

Pine Avenue Development

Anniston Housing Authority

Anniston, Alabama

Gregg Fortner, Executive Director



Pine Avenue Development
Anniston Housing Authority
Anniston, Alabama

Revision Table		
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Title Page

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GENERAL NOTES

1. CONTRACTUAL OBLIGATION:

The GC shall abide by and be responsible for all requirements stated in the General Conditions unless noted otherwise.

2. GENERAL CONDITIONS:

The GC shall provide all labor, material, equipment, tools, utilities, insurance, transportation, and pay for all required taxes, permits, and services required to complete the entire scope of work, whether temporary or permanent. All materials except temporary forms are to be new, unused and of the specified quality. The GC shall maintain the project site in a clean and orderly fashion. Tools and equipment shall be secured, and all debris shall be removed daily. The GC shall maintain a visitors log. All visitors shall be required to sign such log. Dates and times of entering and exiting the site for all visitors shall be noted. GC to secure project site from unauthorized entry at all times. Coordinate location of barricades or temporary fencing with the documents and owner. The GC shall photograph the project site and existing conditions prior to the beginning of the work. Photographs shall be taken of the progress of the work at intervals no greater than 7 calendar days. Photographs shall be in color and identified by date and time of day. Maintain digital photograph file onsite. Deliver completed file to the architect upon receipt of use and occupancy permit. The GC shall maintain an on site staging area and shall keep the agency approved construction documents, all licensing information, visitors log, photograph file, and at least one set of reproducible construction documents, to be marked concurrently with the construction, to record actual conditions of the construction and device installations. Deliver completed reproducible record set to the architect upon completion of the project. GC to remove and dispose of all waste and debris from project site in a legal manner. Upon completion of the work, provide professional cleaning service to clean the project site, interior and exterior, for final occupancy.

3. GRAPHICS:

Existing construction (partitions, doors, plumbing fixtures, casework, equipment, etc.) is indicated on the floor plans, with lines in a lighter shade (screened). Existing walls to remain are poched. New construction is indicated by full intensity (solid) lines. Items to be demolished are indicated in light finely dashed lines.

4. INTERPRETATION:

The architect is solely responsible for the design interpretation of the construction documents.

5. DOCUMENT DISCREPANCIES:

Whenever there are discrepancies in the contract documents, the contractor shall base his bid upon the better quality or greater quantity of the material or work described.

6. DRAWING SCALE:

The contractor shall not scale drawings.

7. FIELD CONDITIONS:

The contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements, conditions, and other information known to the contractor with the contract documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the architect at once. No allowance will be made on behalf of the contractor or subcontractors for failure to visit the site.

8. CONSTRUCTION MEANS...PROCEDURES:

The general contractor shall supervise and direct the work, using the contractor's best skill and attention. The contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of work under the contract, unless contract documents give other specific instructions concerning these matters. Any work that must be removed or relocated due to lack of coordination of the trades is solely the contractor's responsibility. The contractor shall maintain a secure site throughout the construction process.

9. BUILDING SYSTEMS:

The GC shall coordinate the location and installation of all building systems and equipment. The GC shall coordinate all building trades to assure all required clearances for operation and maintenance of all equipment and systems as required by code, these documents, or manufacturer's recommendations are met or exceeded. Lack of specific details shall not be an excuse for improper installation of any material, device, or system. Where details are not provided, the GC shall refer to the printed manufacturer's recommendations for installation guidelines. All installed systems and devices are to operate quietly and without excessive vibration. This includes but is not limited to the following systems; mechanical, electrical, lighting, plumbing, and telephone equipment.

10. CLEARANCES:

The contractor shall coordinate with all building trades involved in the project for preparation of composite shop drawings for each floor to insure proper clearances for fixtures, ducts, ceilings, etc, while maintaining the specified ceiling heights noted on the drawings. Clarify any conflicts with architect.

11. LOCATIONS:

Electrical panels, telephone equipment, fire extinguishers, fire pulls, lights/horns, smoke detectors, thermostats, etc, shall be located in accordance with requirements of governing agencies. Any location not specifically shown shall be verified with architect prior to rough-out and installation. Unless otherwise noted, the above panels and/or equipment shall be fully recessed &shall maintain the integrity of wall fire rating requirements.

12. GOVERNING AGENCIES:

The GC and all of his forces shall comply with all regulations by any governing agency with jurisdiction over the project or project site.

