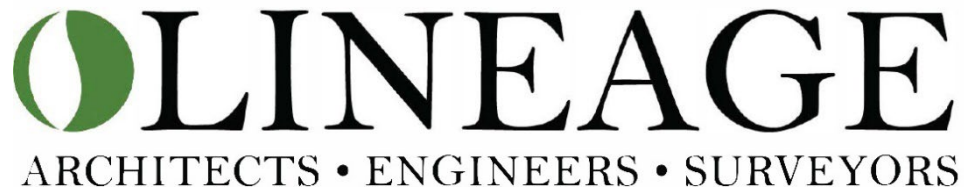


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THREE-PART  
SPECIFICATIONS  
FOR

**Restroom Upgrades at Natural Chimneys**

94 Natural Chimneys Lane

Mt. Solon, Virginia



December 17, 2024

## GENERAL REQUIREMENTS – SECTION 01 10 00

### PART ONE GENERAL

#### 1.1 SECTION INCLUDES

- A. This Section establishes general requirements for any and all work performed on this Project. The requirements of this Section are in addition to the requirements established by the General and Supplementary Conditions.

#### 1.2 RELATED SECTIONS

- A. Section 01 33 00 Submittal Procedures

#### 1.3 CONDITIONS OF THE CONTRACT

- A. The General Conditions and Supplementary Conditions apply to any and all work performed on this Project.

#### 1.4 SUBMITTALS

- A. Comply with requirements of Section 01 33 00
- B. Within 15 days of award of Contract, submit the following:
  1. List of Subcontractors
  2. Construction Schedule

#### 1.5 REFERENCED STANDARDS

- A. International Building Code 2021 Edition
- B. Virginia Uniform Statewide Building Code 2021 Edition
- C. Americans with Disabilities Act current legislation

### PART TWO PRODUCTS

- 2.1 Not used.

### PART THREE EXECUTION

#### 3.1 CODES AND REGULATIONS

- A. All work shall comply with all applicable federal, state, and local codes and ordinances.

#### 3.2 LAYOUT

- A. The Contractor shall perform all staking and layout.

- B. Layout of the work shall be performed in advance by competent, qualified personnel.

### 3.3 EXISTING CONDITIONS

- A. The Contractor shall visit the site prior to starting any work and shall become fully informed of any and all existing conditions and limitations.
- B. Location of Existing Utilities: The Contractor shall contact the various utility companies including, but not limited to Miss Utility, for the purpose of locating any and all existing underground utilities. Such contact shall be made sufficiently in advance of commencing operations to allow adequate time for marking said utilities and no less than the minimum notice required by state law. The Contractor shall make any other notifications required by federal, state, or local authorities.
- C. Contractor shall field verify all dimensions.

### 3.4 TESTING LABORATORY AND INSPECTION SERVICES

- A. The Owner will select a pre-qualified independent testing laboratory and inspection service if required.
- B. Payment for testing and/or inspection services will be in accordance with the General Conditions.
- C. Access to work: Representatives of the testing/inspection agency shall always have access to the work.

### 3.5 CLEANING

- A. Progress Cleanup:
  1. The Jobsite shall be always maintained in neat and orderly condition during construction.
  2. All scrap, debris, and waste material shall be properly stored in containers or removed from the Jobsite weekly, and more often if necessary.
  3. Scrap and debris shall be stored neatly at the Jobsite prior to removal in appropriate containers, dumpsters, etc.
  4. Tipping Fees: The Contractor shall pay all fees associated with the removal of debris and other waste from the Jobsite.

### 3.6 FINAL CLEANING

- A. Definition: Final Cleaning shall be to the level of cleanliness generally provided by skilled professional cleaners using commercial quality environmentally friendly building maintenance equipment and Materials. Final cleaning shall be to the satisfaction of the Owner.
- B. CLEANING REQUIREMENTS APPLY ONLY TO AREAS AFFECTED BY THE WORK.

- C. Upon completion of Work, remove from all tools, surplus materials, equipment, scrap, debris, and waste from Jobsite.
- D. Broom clean all paved areas on the site and adjacent to the site. Hose off any mud and similar deposits. Remove any mortar droppings and splashed materials. Use appropriate cleaners on areas to remove stains.
- E. Structures, Exterior. Visually inspect all new and restored exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter. Remove all traces of splashed materials.
- F. Structures, Interior. Visually inspect all interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter. Remove any labels except those with instructions for the user or required by law to remain. Remove all traces of splashed materials. Remove paint droppings, spots, stains, and dirt from finished surfaces. Use only cleaning materials appropriate for the surface(s) being cleaned.

- END OF SECTION -

## WORK RESTRICTIONS – SECTION 01 14 00

### PART ONE - GENERAL

#### 1.1 OPERATIONS OUTSIDE CONSTRUCTION LIMITS

- A. The contractor shall comply with designated travel paths, staging areas and dumpster locations.

#### 1.2 WORK SITE PROTECTION

- A. Provided by the contractor as follows:
  1. No traffic on lawn and landscaped areas except as approved by Owner.
  2. All open trenches and other excavations shall be temporarily filled or otherwise made safe at the close of each work day.

#### 1.3 HOT WORKS OPERATIONS

- A. The contractor shall follow all OSHA standards/regulations on Hot Works operations and is subject to VOSHA inspections. CM/GCs certify that they have a Hot Works program in place with proper oversight that includes recognition of the risk of after-hours ignition from Hot Work and the requirement for a fire watch.

#### 1.4 SAFETY PROCEDURES

- A. The contractor shall establish a safety program and review safety procedures for hazardous work prior to the commencement of that work.

#### 1.5 ELECTRONIC DEVICES

- A. Use of cellular telephones and two-way pagers is allowed.

### PART TWO - PRODUCTS

#### 2.1 Not Used

### PART THREE - EXECUTION

#### 3.1 Not Used

- END OF SECTION -

## PROJECT MANAGEMENT AND COORDINATION – SECTION 01 31 00

### PART ONE - GENERAL

#### 1.1 PROGRESS MEETINGS

- A. Scheduling:
  - 1. The contractor is required to schedule Progress Meetings throughout progress of the Work at regular intervals, and at a minimum of two (2) per month. The monthly pay meeting, required by the General Conditions, may serve as a Progress Meeting. The contractor is also required to coordinate scheduled meeting dates with the Owner.
- B. Brief Progress Summary & Work Projection:
  - 1. The contractor is required to provide a brief summary, in narrative form, of progress since the previous meeting and report on projected work for a minimum of the next two (2) weeks.
- C. Attendance Required:
  - 1. Project Superintendent, major Trade/Subcontractors, and Suppliers, and the Owner, as appropriate to agenda topics for each meeting.
- D. Agenda:
  - 1. Review items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project that may include:
    - a. Schedule
    - b. Issues
    - c. Requests for Information
    - d. Estimated Change Orders
    - e. Change Orders
    - f. Submittals
    - g. Applications for Payment
    - h. Safety, Security, and Conduct

#### 1.2 PRECONSTRUCTION MEETINGS

- A. Required by the General Conditions, this meeting will be scheduled by the Owner.

### PART TWO - PRODUCTS

- 2.1 Not Used

### PART THREE - EXECUTION

- 3.1 Not Used

- END OF SECTION -

## SUBMITTAL PROCEDURES – SECTION 01 33 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Procedures for Submittals to the Owner

#### 1.2 RELATED SECTIONS

- A. Section 01 10 00 General Requirements

#### 1.3 SUBMITTALS

- A. Comply with requirements of this Section
- B. Within 30 days of award of Contract and before making other Submittals, submit the following
  1. Submittal Schedule
  2. Quality Assurance
  3. Coordination of Submittals: Prior to each Submittal, carefully review and coordinate all aspects of each item being submitted with the requirements of the Contract Documents, in place work, and other Submittals.

### PART TWO - PRODUCTS

- 2.1 Not used

### PART THREE - EXECUTION

- 3.1 Make all Submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the Contract Documents.
- 3.2 The General Contractor shall review and approve all Submittals for compliance with the Contract Documents prior to submittal to the Owner.
- 3.3 Copies: Submit all items digitally except color samples. Color samples shall be physical submittals delivered to Owner.
- 3.5 Where Submittals are required, no work shall be commenced until such submittals have been approved by the Owner.
- 3.6 Shop Drawings: Make all Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the items shown and their method of connection to the work. Do not simply replicate architectural drawings.
- 3.7 Manufacturer's Literature and Materials Lists: Where contents of submitted literature from manufacturers include data not pertinent to the Submittal, clearly indicate which portion of the contents is being submitted for review.
- 3.8 Samples: Samples shall be of the precise article proposed to be provided. Samples will be retained by the Owner until product shown is incorporated into the work.
- 3.9 The Owner shall have a minimum of seven business days to review submittals.

- END OF SECTION -

## TEMPORARY FACILITIES AND CONTROLS - SECTION 01 50 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Description
- B. Job Conditions
- C. Temporary utilities
- D. Temporary sanitary facilities
- E. Storage Trailers
- F. Temporary controls: barriers, enclosures, and fencing
- G. Security requirements
- H. Vehicular access and parking
- I. Waste removal facilities and services

#### 1.2 DESCRIPTION

- A. Specific administrative and minimal procedural actions are specified in this section, as extensions of provisions in the General Conditions and other Contract Documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary facilities required, and no omission from this section will be recognized as an indication by Owner that such temporary activity is not required for successful completion of the work and compliance with requirements of the Contract Documents. Provisions of this section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities.

#### 1.3 JOB CONDITIONS

- A. General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

#### 1.4 TEMPORARY UTILITIES

- A. General: The Contractor shall provide all temporary services and facilities as specified below, and as required for the proper and expeditious prosecution of the work. The Contractor shall make all connections to existing sources of supply and pay all charges

for same as required; provide all labor, materials, equipment, and appliances necessary for the complete installation, operation and maintenance of all temporary service system and facilities as required; and he shall remove such temporary installation and connections when no longer required, or when directed.

#### 1.5 STORAGE TRAILERS

- A. Storage Trailers: The Contractor shall provide storage trailers necessary for the containment and storage of material and equipment for the work. Configuration and maintenance of such facilities shall comply with local laws and ordinances and with local fire codes. The Contractor shall meet with the Owner and obtain written instructions for the placement of storage facilities.

#### 1.6 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, trees, shrubbery, and structures from damage.

#### 1.7 SECURITY

- A. The types of temporary security and protection provisions required include, but not by way of limitation, fire protection, barricades, warning signs/lights, site enclosure fence, sidewalk bridges, building enclosure/lockup, personnel security program (theft prevention), environmental protection, and similar provisions intended to minimize property losses, personal injuries and claims for damages at the job site. Note the proximity of occupied buildings. Provide security/protection services and systems in coordination with activities and in a manner to achieve 24-hour, 7 day-per-week effectiveness.

#### 1.8 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and the Owner.
- B. Provide and maintain access free of obstructions to fire hydrants.
- C. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

#### 1.9 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to the specified condition. It is the contractor's responsibility to document existing conditions if damage exists prior to commencing the project.

PART TWO - PRODUCTS

2.1 Not Used

PART THREE - EXECUTION

3.1 Not Used

- END OF SECTION -

## TEMPORARY BARRIERS AND ENCLOSURES – SECTION 01 56 00

### PART ONE - GENERAL

#### 1.1 TEMPORARY BARRIERS AND ENCLOSURES

- A. Provide barriers to prevent unauthorized entry to construction areas.
  - 1. Provide orange construction fencing.
- B. Exterior Closures:
  - 1. Provide temporary weather-tight closure at exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures, and to prevent entry of unauthorized persons.
  - 2. Provide access doors with appropriate hardware and locks.

#### 1.2 SECURITY

- A. Conduct all operations in a manner to avoid risk of loss, theft, or damage by vandalism.

#### 1.3 NOISE CONTROL

- A. Execute Work as quietly as practicable to avoid unnecessary disturbances to occupants within and around the premises.
- B. High-level noise operations must be performed in accordance with local regulations.

### PART TWO - PRODUCTS

#### 2.1 Not Used

### PART THREE - EXECUTION

#### 3.1 Not Used

- END OF SECTION -

## PRODUCT REQUIREMENTS – SECTION 01 60 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.

#### 1.2 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

#### 1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

#### 1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate-controlled enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. This included trusses. Provide ventilation to prevent condensation and degradation of products.

- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: products of one of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

#### 1.6 PRODUCT SUBMITTALS

- A. Submit two copies of each submittal for each product to the Owner unless otherwise noted in specific section.

#### 1.7 PRODUCT SUBSTITUTION PROCEDURES

- A. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- B. Product substitutions may be submitted in writing for approval.

### PART TWO - PRODUCTS

- 2.1 Comply with specific product sections.

### PART THREE - EXECUTION

- 3.1 Comply with specific product section and industry recognized standards of care.

- END OF SECTION -

## CONTRACT CLOSEOUT – SECTION 01 70 00

### PART ONE - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental General Conditions.

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
  - 1. Inspection procedures.
  - 2. Submittal of As-Built markup project documents to Owner.
  - 3. Submittal of warranties to Owner.
- B. Detailed requirements for record documents to be submitted as part of project closeout are to be found in Contractor "As-Built" Drawings.

#### 1.3 SUBSTANTIAL COMPLETION

- A. Procedures: Comply with procedures specified in the General Conditions for the Contract for Construction. Before submitting the Certificate of Partial or Substantial Completion by the Contractor complete the following. List exceptions in the request.
  - 1. In the Application 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.
    - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
    - b. 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.
  - 2. Obtain and submit all releases that the Owner requires in order to lawfully occupy the Work without restriction.
  - 3. Advise the Owner of pending insurance changeover requirements.
  - 4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents. All warranties and guarantees shall be drawn in the name of the owner.
  - 5. Submit marked up project documents, maintenance manuals, and similar information to the Owner.
  - 6. Deliver extra stock, and similar items.
  - 7. Discontinue and remove temporary facilities from the site, along with construction tools and similar elements.
  - 8. Complete repair of all deficient work, including the touch up of all deficient finishes.
    - a. The Owner will under no circumstances confirm the Work to

- Substantially Complete unless all deficient finish work has been completely repaired and all deficient finishes touched up.
9. Complete Final Cleaning.
    - a. The Owner will under no circumstances confirm the Work to Substantially Complete unless Final Cleaning has been completely performed.
  10. Remove temporary lock cylinders and cores.
  11. Complete all start-up testing of building systems.
  12. Complete the exterior portions of the Work to the same degree as that of the interior.

#### 1.4 FINAL ACCEPTANCE

- A. Procedures: Comply with procedures specified in the Owner's General Conditions for the Contract for Construction. Before submitting the Certificate of Completion by the Contractor complete the following:
  1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required. List exceptions in the request.
  2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
  3. Submit a certified copy of the Owner's final inspection list of items to be completed or corrected. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
  5. Submit consent of surety to final payment.
  6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

#### PART TWO - PRODUCTS

- 2.1 Not used

#### PART THREE - EXECUTION

##### 3.1 FINAL CLEANING

- A. General: Regular construction cleaning is included in Division 1 Section "Temporary Facilities and Temporary Controls."
- B. Cleaning: Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
  1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
    - a. Remove all temporary labels. Do not remove labels describing the fire

- resistance of doors and frames.
  - b. Clean glass, plastic, and all reflective surfaces, including all glass in doors and windows. Remove glazing compound, and over-paint. Clean all transparent material on both surfaces.
  - c. Exterior hard surfaces must be free of stains, shavings, films, gum, and other foreign deposits.
  - d. Interior hard surfaces, including shelves within built-in casework, must be free of cobwebs, dust, stains, shavings, films, and gum.
  - e. Electrical and mechanical equipment must be free of dust, cobwebs, stains, shavings, films, gum, excess lubricant, and other substances.
  - f. Interior and exterior lamp lenses, reflectors, and baffles must be free of cobwebs, dust, stains, films, gum, insect droppings and carcasses.
  - g. Removal of Protection and Facilities: Remove temporary protection and construction facilities installed for the Work, including Contractor's office and site fencing, as specified in Division 1 Section, "Temporary Facilities and Controls." Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
- C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
- 1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

- END OF SECTION -

## DEMOLITION AND DECONSTRUCTION – SECTION 02 41 13

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Removal of existing items as indicated on the plans.
- B. Deconstruction and disassembly of items as indicated on the plans.
- C. Disposal of debris from site.

#### 1.2 RELATED SECTIONS

- A. Section 01 74 19 Construction Waste Management

#### 1.3 QUALITY ASSURANCE

- A. Experienced, qualified personnel shall perform the work of this Section.

### PART TWO - PRODUCTS

- A. Not Used

### PART THREE - EXECUTION

#### 3.1 GENERAL

- A. Prior to commencement of demolition and deconstruction operations, ascertain which materials are to be retained for future reuse.
- B. Protect stored materials from weather and damage.
- C. Remove other items slated for demolition.
- D. Comply with all applicable codes, ordinances, and regulations associated with demolition operations.

#### 3.2 DISPOSAL

- A. Comply with all applicable codes and regulations during disposal operations.

- END OF SECTION -

## TOPSOIL PLACEMENT AND GRADING – SECTION 02 91 00

### PART ONE - GENERAL

#### 1.1 DESCRIPTION

- A. Work Included: Prepare and place topsoil on a previously prepared subgrade.
- B. Related Sections: Additional Sections of the Documents which are referenced in this Section include:
  - 1. Section 02 92 19 00 Seeding

#### 1.2 REFERENCES

- A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in these specifications using the abbreviations shown:
- B. Virginia Department of Transportation – Road and Bridge Specifications (VDOT):
  - 1. 602 Topsoil
- C. Virginia Erosion and Sediment Control Handbook (VESCH):
  - 1. 3.30 Topsoiling

#### 1.3 DELIVERY, STORAGE AND HANDLING

- A. General: Topsoil shall be stripped and stockpiled in accordance with pertinent provisions of VESCH 3.30.

#### 1.4 MAINTENANCE

- A. Erosion: Employ erosion and sediment control practices as necessary to prevent soil erosion until adequate vegetative cover has developed. Topsoil which erodes shall be replaced with topsoil of like character until adequate vegetative cover has developed.

### PART TWO - PRODUCTS

#### 2.1 MATERIALS

- A. General: Topsoil shall conform to the pertinent provisions of VESCH 3.30 and VDOT Section 60 except as described herein.
- B. Topsoil: Use all on-site stockpiled topsoil which is free from matted weeds and sod; clods and stones larger than 2 inches; toxic substances, litter, or other deleterious material.
  - 1. Topsoil must also be free of plant parts of Quackgrass, Johnsongrass, Mugwort, Netsedge, Poison Ivy, Canadian Thistle or other species which might compete with the desired plant growth.
  - 2. Topsoil shall not contain toxic substances harmful to plant growth, such as pesticide residues.

## PART THREE EXECUTION

### 3.1 PREPARATION

- A. General: Preparation of subgrade shall follow the processes described in VESCH 3.30 and VDOT Section 602.
- B. Special: Topsoil shall be placed only upon friable graded surfaces. When subgrade is not properly friable, CONTRACTOR shall prepare the surface by discing or rototilling to a minimum depth of 2 inches.

### 3.2 APPLICATION

- A. General: Application of topsoil shall follow the process as described in VESCH 3.30 and VDOT Section 602.
- B. Distribution: Stockpiled topsoil shall be uniformly distributed over all denuded areas. Topsoil shall have a minimum thickness of 4 inches after natural settlement and light rolling, or greater depth if specified on the plan drawings. Topsoil shall conform to the grades and elevations as shown on the plans. Hand rake areas inaccessible to machine grading.
- C. Compaction: Topsoil shall be compacted by one pass of a cultipacker, roller, or other approved equipment weighing 100-160 pounds per linear foot of roller.
- D. Conditions: Topsoil shall not be placed when either the topsoil or the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to proper grading.

