediately prior to application in accordance with the manufacturer's directions. The use of thinner for any reason shall not relieve the Contractor from obtaining complete coverage.

### 3.04 ATMOSPHERIC CONDITIONS

- A. Paints, other than emulsions, shall be applied only to surfaces that have a safety reading for maximum moisture content as determined by a moisture meter model "LP" manufactured by the Moisture Register Company, or approved equal. While Painting is being done, the temperature of the surfaces to be painted and of the atmosphere in contact shall be maintained at or above 50 degrees Fahrenheit for emulsion paints and 45 degrees Fahrenheit for other coatings. When surface temperatures are above 120 degrees Fahrenheit, manufacturer shall be contacted for special application techniques.

### 3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment.
- B. Remove unfinished louvers, grilles, covers, and access panels and paint separately. Paint dampers exposed behind louvers, grilles, convector and baseboard cabinets to match face panels.
- C. Prime and paint insulated and exposed pipes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- D. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one (1) coat of flat black paint, to limit of sight line.
- E. Paint exposed conduit and electrical equipment occurring in finished areas except prefinished surfaces.
- F. Paint both sides and edges of plywood backboards.

### 3.06 CLEANING

- A. As work proceeds, promptly remove finishes where spilled, splashed, or spattered.
- B. During Painting Operations: Contractor shall remove dirt, debris, waste, rubbish, and implements of service from the buildings, the working area, and the site. Debris, waste, or unused materials shall not be left under, in, or about the buildings and shall be disposed of off the site. All paint materials, tools, clothing, oily rags, and waste must be removed from the buildings every night. **DO NOT** dispose of any painting materials in the unit's toilets, sinks, or sewers.
- C. At Completion of Work: All glass, hardware, anodized surfaces and fixtures in area where painting has been done shall be cleaned of all paint overspray, drips, splatters, etc.
- D. Remove from the premises all tools, surplus materials, debris, scaffolding, and equipment. Clean the areas thoroughly and remove all marks, stains, fingerprints, dust, paint drippings, and the like from the premises.

### 3.07 SCHEDULE - SHOP PRIMED ITEMS FOR SITE FINISHING

- A. Exposed surfaces of guardrails, handrails, attic vents, metal shrouds, and roof jacks.

### 3.08 SCHEDULE - PAINT FINISH

- A. Finish surfaces in accordance with the following procedure for the surface and finish desired thereon. Catalog names and numbers refer to products as stipulated in this Section, unless otherwise specifically noted. Numbers used to identify paint indicates the paint in white. Same material shall be color selected.

### 3.09 SCHEDULE - EXTERIOR SURFACES

- A. Primer: Prime all bare wood and plaster with **255 Acry-Shield 100% Acrylic Exterior Wood** Primer.
- B. Wood and Plaster surfaces:
  - 1. Finish: 2-Coats: **1240 Acry-Shield 100% Acrylic Exterior Flat**, Minimum DFT 1.5 per coat (first coat tinted 1/2 formula).

- C. Doors: Ferrous metal:
  - 1. Primer: 1-Coat: **1710 Kel –Guard** Alkyd Rust –Preventative Primer
  - 2. Finish: 2 coats- **5885 DTM High Performance Acrylic Semi-Gloss**
- D. Metal Railing, Metal Fencing, Walkways, and Stairs: ferrous metal:
  - 1. Primer: 1-Coat: **1710 Kel –Guard Alykd Rust-Preventative Primer.**
  - 2. Finish: 2 Coats: **5885 DTM High Performance Acrylic Semi-Gloss**
- E. SMUD Boxes:
  - 1. Primer: 1-Coat: **5725 DTM Acrylic Primer Finish.**
  - 2. Finish: 1-Coat: **1250 Acry-Shield 100% Acrylic** Exterior Semi-Gloss Finish.
- F. Galvanized metal and aluminum
  - 1. Primer: 1- Coat **5725 DTM Acrylic Primer Finish.**
  - 2. Finish: 2 coats **1250 Acry-Shield 100% Acrylic Exterior Semi-Gloss Finish.**

### 3.10 SCHEDULE - INTERIOR SURFACES

- A. Gypsum board and wood
  - 1. Primer for Gypsum board: **971 Acry-Plex** PVA Sealer.
  - 2. Primer for wood: **975 Acry-Plex 100% Acrylic Interior wood Primer for new wood only.**
  - 3. Soft sheen acrylic eggshell enamel: **1610 Acry-Plex 100% Acrylic** Interior Eggshell Premium Enamel Finish.
  - 4. Kitchens, bathrooms, painted cabinets, all doors, door jambs, trim, all window wraps, baseboard, interior of enameled metal medicine cabinets & all other wood trim: **1685 Dura-Poxy+** Interior/Exterior Semi-Gloss Paint Finish.
  - 5. Colors:
    - a) Interior – Walls: Bone (Color 27).
    - b) Interior – Doors, Trim, Baseboard (if applicable): Swiss Coffee (Color 23).
    - c) Exterior - To be chosen from manufacturer’s standard color palette by Project Manager.

### 3.11 PROTECTION OF WORK

- A. Contractor shall be responsible for all existing structures and/or improvements, including the finished fixtures within the working area, and must provide adequate protection, either by covering or by temporary removal. Any existing structures and/or improvements damaged during the work shall be repaired and/or replaced with materials, fixtures, or equipment of the same kind, quality, and size. Any materials and/or equipment temporarily removed for protection and not damaged shall be reinstalled in their original locations.

- B. The Contractor must thoroughly protect finished floors, countertops, and any fixtures which are not removed during the work from damage by water, paint spots, overspray, handling of materials, etc., by the use of drop cloths or masking tape.

**END OF SECTION**



## **SECTION 09950**

### **UNIT CLEANING**

#### **PART 1 – GENERAL**

##### **1.01 SECTION INCLUDES**

- A. All units shall be thoroughly cleaned according to the following specifications.
- B. For industrial cleaning services, each unit must be completely cleaned and prepared for immediate occupancy. A completed cleaning job is defined to include, but is not limited to, the performance specifications below. However, additional cleaning services may be required based on each individual unit's condition in order to prepare for occupancy.