13. PERMITS/INSPECTIONS:

Unless otherwise provided in the contract documents, the contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of work. The contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the work. Upon completion of the work, the contractor shall obtain a use and occupancy permit as required from the governing codes. Submit one copy of the permit to the owner with final application of payment.

14. LIFESAFETY TESTING:

The GC shall provide the owner and the local fire department written notice 96 hours in advance of any life safety system shut down or testing. The GC shall telephone the fire department immediately prior to such testing or shut down to inform them of the exact time of the anticipated alarm condition. the GC shall notify the fire department immediately upon completion of the test or shut down tore-establish emergency response to alarm conditions.

15. DOORS:

Undercutting of doors shall be done in accordance with NFPA 80 (current issue) table 1-11.4.

16. BLOCKING:

Provide wood blocking in partitions behind all wall hung or wall mounted accessories, equipment, millwork, shelving, or other devices.

17. TOXIC MATERIAL:

In the event the contractor encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or other toxic material, which has not been rendered harmless, the contractor shall immediately stop work in the area affected, seal off the perimeter, and report the condition to the owner and architect in writing.no new building material shall contain asbestos, polychlorinated biphenyl (PCB) or other toxic material as defined by state and federal regulatory agencies.

18. PARTITIONS:

Partitions extending to the structure above shall be tightly sealed. The integrity of rated assemblies and smoke barriers shall be maintained at corners and intersections of lower priority partitions. All horizontal and vertical fire and/or smoke barriers, including all floor structures, shall be continuous from outside wall to outside wall, from one barrier to another, or combination thereof. Barriers must be continuous through concealed spaces and interstitial spaces. Seal completely all openings with UL (or other testing agency) approved assemblies where fire barriers are penetrated or abut other fire barriers, exterior walls, and floors above and below barrier. All fire barriers are to be constructed according to the testing laboratory specifications. All smoke barriers shall be a minimum of 1-hour fire resistant construction. Corridor partitions, smoke stop partitions, horizontal exit partitions, exit enclosures, and all fire rated walls shall be permanently identified with stenciling. Such identification shall be above any decorative ceiling and in concealed spaces. Stenciling to be in red letters, no less than 4" tall with a red band extending the length of the partition. Stenciled identification to read "(x) hour rated fire and/or smoke barrier, protect all openings". Stenciled identification to be positioned to be readily visible from both sides of the barrier and such that from any access point at least one identification marker may be read.

19. PENETRATIONS:

Penetrations of pipes, tubes, conduit, wires, cables, ducts, vents, cabinets, lighting, and other fixtures through fire rated assemblies shall be installed and protected to maintain fire rating.

20. PROTECTION OF FLOOR SURFACES:

Contractor shall provide adequate protection for all finished floor surfaces, existing or new including but not limited to, ceramic tile, vinyl tile, concrete, etc., throughout the construction period.

21. COMMUNICATION EQUIPMENT:

The GC shall coordinate the work he is responsible for with the owner's communication service providers. Coordinate the location of all system controls with the electrical system installer, the owner, and the architect prior to installation. Owner's communication provider to assure that juxtaposing of electrical and data lines will not result in interference, static, or in any other way disrupt the normal function of the data/communication system(s).

22. SUBSTRATE PREPARATIONS:

All subsurfaces shall be properly prepared before application of finishes. Prepare substrate in accordance with finish manufacturer's recommendations. Contractor shall assume responsibility for substrate conditions where finishes are applied.

23. DIMENSION STANDARDS:

Dimensions are not adjustable unless noted with a +/- symbol. Only normal industry standard tolerances are acceptable deviations from dimensions indicated. Do not scale drawings. All dimensions noted as "clear" shall maintain the full space indicated without encroachments. All vertical heights indicated are from the finish floor elevation at the base of the item indicated, unless noted otherwise. Where walls, jambs, or other items are noted to "align", the face of items indicated shall be in line with each other to form a straight line, free of offsets or deviations. Field verify all dimensions. Unless noted otherwise, dimensions are actual, not nominal, as follows:

Columns - from center line to center line
Interior partitions - from finish face to finish face
Concrete/ masonry - from finish face to finish face
Exterior walls - from exterior face to interior finish face of wall

DEFINITIONS & TERMINOLOGY

1. "TYPICAL":

Unless noted otherwise, means identical for all conditions, which match original condition indicated.