### 3.3 QUALITY ASSURANCE

- A. General: Topsoil which is inadequate or unsuitable for healthy plant growth shall be disposed of by the CONTRACTOR and replaced as necessary with topsoil similar in texture and composition to other on-site topsoil, at no additional cost to the OWNER.

- END OF SECTION -

## SEEDING – SECTION 02 92 19

### PART ONE - GENERAL

#### 1.1 DESCRIPTION

- A. Work Included: Furnish and install lime, fertilizer, seed, mulch, and water on all disturbed areas on the site, in strict accordance with this Section and as shown on the drawings. Work in this section includes permanent seeding and, when required, temporary seeding.
- B. Related Sections: Additional Sections of the Documents which are referenced in this Section include:
  - 1. Product Requirements - Section 01 60 00

#### 1.2 REFERENCES

- A. General: The work shall comply with the most recent standards or tentative standards as published at the date of the contract and as listed in this specification using the abbreviation shown.

#### 1.3 SUBMITTALS

- A. General: When requested by the engineer at any time during the landscape installation, contractor shall submit the following in accordance with the Conditions of the Contract.
- B. Soil Analysis: Soil analysis test reports and soil amendment application rate recommendation shall be submitted and approved prior to the commencement of seeding operations.
- C. Hydroseeding: When hydroseeding is proposed, contractor shall submit information on the mixture to be used including fertilizer, lime, and mulch.
- D. Product Data: Contractor shall furnish labels or other appropriate product data for landscape materials. This may include but is not limited to: labels showing lime and fertilizer analysis; labels showing seed mixture contents and analysis; and labels from geotextile fabrics and similar materials.

#### 1.4 QUALITY ASSURANCE

- A. General: Use adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Equipment: Use equipment adequate in size, capacity, and numbers to accomplish the work of this Section in a timely manner.
- C. Seed: Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- D. Soil Amendments: Provide fertilizers, lime and other soil amendments in containers showing analysis, contents, and volume or weight.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Shall be in accordance with Section 01 66 00 Product Requirements.
- B. Delivery: All seed shall be kept cool, dry, and free of contaminants during transportation. Seed and soil amendments shall be delivered in original, unopened containers with appropriate labels attached.
- C. Storage: Seed which is not sown within 24 hours after delivery shall be stored as follows unless other methods of storage are requested by the contractor and approved by the engineer.
  - 1. Seed storage location shall be cool, dry, and sheltered from wind, traffic, and construction activities.
  - 2. Fertilizers, lime, herbicides, insecticides, and other agricultural chemicals shall be stored separately from the seed.
- D. Replacement: Seed which is heated, moistened, or otherwise damaged during transportation or storage shall be rejected and replaced by the contractor at no additional cost to the owner. Seed in damaged or opened packaging shall be rejected and replaced by the contractor at no additional cost to the owner.

## 1.6 PROJECT CONDITIONS

- A. General: For areas specifically designated on the plans, the contractor shall analyze the topsoil and base soil amendment application rates on recommendations received. For areas not specifically designated on the plans, the contractor may elect to analyze topsoil and base application rates on recommendations received, in lieu of rates specified herein.

## 1.7 WARRANTY

- A. General: Contractor shall perform periodic inspection of the seeded areas during the warranty period.

## 1.8 MAINTENANCE

- A. General: Seeded areas shall be maintained as necessary to establish a healthy, uniform stand of turf until substantial completion. Maintenance shall consist of watering, mowing, fertilizing, weed removal, disease, and insect removal, and where erosion occurs, repair.

## PART TWO - PRODUCTS

### 2.1 MATERIALS

- A. Grass seed: Seed shall comply with all applicable state and federal seed laws and contract requirements.
  - 1. Grass seed shall consist of pure, live, certified grass seed mixture, of the latest crop, and containing weed seed less than 0.5 percent by weight of the total mixture.
  - 2. Seed mixture(s) for permanent seeding shall be selected from the following table, based on the time of year during which seeding is to occur. Numbers indicate pounds of seed per acre. Bermudagrass shall be used in the Southern Piedmont and Coastal Plain, and Kentucky Bluegrass shall be used in the Northern Piedmont and Mountains. Bermudagrass and Kentucky Bluegrass shall not be included in the same mixture.

Southern Piedmont and Coastal Plain (1)	Feb. 1 – April 30	May 1 – Aug. 30	Sept. 1 – Nov. 15	Nov. 16 – Jan. 31
Northern Piedmont and Mountains (2)	Feb. 1- May 15	May 16- Aug. 15	Aug. 16 - Oct. 15	Oct. 16 – Jan. 31
Grass Type	Mixture A	Mixture B	Mixture C	Mixture D
Bermudagrass (1) ( <i>Cynodon dactylon</i> ) OR Kentucky Bluegrass (2) ( <i>Poa pratense</i> )	175	175	175	175
Turf-Type Tall Fescue ( <i>Festuca</i> hybrids)	25	25	25	25
Weeping Lovegrass ( <i>Eragrostis curvula</i> )	20	-	24	-
Foxtail Millet ( <i>Setaria italica</i> )	-	80	8	-
Rye ( <i>Secale cereale</i> )	20	-	8	8
TOTAL WEIGHT	240	280	240	208

3. Where specified on plans, crown vetch seed shall be added to the specified seed mixture at a rate of 10 pounds per acre.
4. Seed mixture(s) for temporary seeding shall consist of two seed types selected from the appropriate mixture in the table below. Selection of the particular mixture shall be based on the time of year during which seeding is to occur. Numbers indicate pounds of seed per acre.

Southern Piedmont and Coastal Plain	Feb. 16 – April 30	May 1 – Aug. 30	Sept. 1 – Nov. 15	Nov. 16 – Jan. 31
Northern Piedmont and Mountains	March 1 – April 30	May 1 – Aug. 15	Aug. 16 – Oct. 31	Nov. 1 – Feb. 28/29
Seed Type	Mixture A	Mixture B	Mixture C	Mixture D
Oats ( <i>Avena sativa</i> )	50	-	-	-
Rye ( <i>Secale cereale</i> )	35	-	35	35
Foxtail Millet ( <i>Setaria italica</i> )	-	30	-	-
Annual Ryegrass ( <i>Lolium multifolium</i> )	35	-	35	40
Weeping Lovegrass ( <i>Eragrostis curvula</i> )	-	10	-	-
Korean Lespedeza ( <i>Lespedeza</i> )	15	15	-	-

- B. Fertilizer: Fertilizer shall be commercially prepared and granular. Fertilizer shall be uniform in composition, dry, and free flowing.
  1. Fertilizer shall conform to all applicable state and federal regulations.
  2. Fertilizer for permanent seeding shall be complete with a 10-20-10 or 15-30-15 analysis (percentages by weight of nitrogen, phosphorous and potassium, respectively) or as recommended in the soil test report and approved by the engineer.
  3. Fertilizer for temporary seeding shall be complete with a 10-20-10 or 15-30-15 analysis (percentages by weight of nitrogen, phosphorous and potassium, respectively).
- C. Mulch: Oat or wheat straw shall be used. Straw shall be dry and free from weeds, weed seeds, and foreign matter detrimental to plant life.
- D. Straw blanket: Straw blanket shall consist of a 100 percent straw blanket sewn into a lightweight photodegradable net. The straw blanket shall be designed for installation on 3:1 and steeper slopes. Weight of blanket shall be approximately 0.5 pounds per square yard. Straw blankets shall be used in areas indicated on plans.
- E. Paper matting: Paper matting shall consist of a flexible knitted construction of high strength degradable yarn interwoven with strips of biodegradable paper. Weight of matting shall be approximately 0.2 pounds per square yard.

- F. Water: Water shall be potable or clean water free of contaminants harmful to plant growth. Brackish water shall not be used.
- G. Lime: Unless otherwise noted, lime shall be agricultural ground or pulverized limestone.

## PART THREE - EXECUTION

### 3.1 PREPARATION

- A. General: Rake the soil surface to remove all root clumps, stones, and debris 1 inch or greater in size. True up all depressions and edges.
- B. Grading: Establish a smooth grade ready to receive seed. Finish grade must conform to the grades and elevations as shown on the plans. Tolerance is 0.10 feet.
- C. Topsoil: Topsoil shall be in place for all areas to be permanently seeded in accordance with Section 02 91 00 Topsoil Placement and Grading.

### 3.2 APPLICATION

- A. General: Initial seeding shall consist of uniformly applying seed, mulch, and water on prepared areas. Over-seeding shall consist of applying seed, mulch, and water to areas previously seeded.
- B. Lime: Apply lime uniformly at the rate of 2 tons per acre or as recommended in the soil test report, using approved application method. After application, the soil shall be loosened to a depth of 4 inches by disking, harrowing, or other approved method.  
  
Washed and disturbed areas shall be final dressed prior to applying fertilizer. Lime application is not required for areas to be temporarily seeded for periods less than 4 months.
- C. Fertilizer: Incorporate fertilizer into top 4 inches of soil by discing or power rake.
  - 1. For areas to be permanently seeded, apply fertilizer uniformly at the rate of 1000 pounds per acre for 10-20-10, 670 pounds per acre for 15-30-15, or as recommended in the soil test report.
  - 2. For areas to be temporarily seeded, apply fertilizer uniformly at the rate of 500 pounds per acre for 10-20-10 or 335 pounds per acre for 15-30-15.
- D. Seeding Time: Seed shall be sown during favorable weather conditions. Seed shall not be sown when the ground is frozen or when air temperatures are below freezing. Do not sow under windy conditions.
- E. Seeding: Sow seed uniformly, dividing the selected rate in half and sowing in cross directions using a mechanical spreader. Do not allow seed to drift into adjacent planting beds.
- F. Raking: After machine sowing, lightly cover seed and provide a smooth surface by raking.
- G. Mulching:
  - 1. Apply mulch within 48 hours of sowing seed. Apply mulch of loose straw uniformly at the rate of 2 tons per acre. Between October 16 and January 31, the application rate shall be increased to 3 tons per acre. Mulch shall be anchored to the seeded surface by discing, or netting
  - 2. Areas to be temporarily seeded need be mulched only during the fall or during

- H. Watering: Immediately after completion of mulching, apply water thoroughly to mulch and seedbed with a fine mist spray. Water heavily once per week during dry weather until a thick cover of grass is established.
- I. Hydroseeding: Hydroseeding may be used as an alternative application method upon approval of the engineer. The use of alternative soil amendments and mulch will be considered provided the application rates comply with the rates specified in this section.

- END OF SECTION -

## WELDED WIRE REINFORCEMENT – SECTION 03 22 00

### PART ONE - GENERAL

#### 1.1 SUMMARY

- A. Work includes the furnishing and installation of welded wire reinforcement and miscellaneous welded wire reinforcement accessories.
- B. Related Sections
  - 1. Section 03 30 00 Cast-in-Place Concrete

#### 1.2 REFERENCES

- A. American Concrete Institute (ACI)
  - 1. 318 Building Code Requirements for Structural Concrete
- B. American Society for Testing and Materials (ASTM)
  - 1. A82 Standard Specifications for Steel Wire, Plain, for Concrete Reinforcement
  - 2. A185 Standard Specifications for Steel Welded Wire Reinforcement, Plain, for Concrete
  - 3. A525 Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- C. International Building Code (IBC): Chapter 19 Concrete
- D. CRSI, Manual of Standard Practice
- E. Wire Reinforcement Institute, Manual of Standard Practice
- F. American Road Builders Association, Technical Bulletin No. 265, 1968, Effects of Rust on Bond of Welded Wire Fabric

#### 1.3 DEFINITIONS

- A. Welded Wire Reinforcement - Welded Wire Reinforcement (WWR) designates a material composed of cold-worked steel wire, fabricated into sheets by the process of electric resistance welding.
- B. Wire Size - Individual wire size designations are based on the cross-sectional area of a given wire. The "W" and "D" number represents the cross-sectional area of the wire multiplied by 100. The "W" represents a plain wire, and the "D" represents a deformed wire. A D10 wire would indicate a deformed wire of 0.10 square inch.
- C. Wire Spacing - The centerline-to-centerline distance between parallel wires.
- D. Sheet Width - Center to center distance between outside longitudinal wires. This dimension does not include side overhangs.
- E. Sheet Length - Tip to tip dimension of longitudinal wires (the length dimension always includes end overhangs).
- F. Side Overhang - Extension of transverse wires beyond centerline of outside longitudinal wires (side overhangs are not included in the sheet width dimension).

- G. Overall Width - Tip to tip dimension of transverse wires (this dimension is the sheet width plus both side overhangs).
- H. End Overhangs - Extension of longitudinal wires beyond centerline of first and last transverse wires (end overhangs are included in the sheet length dimension).

#### 1.4 SUBMITTALS

- A. Submit the following in accordance with conditions of Contract and Section 01 33 00, "Submittal Procedures".
  - 1. Product Data: Submit product data for welded wire reinforcement, accessory, and other manufactured product indicated.
  - 2. Shop drawings for fabrication, bending, and placement of welded wire reinforcement, and additional reinforcing bars as required.
  - 3. Material certificates for the following, signed by manufacturer and Contractor certifying that each material complies with requirements established by this specification.
    - a. Certification shall include copies of material test reports certifying compliance with the governing ASTM specifications, submitted before or upon delivery of the welded wire reinforcement.
    - b. Each type and size of anchors, ties, loose rebar, and metal accessories.

#### 1.5 QUALITY ASSURANCE

- A. Materials shall conform to governing ASTM specifications.
- B. Welded Wire Reinforcement Tolerances
  - 1. Sheet Width: The permissible variation shall not exceed 1/2-inch, center-to-center distance between outside longitudinal wires.
  - 2. Overall Width: The permissible variation shall not exceed 1 inch of the overall width (tip-to-tip length of transverse wire).
  - 3. Sheet Length: The overall length may vary by 1 inch or 1% whichever is greater.
  - 4. Side Overhang: The permissible variation shall not exceed 1/2 inch.
  - 5. Deformed Wire Weight: The weight of any deformed wire is 6%.
  - 6. Plain Wire Diameter: The allowable variation in diameter of plain wire is as follows:
 

<u>Wire Size</u>	<u>Diam. Variation</u>
Smaller than W5.0	0.003 inch
W5.0 to W12.0	0.004 inch
W12.1 to W20.0	0.006 inch
Over W20	0.008 inch
- C. Prior to placement of concrete, all welded wire reinforcement shall be free of contaminants that may adversely affect or reduce bond, such as oil or grease. Rust, surface irregularities, mill scale or a combination of all three will not be cause for rejection. Material will be accepted as being satisfactory without cleaning or brushing provided the dimensions, cross sectional area, and tensile properties of the reinforcement meet the requirements of these specifications.
- E. The Owner can conduct additional tests on the welded wire reinforcement to assure compliance with these specifications. Noncompliance demonstrated by these tests shall be cause for rejection of the material represented by the test samples.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Welded wire reinforcement shall be shipped in bundles, tagged, and marked in accordance with the Wire Reinforcement Institute's "Manual of Standard Practice".
- B. Deliver welded wire reinforcement to project in undamaged condition. Lift welded wire reinforcement using a crane, forklift, or other lifting equipment.
  - 1. Loading and unloading material with a crane requires lifting eyes. Lifting eyes are lengths of wire passing completely through to the underside of the bundle and brought back up to the top and twisted around 3 to 4 times to form an eye. Lifting eyes are in the bundle to limit deflecting and bending in the center of the bundle. Typically, there are four lifting eyes per bundle located along the outside edge of the sheet.
  - 2. Loading and unloading material with a forklift requires the welded wire reinforcement to be supported by dunnage.
- C. Store welded wire reinforcement in a protected area to limit the potential for injury and surface deterioration caused by prolonged exposure to conditions that accelerate the oxidation of steel.
- D. Store welded wire reinforcement accessories to prevent corrosion and accumulation of dirt and oil.
- E. Protect reinforcement, ties, and metal accessories from permanent distortion and store them off the ground.

## PART TWO - PRODUCTS

### 2.1 WELDED WIRE REINFORCEMENT

- A. Plain Welded Wire Reinforcement: ASTM A185, and as follows:
  - 1. WWR Yield Strength: Provide minimum yield strength of 75,000 psi (515 Mpa).
  - 2. Welded wire reinforcement shall be manufactured from foreign or domestic steel.
  - 3. Wire Spacing and Size: Provide wire spacing and size, as calculated to maintain the specified area of steel as indicated on the contract drawings.
  - 4. Wire used in the manufacturing of welded wire reinforcement shall conform to ASTM A82.
  - 5. Welded Wire Reinforcement shall be furnished in flat sheets or fabricated into bent sheets as indicated in the contract documents.

### 2.2 SUPPORTS

- A. Plastic or Wire Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement and construction loading conditions. Items shall conform to industry practice as described in the Wire Reinforcement Institute's, "Manual of Standard Practice" or "TF 702 – Supporting Welded Wire Reinforcement".
  - 1. Metal bolsters or chairs which bear against the forms for exposed surfaces shall be equipped with snug fitting, high density, polyethylene tips which provide 1/2" minimum clearance between the metal and any exposed surface.
  - 2. For epoxy-coated reinforcement, all wire/ bar supports, and bar clips shall be epoxy or plastic coated.
  - 3. For galvanized reinforcing, chair and bar supports shall be hot-dipped galvanized, after fabrication, in accordance with ASTM A123.
  - 4. Spacing of slab bolster rows and highchair rows for deck slabs shall be as noted in Wire Reinforcement Institute's "Manual of Standard Practice" and "TF 702, Supporting Welded Wire Reinforcement".

- B. Concrete Blocks: Concrete blocks shall have a minimum bearing area of 2X2" and equal in quality to the concrete specified. Concrete blocks can be used for supporting welded wire reinforcement in footings and slab-on-grades.

### 2.3 OTHER REINFORCEMENT

- A. Steel Reinforcing Bars: Reinforcing bars shall consist of deformed bars meeting the requirements of ASTM A615, Grade 60.
- B. Dowel Bars: Dowel bars shall be round steel bars meeting the requirements of ASTM A36.
- C. Tie Wire: Shall be 16-gauge, black soft-annealed wire conforming to ASTM A641.

### 2.4 COATINGS

- A. Galvanizing for welded wire reinforcement shall be in accordance with ASTM A525.
- B. Epoxy Coatings for welded wire reinforcement shall be in accordance with ASTM A884. Epoxy powders are electrostatically spray applied to a sandblasted near-white steel finish (fusion bonded epoxy resin). Ties, supports, and inserts used in conjunction with epoxy coated steel welded wire reinforcement shall be similarly coated.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions for compliance with requirements for installation tolerances and other specific conditions, and other conditions affecting performance of welded wire reinforcement.
- B. Examine rough-in and built-in construction to verify actual locations of concrete penetrations prior to installation.
- C. Do not proceed until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean all reinforcement by removing mud, oil, or other materials that will adversely affect or reduce bond at the time concrete is placed. Reinforcement with rust and/or mill scale will be accepted, provided the dimensions and weights, including heights or depth of deformations, are not less than required by the ASTM specification covering this reinforcement in this Specification.
- B. Prior to placing welded wire reinforcement, remove laitance, loose materials, and anything that would prevent or hinder the installation of welded wire reinforcement.

### 3.3 INSTALLATION

- A. General
  1. Place supports to secure welded wire reinforcement against displacement caused by construction loads or placing of concrete. Metal or plastic supports, hangers, or spacers may be used. Layers of welded wire reinforcement shall be separated

by chairs or bolsters. Stones, wood blocks, brick chips, etc., shall not be used to support reinforcement.