#### **PART 2 – SERVICES**

##### **2.01 MINIMUM SERVICES**

- A. Clean all floors such as vinyl plank and sheet vinyl
- B. Vacuum and showcase all carpets.
- C. Clean interiors of, but not limited to, all cabinets, closets, cupboards, pantries and vanities. Clean all drawers, handles, and pulls. Clean all counter tops, drain boards, and vanity tops.
- D. Clean all kitchen appliances.
- E. Clean all electrical receptacles (outlets), switches, and cover plates.
- F. Vacuum and clean all window tracks.
- G. Vacuum and clean all water heaters and furnaces. Remove dust, cobwebs and other debris from water heater closets, interior and exterior.
- H. Do not use abrasive cleaning products or tools when cleaning fiberglass bathtub wainscots.
- I. Clean bathrooms and kitchens and their appurtenances including, but not limited to, plumbing fixtures, towel bars, and tub or shower enclosures.
- J. Remove all trash and debris related to painting and cleaning. Remove masking tape and paper from outlets, switches, light fixtures, doorknobs, windows etc.
- K. Sweep and remove oil/greasy substances, spider webs, bird droppings, etc., from patios, porches, driveways, and sidewalks.
- L. Wash and reinstall all light fixture covers and diffusers.

### **PART 3 – FLOOR CLEANING**

#### **3.01 RESILIENT FLOOR PROCEDURES**

- A. Sweep floor.
- B. Clean and wax according to manufacturer's instructions.
- C. Stay several inches away from baseboards to avoid splashing dirty solution and avoid removal of finish or scarring of freshly painted surfaces.
- D. Apply floor finish using applicator or mop. Avoid splashing wax on baseboards, walls, or other surfaces.
- E. Apply as many coats of floor finish as needed to ensure an even uniform gloss.
- F. Do not apply excessive amounts of liquids on floor areas.
- G. Use a national brand floor wax (as recommended by manufacturer).

**END OF SECTION**

## SECTION 12511

### WINDOW AND DOOR BLINDS

#### PART 1 – GENERAL

##### 1.01 GENERAL

- A. The contractor shall furnish all materials, measurements, labor equipment, and transportation as required for installing Window Blinds on all windows as indicated in the Drawings, if any, the Scope of Work and/or as herein specified. Install to inside of window opening.

##### 1.02 SUBMITTALS

- A. Submit product literature for approval.

##### 1.03 DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping:
  - 1. Materials shall be delivered to the Project in original unopened packaging with labels intact.

##### 1.04 SITE CONDITIONS

- A. Roof must be tight, windows and frames installed and glazed, and interior doors hung.
- B. Wet work including concrete, masonry, plaster, stucco, gypsum board, spackling, and taping (including sanding) shall be complete and dry.
- C. Ceilings, electrical, and mechanical work above the product shall be complete.

#### PART 2 – PRODUCTS

- A. Manufacturers:
  - 1. Hampton Bay
  - 2. Bali
  - 3. Levolor
  - 4. Or equal
- B. Window blinds
  - 1. 2" horizontal blade faux wood blinds, with valance and all hardware and accessories necessary for a complete installation.
- C. Door Blinds
  - 1. 3 ½" vertical blade, vinyl blinds with valance and all hardware and accessories necessary for a complete installation

### **PART 3 – EXECUTION**

#### **3.01 INSPECTION**

- A. Verify that site is free of conditions that interfere with blind installation and operation, and shall begin installation only when any unsatisfactory conditions have been rectified.

#### **3.02 INSTALLATION**

- A. Installation shall comply with manufacturer's specifications, standards, and procedures.
- B. Provide support brackets as per manufacturer's installation instructions.
- C. Provide adequate clearance to permit unencumbered operation of blind and hardware.
- D. Demonstrate blinds to be in uniform and smooth working order.

#### **3.03 CLEANING**

- A. Clean soiled blinds with a mild soap solution only. Do not use cleaning methods involving heat, bleach, abrasives, or solvents. Do not use window cleaner or cloths with paper content.
- B. Ensure proper drying following cleaning by providing adequate ventilation.

**END OF SECTION**

## SECTION 15400

### PLUMBING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. Coordinate work with water, gas, sanitary sewer and other services on the site. The locations of points of connection to the site services shall be confirmed prior to commencement of any and all work required under this Section of the specification.
- B. Should work or material not be included in the Drawings or Specifications, but is nevertheless necessary for the proper execution of the stated scope therefore for full compliance with codes, laws, rules and regulations, the Contractor shall understand such work and/or material is required, and he shall perform all such work and furnish such material as fully as if it were particularly delineated or described.

#### PART 2 – PRODUCTS

##### 2.01 GENERAL

- A. Only specified materials shall be utilized in the work of this Section unless substitutions have been approved in accordance with "Substitutions and Product Options".
- B. Materials shall be new, of the best quality for the intended use, shall be listed by the ASA, AGA, UL, as meeting their requirements and bearing their label wherever standards have been established and label services are regularly furnished by them.

##### 2.02 PIPE, FITTINGS

- A. Underground Soil, Waste, Drain, and Vent Pipe: Standard weight, hot coated, cast iron soil pipe and fittings, with "Tyseal" or approved MG mechanical joints.
- B. Above Ground Soil, Waste, Drain, and Vent Pipe: Lines 2" and larger shall be standard weight, hub-less, cast iron soil pipe and fittings, with "no hub" joints. Joints shall have neoprene gaskets and stainless steel bands. Lines under 2" shall be galvanized steel pipe with threaded cast iron drainage fittings; AT the option of this Contractor, all soil, waste, and vent piping above ground may be DWV copper with wrought copper fittings with "Stay-Safe 50" lead free solder and a suitable non-corrosive flux.
- C. Hot, Cold Water Piping: All domestic cold water piping 3" and smaller shall be Type L, hard temper, copper pipe with wrought copper or cast brass solder joint fittings. All joints shall be made up with "Stay-Safe 50" lead free solder. Use a suitable non corrosive flux at joints.
  - 1. Pipes below grade inside buildings shall be soft drawn, Type L or K copper with no joints below slabs. Pipes shall be sleeved with 20-mil plastic sheathing.
- D. Indirect Waste Piping: Shall be Type M, hard temper, copper with wrought copper or cast brass fittings. Joints shall be made up with "Stay-Safe 50" lead free solder.
- E. Natural Gas Pipe: Schedule 40, black steel, galvanized for exterior exposed pipe. All concealed pipe, and all pipe 2½" and larger shall be welded. All accessible pipe 2" and

smaller shall be threaded. Fittings for threaded pipe shall be 150 lb. malleable iron, screwed and banded. Fittings for welded pipe shall be seamless steel, weld neck.