2. "SIMILAR":

Means comparable characteristics for the conditions noted. Verify dimensions and orientation of conditions, which vary from typical or similar condition indicated.

3. "OPPOSITE HAND":

Means condition is mirror image of detailed referenced.

4. "ALIGN":

Means alignment of similar components of construction (walls, jambs, etc.), which are adjacent or the components shall be in line with each other across voids. Dimensions are not adjustable unless noted with plus/minus tolerance.

5. "O.F.O.I.":

Means "owner furnished, owner installed"

6. "U.N.O.":

Means "unless noted otherwise"

7. "O.F.C.I.":

Means "owner furnished, contractor installed"

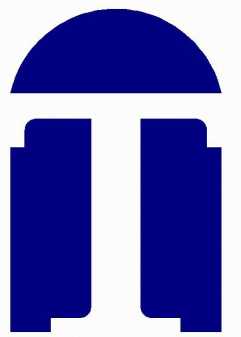
8. REFERENCES:

All references to contractor shall refer to general contractor and/or subcontractor. All references to the owner shall mean the owner or the owner's agent.

All work shall comply with the following codes as adopted by the City of Anniston;
2015 International Residential Code
2014 National Electrical Code
2015 International Plumbing Code
2015 International Mechanical Code
Alabama Residential Energy Code

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4	Site Plan
5	Building 1 Foundation and Floor Plan
6	Building 1 Elevations
7	Building 2 Foundation and Floor Plan
8	Building 2 Elevations
9	Roof Framing Plans
10	Framing Plans
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Dadeville, Alabama 36853



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General
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1. General Requirements