2. Place welded wire reinforcement to obtain at least minimum coverages for concrete protection.
3. Do not displace or damage vapor barrier.
4. Accommodate placement of formed openings.
5. Welded wire reinforcement sheets shall have side lap and end laps as called for on the shop drawings. Laps shall be calculated in accordance with ACI 318 code.
6. Tie any added rebar with annealed iron wire of not less than 16 gauge or suitable clips. Wire ties shall be cut back so that no metal is within 1" of the surfaces when the concrete is exposed to view.

- END OF SECTION -

## CAST IN PLACE CONCRETE – SECTION 03 30 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Cast in place concrete for footings, slabs, pads, and as otherwise indicated on Plans.
- B. Concrete Formwork.
- C. Reinforcing Steel.

#### 1.2 RELATED SECTIONS

- A. Section 04 20 00 Unit Masonry
- B. Section 07 92 00 Sealants and Caulking

#### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Within 30 days of award of Contract, submit the following:
  - 1. Shop Drawings showing connections, configuration, detailed locations of reinforcing steel, etc.
  - 2. Product Data.
  - 3. Mix Designs.

#### 1.4 QUALITY ASSURANCE

- A. Comply with all applicable codes and regulations.
- B. Experienced, qualified personnel shall perform the work of this Section.
- C. Inspections and Testing:
  - 1. Provide access to work for special inspectors if required under IBC.
  - 2. Provide access to work for Owner's testing laboratory.
- D. Reference Standards:
  - 1. ASTM A82-02 Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - 2. ASTM A185-02 Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
  - 3. ASTM A615-04b Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
  - 4. ASTM C33-03 Specification for Concrete Aggregates.
  - 5. ASTM C94-04a Specification for Ready-Mixed Concrete.
  - 6. ASTM C150-04a Specification for Portland Cement.
  - 7. ASTM C494-04 Specification for Chemical Add mixtures for Concrete.
  - 8. ASTM D1056-00 Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
  - 9. ACI301-05 Specifications for Structural Concrete for Buildings
  - 10. ACI 304 Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
  - 11. ACI 305 Recommended Practice for Hot Weather Concreting
  - 12. ACI 306. Recommended Practice for Cold Weather Concreting

13. ACI 309 Recommended Practice for Consolidation Concrete
14. ACI 315 Details and Detailing of Concrete Reinforcement
15. ACI 318-05 Building Code Requirements for Structural Concrete
16. ACI 347 Recommended Practice for Concrete Formwork.

## 1.5 PRODUCT HANDLING

- A. Use all means necessary to protect the products and work of this Section.
- B. Store all materials above ground and protected from weather.
- C. Do not install damaged or defective products.

## PART TWO - PRODUCTS

### 2.1 FORMWORK

- A. Lumber, plywood, or steel forms may be used.

### 2.2 REINFORCING

- A. Reinforcing Bars: ASTM A615 Grade 60.
- B. Steel Wire: ASTM A82.
- C. Welded Wire Fabric (WWF): ASTM A185 Provide chairs, supports, and other materials as required for a complete and proper installation.

### 2.3 CONCRETE

- A. Comply with ACI 318.
  1. Compressive Strength:
  2. Footings: 3,000 PSI.
  3. Slabs: 3,500 PSI.
  4. Air entrainment 6%  $\pm$  1.5% for all exterior slabs on grade.
  5. Slump: 4 inches.

### 2.4 OTHER MATERIALS

- A. Stone Cushion Under Slab: #57 Grade
- B. Admixtures: Comply with ASTM C494.
  1. Form Release Agent: Provide form oil or similar release agent that is compatible with forms used and not detrimental to concrete or inserts.
- C. Expansion Joint Filler ASTM D1056, Class A, Type 2.
  1. Anchors, Inserts, Water stops, etc.: Provide anchor bolts, inserts, and similar accessories as shown on the Plans and/or required for a complete and proper installation.

## PART THREE - EXECUTION

### 3.1 FORMWORK

- A. Comply with ACI 347.
  - 1. Construct all formwork straight, level, plumb, and true to produce work as indicated on the Plans.
  - 2. Set and build into work anchors and other embedded accessories as required for a complete and proper installation. Coordinate placement with other trades.
  - 3. Install expansion and control joints as shown on Plans or required for a complete and proper installation.
  - 4. Earth Forms: May be used for footings. Over excavate 3" beyond sizes shown on Plans.

### 3.2 REINFORCING

- A. Place as shown on Plans, and per ACI 315.
  - 1. Support and tie steel in such a manner that no movement can occur during placement operations and no water damage can occur after completion.
- B. Splices: Per ACI 315.

### 3.3 PLACING CONCRETE

- A. Comply with ACI 304.
  - 1. Provide construction joints as required to produce neat and orderly work. Cold joints in concrete are unacceptable.
  - 2. Do not water down concrete at Jobsite. If slump reduction is desired, plasticizing admixtures are to be mixed in at the batch plant.
- C. Hot Weather Placement: Comply with ACI 305.
- D. Cold Weather Placement: Comply with ACI 306.
- E. Consolidation: Comply with ACI 309.
- E. Finishes:
  - 1. Footings: Float to level.
  - 2. Slabs.
  - 3. Exposed Walkway Edging: Hard troweled, sealed.
  - 4. Slabs Below Pavers: Float to level.
  - 5. Finishing Tolerance: True plane within  $\frac{1}{8}$ " in 10' - 0" in any direction.
- F. Door Pads and Aprons: Light broom finish.

- END OF SECTION -

## MORTAR AND MASONRY GROUT – SECTION 04 05 10

### PART ONE - GENERAL

#### 1.1 Section Includes:

- A. Mortar and masonry grout as specified herein shall include, but not be limited to, portland cement, lime, sand, coarse aggregate, admixtures for use in mortar and masonry grout and appurtenances.
- B. Mortar and masonry grout shall be provided where shown on the Contract Drawings, or as required for a complete installation.

#### 1.2 Related Specification

- A. Section 04 20 00- Unit Masonry

#### 1.3 References

- A. ASTM C144- Standard Specification for Aggregate for Masonry Mortar.
- B. ASTM C150- Standard Specification for Portland Cement.
- C. ASTM C207- Standard Specification for Hydrated Lime for Masonry Purposes.
- D. ASTM C270- Standard Specification for Mortar for Unit Masonry.
- E. ASTM C404- Standard Specification for Aggregates for Masonry Grout.
- F. ASTM C476- Standard Specification for Grout for Masonry.
- G. ASTM C780- Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

#### 1.4 Design Requirements

- A. Do not change brands of mortar materials during the course of the work.
- B. No change shall be made in proportions established for mortar approved under the specifications for mortar properties nor shall material with different physical characteristics be utilized in mortar used in work.
- C. Two different air-entraining materials shall not be combined in mortar or grout.

### PART TWO - PRODUCTS

#### 2.1 Materials

- A. Portland Cement:
  - 1. Provide Type I or III portland cement that conforms to the requirements of ASTM C150.
  - 2. Provide nonstaining portland cement of natural color.
- B. Hydrated Lime: Provide Type S hydrated lime that conforms to the requirement of ASTM C207.

- C. Sand for Mortar: Provide natural sand that conforms to the requirements of the following:
  - 1. ASTM C 144, except for joints less than ¼ inch use aggregate graded with 10 percent passing the No. 16 sieve.
  - 2. White Mortar Aggregates: Provide natural white sand or ground white stone for portland cement-lime mortars.
- D. Aggregates for Grout: Provide fine and coarse aggregates that conform to the requirements of ASTM C404.
- E. Water: Provide clean and potable water from approved source.

## 2.2 Mixes

- A. Mortar: Provide mortar that conforms to the requirement of ASTM C270.
  - 1. Provide a cement-lime mortar; masonry cement mortars are not acceptable.
  - 2. Calcium chlorides are not permitted.

## 2.3 Mixing

- A. Measurement of Materials:
  - 1. Cement and Hydrated Lime: Batched by the bag.
  - 2. Sand: Batched by volume in suitably calibrated containers. Make allowance for building and consolidation, and for weight per cubic foot of contained moisture.
  - 3. Proportion of Volumetric Mixtures: One 94-pound sack of Portland cement and one 50-pound sack of hydrated lime constitute nominal one cubic foot.
  - 4. Shovel measurements: Not permitted.
- B. Mortar:
  - 1. All cementitious materials and aggregates shall be mixed between three and five minutes in a mechanical batch mixer with a sufficient amount of water to produce a workable consistency. Mortar shall be hand mixed.
  - 2. Limit batch size to avoid retempering.
  - 3. Mortar that has begun to stiffen or is not used within two hours after initial mixing shall not be used.
  - 4. The mixer drum shall be completely emptied before recharging the next batch.
- C. Mortar Temperature:
  - 1. For temperatures below 40 degrees F mortar material shall be heated to protect both mortar and completed work from freezing.
  - 2. When outside air temperature is:
    - a. 25 to 40 degrees F: Mixing water and sand shall be heated to produce mortar temperature between 40 and 120 degrees F. Temperatures of mortar on boards shall be maintained above freezing.
    - b. Below 25 degrees F: Masonry shall not be installed.
  - 3. Ideal mortar temperature is 70 degrees F +/- 10 degrees F. Mixing temperature selected shall be maintained within 10 degrees F.
  - 4. Antifreeze compounds or calcium chloride on mortars shall not be used to lower the freezing point or accelerate setting.
- D. Grout: Grout shall be mixed in accordance with the requirements of ASTM C476.

## PART THREE - EXECUTION

### 3.1 Preparation

- A. Prior to placing mortar or grout, remove laitance, loose aggregates and any substance that may prevent mortar or grout from bonding to the foundation.

### 3.2 Installation

- A. Installation of mortar and grout shall be in accordance with the requirements of General Specification 04 20 00 Unit Masonry.

### 3.3 Field Quality Control

- A. Mortar shall be prepared and tested for preconstruction and construction evaluation in accordance with the requirements of ASTM C780. Specimens for construction evaluation shall be prepared a minimum of every 500 square feet of masonry construction.

- END OF SECTION -

## UNIT MASONRY – SECTION 04 20 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Concrete and Brick Masonry.
- B. Installation of Embedded Flashings, Anchors, etc.

#### 1.2 RELATED SECTIONS

- A. Cast In Place Concrete - Section 03 30 00

#### 1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Within 30 days of award of Contract, submit the following:
  - 1. Results of mortar tests performed in accordance with ASTM C270.
  - 2. Manufacturer's literature for masonry accessories, ties, wire reinforcing, control joint fillers, etc.
  - 3. Results of tests of masonry units and materials attesting to compliance with the specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with applicable requirements of governing codes and regulations for types of masonry construction indicated.
- B. Comply with applicable provisions of the following:
  - 1. ACI 530/ASCE 5/TMS 402 Building Code Requirements for Masonry Structures.
  - 2. ACI 530.1/ASCE 6/TMS 602 Specifications for Masonry Structures.
- C. Referenced Standards
  - 1. ACI 530/ASCE 5/TMS 402-02 Building Code Requirements for Masonry Structures.
  - 2. ACI 530.1/ASCE 6/TMS 602-02 Specifications for Masonry Structures.
  - 3. ASTM A615-04b Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
  - 4. ASTM C90-03 Specification for Load Bearing Concrete Masonry Units.
  - 5. ASTM C270-04a Specification for Mortar for Unit Masonry.
  - 6. ASTM C476-02 Specification for Grout for Masonry.
- D. Where provisions of this Specification differ with referenced codes and standards, the more stringent requirement shall apply.
- E. Inspections and Testing:
  - 1. Provide access to work for special inspectors if required under USBC Section 1704.5.
  - 2. Compressive Strength (f m) shall be determined by Unit Strength Method in compliance with ACI 530.1 Sect. 1.6.2. Required compressive strength (f m) shall be as indicated on Plans.
  - 3. Experienced, qualified personnel shall perform the work of this Section.

## 1.5 PRODUCT HANDLING

- A. Use all means necessary to protect the products and work of this Section.
- B. Deliver products to Jobsite and store in manufacturer's original, unopened cartons/containers with labels intact until ready for installation.
- C. Store all materials above ground and protected from weather.
- D. Do not install damaged or defective products.

## PART TWO - PRODUCTS

2.1 MATERIALS, GENERAL: Comply with applicable provisions of ACI 530.1 and as specified herein.

### 2.2 MASONRY UNITS

- A. Concrete Masonry Units: As per drawings.

### 2.3 MORTAR

- A. Comply with ASTM C270.
- B. Use only one brand of mortar cement.
- C. Type: M with latex additive.

### 2.4 GROUT

- A. Comply with ASTM C476.

### 2.5 REINFORCEMENT

- A. Joint Reinforcement Galvanized, truss type; comply with requirements of ACI 530.1.
- B. Rebar ASTM A615 Grade 60.

### 2.6 ACCESSORIES

- A. Wall Ties: Comply with ACI 530.1
- B. Control joint Filler. ASTM D1056, Class A, Type 2.

2.7 Cleaning materials: comply with unit masonry manufacturer's written instructions and recommendations.

2.8 Provide all other materials and accessories as required for a complete and proper installation.

## PART THREE - EXECUTION

### 3.1 INSTALLATION – GENERAL

- A. Comply with applicable requirements of ACI530.1.
- B. Build walls to dimensions and lines shown on Plans. Single width dimensions shown are nominal thickness.
- C. Install piping, conduits, rough-in kits, anchors, etc. as shown or required by other trades.
- D. Protect work of other trades from mortar droppings, spatters, cleaning chemicals, etc. Cover as required.

### 3.2 LAYING WALLS

- A. Bond: Running unless otherwise shown on Plans or specified herein.
- B. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths. Accurately locate openings.

### 3.3 MORTAR JOINTS

- A. Size: 3/8" or as noted.
- B. Joint Profile:
  - 1. Block Walls Exposed to View: Concave.
  - 2. Block Walls to be Waterproofed: Concave.
  - 3. Other Block Walls: Concave.

### 3.4 REINFORCING AND GROUTED CORES

- A. Comply with applicable requirements of ACI 530.1.
- B. Lap rebar at least 40 diameters at splices.

### 3.5 CLEANING

- A. Comply with Requirements of ACI 530.1.
- B. Wipe off excess mortar as work progresses. Dry brush at end of each day's work and more frequently if necessary.
- C. Final cleaning: After mortar has thoroughly set, clean all exposed surfaces to meet Architect's approval.
- D. Protect adjacent surfaces from cleaning chemicals. Cover surfaces as required.

### 3.6 PROTECTION OF WORK: Protect work in compliance with requirements of ACI 530.1.

- END OF SECTION -

## PRESSURE TREATED WOOD PRODUCTS – SECTION 06 07 01

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Preservative treatment of lumber and plywood.

#### 1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.

#### 1.3 REFERENCES

- A. ASTM International (ASTM):
  1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  2. ASTM A653 / A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. American Wood-Protection Association (AWPA):
  1. AWPA E12 Standard method of determining the corrosion of metal in contact with wood.
  2. AWPA M4 - Standard for the Care of Preservative Treated Wood Products.
  3. AWPA P5 - Standard for Waterborne Preservatives.
  4. AWPA P23 Standard for Chromated Copper Arsenate Type C (CCA-C).
  5. AWPA P25 - Standard for Inorganic Boron (SBX).
  6. AWPA P26 - Standard for Alkaline Copper Quat Type A (ACQ-A).
  7. AWPA P27 - Standard for Alkaline Copper Quat Type B (ACQ-B).
  8. AWPA P28 Standard for Alkaline Copper Quat Type C (ACQ-C).
  9. AWPA P29 Standard for Alkaline Copper Quat Type D (ACQ-D).
  10. AWPA P47 - Standard for DCOI/Imidacloprid/Stabilizer, Waterborne (EL2).
  11. AWPA T1 - Use Category System: Processing and Treatment Standard.
  12. AWPA U1 - Use Category System: User Specification for Treated Wood.

#### 1.4 QUALITY ASSURANCE

- A. Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section.
- B. Source Quality: Obtain treated wood products from a single approved source.
- C. Preservative Treatment: Mark each piece of plywood and lumber to show compliance with specified standards.
- D. Kiln Dry after Treatment (KDAT): Provide kiln dry material as indicated or required.
  1. Kiln dry after treatment to 19 percent maximum moisture content for lumber and 18 percent for plywood in accordance with AWPA T1, Section 7: Drying After Treatment (lumber) and AWPA T1, Section F: Pressure treated composites (3c) kiln drying after treatment.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Exposure: Prevent wood products against moisture and dimensional changes, in accordance with instructions from treating plant.

## 1.6 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard limited lifetime warranty for pressure treated wood.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

### 2.2 MATERIALS

- A. Dimension Lumber: As specified in Section 06 10 00.
- B. Structural Plywood: As specified in Section 06 10 00.
- C. Fasteners and Metal Hardware In Preservative Treated Wood: For treated wood and where wood is in ground contact, subject to high relative humidity, or exposed to weather, provide corrosion resistant steel fasteners with hot-dip zinc coating per ASTM A153/A153M, provide corrosion resistant hardware per ASTM A653 / A653M Class G-185 in compliance with building code requirements.

### 2.3 PRESERVATIVE PRESSURE TREATMENT OF WOOD

- A. Preservative treatment for above ground use continuously protected from liquid water.
- B. Preservative Treatment for Above Ground Use: decking, fencing, handrails, joists and subflooring, roof decks and sheathing.
  - 1. Treat wood in the following locations:
    - a. In contact with roofing, flashing, or waterproofing.
    - b. In contact with masonry or concrete.
    - c. Within 18 inches (450 mm) of grade.
    - d. Exposed to weather.
    - e. Other locations indicated.
    - f. Use 0.40 lb/cu ft (6.4 kg/m<sup>3</sup>) of ACQ® in accordance with U1.

## PART THREE - EXECUTION

### 3.1 INSTALLATION

- A. Framing and Sheathing: Comply with installation requirements in Section 06 10 00.
- B. Preservative Treated Wood:
  - 1. Surface treatment of field cuts: All field cuts on members that provide structural support to a permanent structure shall be field treated in accordance with AWPA M4.

- END OF SECTION -

## ROUGH CARPENTRY – SECTION 06 10 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Requirements for rough carpentry work shown on the Drawings and rough carpentry as required to properly construct the project. Materials and installation requirements shall be as specified and accepted practices of the trade for work and materials commonly assigned to rough carpentry and as specified in other sections of the work.
- B. Rough carpentry work includes, but is not limited to, the following:
  - 1. Wood framing and/or blocking of walls, roofs, parapets, and decks.
  - 2. Wood grounds, nailers, blocking and sleepers.
  - 3. Temporary railings, enclosures, forms and rough hardware and anchoring devices.
  - 4. Installation of hollow metal frames.

#### 1.2 QUALITY ASSURANCE

- A. Lumber Standards: Shall comply with PS-20-70 for each indicated use, including moisture content not to exceed 19 percent, and actual size related to the indicated nominal sizes, except as otherwise indicated.
- B. Plywood Standards: Shall comply with PS-1-74 and APA's requirements, except as otherwise indicated for each use.
- C. Factory mark each piece of lumber and plywood with type, grade, mill, and grading agency identification; except omit marking from surfaces to receive transparent finish and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.
- D. Certificate of inspection and grading by a recognized agency may be submitted with each shipment, in lieu of factory marking at Contractor's option.

#### 1.3 SUBMITTALS

- A. Wood Treatment Data:
  - 1. Submit chemical treatment manufacturer's instructions for proper use and handling of treated material.
  - 2. Submit certification of drying to 19 percent moisture content after treatment.
  - 3. For pressure treatment of each type specified, submit certificates of compliance from the treating plant stating chemicals and process used, net amount of salts retained and conformance to the following specifications:
    - a. Wolmanized (CCA), meeting AWPA
    - b. Standard P-5 and conforming to AWPA
    - c. Standard LP-2

## 1.4 PRODUCT HANDLING

- A. Keep rough carpentry materials dry during delivery, storage, and handling. Store lumber and plywood in stacks with provisions for air circulation within stacks. Protect bottom of stacks against contact with damp surfaces. Protect exposed materials against weather.