**2.03 UNIONS**

- A. Steel Pipe: Shall be malleable iron, 150 lb., ground joint, Grinnell Fig. 463.
- B. Copper Pipe: Shall be soldered joint, Nibco series 633 or 733, Mueller, or equal.
- C. Dielectric: Shall be EPCO, Plico, or equal.

**2.04 VALVES, SPECIALTIES**

- A. Gate Valves: Larger than 4" shall be Nibco T 134, bronze body, union bonnet, rising stem, solid wedge, 150 lb. with wheel handle. Valves larger than 3" shall be Nibco F 617 0, iron body, bolted bonnet, outside screw and yoke, solid wedge, 125 lb. with wheel handle.
- B. Check Valves: Nibco T 480, bronze body, inline lift type, Teflon seat, and discs, spring actuated, 125 lb.
- C. Ball Valves: 4" and smaller shall be Nibco T 580, bronze body, "Ring Ball", conventional port, two piece, lever handle, 125 lb.
- D. Relief Valves: Water heater temperature/pressure relief valve, Watts M&M, or equal, with ASME rating, and AGA certified design. Set at 125 psi and 210 F.
- E. Natural Gas Shut off Valves: Homestead Fig. 601, semi steel, lubricated plug, lever handle, 200 lb. Install Koso Series 300 seismic actuated shut off valve at meter. Brace per manufacturer's instructions.
- F. Gas Pressure Regulators: American Regulator, Series 1813C. Regulators shall be sized for full gas capacity of equipment as scheduled on the drawings. Inlet pressure shall be 5 psig. Outlet pressure shall be 7" water column. Regulators installed indoors shall have relief opening piped to outdoors.

**2.05 HANGERS, SUPPORTS**

- A. Installation of piping shall be such that damage cannot result through loading, expansion or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.
- B. Pipe supports shall be spaced sufficiently close to support pipes properly without formation of pockets. Hangers shall be installed at ends of mains and branches and maximum intermediate spacing shall be as follows:

	MAXIMUM SPACING, *FEET		MAXIMUM ROD DIAMETER	
	Pipe Ø, Inches 1" & Less	1-1/4" & More	Pipe Ø Inches	Rod Ø Inches
Steel	8	10	2 & Less	3/8
Copper	6	8	2-1/2 to 3	1/2
Cast Iron	5 (One min. per length & fitting)		4 & larger	5/8

\* Shortest spacing specified determines trapeze spacing.

- C. Pipe hangers shall be Superstrut, B-Line, or equivalent Grinnell. All hangers shall be electro chromate finished.
- D. Steel pipe, cast iron soil pipe: C 711 pipe hangers.
- E. Copper tubing: C 711 copper tube hanger complete with C 716 isolator.
- F. Insulated pipe: C 711 pipe hanger fitted to outside of insulation with C 790 galvanized shields.
- G. Provide resilient mounting for domestic water piping. Thermal insulation may serve as resilient mounting for insulated piping.
- H. Suspended water piping shall be anchored with steel struts.

## **2.06 CLEANOUTS**

- A. Cleanouts in membrane dampproofed floors shall have flashing flange and membrane clamp; plugs shall be bronze, with cast iron body ferrule for cast iron pipe.
- B. Floor (FCO): adjustable floor cleanout, dura-coated with gas and water-tight, bronze, taper thread, plug, and round scoriated top adjustable to finished floor.
- C. Grade (COTG) Housing to be dura-coated cast iron body with integral anchor flange and scoriated cover with lifting device. Cleanouts in un-paved areas shall be set in 18" x 18" x 4" concrete pads.
- D. Wall (WCO): polished chrome plated bronze wall plate and frame for copper tubing; dura-coated with gas and water-tight, bronze, taper thread plug and round smooth stainless steel access cover with securing screw.
- E. Accessible: dura-coated with gas and water-tight, bronze, taper thread plug for cast iron pipe; bronze, raised head, cleanout plug for steel pipe.

## **2.07 SLEEVES, WALL PLATES**

- A. Service Pipe Through Exterior Walls, Roofs: Crane Style BC wall and ceiling plates; chrome plated at finished rooms.
- B. Pipes Through, Under Footings: 18 gage iron sleeves, two diameters larger than pipe, cast in concrete, annular space filled with mastic or plastic bituminous cement.
- C. Pipes through fire rated walls shall be protected with fire retardant mastic as detailed on the drawings. Installation shall be in full accordance with the requirements of the UL system number. Hilti or approved equal.

## **2.08 TRAP PRIMERS**

- A. Automatic trap primer with all bronze body, integral vacuum breaker, non-liming internal operating assembly with gasketed bronze cover. Install for traps where normal usage will not insure maintenance of trap seal.

## **2.09 ACCESS DOORS**

- A. Where construction is not inherently accessible, provide adequately sized and conveniently located access doors in ceilings, walls and furring for servicing valves, equipment, etc.

## **2.10 VALVE BOXES**

- A. Christy #F 36, complete with concrete cover and required extensions. Index all covers "WATER" and "GAS" as required for service use.

## **2.11 PIPE INSULATION**

- A. Insulation shall have composite (insulation, jacket and adhesive used to adhere the jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 or UL 723, not exceeding:

## **2.14 FIXTURES**

- A. Fixtures shall be Kohler, American Standard, or equal, except where specifically noted otherwise. Fixtures shall be standard white color, except as noted.
- B. Sinks or lavatories being replaced to include new trim including faucet, supplies, stops, tailpiece, grid drain, and trap.