- ### 3. Site Utility Work

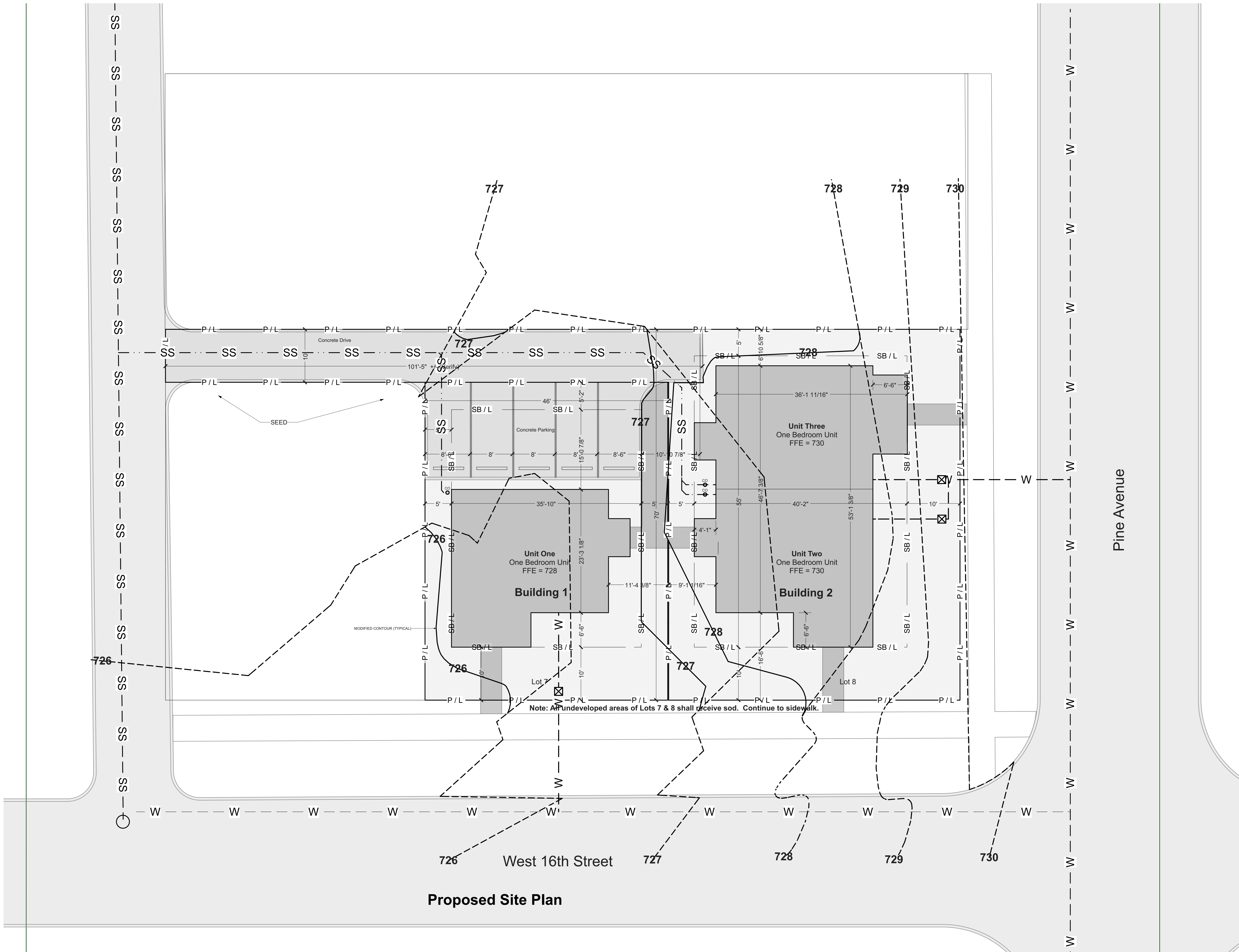
- #### 4. Erosion and Sediment Control

- ## 5. Cleanup and Restoration

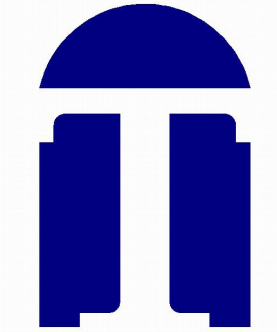
- EROSION CONTROL NOTES:

- GRADING NOTES:

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Proposed Site Plan



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Anniston, Alabama

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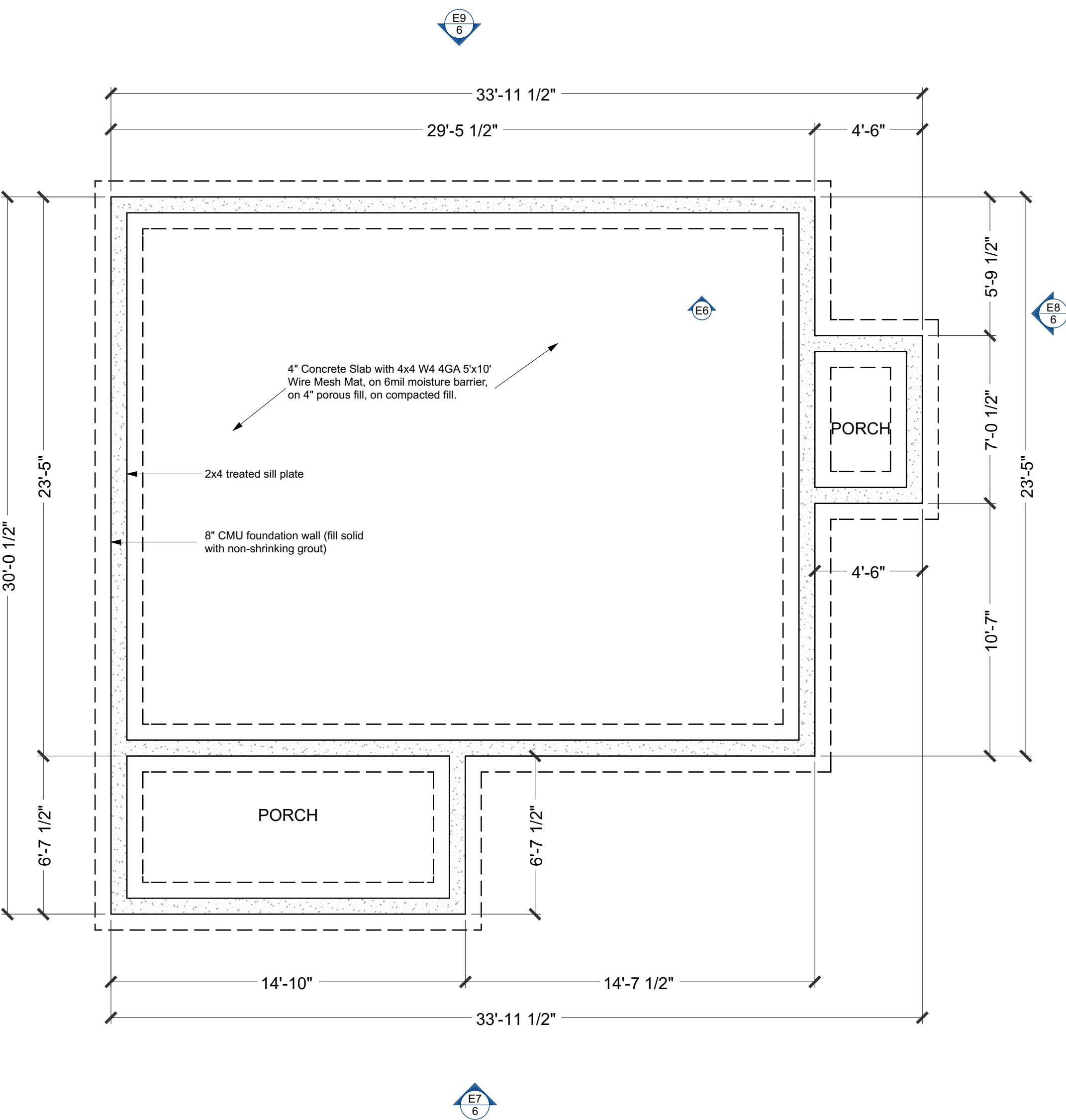
Site Plan