## 1.5 JOB CONDITIONS

- A. Time delivery and installation of carpentry work to comply with protection and storage requirements.
- B. Examine substrates and supporting structure and conditions under which work is to be installed and notify Owner in writing of conditions detrimental to work. Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Correlate location of furring, nailers, blocking, grounds, and similar supports so that attached work will comply with design requirements.

## PART TWO - PRODUCTS

### 2.1 MATERIALS

- A. All materials that could be exposed to moisture, such as roof blocking, plates, grounds, etc., shall be wolmanized treated.
- B. Light Framing: For framing 2 inches to 4 inches thick and not exceeding 6 inches in width, provide:
  - 1. Southern Yellow Pine, Grade Number 2.
  - 2. Douglas Fir-Larch, Grade Number 2.
- C. Board Lumber:
  - 1. Where lumber less than 2 inches in nominal thickness is shown or specified, provide boards dressed S4S, Grade Number 2, Southern Pine.
  - 2. Moisture Content: 19 percent maximum, mark boards "S-DRY".
- D. Miscellaneous Lumber: Provide wood for support or attachment of other work such as cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of the sizes shown or specified, worked to shapes shown and as follows: Grade: Construction Grade light framing size lumber of any species or board size lumber as required. Provide Construction Grade boards or Number 2 boards (SPIB or WWPA).
- E. Anchorage and Fastening Materials: Select proper type, size material and finish for each application. Comply with the following:
  - 1. Nails and Staples: FS FF-N-105.
  - 2. Wood Screws: FS FF-S-111.
  - 3. Bolts and Studs: FS FF-B-575.
  - 4. Nuts: FS FF-N-836.

5. Washers: FS FF-W-92.
6. Lag Screws or Lag Bolts: FS FF-B-561.
7. Masonry Anchoring Devices: For expansion shields, nails, and drive screws, comply with FS FF-S-325.
8. Bar and Strap Anchors: ASTM A575 carbon steel bars.
9. Framing Anchors: Shall be of the type best suited for the connection or detailed as manufactured by Simpson, Silver, Hickman, or equal, having ICBO approval, or proper gauge and galvanized metal.

## PART THREE - EXECUTION

### 3.1. INSTALLATION

#### A. General

1. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with a minimum of joints or the optimum joint arrangement.
2. Fit carpentry work to other work. Scribe and cope as required for accurate fit.
3. Set carpentry work accurately to required levels and lines with members plumb and true.
4. Shim with metal for bearing on concrete and wood at masonry substrates. Where indicated, grout with one part Portland cement to three (3) parts sand for full bearing.
5. Securely attach carpentry work to substrates by anchoring and fastening as shown and as required such as Hilti pneumatic fastening, or equal.
  - a. Provide washers under bolt heads and nuts in contact with wood.
  - b. Attach plywood to comply with the recommendations of the American Plywood Association.
  - c. All fasteners exposed to exterior shall be galvanized or cadmium plated.
6. Store all timber open-stacked in piles at least one foot above the ground surface, properly supported to prevent warping. Timber shall be covered to shed water and for protection from weather. Timber shall not be stored in flood prone areas.

B. Fasteners: Use common wire nails, except as otherwise shown or specified herein. Use finishing nails for exposed work. Do not wax or lubricate fasteners that depend on friction for holding power. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required. Do not drive threaded friction type fasteners; turn into place. Tighten bolts and lag screws at installation and retighten as required for tight connections prior to closing in or at completion of work.

#### C. Wood Grounds, Nailers, Blocking and Sleepers:

1. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached or screeded.
2. Coordinate location with other work; refer to shop drawings of such work if applicable.

3. Attach to substrates securely with anchor bolts or other attachment devices as shown and as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry as work progresses, cutting to fit masonry unit size involved. Anchor to formwork before concrete placement.
4. Provide grounds of dressed, key beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required. Where indicated as permanent grounds, provide treated lumber.

D. Wood Furring:

1. Install plumb and level with closure strips at edges and openings. Shim with wood as required. Fire stop furred spaces on walls at each floor level with wood blocking or incombustible materials accurately fitted to close furred spaces. Comply with governing regulations. Use only as necessary.
2. Tolerance: Shim and level wood furring to a tolerance of 1/8-inch in 10 feet.
3. Installation shall be provided where shown and as necessary for facing materials specified. Except as shown otherwise, furring strips shall be 1-inch by 3-inches continuous and spaced 24 inches on center. Furring shall be erected vertically or horizontally as necessary. Furring strips shall be nailed to trusses and to masonry. Wood plugs shall not be used. Furring strips shall be anchored near ends and at a 2-foot interval between. Furring strips shall be provided around openings, behind bases, and at angles and corners. Furring shall be plumb, rigid, and level, and shall be shimmed as necessary to provide a true, even plane with surfaces suitable to receive the finish required. Furring for cornices, offsets, and breaks in walls or ceilings shall be formed on 1-inch by 3-inch wood strips spaced 16 inches on center.
4. Plywood: Comply with recommendations of American Plywood Association for fabrication and installation of plywood work. Provide thickness shown, or if not shown, provide as recommended by APA "Guide to Plywood Sheathing for Floors, Walls, and Roofs" for spacing of supports and types of substrates involved in the work.

- END OF SECTION -

## SHEATHING – SECTION 06 16 00

### PART ONE - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Roof sheathing.

#### 1.2 SUBMITTALS

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

#### 1.3 QUALITY ASSURANCE

- A. Code Compliance: Comply with requirements of the following:
  - 1. International Code Council (ICC)

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Outdoor Storage: Comply with manufacturer's recommendations.
  - 1. Set panel bundles on supports to keep off the ground.
  - 2. Cover panels loosely with waterproof protective material.
  - 3. Anchor covers on top of stack but keep away from sides and bottom to assure adequate air circulation.
  - 4. When high moisture conditions exist, cut banding on panel stack to prevent edge damage.

#### 1.5 WARRANTY

- A. When warranties are required, verify with Owner's counsel that special warranties stated in this article are not less than remedies available to Owner under prevailing local laws. Include special Project warranties only in those Sections where availability has been verified with contractors and manufacturers.
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sheathing system that fail due to manufacturing defects within specified warranty period. Verify available warranties and warranty periods with manufacturers listed in Drawings.

### PART TWO - PRODUCTS

#### 2.1 ROOF SHEATHING

- A. See Drawings.
  - 1. Basis-of-Design Product: See Drawings.

2. Span Rating: Not less than 32/16.
3. Nominal Thickness: 19/32 inch.
4. Edge Profile: Tongue and groove.
5. Provide fastening guide on top panel surface with pre-spaced fastening symbols.

## 2.2 FASTENERS

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

## 2.3 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Pressure-sensitive, self-adhering, cold-applied, proprietary seam tape consisting of polyolefin film with acrylic adhesive, designed for use around wood, steel, and vinyl-framed flanged windows, frames, door frames and wall penetrations.
1. Basis-of-Design Product: See Drawings.
  2. Thickness: 0.012 inch (0.3 mm).

## PART THREE - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Securely attach to substrate by fastening as indicated, complying with the following:
1. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."
- B. Coordinate sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that exclude exterior moisture.

### 3.2 SHEATHING JOINT-AND-PENETRATION TREATMENT

- A. Seal sheathing joints according to sheathing manufacturer's written instructions.
1. Apply proprietary seam tape to joints between sheathing panels and at items penetrating sheathing. Apply upstanding flashing to overlap both flashing and sheathing.

- END OF SECTION -

## WATERPROOFING – SECTION 07 13 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Self-adhered below grade sheet membrane waterproofing and accessory products.

#### 1.2 RELATED SECTIONS

- A. Section 03 30 00 Cast-In-Place Concrete.
- B. Section 04 20 00 Unit Masonry.
- C. Section 06 10 00 Rough Carpentry.
- D. Section 07 92 00 Sealants and Caulking.

#### 1.3 REFERENCES

- A. American Society of Testing and Materials (ASTM):
  1. ASTM C 140 Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
  2. ASTM C 272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
  3. ASTM C 293 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading).
  4. ASTM C 518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
  5. ASTM C 578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
  6. ASTM C 836 Standard Test Methods for Crack Cycling at -32 C.
  7. ASTM D 36 Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus).
  8. ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
  9. ASTM D 412 Standard Test Method for Tensile Strength.
  10. ASTM D 412 Standard Test Method for Elongation of Rubberized Asphalt.
  11. ASTM D 570 Standard Test Method for Water Absorption.
  12. ASTM D 751 Standard Test Method for Resistance to Hydrostatic Head.
  13. ASTM D 882 Standard Test Method for Tensile Strength, Film.
  14. ASTM D 896 Standard Practice for Resistance of Adhesive Bonds to Chemical Reagents.
  15. ASTM D 903 Standard Test Method for Peel Resistance.
  16. ASTM D 1191 Standard Test Method for Concrete Joint Sealers.
  17. ASTM D 1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
  18. ASTM D 1777 Standard Test Method for Thickness of Textile Materials.
  19. ASTM D 1876 Standard Test Method for Lap Adhesion.
  20. ASTM D 1970 Standard Test Method for Flexibility at Cold Temperature.
  21. ASTM D 1970 Standard Test Method for Crack Cycling at -32 C.
  22. ASTM D 3407 Standard Test Methods for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements.
  23. ASTM D 3408 Method of Testing Joint Sealants, Hot Poured, Elastomeric-Type, for Portland Cement Concrete Pavements.

24. ASTM D 4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
25. ASTM D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
26. ASTM D 4586
27. ASTM D 4716 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
28. ASTM D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile.
29. ASTM D 5147 Standard Test Methods for Tensile Strength.
30. ASTM D 5147 Standard Test Methods for Ultimate Elongation.
31. ASTM D 5147 Standard Test Methods for Elongation of Rubberized Asphalt.
32. ASTM D 5147 Standard Test Methods for Flexibility at Cold Temperature.
33. ASTM D 5147 Standard Test Methods for Water Absorption.
34. ASTM D 5295 Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.
35. ASTM D 5329 Standard Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.
36. ASTM D 5385 Standard Test Methods for Resistance to Hydrostatic Head
37. ASTM D 5601 Standard Test Methods for Tear Resistance.
38. ASTM D 5602 Standard Test Methods for Static Puncture.
39. ASTM D 5957 Standard Guide for Flood Testing Horizontal Waterproofing Installations.
40. ASTM E 96(B) Standard Test Method for Water Vapor Permeance.
41. ASTM E 154 Standard Test Method for Puncture Resistance.
42. ASTM D 5385 Standard Test Methods for Resistance to Hydrostatic Head.

B. International Organization for Standardization (ISO) 9001:2000 Quality Standard.

#### 1.4 DEFINITIONS

- A. Waterproofing Terminology: Refer to the following publications for terms related to waterproofing work not otherwise defined in this section.
1. ASTM D 1079: Definitions of Terms Relating to Waterproofing, Roofing, and Bituminous Materials.
  2. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
  3. Roof Consultants Institute Glossary of Terms.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Include physical properties of the specified materials and explanations about product installation, including installation techniques, restrictions, limitations and manufacturer recommendations.
- C. Warranty: Certification that all components of the waterproofing assembly are being supplied and warranted by a single manufacturer. Provide a specimen warranty from the manufacturer that includes all components of the waterproofing installation.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. The installer shall have a minimum of 3 years' experience to install the specified waterproofing system on the project.
- B. Manufacturer Qualifications:
  - 1. Shall have a minimum of 10 years' experience manufacturing waterproofing membrane systems.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original unopened containers of packaging clearly labeled with manufacturer's name, brand name, instruction for use and all identifying numbers.
- B. Store all materials upright, on pallets, in protected and well-ventilated areas. Only materials to be used the same day shall be removed from this location. Special care shall be required at temperatures below 40-degree F (4 degree C). Keep all materials away from open flame or welding sparks.

## 1.9 SITE PROTECTION

- A. During waterproofing work, exposed surfaces of finished surfaces shall be protected with tarps to prevent damage. Contractor shall assume full responsibility for any damage.
- B. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.
- C. The Contractor shall provide for adequate protection of the installed membrane preventing damage that might arise from work performed by the other trades.
- D. Apply drainage/ protection board/ insulation as soon as possible after membrane installation.
- E. Do not allow waste products, including but not limited to petroleum, grease, oil, solvents, vegetable or mineral oil, animal fat, to come in contact with the waterproofing membrane. Contaminated membrane shall be cut out and replaced in accordance with the Approved Details.

## 1.10 PROJECT CONDITIONS

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

## 1.11 WARRANTY

- A. Sheet Membrane Waterproofing: Upon completion of work, the contractor shall supply the Owner with a single-source warranty issued by the manufacturer of the waterproofing assembly.
- B. Warranty Period: 5 years.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: SOPREMA, Inc., which is located at: 310 Quadral Dr.; Wadsworth, OH 44281; Toll Free Tel: 800-356-3521; Tel: 330-334-0066
- B. Substitutions: Permitted.

### 2.2 SELF-ADHERED SHEET MEMBRANE BELOW GRADE WATERPROOFING

- A. Furnish and install a complete vertical and/or horizontal waterproofing assembly including a self-adhered sheet waterproofing membrane with a drainage / protection course. To ensure total system compatibility all products shall be purchased from a single-source manufacturer.

### 2.3 DRAINAGE BOARD

- A. Prefabricated Drainage Board: A composite drainage board consisting of a post - industrial recycled polypropylene core of fused, entangled filaments covered with a geo-composite filter fabric on its upper surface to allow water to pass into the drainage core while restricting the movement of soil particles and suitable for use in select vertical and horizontal applications.

### 2.4 PROTECTION BOARD

- A. Asphaltic Hardboard: a pre-molded, semi-rigid asphaltic protection board composed of bitumen, mineral core, and reinforcement. Provide 0.125 inch (3 mm) thick hardboard on horizontal surfaces not receiving steel reinforced slab. Where steel reinforcing bars are to be used, apply two layers of 0.125 inch (3 mm) thick hardboard or one layer of 0.250 inch (6 mm) thick hardboard.

## PART THREE - EXECUTION

### 3.1 SURFACE INSPECTION

- A. Do not begin installation until substrates have been properly prepared.
- B. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are completed.

### 3.2 SURFACE PREPARATION

- A. Surfaces shall be structurally sound and free of voids, spalled areas, looser aggregate, and sharp protrusions. Remove contaminates such as grease, oil, and wax from exposed surfaces. Remove dust, dirt, loose stone, and debris. Use repair materials and methods which are acceptable to manufacturers of sheet membrane waterproofing.
- B. Masonry Substrates: Apply waterproofing over suitable concrete block and brick with smooth trowel-cut mortar joints or parge coat.

### 3.3 PROTECTION AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by membrane manufacturer of affected construction.

- END OF SECTION -

## FIBER GLASS BUILDING INSULATION – SECTION 07 21 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Batt and Roll Insulation

#### 1.2 RELATED SECTIONS

- A. Section 09 25 00 Gypsum Board

#### 1.3 REFERENCES

- A. ASTM C 423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- D. ASTM C 612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- F. ASTM C 764 - Standard. Specification for Mineral Fiber. Loose-Fill Thermal Insulation.
- G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- K. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- L. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).

- M. Federal Specification HH-I-558B: Insulation, Blocks, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe fitting Covering, Thermal (Mineral Fiber, Industrial Type).
- N. National Fire Protection Association (NFPA) Life Safety Code.
- O. Underwriters Laboratories (UL) - UL 2079 Standard test method for fire resistance of Building Joint Systems.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with a minimum of ten years' experience manufacturing products in this section shall provide all products listed.
- B. Installer Qualifications: Products listed in this section shall be installed by a single organization with at least five years' experience successfully installing insulation on projects of similar type and scope as specified in this section.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.
- C. Handling: Handle materials to avoid damage.

#### 1.7 SEQUENCING

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

#### 1.8 PROJECT CONDITIONS

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

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CertainTeed Corp., Insulation Group, which is located at: 750 E. Swedesford Rd. P. O. Box 860; Valley Forge, PA 19482-0860; Toll Free Tel: 800-233-8990
- B. Substitutions: Permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 Product Requirements.

### 2.2 INSULATION

- A. Blanket Insulation, CertainTeed Commercial Blanket Insulation. Complies with ASTM C 553, Type I and ASTM 665, Type I Plain. Composed of inorganic glass fibers bonded with a thermoset resin.
  - 1. Fire Hazard Classification: ASTM E 84:
    - a. Maximum Flame Spread Index; 25.
    - b. Maximum Smoke Developed Index; 50.
  - 2. Noncombustibility: ASTM E 136, meets requirements.
  - 3. Size: As shown on drawings.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify that all exterior and interior wall, partition, and floor/ceiling assembly construction has been completed to the point where the insulation may correctly be installed.
- C. Verify that mechanical and electrical services in ceilings, walls and floors have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
- D. If substrate preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

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

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in exterior spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.
- E. Install insulation with vapor barrier installed facing the warm side. Seal or tape joints as required.

### 3.4 PROTECTION

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

- END OF SECTION -

## ASPHALT SHINGLES – SECTION 07 31 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Asphalt roofing shingles.
- B. Leak barrier and moisture shedding roof deck protection.
- C. Metal flashing associated with shingle roofing.
- D. Attic ventilation.

#### 1.2 RELATED SECTIONS

- A. Section 06 10 00 Rough Carpentry
- B. Section 07 62 00 Flashing and Sheet Metal

#### 1.3 REFERENCES

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- C. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.
- D. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
- E. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
- F. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
- G. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
- H. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- I. ASTM E 903 - Standard Test Method for Solar Absorption, Reflectance and Transmission of Materials Using Integrating Spheres.
- J. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
- K. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
- L. ASTM E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
- M. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual

- N. Asphalt Roofing Manufacturers Association (ARMA).
- O. National Roofing Contractors Association (NRCA).
- P. American Society of Civil Engineers (ASCE).
  - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

#### 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, showing compliance with requirements.
- C. Selection Samples: Two complete sets of color cards representing manufacturer's full range of available colors and patterns.
- D. Manufacturer's installation instructions, showing required preparation and installation procedures.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the roofing system products specified in this section, with minimum of 25 years' experience.
- B. Installer Minimum Qualifications:
  - 1. Installer shall be classified as an Authorized contractor as defined and certified by GAF.

#### 1.7 REGULATORY REQUIREMENTS

- A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.
- B. Install all roofing products in accordance with all federal, state and local building codes.
- C. All work shall be performed in a manner consistent with current OSHA guidelines.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in sunlight.
- C. Store bundles on flat surface to maximum height recommended by manufacturer; store rolls on end.
- D. Store and dispose of solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 1.9 WEATHER CONDITIONS

- A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with GAF's recommendations

## 1.10 WARRANTY

- A. Provide manufacturer's standard warranty against material defeats.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: GAF, Residential Roofing Products, which is located at: 1361 Alps Rd. ; Wayne, NJ 07470; Toll Free Tel: 800 ROOF-411; Tel: 800-766-3411; Email: request info (cfontenot@gaf.com); Web: www.gaf.com
- B. Tamko
- C. Substitutions: Permitted
- D. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
  - 1. When submitting a request for substitution, provide information specified above under Submittals, for each substitute product.

### 2.2 SHINGLES

- A. As per drawings
- B. Color:
  - 1. As selected by Owner from manufacturer's full range to match existing.

### 2.3 HIP AND RIDGE SHINGLES

- A. Ridge cap shingle field fabricated from the same color and type of field shingle.

### 2.4 STARTER STRIP

- A. Self-sealing starter shingle designed for all roof shingles.

### 2.5 UNDERLAYMENT

- A. Self-sealing synthetic underlayment as per drawings.