## **PART 3 – EXECUTION**

### **3.01 VIBRATION AND SOUND CONTROL**

- A. Make necessary provisions to prevent the transmission of vibration to the building structure and the passage of noise from the equipment rooms to other rooms. Provisions shall include: vibration isolators for motor driven equipment; flexible pipe connections to motor driven equipment; resilient mounting for piping; sealing off pipe and duct penetrations of walls, floors and ceilings of equipment rooms.

### **3.04 INSTALLATION, GENERAL**

- A. Provide necessary cutting in connection with the work of this Section. No structural members shall be drilled, bored, or notched in a manner which will impair their structural capacity; penetrations of concrete or masonry shall be made with core drills; No cutting shall be done without the approval of the Architect.

### **3.05 INSTALLATION, PIPING**

- A. General:
  - 1. Rough in shall proceed as rapidly as general construction will permit. All rough in shall be complete, locations verified by Architect and Owner, tested, and inspected prior to installation of concrete, lath, plaster, gypsum wallboard, or other finishes.
  - 2. All piping shall be concealed in finished rooms, installed in furred walls and partitions.
  - 3. Piping shall be new and free from foreign substances. plated, polished, or soft metal piping. ALL changes in pipe size shall be made with reducing fittings. Bushings will NOT be permitted.
  - 4. Provide shut off valves on branch pipes serving two or more fixtures, and where required to permit proper servicing of equipment.



5. Valves shall be of the same size as the pipe in which they are installed, unless specifically sized on the Drawings. Hand controlled line valves shall be ball valves unless otherwise noted.
  6. Valves shall be accessible and shall NOT be installed with the stems below the horizontal plane. Provide access panels at walls, ceilings, or floors.
  7. Escutcheons shall be chrome plated at plumbing fixtures.
  8. Cutting or boring of joists or other structural members shall be done only when alternative routing is impossible and ONLY upon written approval of the Architect.
  9. No water or drainage piping shall pass over electrical equipment unless adequate protection is provided to prevent damage by leaks or condensation.
- B. Soil, Waste, Vent, Drain Piping:
1. Soil, waste, and vent piping occurring within the building shall be installed to a uniform minimum grade of  $\frac{1}{4}$ " per foot unless otherwise noted. Vent piping shall be graded so that all condensation shall flow directly to a soil or waste line.
  2. Drilling and tapping of drains, soil, waste, or vent pipes are prohibited.
- C. Hot, Cold Water Systems:
1. Dielectric unions shall be installed where copper pipe is connected to galvanized steel piping or stub outs.
  2. Connections from copper pipe to fixture supply fittings shall be made with copper or brass nipples.
  3. To the greatest extent possible, domestic cold water piping shall be kept separated from hot piping and where there is a choice shall be run in the coolest portion of the available space.
  4. Piping in walls serving exterior hose bibs to be insulated.
- D. Flashing:
1. Flash and counterflash roof and wall penetrations water tight with 24 gauge sheet metal, except as noted.
- E. Excavation, Backfill:
1. Excavation shall be carried to 4" below the bottom of pipes. Provide a sand bedding for all sloped drainage piping.
  2. Backfill material shall be non corrosive and free from all foreign material that could damage pipes. Backfill shall be placed in 6" layers, each layer tamped, and compacted to 95% of maximum dry density.
- F. Indirect Waste Piping:
1. Indirect waste piping shall be installed to a uniform minimum grade of  $\frac{1}{4}$ " per foot unless otherwise noted.

G. Natural Gas Piping Systems:

1. Natural gas piping shall slope back to meter where possible; bottom of vertical natural gas lines shall be fitted with 6" long capped drip legs.
2. In addition to main shut off valve, a natural gas stopcock shall be installed at each natural gas fired piece of equipment.

**3.06 TESTING, INSPECTIONS**

A. General: This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having jurisdiction over the Work. .

B. Tests:

1. This Contractor shall make all tests required by all local, state, and federal laws, codes, ordinances, and regulations having jurisdiction over this work.
2. Natural Gas Piping: Shall be tested for twenty four (24) hours at a pressure of 50 psig with nitrogen or compressed air.

**3.07 PIPE CLEANING**

- A. Flush water piping systems. Remove, clean and replace strainer baskets prior to final inspection.
- B. Blow out compressible fluid piping with compressed air before connecting with regulators or equipment.

**3.08 ADJUSTING**

- A. Properly adjust stops, and controls, and demonstrate safe and satisfactory operation of all equipment.

**3.09 CLEANING**

- A. Upon completion of the work of this Section, remove surplus material, debris, and equipment associated with or used in the performance of this work.

**END OF SECTION**

## SECTION 15800

### HEATING, VENTILATING & AIR CONDITIONING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. General: All heating, ventilating, and air conditioning.

##### 1.03 QUALITY ASSURANCE

- A. All HVAC equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.
- B. Comply with UL 181 and UL 181A for ducts and closures.

##### 1.04 STRUCTURAL REQUIREMENTS

- A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

#### PART 2 – PRODUCTS

##### 2.01 EQUIPMENT

- A. Miscellaneous equipment not specified herein shall be furnished as scheduled on the drawings.

##### 2.02 TEMPERATURE CONTROLS

- A. General: The control system shall be Honeywell RTH7600D or equal Programmable Thermostat.
- B. Control Wiring and Conduit for the control equipment in accordance with the wiring diagrams and the functional operation of the control system shall be the responsibility of the control subcontractor. All control wiring shall be concealed in walls or slab or above ceiling. Line voltage control wiring and low voltage control wiring shall be Type THHN/THWN wire per C.E.C. Low voltage jacketed multi conductor cable may be used for thermostat wiring.
- C. Electrical Power Wiring and connections to motors and control equipment and panels shown on the temperatures control diagrams or specified, will be furnished and installed by the Electrical Contractor performing this work.
- D. After completion of the installation, the control Sub Contractor shall regulate and adjust
- E. Guarantee: Entire system shall be guaranteed for one year without charge to the Owner from the date of acceptance of the completed building.
- F. C.C.R. Title 24 Energy Standards, Requirements: All work, controls, devices, and control operation and settings shall meet current requirements of the C.C.R. Energy Standards.