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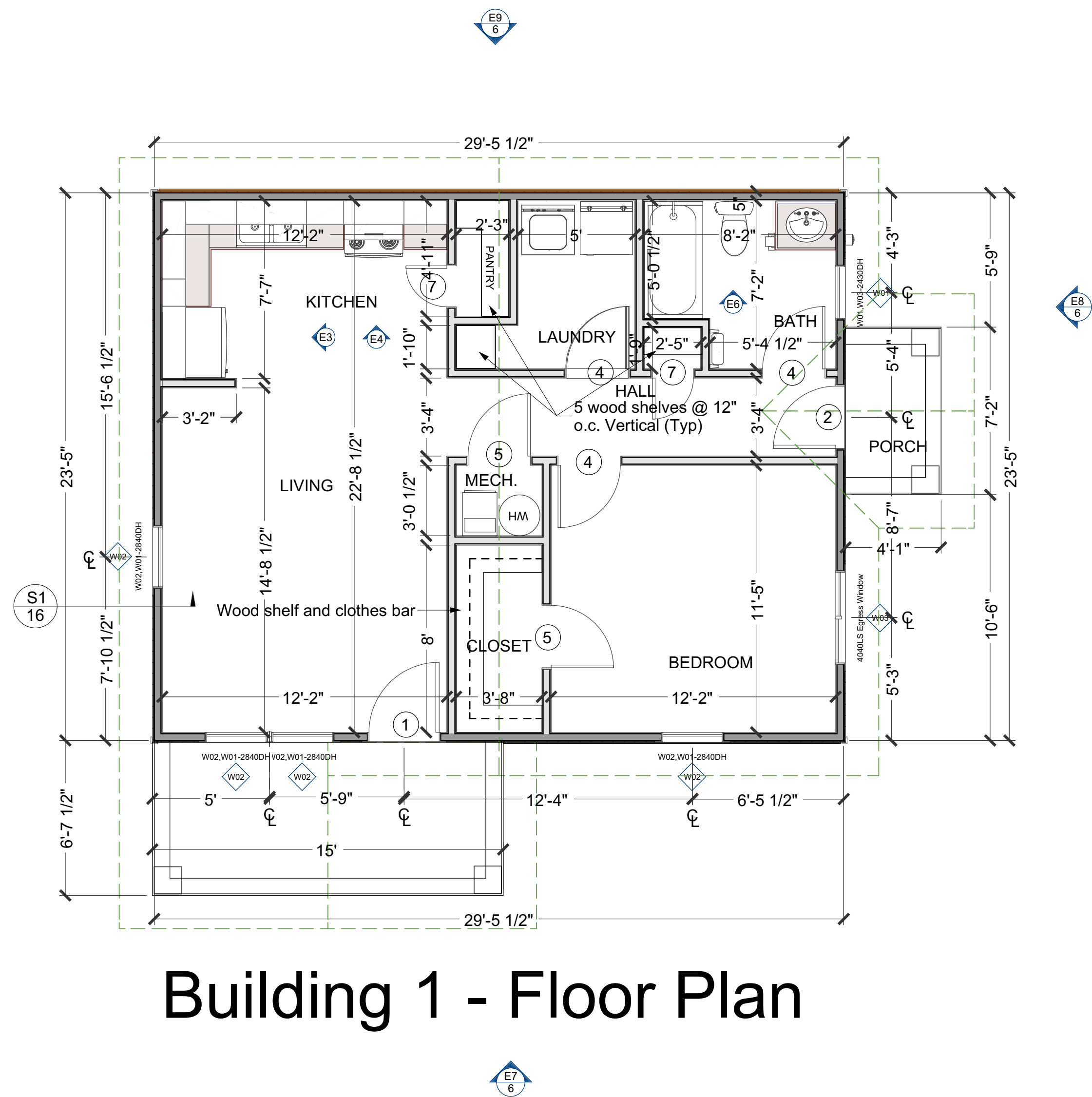
Building 1 - Foundation Plan