### 2.6 ACCESSORY PRODUCTS

- A. Fasteners
  - 1. Standard round wire shingle type, zinc-coated steel, or aluminum; 10 to 12 gauge (3.416 mm to 2.657 mm for steel) (2.588 mm to 2.052 mm for aluminum), barbed or deformed shank, with heads 3/8 inch (9.5 mm) to 7/16 inch (11 mm) in diameter; length sufficient to penetrate at least 3/4 inch (19 mm) into sheathing.

- B. Roofing Cement:
  - 1. General purpose asphalt roofing cement meeting the requirements of ASTM D 4586 Type I or II.
- C. Roof Accessory Paint
- D. Exterior acrylic rust resistant aerosol roof accessory paint.
- E. Metal Flashing:
  - 1. 0.032 inch (0.8 mm) aluminum sheet, complying with ASTM B 209.
  - 2. Use metal flashings at:
    - a. Eave edges.
    - b. Rake edges.
    - c. Valleys.

## 2.7 ATTIC VENTILATION

- A. Ridge Vent:
  - 1. Flexible rigid plastic ridge ventilator designed to allow the passage of hot air from attics, while resisting snow infiltration. For use in conjunction with eave/soffit ventilation products.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until roof deck has been properly prepared.
- B. If roof deck preparation is the responsibility of another installer, notify owner of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean deck surfaces thoroughly prior to installation of leak barrier and roof deck protection.
- B. At areas to receive leak barrier, fill knot holes and cracks with latex filler.

### 3.3 INSTALLATION OF UNDERLAYMENT

- A. Install using methods recommended by manufacturers in accordance with local building code. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
- B. Eaves:
  - 1. Place eave edge metal flashing tight with fascia boards; lap joints 2 inches (50 mm) and seal with plastic cement; nail at top of flange.
- C. Valleys:
  - 1. Install leak barrier at least 36 inches wide centered on valley; lap ends 6 inches (150 mm) and seal.
- D. Hip and Ridge:
  - 1. Install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots will not be covered.

- E. Roof Deck:
  - 1. Install one layer of roof deck protection over entire area not protected by eave or valley membrane; run sheets horizontally lapped so water sheds.
- F. Penetrations:
  - 1. At vent pipes, install a 24 inch (610 mm) square piece of leak barrier lapping over roof deck protection; seal tightly to pipe.
  - 2. At rake edges, install metal edge flashing over leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches (50 mm) and seal with plastic cement; secure with nails.
  - 3. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots are not covered.

### 3.4 INSTALLATION OF SHINGLES

- A. Install in accordance with manufacturer's instructions and requirements of local building code.
  - 1. Avoid breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F (4 degrees C).
  - 2. Handle carefully in hot weather to avoid damaging shingle edges.
  - 3. Secure with 4 to 6 nails per shingle; use number of nails required by manufacturer or by code, whichever is greater. Nails must be long enough to penetrate through plywood or OSB, or 3/4 inch (19 mm) into dimensional lumber.
- B. Install hip and ridge shingles as required by the manufacturer.
  - 1. At ridges, install hip and ridge shingles over ridge or ridge vent material.
- C. Make valleys using "woven valley" technique:
  - 1. Run shingles from both roof slopes at least 12 inches (305 mm) across center of valley, lapping alternate sides in a woven pattern.
  - 2. Attach not closer than 6 inches (150 mm) to center of valley.
- D. All penetrations are to be flashed according to ARMA and NRCA application instructions and construction details.

### 3.5 INSTALLATION OF VENTILATION

- A. Ventilation must meet or exceed local code requirements.
- B. Ridge Vent:
  - 1. Cut continuous vent slot through sheathing, stopping 6 inches (150 mm) from each end of ridge.
  - 2. On roofs without ridge board, make slot 2 inches (50 mm) wide, centered on ridge.
  - 3. Install ridge vent material full length of ridge, including uncut areas.
  - 4. Butt ends of lengths of ridge vent material and join using plastic cement.
  - 5. Install eave vents in sufficient quantity to equal or exceed the ridge vent area, calculated as specified by manufacturer.
  - 6. Install ridge shingles over ridge vent material; use fasteners of specified length, leaving 3/4-inch (19 mm) slot open between ridge and roof shingles.

### 3.6 PROTECTION

- A. Stage work progress so that traffic is minimized over completed roofing.

B Protect installed products until completion of project.

- END OF SECTION -

## ROOFING UNDERLAYMENT – SECTION 07 31 20

### PART ONE - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Self-adhering membrane as a sloped roof underlayment.
- B. Related Sections:
  - 1. Section 06 10 00 Rough Carpentry

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. D412 Standard Test Methods for Vulcanized Rubber and Elastomeric Tension
  - 2. D461 Standard Test Methods for Felt
  - 3. D903 Test Methods for Peel or Stripping Strength of Adhesive Bonds
  - 4. D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
  - 5. D3767 Standard Practice for Rubber Measurement of Dimensions
  - 6. E96 Standard Test Methods for Water Vapor Transmission of Materials

#### 1.3 SUBMITTALS

- A. Manufacturer's product data sheet and product sample.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Self-adhesive membrane roofing underlayment shall be manufactured and marketed by a firm with a minimum of 25 years' experience in the production and sales of self-adhered membrane roofing underlayments.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. The membrane and accessory products must be handled properly. Read all product labels and Material Safety Data Sheets (MSDSs) for proper handling and disposal. Deliver all materials in manufacturer's unopened packages and store all materials under cover. Do not double stack palletized material.

### PART TWO - PRODUCTS

#### 2.2 Manufacturers and Products

- A. Acceptable Products and Manufacturers: Grace Ice & Water Shield manufactured by W. R. Grace & Co.–Conn., Grace Construction Products, Cambridge, MA is the basis of design. Substitutions permitted with written approval of Owner.

#### 2.3 MATERIALS

- A. Use a cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive. An embossed, slip resistant surface shall be provided on the polyethylene. Underlayment shall be interwound with a disposable silicone coated release sheet. Membrane shall conform to the physical properties as listed in the chart

below:

Property	Value	Test Method
Color	Grey-black	
Thickness, membrane	40 mil (1.02mm)	ASTM D3767 Procedure A (section 9.1)
Tensile Strength, membrane	250 psi (1729 kN/m <sup>2</sup> )	ASTM D412 (Die C modified)
Elongation, membrane	250%	ASTM D412 (Die C modified)
Low temperature flexibility	Unaffected @ -20 degrees F	ASTM D1970
Adhesion to plywood	3.0 lbs/in. Width (525N/n)	ASTM D903
Permeance (max)	0.05 Perms (2.9 ng/m <sup>2</sup> s Pa)	ASTM E96
Material Weight installed (max)	.03lb/ft <sup>2</sup> (1.3kg/m <sup>2</sup> )	ASTM D461

### PART THREE - EXECUTION

#### 3.2 PREPARATION

- A. Install the membrane directly on a clean, dry, continuous structural deck. Some suitable deck materials include plywood, wood composition, wood plank, metal, concrete, or gypsum sheathing. Remove dust, dirt, loose nails, and old roofing materials. Protrusions from the deck area must be removed. Decks shall have no voids, damaged, or unsupported areas. Repair deck areas before installing the membrane.
- B. Prime concrete, masonry surfaces, and sheathing with at a rate of 250–350 ft<sup>2</sup>/gal (6–8 m<sup>2</sup>/L). Prime wood composition and gypsum sheathing with additional primer if adhesion is found to be marginal. Apply at same rate.
- C. Priming is not required for other suitable surfaces provided that they are clean and dry.

#### 3.3 INSTALLATION

- A. Install in strict accordance with manufacturer's printed application procedures, precautions, and limitations.

- END OF SECTION -

## CEMENTITIOUS FIBER BOARD PANEL – SECTION 07 46 20

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Pre-primed Fiber cement lap siding, panels, single, trim, fascia, moulding and accessories.
- B. Factory-finished fiber cement lap siding, panels, single, trim, fascia, moulding and accessories.

#### 1.2 RELATED SECTIONS

- A. Section 06 10 00 Rough Carpentry

#### 1.3 REFERENCES

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

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings: Provide detailed drawings of atypical non-standard applications of cementitious siding materials which are outside the scope of the standard details and specifications provided by the manufacturer.
- D. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum of 2 years' experience with installation of similar products.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

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

## 1.7 PROJECT CONDITIONS

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

## 1.8 WARRANTY

- A. Product Warranty: Limited, non-pro-rated product warranty.
  - 1. Lap siding for 30 years.
  - 2. Soffit panels for 30 years.
- B. Finish Warranty: Limited product warranty against manufacturing finish defects. 15 year minimum.
- C. Workmanship Warranty: Application limited warranty for 2 years.

## PART TWO - PRODUCTS

### 2.1 SIDING

- A. Cementitious Fiber Board Panel
  - 1. Fiber-cement Siding - complies with ASTM C 1186 Type A Grade II.
  - 2. Fiber-cement Siding - complies with ASTM E 136 as a noncombustible material.
  - 3. Manufacturer's Technical Data Sheet.

### 2.3 FASTENERS

- A. Wood Framing Fasteners per mfr. Directions.
- B. Masonry Walls:
  - 1. Masonry Walls: ET&F ASM No.-144-125, 0.14-inch (3.6 mm) shank by 0.30-inch (7.6 mm) head by 2 inches (51 mm) long corrosion resistant nails.

### 2.4 FINISHES

- A. Factory Primer: Provide factory applied universal primer.
  - 1. Primer: Factory primed
  - 2. Topcoat: Refer to Section 09 90 00 Painting.
- B. Factory Finish: Refer to Exterior Finish Schedule.
  - 1. Product: Equivalent to specifications on drawings.
  - 2. Definition: Factory applied finish; defined as a finish applied in the same facility and company that manufactures the siding substrate.
  - 3. Process:
    - a. Factory applied finish by fiber cement manufacturer in a controlled environment within the fiber cement manufacturer's own facility utilizing a multi-coat, heat cured finish within one manufacturing process.
    - b. Each finish color must have documented color match to delta E of 0.5 or better between product lines, manufacturing lots or production runs as measured by photospectrometer and verified by third party.
  - 4. Protection: Factory applied finish protection such as plastic laminate that is removed once siding is installed

- 5. Accessories: Complete finishing system includes pre-packaged touch-up kit provided by fiber cement manufacturer. Provide quantities as recommended by manufacturer.
- C. Site painting is acceptable in lieu of factory applied finish.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If framing preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 6-inch wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
  - 1. Install water-resistive barriers and claddings to dry surfaces.
  - 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
  - 3. Protect siding from other trades.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. A water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.

### 3.3 INSTALLATION

- A. Install materials in strict accordance with manufacturer's installation instructions.
- B. Starting: Install a minimum 1/4 inch (6 mm) thick lath starter strip at the bottom course of the wall. Apply planks horizontally with minimum 1-1/4 inches (32 mm) wide laps at the top. The bottom edge of the first plank overlaps the starter strip.
- C. Allow minimum vertical clearance between the edge of siding and any other material in strict accordance with the manufacturer's installation instructions.
- D. Align vertical joints of the planks over framing members.
- E. Maintain clearance between siding and adjacent finished grade.
- F. Locate splices at least one stud cavity away from window and door openings.
- G. Use off-stud metal joiner in strict accordance with manufacturer's installation instructions.
- H. Wind Resistance: Where a specified level of wind resistance is required lap siding is installed to framing members and secured with fasteners described in Table No. 2 in National Evaluation Service Report No. NER-405.

- I. Face nail to sheathing.
- J. Specific framing and fastener requirements refer to Tables 2 and 3 in National Evaluation Service Report No. NER-405.
- K. Factory Finish Touch Up: Apply touch up paint to cut edges in accordance with manufacturer's printed instructions.
  - 1. Touch-up nicks, scrapes, and nail heads in pre-finished siding using the manufacturer's touch-up kit pen.
  - 2. Touch-up of nails shall be performed after application, but before plastic protection wrap is removed to prevent spotting of touch-up finish.
  - 3. Use touch-up paint sparingly. If large areas require touch-up, replace the damaged area with new pre-finished siding. Match touch up color to siding color through use of manufacturer's branded touch-up kits.

### 3.4 FINISHING

- A. Finish unprimed siding with a minimum one coat high quality, alkali resistant primer and one coat of either, 100 percent acrylic or latex or oil based, exterior grade topcoats or two coats high quality alkali resistant 100 percent acrylic or latex, exterior grade topcoat within 90 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.
- B. Finish factory primed siding with a minimum of one coat of high-quality 100 percent acrylic or latex or oil based exterior grade paint within 180 days of installation. Follow paint manufacturer's written product recommendation and written application instructions.

### 3.6 PROTECTION

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

- END OF SECTION -

## FIBER SUBSTRATE SIDING – SECTION 07 46 26

### PART ONE – GENERAL

#### 1.1 SECTION INCLUDES

- A. Primed hardboard siding.
- B. Matching soffit panels and trim.
- C. Sealing panel joints and penetrations.
- D. Flashings within siding installation.

#### 1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry: Stud wall bracing and sheathing.
- B. Section 09 91 00 - Painting

#### 1.3 REFERENCES

- A. ANSI/AHA A135.6 - Hardboard Siding.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products off the ground, on a flat surface, and under a roof or separate waterproof covering.

#### 1.5 WARRANTY

- A. Manufacturer's Standard Warranty: 50 year transferable limited warranty with 5 year 100 percent repair and replacement warranty.

### PART TWO - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: LP SmartSide, which is located at: 414 Union St. Suite 2000; Nashville, TN 37219; Toll Free Tel: 888-820-0325; Fax: 877-523-7192; Email:[request info \(ben.barrette@lpcorp.com\)](mailto:ben.barrette@lpcorp.com); Web:[www.lpcorp.com/smartside](http://www.lpcorp.com/smartside)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

#### 2.2 MATERIALS

- A. Panel Siding: 120 Series as manufactured by LP SmartSide.

1. Description: Embossed surface hardboard complying with ANSI/AHA A135.6, with resin and linseed oil impregnated surface; acrylic exterior finish.
  2. Fire Rating: 1 hour ASTM E119 assemblies available; ASTM E 84 Class C flamespread.
  3. Thickness: Average of 1/2 inch (13 mm) nominal.
  4. Style: Cedar grain, grooves at 8 inches (203 mm) on center; shiplap edges.
  5. Finish: Primed.
- B. Soffit Panels: As manufactured by LP SmartSide.
1. Description: Embossed surface hardboard complying with ANSI/AHA A135.6, with resin and linseed oil impregnated surface; thermoset acrylic latex primed finish; no grooves, square edges.
  2. Fire Rating: 1 hour ASTM E119 assemblies available; ASTM E 84 Class C flamespread.
  3. Thickness: 7/16 inch (11 mm) nominal.
  4. Style: Smooth grain, 48 inches (1219 mm)
- C. Trim and Fascia: As manufactured by LP SmartSide.
1. Description: Wood grain embossed surface hardboard complying with ANSI/AHA A135.6, with resin and linseed oil impregnated surface; acrylic exterior primed finish.
  2. Fire Rating: 1 hour ASTM E119 assemblies available; ASTM E 84 Class C
  3. Size: 3-1/2 inches wide for door trim and corner boards.
  4. Size: 7-1/4 inches wide for baseboards.
  5. Ploughed Fascia: 7-1/4 inches wide by 16 ft (4877 mm) long; 4/4 thick.
  6. Trim fascia boards plowed to receive soffit panel.

## PART THREE – EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.

### 3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and drawing details.
  1. Read warranty and comply with terms necessary to maintain warranty coverage.
  2. Install in accordance with conditions stated in model code evaluation service report.
  3. Properly space joints to allow for equilibration.
- B. Allow products to adjust to ambient conditions before starting installation.
- C. Do not install to green wood or crooked structural framing. Do not install over rain soaked or buckled materials. Do not install if excessive moisture is present in the interior, including that from curing concrete and plaster.
- D. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.
- E. Over Masonry Walls: Install furring strips (strapping) of adequate thickness to accept full length of nails and spaced at 16 inches (406 mm) on center.

- F. Install sheet metal flashing above door and window casings and horizontal trim in field of siding.
- G. Do not install siding less than 6 inches (150 mm) from ground nor closer than 1 inch (25 mm) to roofs, patios, porches, and other surfaces where water may collect.
- H. Do not cut siding to fabricate trim; use trim components manufactured for the purpose.
- I. After installation, seal joints except lap joints of lap siding. Seal around penetrations. Paint exposed cut edges

### 3.3 PROTECTION

- A. Protect installed products until completion of project.

### 3.4 CLEANING

- A. Touch-up, repair or replace damaged products after Substantial Completion.

- END OF SECTION -

## FLASHING AND SHEET METAL – SECTION 07 60 00

### PART ONE - GENERAL

- A. Provide flashing and sheet metal components for building construction.

#### 1.2 SUBMITTALS

- A. Submit for approval samples, shop drawings, product data.

#### 1.3 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which 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.

#### 1.4 RELATED SECTIONS

- A. Section 06 10 00 Rough Carpentry

### PART TWO - PRODUCTS

#### 2.1 MATERIALS

- A. Flashing:
  - 1. Steel: 24 gage galvanized steel, G90 galvanizing, ASTM A525.

### PART THREE - EXECUTION

#### 3.1 INSTALLATION

- A. Follow recommendations of SMACNA "Sheet Metal Manual". Allow for expansion. Isolate dissimilar materials to prevent corrosion.
- B. 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.
- C. Restore damaged components and finishes. Clean and protect work from damage.

- END OF SECTION -

## SEALANTS AND CAULKING – SECTION 07 92 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Sealants and caulking
- B. Backing Materials, Primers, Sleeves, and Similar Accessories

#### 1.2 SUBMITTALS

- A. Comply with requirements of Section 01 33 00.
- B. Within 30 days of award of Contract, submit the following:
- C. Product Data: Material Specifications and Certifications.

#### 1.3 QUALITY ASSURANCE

- A. Experienced, qualified personnel shall perform the work of this Section.
- B. Referenced Standards:
  - 1. ASTM C920-02 Specification for Elastomeric Joint Sealants
  - 2. ASTM C834-00 Specification for Latex Sealants
  - 3. ASTM C919-02 Practice for Use of Sealants in Acoustical Applications
  - 4. ASTM C1193-05 Guide for Use of Joint Sealants
  - 5. ASTM C1311-02 Specification for Solvent Release Sealants

#### 1.4 PRODUCT HANDLING

- A. Use all means necessary to protect the product and work of this Section.
- B. Deliver products to Jobsite and store in manufacturer's original, unopened, and undamaged containers with labels intact until ready for installation.
  - 1. Store all materials above ground and protected from weather.
  - 2. Discard products in broken containers.

### PART TWO - PRODUCTS

#### 2.1 SEALANT

- A. Acceptable Manufacturers:
  - 1. Dow Corning
  - 2. GE Silicones
  - 3. Tremco
  - 4. Substitutions: Permitted.
- B. Sealant Type: Silicone building sealant complying with ASTM C920 Type M or S, Grade NS, Class 35 and Fed Spec. TT-S-001543A
  - 1. Backing Materials: Comply with ASTM C1330, Type B as recommended by sealant manufacturer for specific application.
  - 2. Primer. As recommended by sealant manufacturer for specific application.

### PART THREE - EXECUTION

### 3.1 SURFACE CONDITIONS

- A. Inspection: Prior to commencing the work of this Section, carefully inspect the installed work of other trades, and verify that all such work is complete to the point where the application of sealants may properly commence.
- B. Discrepancies: Do not apply sealants until all unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Prepare substrates in accordance with ASTM C1193 and sealant manufacturer's instructions and recommendations.
- B. Apply primer in accordance with manufacturer's instructions and recommendations.
- C. Install sealant backing (backer rod) in accordance with ASTM C1193 manufacturer's instructions and recommendations prior to applying sealant.
- D. Apply sealants in accordance with ASTM C1193 and manufacturer's instructions and recommendations.
- E. Tool sealant to ensure adhesion to substrate and produce smooth surface without flaws or defects.
- F. Remove excess sealant from adjacent surfaces.