## 2.03 DUCT WORK

- A. Factory made Air Ducts (Fiberglass flexible ducts): Factory made air ducts shall be approved for the use intended and shall conform to the requirements of CMC. Standard 6-5. The manufacturer shall identify each portion of a factory-made air duct system with a label or other suitable identification indicating compliance with CMC. Standard 6-5 and its class designation. These ducts shall be listed and shall be installed in accordance with the terms of their listing.
- B. Galvanized Sheet Steel: Lock-forming quality, ASTM A 653, G90 (ASTM A 653M, Z275) coating designation with mill phosphatized finish for exposed surfaces of ducts. All galvanized sheet metal shall comply with CMC Standard 2-2.
- C. Joint and Seam Sealant: Comply with UL723, UL181B, and ASTM-E84.
- D. Round Duct: Machine formed, spiral lock seam construction spot welded and bonded seams with an intermediate standing rib for rigidity. Slip joint construction couplings with a minimum of 2" insertion length. Galvanized Sheet Metal gauge per SMACNA "HVAC Duct Construction Standards, Metal and Flexible", latest edition, and CMC Standard 6-2.
- E. Fittings: (except elbows) machine formed using SMACNA RL-1 seams with seal class B.
- F. Elbows: fittings shall have a wall thickness not less than that specified for longitudinal straight ducts as shown in Table 3-2 and 3-3, SMACNA HVAC Duct Construction Standards, Metal and Flexible, 4" - 8" two piece, die stamped with fully welded longitudinal seam; 9" - 30", segmented standing seam construction; 31" - 36", segmented construction with joint spot welded and bonded. .
- G. Branch Connections:
1. 45 degree entry fittings: All 45 degree entry fittings shall be constructed per SMACNA HVAC Construction Standards Metal And Flexible, figure 4-6.
  2. Conical Fittings: All conical fittings shall be constructed per SMACNA HVAC Construction Standards Metal And Flexible, figure 4-6. All conical fittings shall be constructed with a minimum 2" flare around entire perimeter and a minimum 1:2 slope unless noted otherwise.
  3. Wye Fittings: All wye fittings shall be 45 degree.
- H. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standards, Metal and Flexible" for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals and CMC Standard 6-2.
- I. Fibrous Glass Ducts: Comply with SMACNA's "Duct Construction Standards, Metal and Flexible. Thermaflex, Anaco Flex Systems, Cal-Flex Model #2PPJ or equal insulated flexible glass fiber duct factory fabricated as a Class 1 air duct, constructed of 2-layers of polyester film 100% bonded together, encapsulating the galvanized steel wire. Insulated with fiberglass insulation and jacketed with a reinforced vapor barrier jacket listed and labeled as a Class 1 Air Duct. Tested in accordance with U.L. Standard 181. Meets all requirements of NFP 90-A & 90-B, UMC Standard 6.1, Appendix A. Inner liner shall be black where visible through registers. All flexible ductwork must have a FHC not exceeding 25/50.

## **2.04 DUCT ACCESSORIES**

- A. Duct Hangers (Horizontal, Rectangular Ducts)
  - 1. Metal straps width and gauge shall be per SMACNA Guidelines.
  - 2. Use ½" diameter rod hangers for exposed ducts.
- B. Duct Hangers (Horizontal, Round Ducts):
  - 1. Metal straps width and gauge shall be per SMACNA Guidelines.
  - 2. Use 3/8" diameter rod hangers for exposed ducts.

## **2.05 DUCTWORK AUXILIARIES**

- A. Sealants
  - 1. Duct sealant: Design Polymeric DP1020, Permatite 777 Super Sealant, Permatite Class II Duct Sealer, Ductmate Proseal duct sealant, and RCD Corporation Elastomeric terpolymer emulsion.
  - 2. Silicone sealant shall be GE RTV, 3 M The sealants meet ASTM Specification 920, Type S, Grade NS, Class 25 or equal.
  - 3. Polyurethane sealant shall be Sikaflex-15LM, elastomeric sealant. Meets Federal Specification TT-S-00230C, Type II, class A; ASTM C-920, Type S, Grade NS, Class 25; Federal Specification for silicones - TT-S-001543 A.
  - 4. Joint and Seam Sealant: Comply with UL723.
  - 5. Tapes and Adhesives: Pressureless Tapes: Hardcast, 4" wide Type DT 5400 mineral impregnated woven fiber tape with manufacturer's FTA 20 activator/adhesive (indoors) and RTA 50 activator/adhesive (outdoors), applied with brush or roller in accordance with manufacturer's directions.

## **2.06 GRILLES, REGISTERS AND DIFFUSERS**

- A. As scheduled.
- B. Provide with gaskets to prevent any streaking.

## **2.07 AIR FILTERS**

- A. Air filters shall be of an approved type tested in accordance with test method CSFM 12 71 1 as shown in Part II, Title 24, California Code of Regulations. Preformed filters having combustible framing shall be tested as a complete assembly. Air filters shall be Class 2 or better as defined in the test method above. Air filters shall be accessible for cleaning or replacement.
- B. Provide a set of construction filters and an additional set of filters to be installed after completion of all construction work and prior to final acceptance of the project.