- END OF SECTION -

## HOLLOW METAL DOORS AND FRAMES – SECTION 08 11 13

### PART ONE - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Related Sections:
  - 1. None

#### 1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

#### 1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, core descriptions, and finishes.
- B. Shop Drawings: Include the following:
  - 1. Elevations of each door type.
  - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 4. Locations of reinforcement and preparations for hardware.
  - 5. Details of each different wall opening condition.
  - 6. Details of anchorages, joints, field splices, and connections.
  - 7. Details of accessories.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on drawings. Coordinate with final Door Hardware Schedule.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.
- B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
  - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Ceco Door Products; an Assa Abloy Group company.
  - 2. Republic Doors and Frames.
  - 3. Steelcraft; an Ingersoll-Rand company.
  - 4. Substitutions: Permitted

### 2.2 HOLLOW-METAL PANELS

- A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

### 2.3 FRAME ANCHORS

- A. Jamb Anchors:
  - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
  - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
  - 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

### 2.4 MATERIALS

- A. Recycled Content of Steel Products: Post-consumer recycled content plus one-half of pre-consumer recycled content not less than 23 percent.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

- C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- E. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot dip galvanized according to ASTM A 153/A 153M, Class B.
- F. Inserts, Bolts, and Fasteners: Hot dip galvanized according to ASTM A 153/A 153M.
- G. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- H. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
- I. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

## 2.5 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
  - 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026-inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
  - 2. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches
  - 3. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
  - 4. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
  - 5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
  - 6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
  - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed

- fasteners unless otherwise indicated.
2. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
  3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
  4. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
      - 1) Two anchors per jamb up to 60 inches high.
      - 2) Three anchors per jamb from 60 to 90 inches high.
      - 3) Four anchors per jamb from 90 to 120 inches high.
      - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
  5. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
  2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

## 2.6 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

### 3.3 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
  - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - a. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    - b. Field apply bituminous coating to backs of frames that will be filled with grout containing anti-freezing agents.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on shop drawings.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
  - 4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Steel Doors:
    - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
    - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
    - c. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.
    - d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

### 3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touch-up: Immediately after erection, sand smooth rusted or damaged areas

of prime coat and apply touch-up of compatible air-drying, rust-inhibitive primer.

- D. Touch-up Painting: Cleaning and touch-up painting of abraded areas of paint are specified in painting Sections.

- END OF SECTION -

## DOOR HARDWARE – SECTION 08 71 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Hardware for wood and hollow steel doors.
- B. Weather-stripping, seals, and door gaskets.

#### 1.2 RELATED SECTIONS

- A. Section 08 11 13 Hollow Metal Doors and Frames.

#### 1.3 REFERENCES

- A. AWI (Architectural Woodwork Institute) - Architectural Woodwork Quality Standards.
- B. BHMA (Builders Hardware Manufacturers Association) - A156 series.
- C. DHI (Door and Hardware Institute) A115 series.
- D. DHI (Door and Hardware Institute) WDHS.3 - Architectural Hardware for Wood Flush Doors.
- E. Uniform Federal Accessibility Standards (UFAS)

#### 1.4 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 Submittals: Procedures for submittals.
- B. Shop Drawings:
  - 1. Indicate locations and mounting heights of each type of hardware, schedules, and catalog cuts.
  - 2. Submit manufacturer's parts lists, and templates.
- C. Samples:
  - 1. Submit 1 sample of hinge and latch set illustrating style, color, and finish.

#### 1.5 SUBMITTALS FOR INFORMATION

- A. Section 01 33 00 Submittals: Procedures for submittals.
- B. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

#### 1.6 SUBMITTALS AT PROJECT CLOSEOUT

- A. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

## 1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
  1. AWI.
  2. BHMA A156 series.
  3. DHI - A115 series.
  4. DHI - WDHS.3.
  5. NFPA 80.
  6. NFPA 252.
  7. UL 10B.
  8. UL 305.

## 1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

## 1.9 PROJECT CONDITIONS

- A. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

## 1.10 WARRANTY

- A. Provide ten-year manufacturer warranty for door closers.

## 1.11 MAINTENANCE PRODUCTS

- A. Provide special wrenches and tools applicable to each different or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Hinges: Follow door manufacturer's specifications.
- B. Locksets: Follow door manufacturer's specifications.
- C. Door Closers: Follow door manufacturer's specifications.
- D. Push-plates, Pull-plates, Doorstops, etc.: Follow door manufacturer's specifications.
- E. Seals, Thresholds and Weather-stripping: Follow door manufacturer's specifications.
- F. Exit Devices: Follow door manufacturer's specifications.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

### 3.2 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions.
- B. Use templates provided by hardware item manufacturer.

### 3.3 ADJUSTING

- A. Adjust hardware for smooth operation.

### 3.4 PROTECTION OF FINISHED WORK

- A. Do not permit adjacent work to damage hardware or finish.
- B. Remove temporary cylinders and cores at Substantial Completion.

- END OF SECTION -

## GYPSUM BOARD – SECTION 09 25 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Gypsum board wall panels.
- B. Gypsum Board soffit ceiling panels.
- C. Accessories and Trim.

#### 1.2 RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry.
- B. Section 07 21 00 - Building Insulation.
- C. Section 07 92 00 – Sealants and Caulking.

#### 1.3 REFERENCES

- A. ASTM C473 - Standard Test Methods for Physical Testing of Gypsum Panel Products.
- B. ASTM C 475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- C. ASTM C 514 - Standard Specifications for Nails for the Application of Gypsum Board.
- D. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board.
- E. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- F. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- G. ASTM C 1396 - Standard Specification for Gypsum Board.
- H. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
- I. GA-214 - Recommended Levels of Gypsum Board Finish.
- J. GA-216 - Application and Finishing of Gypsum Board.
- K. GA-231 - Assessing Water damage to Gypsum Board.
- L. GA-238 - Guidelines for the Prevention of Mold Growth on Gypsum Board.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.

- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Design data test reports.
  - 4. Installation methods.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging indicating manufacturer and product name and protect until ready for installation.
- B. Store gypsum in accordance with GA-238 and manufacturer recommendations.

#### 1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) in accordance with ASTM C 840 and within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### PART TWO - PRODUCTS

#### 2.1 GYPSUM BOARD WALL PANELS

- A. Moisture and Mold Resistant Products:
  - 1. Moisture and Mold Resistant Gypsum Board: Gypsum core panel with enhanced core formulated for resistance to moisture and mold; surfaced with moisture/mold resistant paper on front, back, and long edges. Complying with ASTM C 1396.

#### 2.2 GYPSUM BOARD CEILING AND SOFFIT PANELS

- A. Interior Ceiling Board.
  - 1. See Drawings.

#### 2.3 ACCESSORIES

- A. Interior Trim: Complying with ASTM C 1047.
  - 1. Corner Bead
  - 2. Control Joint
- B. Fasteners:
  - 1. Screws: ASTM C 954 or ASTM C 1002 as recommended by panel manufacturer.
  - 2. Adhesive: Recommended by panel manufacturer.

- C. Joint Treatment:
  - 1. Tape: Comply with ASTM C 475.
  - 2. Joint Compound: Comply with ASTM C 475.
- D. Sealants and Caulking: Provide Joint Sealant and Acoustical Sealant as specified in Section 07 92 00.
- E. Insulation: Thermal and acoustical insulation as specified in Section 07 21 00.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until supports and substrates have been properly prepared.
- B. Verify that framing and supports are ready to receive work and opening dimensions are as indicated on the Drawings.
- C. If support and substrate preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Examine gypsum board panels for damage and existence of mold. Install undamaged panels.
- C. Examine gypsum board in accordance with GA 231 for water damage.
- D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's written instructions and ASTM C 840 and GA 216.
- B. Erect single layer gypsum board in most economical direction with ends and edges occurring over firm bearing.
- C. Place control joints consistent with lines of building spaces as indicated on Drawings.
- D. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

### 3.4 FINISHING

- A. General: Comply with ASTM C 840, GA 214, and GA 216.
  - 1. Level 1: Plenums, service corridors; above ceilings.
  - 2. Level 2: Areas of water-resistant gypsum backing board under tile.
  - 3. Level 3: N/A.
  - 4. Level 4: Areas to receive flat sheen paint finish, most interior walls
  - 5. Level 5: Areas to receive gloss, semi-gloss sheen paints; critical lighting conditions, exam rooms.

3.5 PROTECTION

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

- END OF SECTION -

## RESILIENT WALL BASE – SECTION 09 65 00

### PART ONE - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: RESILIENT WALL BASE

#### 1.2 REFERENCED DOCUMENTS

- A. ASTM International
1. E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
  2. E648, Standard Test Method for Critical Radiant Flux of Flooring Systems Using a Radiant Energy Source.
  3. E662, Test Method for Specific Density of Smoke Generated by Solid Materials.
  4. F137, Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus.
  5. F925, Standard Test Method for Resistance to Chemicals of Resilient Flooring.
  6. F1861, Standard Specification for Resilient Wall Base.
- B. Other Referenced Documents
1. National Fire Protection Association (NFPA), NFPA 255; Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
  2. National Fire Protection Association (NFPA), NFPA 258; Test Method for Specific Density of Smoke Generated by Solid Materials.
  3. California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
  4. The Collaborative for High Performance Schools (CHPS).

#### 1.3 SUBMITTALS

- A. Product Data: Submit product data, including manufacturer's specification summary sheet for specified products.
- B. Shop Drawings: Submit shop drawings showing layout, finish colors, patterns and textures.
- C. Samples: Submit selection and verification samples for finishes, colors, and textures.
- D. Quality Assurance Submittals: Submit the following
1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
  2. Manufacturer's Instructions: Manufacturer's installation and maintenance instructions.
- E. Maintenance Information: Maintenance information for installed products in accordance with Division 1 sections.
1. Methods for maintaining installed products.
  2. Precautions against cleaning materials and methods detrimental to finishes and performance.
- F. Warranty: Warranty documents specified herein.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installing work similar to that required for this project.
- B. Single-Source Responsibility: Obtain resilient wall base tile and manufacturer's recommended adhesive from a single supplier.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with requirements in Division 1.
- B. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with Identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and acclimated to site conditions at temperature and humidity conditions recommended by manufacturer.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Requirements/Conditions: In accordance with manufacturer's recommendations, areas to receive resilient wall base shall be clean, fully enclosed, weather tight with the permanent HVAC set at a uniform temperature of 65° - 85° F for 48 hours prior to, during and thereafter installation of resilient wall base. Resilient wall base and adhesive shall be conditioned in the same manner. Resilient wall base must be unboxed at least 48 hours prior to installation in the areas in which it will be installed.

#### 1.7 SEQUENCING AND SCHEDULING

- A. Finishing Operations: Install resilient wall base after finishing operations, including floor covering, painting, and ceiling operations, have been completed.

#### 1.8 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1, Closeout Submittals Section.
- B. Quantity: Furnish quantity of resilient wall base equal to 5% of amount to be installed.
- C. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.
- D. Maintenance of finished resilient wall base to be conducted per Manufacturer's Maintenance Guide.

#### 1.9 WARRANTY

- A. Manufacturer's Materials Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1. Warranty: 1-year limited warranty commencing on Date of Substantial Completion. Notice of any defect must be made in writing to manufacturer within 30 days after buyer learns of the defect.

## PART TWO - PRODUCTS

### 2.1 RESILIENT WALL BASE

- A. Substitutions: Permitted. Manufacturer: Johnsonite
- B. Test results
  1. ASTM D570, Water Absorption of Plastics; < 0.15%.
  2. ASTM E84 (NFPA 255), Surface Building Characteristics of Building Materials; Class C.
  3. ASTM E648 (NFPA 253), Critical Radiant Flux; Class 1, > 1.0 W/cm<sup>2</sup>.
  4. ASTM E662 (NFPA 258), Specific Optical Density of Smoke Generated by Solid Materials; Passes.
  5. ASTM F925, Resistance to Chemicals; Passes, List Available.
  6. ASTM F1515, Light Stability; Excellent.
  7. ASTM F1861, Standard Specification for Resilient Wall Base - Types TS, TP & TV, Group 1 & 2, Styles A&B; (Federal Specification SSW40a, Type II, Styles A&B).
  8. NFPA 101 Life Safety Code, Wall Base; Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height shall meet the requirements for the interior wall finish for its location or the requirements for Class II interior floor finish as described (CFR > .22 W/cm<sup>2</sup> / < .45 W/cm<sup>2</sup>) using ASTM E 648. If Class I floor finish is required (CFR > .45 W/cm<sup>2</sup>), the interior floor trim shall be Class I.
  9. Complies with California Proposition 65
  10. Approved for Collaborative for High Performance Schools 01350, Low-Emitting Material Criteria.

### 2.2 PRODUCT SUBSTITUTIONS

- A. Substitutions: permitted.

## PART THREE - EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturers' requirements as published in manufacturers' installation instructions.

### 3.2 EXAMINATION

- A. Site Verification of Conditions: Confirm substrate conditions (which have been previously addressed under other sections) are acceptable for product installing in accordance with manufacturer's instructions.
- B. Material Inspection: In accordance with manufacturer's installing requirements, visually inspect materials prior to installing. Material with visual defects shall not be installed.

### 3.3 PREPARATION

- A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage while installing.
- B. Substrate Preparation: Prepare substrate to be smooth, rigid, flat, level, permanently dry, clean and free of foreign materials such as paint, dust, grease, oils, solvent, old adhesive residue, vinyl wall coverings, non-porous surfaces and all other contaminants that may interfere with adhesive bond.
- C. Do not install over existing floor covering or over substrates not approved by manufacturer.

### 3.4 INSTALLING

- A. Refer to installation instructions for specific resilient wall base detailed specifications on installing.

### 3.5 PROTECTION.

- A. Protection: Protect installed product and finish surfaces from damage during construction. Remove and legally dispose of protective covering at time of substantial completion.
- B. Restrict cleaning for first 72 hours.

### 3.6 CLEANING

- A. Cleaning: See Flexco maintenance instructions. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of.

- END OF SECTION -

## CONCRETE FLOOR COATING SYSTEMS – SECTION 09 67 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Epoxy coating systems for interior and exterior concrete.

#### 1.2 RELATED SECTIONS

- A. Section 01 40 00 – Quality Control
- B. Section 07 92 00 – Sealants and Caulking
- C. Section 09 91 00 – Painting

#### 1.3 REFERENCES

- A. ASTM C 307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
- B. ASTM C 413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- C. ASTM C 531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- D. ASTM C 579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- E. ASTM C 580 - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- F. ASTM C 883 - ASTM C883-89 Standard Test Method for Effective Shrinkage of Epoxy-Resin Systems used with Concrete.
- G. ASTM D 638 - Tensile Properties of Plastics.
- H. ASTM D 1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
- I. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- J. ASTM D 2240 - Standard Test Method for Rubber Property Durometer Hardness.
- K. ASTM D 2369 - Standard Test Method for Volatile Content of Coatings.
- L. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- M. ASTM D 4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abrader.

- N. ASTM D 4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
- O. ASTM F 1869 - Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- P. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.
- Q. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- R. MIL-D-3134F - Military Specification, Deck Covering Materials.
- S. State of California Air Resources Board approved architectural coatings volatile organic compound (VOC) rule.
- T. California Air Quality Management/Pollution Control District, San Diego APCD Rule 67
- U. New York City AQMD Rule 205
- V. New Jersey VOC
- W. USDA incidental contact requirements.
- X. L.A. Rule 66 and VOC/VOS Rules and Regulations.
- Y. ICRI (International Concrete Repair Institute) Guideline No. 03732

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products specified in this section will be supplied by a single manufacturer with a minimum of ten years' experience.
- B. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in accordance with the manufacturer's instructions.
  - 1. Store materials in dry, enclosed area with adequate protection from moisture.
  - 2. Keep containers sealed until ready for use.
  - 3. Storage Temperature: 65°F (18°C) to 90°F (32°C).
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 1.7 SEQUENCING

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

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.
- C. Schedule coating work to avoid excessive dust and airborne contaminants. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

## 1.9 COORDINATION

- A. Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed materials.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Milamar Coatings.
- B. Acceptable Manufacturer: Sherwin-Williams.
- C. Acceptable Manufacturer: Tennant Coatings, Inc.
- D. Substitutions permitted.

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

- B. Examine surfaces for compliance with requirements for installation tolerances and other conditions affecting performance of all coatings to be applied.
- C. If substrate surface preparation is the responsibility of another installer, notify Owner of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Allow concrete substrate to cure a minimum of 30 days.
- D. Test concrete for moisture in accordance with ASTM F 1869 or ASTM F 2170. Readings shall be below 3 pounds per 1,000 square feet over a 24-hour period on the calcium chloride test or below 70 percent relative internal concrete humidity.
- E. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
  - 1. Cleaning: Scrub with detergent and rinse with clean water to remove surface dirt, grease, and oil.
  - 2. For systems with a thickness of 1/8 inch or more prepare concrete by mechanical means such as shot blasting or scarification with an integral dust collection system to achieve a minimum CSP (Concrete Surface Profile) of 5 as outlined by ICRI (International Concrete Repair Institute) Guideline No. 03732 or anchor pattern of 2.0-3.0.
  - 3. For systems with a thickness of less than 1/8 inch prepare concrete by mechanical means such as diamond grinding with an integral dust collection system to achieve a minimum CSP (Concrete Surface Profile) of 2 as outlined by ICRI (International Concrete Repair Institute) Guideline No. 03732."
  - 4. Any spalled or deteriorated concrete shall be removed and filled back to the original surface with filler as recommended by manufacturer.
  - 5. Treat nonmoving joints and cracks from reflecting through the floor system according to manufacturer's recommendations. All moving joints shall be carried through the floor system.
  - 6. Mask all termination points, gratings, drains, and other surfaces requiring protection.
  - 7. Use key cuts at all termination points, gratings, drains and other surfaces in which the installed overlayment does not abut against a vertical surface shall be key cut. The keyway shall have a width and depth of 1/2 inch.
  - 8. Sweep and vacuum concrete surface.
  - 9. Use magnetic broom to remove excess shot.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Apply primer as recommended for the application. Components shall be pre-mixed, blended, and applied according to manufacturer's directions.
- C. Components for subsequent coats shall be mixed and applied in strict accordance with manufacturer's directions.

- D. Broadcast aggregate to achieve mixture and color selected. Allow to cure and subsequently sweep up excess aggregate.

#### 3.4 FIELD QUALITY CONTROL

- A. Coating manufacturer's representative to verify that installation is in conformance to the manufacturer's recommendations.

#### 3.5 PROTECTION AND CLEANING

- A. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.
- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.
- D. Remove temporary coverings and protection of surrounding areas and surfaces.

- END OF SECTION -

## PAINTING - SECTION 09 91 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. The Work in this Section requires the surface preparation and field application of primers, paints, stains, and coatings to surfaces as required in the Plans and Contract Documents.

#### 1.2 RELATED SECTIONS

- A. Section 03 30 00 Cast-In-Place Concrete

#### 1.3 REFERENCES

- A. Occupational Safety and Health Act (OSHA) - Safety Standards.
- B. American National Standards Institute (ANSI) - Performance Standards.
- C. National Paint and Coatings Association (NPCA) - Gloss Standard.
- D. American Society for Testing Materials (ASTM) - Testing Methods.