## **PART 3 – EXECUTION**

### **3.01 DUCTWORK**

- A. Conceal ducts from view in finished and occupied spaces.
- B. Avoid passing through electrical equipment spaces and enclosures.
- C. Support and connect metal ducts according to SMACNA's "HVAC Duct Construction Standard."
- D. Install duct accessories according to applicable portions of details of construction as shown in SMACNA standards.
- E. Install volume-control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.
- F. Ductwork shall comply with Chapter 6 C.M.C.
- G. Broken places in galvanized coating made in forming shall be completely soldered over or covered with zinc-rich paint.
- H. Ducts shall be constructed, reinforced and supported in accordance with the SMACNA HVAC Duct Construction Standards - Metal and Flexible and the following requirements.
- I. Shop Fabricated Ductwork
  - 1. Fabricate ductwork as required by classification as described below or gauges, and of configuration and sizes shown on the Drawings. Note that duct sizes shown are net inside; where ducts are lined, fabricate larger than shown to accommodate lining with shown dimensions net inside lining.
  - 2. Fabricate rectangular ducts with adequate cross bracing or reinforcing to prevent drumming; should drumming subsequently occur, provide additional reinforcement as necessary to overcome same.
  - 3. Construct ducts to provide smooth passage for the conducted air, laying edges exposed to the air stream in the direction of airflow.
  - 4. Longitudinal Seams: Pittsburgh Lock shall be used on all longitudinal seams. All longitudinal seams will be sealed with a mastic sealant. Snaplock is not acceptable.
  - 5. Transverse Seams (Exposed Ductwork): Reinforced "S" Slip per SMACNA Figure 2-1, Joint Type T-7.
  - 6. Duct shall be diagonally creased on all four sides.
  - 7. Seams shall be double crimped.
  - 8. Seal all joints and seams on all outdoor ducts and plenums, on all indoor supply ducts; use one layer of pressureless tape for sealing. Seal other ducts similarly where noted on drawings.
  - 9. Fabricate elbows or other fittings for changing direction of duct with a centerline radius equal to 1.5 times the duct width unless shown otherwise or necessitated by space restrictions. Where space does not permit the above radius or where

square elbows are indicated on the drawings, provide double wall turning vanes of an approved type.

10. Fabricate diverging transitions with side slopes of 1:6; fabricate converging transitions with side slopes of 1:2. Greater slopes may be used only where space restriction prohibits specified slopes no abrupt changes or offsets of any kind in the duct system will be permitted. Approval by the engineer is required prior to fabrication and installation of any ductwork that does not comply with the above requirements. Round to round take offs shall be made with 45 degree wye fittings.
11. Divided-flow fittings shall be constructed with a radiused entrance to all branch taps and with no excess material projecting from the body into the branch tap entrance.
12. Fiberglass turning vanes will not be acceptable.
13. All seams around fan and coil housings shall be sealed with non hardening caulking compound. See duct insulation for sealing of other duct seams.
14. Paint the inside of ductwork visible through grilles and registers dull black.

J. Ductwork and Supports

1. Install ducts rigidly, securely, and air tight.
2. Support ducts independently of ductwork connected equipment and visa versa.
3. Hangers shall be spaced to prevent bending or sagging of ducts.
4. Ductwork shall be supported within three feet of all changes of direction.
5. Support rectangular ducts:
  - a. Support per SMANCA or current local Mechanical Code whichever is more stringent.
  - b. The straps shall be screwed or bolted to opposite sides of duct and firmly secured to overhead construction. Hangers on rectangular sheet metal ducts shall be installed on both sides of ducts and turned under ducts a minimum of 2". Each hanger shall be secured to duct with a minimum of two self tapping sheet metal screws into the side of the duct and one into the bottom and shall be securely fastened to construction in an approved manner.
6. Support round ducts:
  - a. Support per SMANCA or current local Mechanical Code whichever is more stringent.
  - b. The strap shall be firmly secured at two ends to overhead construction and running continuous under the duct and secured to the duct.

K. Flexible Ducts - Install as follows

1. With each section carrying a UL Class I label.

2. With no sharp bends. Do not bend size 4" through 12" diameter in excess of 180° in a 6 ft. length; do not bend sizes over 12" diameter in excess of 90° in a 6 ft. length.
3. Listed flexible duct: Install flexible duct as per manufacturer's instructions. With all metal-to-metal connections secured with Panduit PLT-8H clamps or stainless steel cinch clamp, apply duct sealant between the end of the duct and the collar in a 2 inch band and clamp as described above. Allow at least 48 hours before pressure testing.

### **3.02 EQUIPMENT**

- A. Refrigerant and Oil: Furnish and install initial charge of refrigerant and lubricating oil. The contractor shall replenish for a period of one year without charge to the owner all refrigerant or oil lost due to leaks or other difficulties with equipment.
- B. Extended Compressor Warranty: Mechanical Contractor shall unconditionally guarantee all refrigerant compressor parts against defects of materials, workmanship, and installation for a period of five (5) years from date of acceptance of the project. (Parts and labor for 1st year, parts only next four years.)

### **3.03 FIELD QUALITY CONTROL**

- A. Duct Cleaning: After installation is complete, but before balancing and final connections are made, and with construction filters in place, blow clean all ductwork with the system fans operating at full air volume.
- C. Ductwork Testing: All ductwork shall be HERS tested as required by code.
- D. Inspections: Evidence of poor fabrication or installation, as disclosed by job site inspections, will be cause for rejection; replacement or repair of defective work shall be done at no additional cost to the owner.

### **3.04 OPERATIONAL TESTS AND ADJUSTMENTS**

- A. Upon completion of the work, all equipment and systems shall be operated and tested for a period of at least three consecutive days to demonstrate their satisfactory overall operation. On the last day of this period, the Contractors shall arrange for an acceptance test and final inspection by the owner. All necessary adjustments and corrections to the systems shall be made prior to acceptance test so that the systems are operating smoothly and properly and absolutely ready before check and acceptance.
- B. Coordination of all items associated with the mechanical systems is the responsibility of the mechanical contractor, including all wiring in connection with mechanical equipment, and all temperature control work. It shall be this contractor's responsibility to determine that his systems, equipment and apparatus are properly wired and controlled and completely ready for satisfactory operation and test.
- C. Immediately before starting tests, all air filters shall be replaced as previously specified. All motors checked for rotation and all bearings lubricated.