#### 1.4 DEFINITIONS

- A. Commercial as used in this Section refers to a product well suited for a commercial application.
- B. DFT as used in this Section refers to the Dry Film Thickness of the coating.
- C. Enamel refers to any acrylic or alkyd (oil) base paint which dries leaving an eggshell, pearl, satin, semi-gloss, or high gloss enamel finish.
- D. DTM as used in this Section refers to paint that is applied directly to metal.
- E. Premium as used in this Section refers to the best quality product "top of the line".
- F. Paints are available in a wide range of sheens or glosses, as measured by a gloss meter from a 60-degree angle from vertical, as a percentage of the amount of light that is reflected. The following terms are used to describe the gloss of our products.
  - 1. Flat = Less than 5 Percent.
  - 2. Eggshell = 5 - 20 Percent.
  - 3. Satin = 20 - 35 Percent.
  - 4. Semi-Gloss = 30 - 65 Percent.
  - 5. Gloss = Over 65 Percent.

## 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide a complete list of all products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category.
- C. Samples: Submit three paper samples, 5 inches by 7 inches (127mm x 178mm) in size, illustrating selected colors for each color selected with specified coats cascaded.
- D. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years' experience.
- B. Installer Qualifications: All products listed in this section are to be applied by a Painting Contractor with a minimum of five years demonstrated experience in surface preparation and field application of the same type and scope as specified.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Disposal:
  - 1. Never pour leftover coating down any sink or drain. Use up material on the job or seal can and store safely for future use.
  - 2. Do not incinerate closed containers.
  - 3. For specific disposal or recycle guidelines, contact the local waste management agency or district. Recycle whenever possible.

## 1.8 PROJECT CONDITIONS

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

## 1.9 WARRANTY

- A. All thinners, fillers, primers, and finish coatings shall be from the same manufacturer to support a product warranty.

- B. At project closeout, provide to the Owner or owner's representative an executed copy of the Manufacturer's standard form outlining the terms and conditions of and any exclusions to their Limited Warranty against Manufacturing Defect.

#### 1.10 EXTRA MATERIALS

- A. At project closeout, supply the Owner or owner's representative one gallon of each product for touch-up purposes. Cans shall be clearly marked with color name, number and type of paint.
- B. At project closeout, provide the color mixture name and code to the Owner or owner's representative for accurate future color matching.

### PART TWO - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Sherwin Williams, Benjamin Moore, Behr.
- B. Substitutions will be accepted. Follow standard substitution procedures with Owner approval.

#### 2.2 MATERIALS - GENERAL

- A. Compatibility: Provide materials that are compatible with one another, and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

#### 2.3 MIXING AND TINTING

- A. Except where specifically noted in this section, all paint shall be ready-mixed and pre-tinted. Agitate all paint prior to and during application to ensure uniform color, gloss, and consistency.
- B. Thinner addition shall not exceed manufacturer's printed recommendations. Do not use kerosene or other organic solvents to thin water-based paints.
- C. Where paint is to be sprayed, thin according to manufacturer's current guidelines.

#### 2.4 INTERIOR PAINT SCHEDULE

- A. Concrete - Poured / Pre-cast, Stucco:
  - 1. Commercial Water base Acrylic System: (one prime coat and two finish coats, eggshell finish).
- B. CMU, Concrete Block:
  - 1. Commercial Water base Acrylic System: (one filler coat and two finish coats, eggshell finish).

- C. Metal - Doors, Frames:
  - 1. Commercial Water base Acrylic System: (one prime coat and two finish coats, semi-gloss finish).
- D. Gypsum Board / Drywall:
  - 1. Commercial Water base Acrylic Latex System: (one prime coat and two finish coats, eggshell finish).
- E. Wood: Doors and Trim (Painted):
  - 1. Commercial Water base Acrylic Latex System: (one prime coat and two finish coats, semi-gloss finish).

## 2.5 EXTERIOR PAINT SCHEDULE

- A. Concrete and Masonry.
  - 1. Exterior Grade Commercial Water base Acrylic Latex System: (one prime coat and two finish coats, flat finish).
- B. Metal: Doors, Frames, Railings.
  - 1. Exterior Grade Commercial Water base Acrylic Latex System: (one prime coat and two finish coats, semi-gloss finish).
- C. Siding and Trim:
  - 1. Exterior Grade Commercial Water base Acrylic Latex System: (one prime coat and two finish coats, semi-gloss finish).

## PART THREE - EXECUTION

### 3.1 EXAMINATION

- A. The Contractor shall review the product manufacturer's special instructions for surface preparation, application, temperature, re-coat times, and product limitations.
- B. The Contractor shall review product health and safety precautions listed by the manufacturer.
- C. The Contractor shall be responsible for enforcing on site health and safety requirements associated with the Work.
- D. Do not begin installation until substrates have been properly prepared.
- E. Ensure that surfaces to receive paint are dry immediately prior to application.
- F. Ensure that moisture-retaining substrates to receive paint have moisture content within tolerances allowed by coating manufacturer. Where exceeding the following values, promptly notify Architect and obtain direction before beginning work.
  - 1. Concrete and Masonry: 13 percent. Allow new concrete to cure a minimum of 28 days.

2. Exterior Wood: 17 percent.
3. Interior Wood: 15 percent.
4. Interior Finish Detail Woodwork, Including Trim, and Casework: 10 percent.
  
5. Plaster and Gypsum: 15 percent.
6. Concrete Slab-On-Grade: Perform calcium chloride test over 24-hour period or other acceptable test to manufacturer. Verify acceptable moisture transmission and pH levels.
  
- G. Examine surfaces to receive coatings for surface imperfections and contaminants that could impair performance or appearance of coatings, including but not limited to, loose primer, rust, scale, oil, grease, mildew, algae, or fungus, stains or marks, cracks, indentations, or abrasions.
  
- H. Correct conditions that could impair performance or appearance of coatings in accordance with specified surface preparation procedures before proceeding with coating application.

### 3.2 PREPARATION - GENERAL

- A. Clean surfaces thoroughly prior to coating application.
  
- B. Do not start work until surfaces to be finished are in proper condition to produce finished surfaces of uniform, satisfactory appearance.
  
- C. Stains and Marks: Remove completely, if possible, using materials and methods recommended by coating manufacturer; cover stains and marks which cannot be completely removed with isolating primer or sealer recommended by coating manufacturer to prevent bleed-through.
  
- D. Remove Mildew, Algae, and Fungus using materials and methods recommended by coating manufacturer.
  
- E. Remove dust and loose particulate matter from surfaces to receive coatings immediately prior to coating application.
  
- F. Remove or protect adjacent hardware, electrical equipment plates, mechanical grilles and louvers, lighting fixture trim, and other items not indicated to receive coatings.
  
- G. Move or protect equipment and fixtures adjacent to surfaces indicated to receive coatings to allow application of coatings.
  
- H. Protect adjacent surfaces not indicated to receive coatings.
  
- I. Prepare surfaces in accordance with manufacturer's instructions for specified coatings and indicated materials, using only methods and materials recommended by coating manufacturer.

### 3.3 SURFACE PREPARATION

- A. Concrete and Concrete Masonry: Clean surfaces free of loose particles, sand, efflorescence, laitance, form oil, curing compounds, and other substances which could impair coating performance or appearance.
- B. Existing Coatings:
  - 1. Remove surface irregularities by scraping or sanding to produce uniform substrate for coating application; apply one coat primer of type recommended by coating manufacturer for maximum coating adhesion.
  - 2. If presence of lead in existing coatings is suspected, cease surface preparation and notify Architect immediately.
- C. Gypsum Board: Repair cracks, holes, and other surface defects with joint compound to produce surface flush with adjacent surfaces.
- D. Masonry Surfaces - Restored: Remove loose particles, sand, efflorescence, laitance, cleaning compounds and other substances that could impair coating performance or appearance.
- E. Metals – Follow manufacturer's instructions specific to metal type and condition.
- F. Wood:
  - 1. Seal knots, pitch streaks, and sap areas with sealer recommended by coating manufacturer; fill nail recesses and cracks with filler recommended by coating manufacturer; sand surfaces smooth.
  - 2. Remove mill marks and ink stamped grade marks.
  - 3. Apply primer coat to back of wood trim and paneling.
- G. Wood Doors: Seal door tops and bottoms prior to finishing.

### 3.4 APPLICATION - GENERAL

- A. Application of primers, paints, stains, or coatings, by the Contractor, will serve as acceptance that surfaces were properly prepared in accordance with the manufacturer's recommendation.
- B. Apply each coat to uniform coating thickness in accordance with manufacturer's instructions, not exceeding manufacturer's specified maximum spread rate for indicated surface; thins, brush marks, roller marks, orange-peel, or other application imperfections are not permitted.
- C. Allow manufacturer's specified drying time, and ensure correct coating adhesion, for each coat before applying next coat.
- D. Inspect each coat before applying next coat; touch-up surface imperfections with coating material, feathering, and sanding if required; touch-up areas to achieve flat, uniform surface without surface defects visible from 5 feet (1.5 m).

- E. Remove dust and other foreign materials from substrate immediately prior to applying each coat.
- F. Where paint application abuts other materials or other coating color, terminate coating with a clean sharp termination line without coating overlap.
- G. Where color changes occur between adjoining spaces, through framed openings that are of same color as adjoining surfaces, change color at outside stop corner nearest to face of closed door.
- H. Re-prepare and re-coat unsatisfactory finishes; refinish entire area to corners or other natural terminations.

### 3.5 CLEANING

- A. Clean excess coating materials, and coating materials deposited on surfaces not indicated to receive coatings, as construction activities of this section progress; do not allow to dry.
- B. Re-install hardware, electrical equipment plates, mechanical grilles and louvers, lighting fixture trim, and other items that have been removed to protect from contact with coatings.
- C. Reconnect equipment adjacent to surfaces indicated to receive coatings.
- D. Relocate to original position equipment and fixtures that have been moved to allow application of coatings.
- E. Remove protective materials.

### 3.6 PROTECTION AND REPAIR

- A. Protect completed coating applications from damage by subsequent construction activities.
- B. Repair to Architect's acceptance coatings damaged by subsequent construction activities. Where repairs cannot be made to Architect's acceptance, re-apply finish coating to nearest adjacent change of surface plane, in both horizontal and vertical directions.

- END OF SECTION -

## WASHROOM ACCESSORIES – SECTION 10 28 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Washroom Accessories:
  - 1. Soap dispensers.
  - 2. Waste receptacles.
  - 3. Toilet tissue dispensers.
  - 4. Mirrors.
  - 5. Grab bars.
  - 6. Paper towel dispensers.

#### 1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry
- B. Section 09 25 00 - Gypsum Board
- D. Section 10 28 14 - Baby Changing Stations

#### 1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets for each product specified, including the following:
  - 1. Installation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Cleaning and maintenance instructions.
  - 4. Replacement parts information.
- B. Schedule: Submit a toilet accessory schedule, indicating the type and quantity to be installed in each washroom. Use room numbers as indicated on the Drawings.
- C. Country of Origin: Manufacturer must supply, with first submittal, Country of Origin information for each type of washroom accessory for this project.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer: Provide products manufactured by a company with a minimum of 10 years' successful experience manufacturing similar products.
- B. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
- C. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.
- D. Hazardous Materials: Comply with EU Directive "Restrictions of Hazardous Substances (RoHS) requirements."

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

## 1.6 WARRANTY

- A. Manufacturer's Warranty for Washroom Accessories: Manufacturer's standard 1 year warranty for materials and workmanship.

## PART TWO - PRODUCTS

### 2.1 SOAP DISPENSERS

- A. Basis of Design: See Drawings

### 2.2 PAPER TOWEL DISPENSERS

- A. Basis of Design: See Drawings

### 2.3 TOILET TISSUE DISPENSERS

- A. Basis of Design: See Drawings

### 2.4 MIRRORS

- A. Stainless Steel Channel Frame Mirrors:
  - 1. Basis of Design: See Drawings

### 2.5 GRAB BARS

- A. Stainless Steel Grab Bars: With snap flange covers:
  - 1. Satin Finish:
    - a. Basis of Design: Bobrick Model B-6806X18.
      - 1) Length: 18 inches (457 mm).
    - b. Basis of Design: Bobrick Model B-6806X36.
      - 1) Length: 36 inches (914 mm).
    - c. Basis of Design: Bobrick Model B-6806X42.
      - 1) Length: 42 inches (1067 mm).

with satin finish, 3-1/4-inch (85 mm) diameter x 1/2 inches (13 mm) deep; snap over mounting flange to conceal mounting screws.

## PART THREE - EXECUTION

### 3.1 INSTALLATION

- A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
  - 1. Verify location does not interfere with door swings or use of fixtures.
  - 2. Comply with manufacturer's recommendations for backing and proper support.
  - 3. Use fasteners and anchors suitable for substrate and project conditions

4. Install units rigid, straight, plumb, and level, in accordance with manufacturer's installation instructions and approved shop drawings.
5. Conceal evidence of drilling, cutting, and fitting to room finish.
6. Test for proper operation.

3.2 CLEANING AND PROTECTION

- A. Clean exposed surfaces of compartments, hardware, and fittings.
- B. Touch-up, repair or replace damaged products until Substantial Completion.

- END OF SECTION -

## BABY CHANGING STATIONS – SECTION 10 28 14

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Baby Changing Stations, Plastic with Recycled Content:
  - 1. Surface-mounted horizontal design.

#### 1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets for each product specified, including the following.
  - 1. Installation instructions and recommendations, including templates and rough-in measurements.
  - 2. Storage and handling requirements and recommendations.
  - 3. Cleaning and maintenance instructions.

#### 1.3 QUALITY ASSURANCE

- A. Manufacturer: Provide products manufactured by a company with a minimum of 5 years' successful experience manufacturing similar products.
- B. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
- C. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A 117.1 requirements as applicable.
- D. Baby Changing Stations: Provide products which comply with the following standards and requirements.
  - 1. Antimicrobial Treatment: Changing surfaces embedded with Microban®, with antibacterial claim substantiated by Kirby-Bauer test or other manufacturer approved equivalent standard industry test methodology.
  - 2. Americans with Disabilities Act (ADA).
  - 3. ANSI A 117.1 - Accessible and Usable Building and Facilities.
  - 4. ANSI Z 535.4 - Product Safety Signs and Labels.
  - 5. ASTM F 2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use.
  - 6. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
  - 7. European Standards: EN 12221 Changing units for domestic use.
  - 8. CPSIA: Conformity with the U.S. Product Safety Commission product safety rules, bans, standards, and regulations that include applicable chemical compliance requirements.

#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturers' instructions and recommendations. Protect from damage.

## 1.5 WARRANTY

- A. Manufacturer's Warranties: Submit manufacturer's standard 5-year warranty for materials and workmanship and include a provision for replacement caused by vandalism.

## PART TWO - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Koala Kare Products, a Division of Bobrick, [www.koalabear.com](http://www.koalabear.com). Location of manufacturing shall be the United States.
- B. Substitutions: Permitted

## PART THREE - EXECUTION

### 3.1 INSTALLATION

- A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
  1. Verify location does not interfere with door swings or use of fixtures.
  2. Use fasteners and anchors suitable for substrate and project conditions.
  3. Install units at location and height indicated on the Drawings.
  4. Install units level, plumb and in proper relationship with adjacent construction.
  5. Adjust for proper operation.

### 3.2 PROTECTION

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

- END OF SECTION -

## COMMON WORK RESULTS FOR PLUMBING – SECTION 22 05 00

### PART ONE – GENERAL

#### 1.1 RELATED DOCUMENTS

A. Requirements of the General Conditions, Supplementary General Conditions, and Special Conditions apply to this and all Plumbing sections.

#### 1.2 JOB CONDITIONS

A. The drawings show the general scope and arrangement of the plumbing systems and shall be followed as closely as actual conditions allow.

B. Give consideration to all other trades. Make arrangements to avoid conflicts and interference with other work. Fully coordinate all components of plumbing systems with minor adjustments as required, including provision of offsets, transitions, fittings, and accessories to meet actual conditions.

#### 1.3 ELECTRICAL WORK

A. Electrical equipment and electrical motor-driven equipment specified herein shall be provided complete with motors, integral motor starters where indicated, and controls. Electrical equipment and wiring shall conform to the requirements of Division 26 - Electrical. Manual or automatic control and protective or signal devices required for the operation specified herein, and any control wiring required for control devices but not shown on the electrical plans shall be provided under this section.

#### 1.4 CONFORMANCE TO REGULATIONS

A. All work shall conform to the regulations of the applicable federal, state, and local laws, ordinances and codes.

#### 1.5 REGULATORY REQUIREMENTS

A. All products shall be listed by the Underwriters Laboratories, Inc. (UL), and shall bear the UL label. Where UL labels are not provided from the factory, the contractor shall be responsible for having the equipment or materials tested by a UL testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

#### 1.6 QUALITY ASSURANCE

- A. Work shall meet or exceed minimum recommendations of:
1. AGA - American Gas Association
  2. ANSI - American National Standards Institute
  3. ASME American Society of Mechanical Engineers
  4. ASPE - American Society of Plumbing Engineers
  5. ASTM - American Society for Testing and Materials
  6. AWS - American Welding Society
  7. AWWA - American Water Works Association
  8. EPA - Environmental Protection Agency
  9. GAMMA - Gas Appliance Manufacturer's Association

10. IBC - International Building Code (current adopted edition)
11. IECC - International Energy Conservation Code (current adopted edition)
12. IFGC - International Fuel Gas Code (current adopted edition)
13. IPC - International Plumbing Code (current adopted edition)
14. NEMA - National Electrical Manufacturers Association
15. NIOSH - National Institute for Occupational Safety and Health
16. NSF - National Sanitation Foundation
17. OSHA - Occupational Safety and Health Act
18. PPFA - Plastic Pipe and Fittings Association
19. SPI - Society of the Plastics Industry
20. TIMA - Thermal Insulation Manufacturers Association
21. UL - Underwriters' Laboratories
22. VUSBC - Virginia Uniform Statewide Building Code (current adopted edition)

B. Reference to the standards of any technical society, organization, or association, or to the laws, ordinances, or codes of governmental authorities shall mean the latest standard, code, or specification adopted, published, and effective at the date of taking bids.

C. The specifications, codes, and standards referenced in these specifications (including addenda, amendments, and errata) shall govern in all cases where references thereto are made. In case of conflict between the referenced specifications, the more stringent requirement shall govern unless otherwise permitted by the Owner.

#### 1.7 MATERIALS AND EQUIPMENT

A. Unless specifically provided otherwise, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and be new, current design, unused, and undamaged.

B. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate equipment shall be interchangeable.

#### 1.8 UTILITIES AND CONNECTIONS

A. Verify location of all existing utilities before laying out and making connections. Report any inconsistencies to Owner before commencing work. Contractor shall be responsible for any error resulting from failure to exercise these precautions.

#### 1.9 WIRING DIAGRAMS

All plumbing equipment shall be provided with complete wiring diagrams showing all power and control connections. The diagrams shall be placed in a clear plastic pouch that is permanently affixed to the equipment.

#### 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Refer to Division 01 requirements.

B. Protect products from damage, marring, and soiling.

C. Any marring of factory finishes shall be touched up to match the original factory finish.

## 1.11 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. General: The Contractor shall submit information, for Owner's review, to demonstrate compliance of proposed Products and/or installations with the Contract Documents. This information shall include, but not be limited to: catalog data; performance data; noise levels; etc. Proposed Products that are not in compliance with the Contract Documents may be rejected. Information must be submitted on all required Products, including proposed Products that appear to be in compliance with the Contract Documents.
- C. Contractor preparation:
1. The Contractor shall review and approve each submittal and coordinate all other related or affected Work before submitting for review. All copies of each submittal shall bear the Contractor's stamp, with signature or initials, certifying review and approval; verification of field dimensions; and coordination with adjacent Work are in compliance with the requirements of the Contract Documents.
  2. The Contractor shall identify variations from the requirements of the Contract Documents on all copies of applicable submittals. No extra charges shall be paid for the providing of Products or furnishing of Work required as a result of failure to comply with this requirement.
- D. Submittal Format:
1. Each submittal shall be accompanied by a letter of transmittal listing Project Title, Contractor, Subcontractor or supplier, submitted Products, pertinent drawing and detail number, and specification section number, as appropriate.
  2. Product data shall be clearly marked to identify the applicable Products or models. Options or modifications required by the Contract Documents shall be clearly identified.
  3. Submittals shall be complete with all associated Products. Submittals on portions of a Product or system shall not be reviewed.
  4. Provide Manufacturer's start-up procedures, testing and checklists.
  5. Contractor shall provide coordinated shop drawings of Division 22 systems. Shop drawings shall be prepared in electronic format and submitted in printed form.
- E. Approval required: The ordering, fabrication and/or installation of Products before approval of all relevant submittals shall be at the Contractor's risk. Any damage to new or existing Work resulting from the installation of unapproved Products shall be repaired or replaced by the Contractor at no additional cost. Payment will not be recommended for any Work that does not have an approved submittal.

## 1.12 SUBSTITUTIONS

- A. Refer to Division 01 requirements.
- B. For a Product specified by naming one or more manufacturer and model, and followed with the statement "or approved equal," the Contractor may submit a Product other than the Product specified by manufacturer and model, that Product shall be considered a Substitute Product and shall comply with the following conditions:
1. The Contractor shall verify the Substitute Product is equal or superior in all respects to the Specified Product.
  2. The Contractor shall submit data on the Substitute Product in compliance

with the "Submittals" paragraph herein.

3. After the Substitute Product has been approved by the Owner, the Contractor shall be responsible for coordinating the installation of the Substitute Product with all trades. The Contractor shall be responsible for any changes required to incorporate the Substitute Product into the Work.

4. The Contractor waives all claims for additional costs related to the Substitute Product that becomes apparent before, during or after installation.

#### 1.13 PROJECT/SITE CONDITIONS

A. Install work in locations shown on Drawings, unless prevented by Project conditions.

B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner before proceeding.

#### 1.14 WARRANTIES

A. Refer to Division 01 requirements.

B. Warranty periods shall begin from Date of Substantial Completion.

#### 1.15 CONTRACTOR COORDINATION

A. Plumbing contractor(s) shall coordinate their work with all other trades prior to fabrication of systems and commencement of installation. It shall be the responsibility of each contractor to review the work of other trades as it affects their work, and as their work affects other trades, to insure that the construction documents are closely followed. Where discrepancies arise, they shall be referred to the Owner for resolution before proceeding with the Work.

#### 1.16 INSTRUCTIONS TO BIDDERS

A. Prior to submission of their bid, each Bidder shall make and shall be deemed to have made a careful examination of the proposal documents. Each Bidder shall make and shall be deemed to have made a thorough investigation of all applicable laws, rules, regulations and ordinances of any Authority Having Jurisdiction and incorporate result of those investigations into their bid. Each Bidder shall be deemed to have satisfied themselves as to all conditions under which they will be obligated to operate should they become the successful Bidder and enter into a contract for the Work. It is understood and agreed that all such reasonable factors have been properly investigated and considered in the preparation of the Trade sub-contractor's bid and there will be no adjustment to the contract cost or time which is based on the lack of such investigation.

B. No consideration will be given to requests for changes in Trade Contractor pricing/bids based on an uncoordinated scope of work between Trade teams.

C. Site Visit:

1. It is strongly encouraged that all prospective bidders visit the site to investigate existing conditions that may affect their pricing. The site visit is not mandatory, however, future requested changes to a bidders pricing that involves items that could have been reasonably ascertained from a site visit will not be considered.

## 1.17 GENERAL REQUIREMENTS SPECIFIC TO TRADE CONTRACTOR OF THIS DIVISION

- A. Design, furnish and install a complete plumbing system including utility connections, pumps, piping, support, bracing, etc., in accordance with all other current applicable regulatory requirements.
- B. Plumbing fixtures and equipment complete as required.
- C. In-line pumps and associated work.
- D. Escutcheons.
- E. Supports for wall hung plumbing items as required.
- F. Provide a floor drain in each water entry room to accommodate the fire protection Trade Contractor.
- G. Provide all excavation, shoring, backfill and compaction required for plumbing work. Handwork as required.

## PART TWO - PRODUCTS

SEE DRAWINGS.

## PART THREE - EXECUTION

### 3.1 GENERAL

- A. Unless otherwise noted, install equipment in accordance with manufacturer's printed instructions for application indicated.
- B. Install, operate, and adjust systems in accordance with the plans and specifications.
- C. All work for this division shall conform to the regulations of the applicable federal, state, and local laws, ordinances, and codes. not proceed with that portion of the Work until a response has been returned.
- D. All Products delivered to the site(s) shall be stored in accordance with the manufacturer's printed instructions. If a manufacturer does not have printed instructions, then the Product shall be adequately housed and otherwise protected against damage or corrosion. If any Product stored at the site(s) is not protected as specified herein, the Contractor shall not receive payment for that Product. Any Product damaged as a result of failure to comply with this requirement shall be replaced by the Contractor at no additional cost to the Owner.

- END OF SECTION -

## PLUMBING FIXTURES – SECTION 22 40 00

### PART ONE - GENERAL

#### 1.1 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.
- C. Showers.

#### 1.2 REFERENCE STANDARDS

#### 1.3 SUBMITTALS

- A. Refer to Division 01 requirements.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with documented experience.

#### 1.5 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

### PART TWO – PRODUCTS

#### 2.1 BASIS OF DESIGN - FIXTURES AND FITTINGS

- A. Refer to architectural drawings for basis of design fixtures.
- B. Contractor shall provide basis of design fixtures.

### PART THREE - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Confirm that millwork is constructed with adequate provision for the installation of countertop lavatories and sinks.

### 3.2 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

### 3.3 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.

C. Install components level and plumb.

D. Install and secure fixtures in place with wall supports and bolts.

E. Seal fixtures to wall and floor surfaces with sealant, color to match fixture.

### 3.4 INTERFACE WITH WORK OF OTHER SECTIONS

A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

### 3.5 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

### 3.6 CLEANING

A. Clean plumbing fixtures and equipment.

### 3.7 PROTECTION

A. Protect installed products from damage due to subsequent construction operations.

B. Do not permit use of fixtures by construction personnel.

C. Repair or replace damaged products before Date of Substantial Completion.

### 3.8 SCHEDULES

A. Fixture Heights: Install fixtures to heights above finished floor as required for compliance with the IPC and ADA.

#### B. Fixture Rough-In

1. Water Closet (Tank Type):
  - a. Cold Water: 1/2 Inch.
  - b. Waste: 4 Inch.
  - c. Vent: 2 Inch.
2. Lavatory:
  - a. Hot Water: 1/2 Inch.
  - b. Cold Water: 1/2 Inch.
  - c. Waste: 1-1/2 Inch.
  - d. Vent: 1-1/4 Inch.

3. Shower:
  - a. Hot Water: 1/2 Inch.
  - b. Cold Water: 1/2 Inch.
  - c. Waste: 1-1/2 Inch.
  - d. Vent: 1-1/4 Inch.

- END OF SECTION -

## COMMON WORK RESULTS FOR ELECTRICAL – SECTION 26 05 00

### PART ONE – GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Requirements of the General Conditions, Supplemental General Conditions, and Special Conditions apply to this and all Electrical Specification Sections.
- B. This Section applies to all Electrical sections.

#### 1.2 JOB CONDITIONS

- A. The Contract Documents specify the scope and arrangement of the Work and shall be followed as closely as actual conditions allow.
- B. The Contractor shall give consideration to all other trades, and make arrangements to avoid conflicts and interference with other Work, new or existing. Contractor shall coordinate all components of the Work, and provide minor adjustments as required, including offsets, transitions, fittings, and accessories to meet actual conditions.
- C. The Contractor shall visit the job site prior to bid date to examine the conditions under which the Work is to be performed. No extra charges shall be paid for providing of Products or furnishing of Work resulting from failure to comply with this requirement.

#### 1.3 ELECTRICAL WORK

- A. Electrical equipment and electrical motor-driven equipment specified herein shall be provided complete with motors, motor starters, and controls. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for the motor control specified.

#### 1.4 CONFORMANCE TO REGULATIONS

- A. All Work shall conform to the regulations of the applicable federal, state, and local laws, ordinances and codes.

#### 1.5 REGULATORY REQUIREMENTS

- A. All applicable Work shall conform to the requirements of NFPA 70.
- B. All Products shall be listed by the Underwriters Laboratories, Inc. (UL), and shall bear the UL label. Where UL labels are not provided from the factory, the Contractor shall be responsible for having the equipment or materials tested by a UL testing firm, acceptable to authority having jurisdiction, to determine suitability of the Product for purpose specified.

#### 1.6 QUALITY ASSURANCE

- A. Work shall meet or exceed minimum recommendations of:
  - 1. ANSI - American National Standards Institute
  - 2. ASTM - American Society for Testing Materials
  - 3. AWG - American Wire Gauge
  - 4. EEI - Edison Electric Institute
  - 5. ETL - Electrical Testing Lab

6. EIA - Electronic Industries Association
7. IBC - International Building Code (latest adopted edition)
8. IECC - International Energy Conservation Code (latest adopted edition)
9. IEEE - Institute of Electrical and Electronic Engineers
10. IPCEA - Insulated Power Cable Engineers Association
11. ISA - Instrument Society of America
12. NEC - National Electrical Code, NFPA 70 (latest adopted edition)
13. NECA - National Electrical Contractors Association
14. NEMA - National Electrical Manufacturer's Association
15. NESC - National Electrical Safety Code
16. NFPA - National Fire Protection Association
17. OSHA - Occupational Safety and Health Act
18. UL - Underwriters' Laboratories, Inc.
19. VUSBC - Virginia Uniform Statewide Building Code

- B. Reference to the standards of any technical society, organization, or association, or to the laws, ordinances, or codes of governmental authorities shall mean the latest standard, code, or specification adopted, published, and effective on the date of Bid Opening.
- C. The specifications, codes, and standards referenced in these specifications (including addenda, amendments, and errata) shall govern in all cases where references thereto are made. In case of conflict between the referenced specifications, the more stringent requirement shall govern unless otherwise permitted by the Owner. Major conflicts shall be referred to the Owner for resolution.

#### 1.7 MATERIALS AND EQUIPMENT

- A. Unless specifically noted otherwise, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards, be of a current design, new, unused, and undamaged.
- B. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate equipment shall be interchangeable.

#### 1.8 UTILITIES AND CONNECTIONS

- A. Verify location of all existing utilities before laying out and making connections. Report any inconsistencies to Owner before commencing Work. Contractor shall be responsible for correcting any errors and repairing or replacing all materials and equipment damaged as a result of failure to comply with this requirement.

#### 1.9 WIRING DIAGRAMS

- A. All electrical equipment shall be provided with complete wiring diagrams showing all power and control connections. The diagrams shall be legible and placed in a clear plastic pouch that is permanently affixed to the equipment.

#### 1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect Products from damage, marring, and soiling.
- B. Any marring of factory finishes shall be repaired or replaced as necessary to match the original factory finish.

## 1.11 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. General: The Contractor shall submit information, for Owner's review, to demonstrate compliance of proposed Products and/or installations with the Contract Documents. This information shall include, but not be limited to catalog data; performance data; noise levels; etc. Proposed Products that are not in compliance with the Contract Documents may be rejected. Information must be submitted on all required Products, including proposed Products that appear to be in compliance with the Contract Documents.
- C. Contractor preparation:
  - 1. The Contractor shall review and approve each submittal and coordinated all other related or affected Work before submitting for review. All copies of each submittal shall bear the Contractor's signature or initials, certifying review and approval; verification of field dimensions; and coordination with adjacent Work are in compliance with the requirements of the Contract Documents.
  - 2. The Contractor shall identify variations from the requirements of the Contract Documents on all copies of applicable submittals. No extra charges shall be paid for the providing of Products or furnishing of Work required as a result of failure to comply with this requirement.
- D. Submittal Format:
  - 1. Each submittal shall be accompanied by a letter of transmittal listing Project Title, Contractor, Subcontractor or supplier, submitted Products, pertinent drawing and detail number, and specification section number, as appropriate.
  - 2. Product data shall be clearly marked to identify the applicable Products or models. Options or modifications required by the Contract Documents shall be clearly identified.
  - 3. Submittals shall be complete with all associated Products. Submittals on portions of a Product or system shall not be reviewed.
- E. Approval required: The ordering, fabrication and/or installation of Products before approval of all relevant submittals shall be at the Contractor's risk. Any damage to new or existing Work resulting from the installation of unapproved Products shall be repaired or replaced by the Contractor at no additional cost. Payment will not be recommended for any Work that does not have an approved submittal.

## 1.12 SUBSTITUTIONS

- A. Refer to Division 01 requirements.
- B. For a Product specified by naming one or more manufacturer and model, and followed with the statement "or approved equal," the Contractor may submit a Product other than the Product specified by manufacturer and model, that Product shall be considered a Substitute Product and shall comply with the following conditions:
  - 1. The Contractor shall verify the Substitute Product is equal or superior in all respects to the Specified Product.
  - 2. The Contractor shall submit data on the Substitute Product in compliance with the "Submittals" paragraph herein.
  - 3. The Contractor shall be responsible for coordinating the installation of the Substitute Product with all trades. The Contractor shall be responsible for any changes required incorporating the Substitute Product into the Work.
  - 4. The Contractor waives all claims for additional costs related to the Substitute Product that become apparent before, during or after installation.

### 1.13 OPERATING AND MAINTENANCE MANUAL

- A. Refer to Division 01 requirements.

### 1.14 PROJECT/SITE CONDITIONS

- A. Install Work in accordance with the Contract Documents unless prevented by Project conditions.
- B. When Project/Site conditions require a revision to the Work the Contractor shall prepare drawings to show proposed revision. The drawings shall include revisions to Work specified in other Sections when applicable. Submit drawings to Owner for review. The Contractor shall allow a minimum of three business days for the Owner to respond to proposed revision. The Contractor shall not proceed with that portion of the Work until a response has been returned.

### 1.15 WARRANTIES

- A. Refer to Division 01 requirements.
- B. Warranty periods shall begin from Date of Substantial Completion.

### 1.16 CONTRACTOR COORDINATION

- A. Electrical contractor shall coordinate their work with all other trades prior to fabrication of systems and commencement of installation. It shall be the responsibility of the electrical contractor to review the work of other trades as it affects their work, and as their work affects other trades, to insure that the construction documents are closely followed and conflicts are avoided. Where discrepancies arise, they shall be referred to the Owner for resolution before proceeding with the Work.

### 1.17 INSTRUCTIONS TO BIDDERS

- A. Prior to submission of their bid, each Bidder shall make and shall be deemed to have made a careful examination of the proposal documents. Each Bidder shall make and shall be deemed to have made a thorough investigation of all applicable laws, rules, regulations, and ordinances of any Authority Having Jurisdiction and incorporate result of those investigations into their bid. Each Bidder shall be deemed to have satisfied themselves as to all conditions under which they will be obligated to operate should they become the successful Bidder and enter into a contract for the Work. It is understood and agreed that all such reasonable factors have been properly investigated and considered in the preparation of the Trade sub-contractor's bid and there will be no adjustment to the contract cost or time which is based on the lack of such investigation.
- B. No consideration will be given to requests for changes in Trade Contractor pricing/bids based on an uncoordinated scope of work between Trade teams.
- C. Site Visit:
  - 1. It is strongly encouraged that all prospective bidders visit the site to investigate existing conditions that may affect their pricing. The site visit is not mandatory, however, future requested changes to a bidders pricing that involves items that could have been reasonably ascertained from a site visit will not be considered.

## 1.20 GENERAL REQUIREMENTS SPECIFIC TO TRADE CONTRACTOR OF THIS DIVISION

- A. Design, furnish and install a complete electrical system including utility connections, fixtures, equipment, electrical connection of equipment provided by others, etc., in accordance with all current applicable regulatory requirements.
- C. Provide backing for all electrical work.
- E. Provide all excavation, shoring, backfill and compaction required for electrical work. Handwork as required.
- G. Size and select all electrical distribution equipment, raceways, conductors, boxes and other appurtenances as required for a completely functioning system.
- H. Provide all required breakers, panel components, switches, disconnects, pull cans, panel boards, receptacles, raceways, etc. for a complete electrical installation.
- I. Grounding requirements.
- J. All outlets as required by the National Electrical Code and Project requirements.
- K. Interior and exterior light fixture assemblies including all support wires, backing, trim, poles, pole bases, controls, etc. for a complete installation.

## PART TWO - PRODUCTS

SEE DRAWINGS.

## PART THREE - EXECUTION

### 3.1 GENERAL

- A. Unless otherwise noted, install equipment in accordance with manufacturer's printed instructions for application indicated. Maintain copies of manufacturer's printed instructions at the project site.
- B. Install, operate, and adjust systems in accordance with the Contract Documents.
- C. Wiring, conduit, and other items associated with the electrical system shall not obstruct access to any new or existing electrical equipment and/or mechanical equipment. All electrical equipment shall be installed where it is readily accessible for servicing.
- D. All Products delivered to the site(s) shall be stored in accordance with the manufacturer's printed instructions. If a manufacturer does not have printed instructions then the Product shall be adequately housed and otherwise protected against damage or corrosion. If any Product stored at the site(s) is not protected as specified herein, the Contractor shall not receive payment for that Product. That Product shall be stored by the Owner at the expense of the Contractor. Any Product damaged as a result of failure to comply with this requirement shall be replaced by the Contractor at no additional cost to the Owner.

### 3.2 WORKMANSHIP

- A. Install Work using procedures defined in NECA Standard of Installation.

### 3.3 FINISHES

- A. Every effort has been made to coordinate the trades involved. This coordination will be the responsibility of all parties involved in both the planning and construction of the project.
- B. The Contractor shall be responsible for the careful and complete coordination of all portions of the Work with that of other trades.
  - 1. Center all applicable devices in ceiling tiles as shown and where appropriate.
  - 2. Devices and device plates shall be grouped as shown on the electrical drawings.
  - 3. All applicable devices shall be flush with finished surfaces.

### 3.4 CLEANING THE INSTALLATION

- A. After the equipment, wiring, and conduit has been proven operational, carefully clean all interiors of cabinets and external parts of each piece of equipment, thoroughly removing all traces of dirt, oil, grease, and other foreign substances or objects.

- END OF SECTION -

# LINEAGE

ARCHITECTS • ENGINEERS • SURVEYORS

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## Architectural and Engineering Services

### Client:

Ernest Sadler  
Esadler1227@gmail.com

### Scope of Work:

- Schematic design for new residence.
- Deliverables: floor plans & elevations to be used in permit set completed by client.
- Scope can be expanded at client's request.

### Pricing & Terms of Payment:

- The fee for consultation on this project shall be on a time-and-material basis for a minimum of \$500 at the following rates:
  - Principal Architect/Engineer \$120.00 per hour
  - Project Designer \$90.00 per hour
  - Senior Drafter \$90.00 per hour
  - Junior Designer/Draftsman \$65.00 per hour
  - Administration \$50.00 per hour
- Deliverables and review materials provided as PDF files unless requested as hard copies by client.
- Drawing larger than 11" X 17", printed by Architect for purposes other than internal review, discussion, or files, will be charged at the following rates:
  - Sizes up to and including 24" X 36": \$2.50/sheet.
- Reimbursement for any project-specific administrative costs including but not limited to printing, reproduction, postage and filing fees at cost plus 10.00%.
- Invoices are sent monthly. Invoiced amounts are to be paid within 15 days of the invoice date.

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Ernest Sadler, Client

Date

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Pennie Z. Garber, AIA, LEED AP, NCARB, Principal Architect

Date

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Jonathan F. Garber, PE, Principal Engineer

Date

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