**END OF SECTION**



## SECTION 16000

### ELECTRICAL

#### PART 1 – GENERAL

##### 1.01 SCOPE OF WORK

- A. Electrical work includes all labor, tools and material necessary to install, test and place in operation complete and operable electrical systems, as shown on the plans and described herein.
- B. The general extent of the electrical work includes, among others, the furnished and installing of the following items:
  - 1. Lighting and small power installation, including fixtures, receptacle outlets, switching and circuits as indicated on the drawings.
  - 4. Complete grounding systems.
  - 3. Telephone service entrance conduit, backboards and interconnecting conduit.
  - 6. The contractor will coordinate with the local utility companies for verification of their requirements prior to bid closure and prior to installation. It will be the contractor's responsibility to verify voltage; phase; conduit size, type, and quantity; wire size, type, and quantity.
  - 7. Electrical contractor to coordinate with cable company and provide all necessary conduit and hardware for installation of Cable Service to each building.
  - 8. Supply and install smoke/CO detectors on line current.
  - 9. Supply and install telephone and cable service box at main panel. Provide outlets per electrical plan.
  - 10. Supply and install doorbell chimes, transformers and push buttons.
  - 11. Supply and install exhaust fans and fan/lights; venting connection by separate HVAC Contractor.
  - 12. Supply and install dedicated circuits for microwave oven, electric oven and dryer outlets/hook-ups.
  - 13. Supply and install all electrical meters, panels, breakers, fixtures, outlets and devices per electrical plans.
  - 14. Supply and install all appropriate light bulbs, incandescent or fluorescent.
  - 15. Supply and install all service entrance cable, trenching and backfill to building from utility service.
  - 16. Supply and install pigtails on ranges, microwaves and HVAC equipment.
  - 17. Install ranges and microwaves.
  - 18. Install electrical service outlet for auto pilot for water heater.

19. Verify electrical requirements for HVAC equipment. Provide and install complete electrical services to this equipment such as wiring and disconnect devices.

## **1.02 DRAWINGS**

- A. The electrical layouts are generally diagrammatic. The location of outlets and equipment are approximate unless dimensioned. The exact locations and routing of conduits shall be governed by structural conditions and physical interferences and by the location of electrical terminations of equipment.
- B. Any detail on either the drawings or specification that contributes to an illegal condition shall not relieve the contractor's responsibility to bring this condition to the attention of the Architect or Engineer prior to installation. Failure of this responsibility shall require the contractor to remove all material affected by this condition and re-install legally. Any removal and re-installations will be done at the contractor's expense.

## **1.03 QUALITY ASSURANCE**

- A. All work shall be in full accord with the latest edition of the California Electrical Code, all local, state, and federal codes, and with the requirements of the serving utility companies.
- B. All electrical materials used on this project shall be the best possible grade of their kinds, new, free from defects, and unless otherwise specifically noted, shall conform to applicable standards of National Electrical Manufacturers Association, The American National Standards Institute and Underwriters Laboratories, Inc. Each article of a kind shall be the standard product of a single manufacturer.
- C. Specific brand names and catalog numbers are used to describe materials in order to establish standards of performance and quality. The decision of the Engineer shall govern as to what materials may be substituted, but the burden of proof as to the equality of any proposed substitution shall be upon the Contractor.

## **1.04 SUBMITTALS**

- A. Submit to the Architect a complete list of materials and equipment stating manufacturer's names, catalog numbers, etc. No materials shall be installed until final approval is given.
- B. Submit to the architect evidence of coordination with the serving utility companies indicating final voltage, phase, conduit sizes and locations of equipment.

## **1.05 WARRANTY**

- A. Guarantee all work for one year from date of acceptance against all defects in material, equipment and workmanship.

## **1.06 PRODUCT HANDLING**

- A. Contractor shall be responsible for delivery, storage, protection and placing of all equipment and materials.
- B. Protection: Contractor shall protect from damage during construction, work and materials of other trades as well as electrical work and material. Electrical equipment stored and installed on job site shall be protected from dust, water or any other damage.

## **PART 2 – PRODUCTS**

### **2.01 RACEWAY**

- A. Steel conduit or intermediate metal in damp locations or where exposed to mechanical injury, or electrical metallic tubing in dry locations if protected against mechanical injury, throughout the job except where shown otherwise on plans.
- B. Rigid Conduit or Intermediate Metal Conduit together with couplings, locknuts, bushings, and fittings: Galvanized steel or aluminum.
- C. Electrical Metallic Tubing: Galvanized with watertight compression type fittings or a UL approved setscrew type.
- D. Flexible Steel Conduit: "Sealtight" with Appleton type ST fittings. Bare steel flexible conduit permitted for connection to lighting fixtures only.
- E. PVC Conduit (polyvinylchloride): Rigid heavy-weight type Schedule 40 complete with PVC fittings. (Minimum ¾")

### **2.02 WIRE AND CABLE**

- A. Plainly marked with UL label, gauge, voltage and kind of insulation.
- B. General Wiring: 600 V type "THHN" Copper, minimum size #12AWG.
- C. Feeders: 600 V type "THWN" Copper, or as shown on plans.
- D. Aluminum conductors are not to be used unless specifically called out for on drawings.
- E. Romex: Romex may be used in the wiring of the single family and duplex units, or where permissible by code.

### **2.03 DEVICES**

- A. Wall switches: AC rated, heavy duty, quiet type, rated 20 amperes at 120 Volts A.C. Special switches as noted.
- B. Convenience outlets: Leviton tamper-resistant (per code), Decora style residential grade, Rated 15 amperes at 120 Volts A.C., unless otherwise required by code and/or load conditions. 3 wire groundable type. Color white.
- C. Plates: Plates shall be supplied for every local switch, receptacle, etc. Plates shall be Urea or Lexan. Color white.
- D. Telephone and Cable Outlets: All living units shall be pre-wired by electrical contractor.
- E. G.F.I., Telephone, T.V. and other electrical cable outlets shall be Leviton, Eagle or approved equivalent. Color: White.
- F. Doorbell chimes (where applicable): Nutone LB-12 white with pushbutton PB-41L gold anodized, and transformer 101T.
- G. All exterior outlets shall have waterproof, sealed covers. MASON "Watertite" vertical outlet. Color: White. Provide with in use cover.

## **2.04 LIGHTING FIXTURES AND ACCESSORIES**

- A. Manufacturer of Fixtures: All fixtures of one type shall be of one manufacturer and of identical finish and appearance.
- B. Accessories: All fixtures shall be complete with accessories, end caps, plaster frames, yokes, hangers, etc., which are required for the specific installation.
- C. Lamps: Supply lamps as indicated on Fixture Schedule.
- D. Ballasts: Ballasts for fluorescent fixtures shall be energy efficient type, integral with the fixture, high power factor (minimum 90% P.F.)

## **2.05 BOXES**

- A. Shall be of size and shape best suited for particular application, properly code sized for number of wires and conduits passing through or terminating therein, but in no case less than four inches square or octagon. Telephone outlet boxes shall be 4-11/16"x 2-1/2" deep, minimum. Support boxes directly to structural members, framing or blocking by means of screws, anchors, bolts or embedded in masonry or concrete. Do not use nails to set boxes.

## **2.06 STARTERS AND DISCONNECTS**

- A. Consult mechanical drawings and specifications for starters. Provide starters where not supplied with mechanical equipment. Square D, combination starter with fusible disconnect.

## **PART 3 – EXECUTION**

### **3.01 RACEWAY INSTALLATION**

- A. Electrical Metallic Tubing may be used in dry locations where protected from mechanical injury.
- B. PVC conduit may be used underground or where encased in concrete.
- C. All conduit shall be run concealed in finished areas.
- D. Connect all air-conditioning motors to conduit systems with sections of flexible conduit to facilitate removal of motor. Use approved fittings only.

### **3.02 WIRE INSTALLATION**

- A. Where allowed on the drawings, aluminum feeders shall be terminated using compression lugs.
- B. Provide grounding in accordance with applicable codes and regulations.

### **3.03 LIGHTING FIXTURE INSTALLATION**

- A. Install fixtures complete with all necessary connectors and brackets. Remove all labels except UL label from exposed parts of fixtures. Clean fixtures upon project completion.

- B. Where structural members or mechanical equipment prevent installation of fixtures as shown, resulting layouts shall be symmetrical within ceiling space and approved by the architect.
- C. Provide one-hour enclosure around fixtures in all one-hour ceilings to maintain the integrity of one-hour ceilings.

### **3.04 GROUNDING AND BONDING**

- A. The entire electrical system shall form a continuous metallic electrical conductor from service point to every outlet and shall be grounded by connection to the main service ground.
- B. A Ground wire shall be installed in all PVC and flexible conduit.
- C. Raceway systems, supports, cabinets, switchboards, control equipment, motor frames, lighting fixtures and utilization apparatus shall be permanently and effectively grounded.
- D. Where cabinets are furnished with a ground bus, all required bonding conductors shall connect thereto, each with a separate lug.
- E. All grounding conductors are to be copper only. Aluminum will not be allowed.

### **3.05 TESTS**

- A. Upon completion of the work and adjustments of all equipment, all systems shall be tested to demonstrate that all equipment furnished, installed and/or connected under the provisions of these specifications shall function in the required manner.
- B. All systems shall test free from short circuits and grounds, and be free from mechanical and electrical defects. All circuits shall be tested for the proper neutral connection, and rotation of motors.
- C. Where tests indicate faulty installation or other defects, they shall be located, repaired, and retested at the Contractor's expense.

**END OF SECTION**

## **SECTION 16740**

### **TELEPHONE SYSTEM**

#### **PART – GENERAL**

##### **1.01 DESCRIPTION**

- A. Main telephone entrance, telephone prewiring and individual outlets. Coordinate installation of complete project system with telephone company. It is the Contractor's responsibility to supply and install all necessary components for a complete telephone system from weatherheads to individual outlets.
  
- B. It is the Contractor's responsibility to coordinate all work and pay for all permits relating to the installation of telephone systems to the project and individual residences. This includes the cost of work that may be provided by utility companies and charged to the project. Such works includes, but is not limited to, the following:
  - 1. Conductors to telephone outlets inside the buildings
  - 2. Conduits
  - 3. Terminal box (exterior to the building).
  - 4. Telephone outlets at locations indicated on the Drawings

#### **PART – PRODUCTS**

##### **2.01 ENTRANCE**

- A. Provide and install weather head, entrance facility and extend conduit at each building. Verify all requirements with the telephone company. Pay all costs and fees. See Drawings for diagrammatic entrance configurations.

##### **2.02 TELEPHONE EQUIPMENT AND CABLING**

- A. Provide and install all required prewiring and outlets to each unit from their respective building telephone entrances. See plans for exact outlet locations. Verify the size and type of cables and outlets with telephone company.

**END OF SECTION**

## **SECTION 16800**

### **CABLE TELEVISION**

#### **PART 1 – GENERAL**

##### **1.01 DESCRIPTION**

- A. Main cable television entrance, rewiring and individual outlets. Coordinate installation of complete project system with Cable Television Company. It is the Contractor's responsibility to supply and install all components necessary for a complete cable television system, from weatherheads to individual outlets.
- B. It is the Contractor's responsibility to coordinate all work and pay for all permits relating to the installation of cable television to the project and individual residences. This includes the cost of work that may be provided by utility companies and charged to the project. Such work includes, but is not limited to, the following:
  - 1. Conductors to telephone outlets inside the buildings
  - 2. Conduits
  - 3. Terminal box (exterior to the building); see electrical drawings
  - 4. Outlets at locations indicated on electrical drawings

#### **PART 2 – PRODUCTS**

##### **2.01 ENTRANCE**

- A. Provide and install weather head, entrance facility and conduit on exterior of each building. Verify all requirements with the cable television Company. Pay all costs and fees.

##### **2.02 CABLE TELEVISION EQUIPMENT AND CABLING**

- A. Provide and install all required rewiring and outlets to each unit from their respective building cable television entrances. See plans for exact outlet locations. Verify the size and type of cables and outlets with Cable Television Company.

**END OF SECTION**