FOUNDATION NOTES

- FOUNDATIONS TO BEAR A MINIMUM OF 24" BELOW FINISH GRADE
- ALL ANCHOR BOLTS TO BE 5/8" DIA X 10 (TO EXTEND A MIN. OF 7" INTO GROUTED CELLS OF CMU). ALL ANCHORS TO BE INSTALLED IN ACCORDANCE WITH IRC R403.1.6.
- ALL REINFORCING STEEL SHALL BE ASTM A-615, GRADE 60 AND SHALL BE INSTALLED IN ACCORDANCE WITH IRC R403.1.3.2
- ALL REINFORCING STEEL TO OVERLAP A MINIMUM OF 24" FOR SPLICES FOR #4 BARS & 36" FOR #5 BARS
- PROVIDE CORNER BARS TO MATCH CONTINUOUS STEEL
- MINIMUM ALLOWABLE CONCRETE COMPRESSIVE STRENGTH SHALL BE 3,000 PSI (DESIGNED AS 2,500 PSI) AT 26 DAYS. MAXIMUM AGGREGATE SIZE IS 1". MAXIMUM AIR ENTRAINMENT IS 3%. CEMENT SHOULD BE TYPE 1 OR 2
- SOIL BEARING CAPACITY ASSUMED TO BE 2,000 PSF. IF SOIL CONDITIONS VARY FROM THIS, THE PROJECT ENGINEER MUST BE NOTIFIED. ALL FOOTINGS MUST BEAR ON UNDISTURBED SOIL. ALL SLOPES MUST BE STABILIZED
- ADJACENT GROUND SURFACES SHALL BE SLOPED AWAY FROM STRUCTURE DRAINAGE OF SURROUNDING AREA SHALL ALSO BE PROVIDED TO PREVENT ACCUMULATION OF SOIL AND EROSION OF SOIL NEAR FOOTINGS
- UNIFORM SOIL CONDITIONS, MUST BE PROVIDED UNDER SLAB AND FOOTINGS. CUT/FILL OR NON-UNIFORM SOIL CONDITIONS SHOULD BE EXCAVATED AND REPLACED W/ UNIFORM ENGINEERED FILL MATERIAL TO MINIMIZE DIFFERENTIAL MOVEMENT
- THE TOPS OF FOUNDATION WALLS SHALL EXTEND 12" ABOVE THE ADJACENT FINISH GRADE

GENERAL NOTES

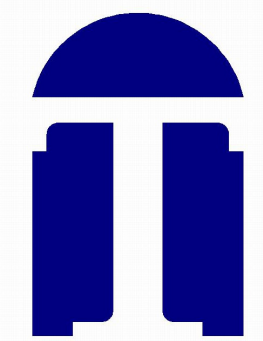
- Code Compliance:**
 - All work shall comply with applicable local, state, and national building codes, ordinances, and regulations.
 - The design is based on the latest adopted versions of the International Building Code (IBC), International Residential Code (IRC), and other applicable standards.
- Dimensions:**
 - All exterior dimensions are to face of stud, face of concrete unless otherwise noted.
 - All interior dimensions are to face of wall finish unless otherwise noted.
 - Contractor shall verify all dimensions and conditions on site prior to construction and report discrepancies to the architect/engineer.
- Structural:**
 - Refer to structural drawings for foundation, framing, and structural details.
 - Do not scale drawings. Use figured dimensions only.
- Mechanical, Electrical, Plumbing (MEP):**
 - Refer to MEP drawings for locations and specifications of all mechanical, electrical, and plumbing systems.
 - All penetrations through structural members must be approved by the structural engineer.
- Fire Safety & Egress:**
 - Maintain all fire-rated assemblies as shown on plans. Penetrations shall be sealed with approved firestopping.
 - Egress paths and door swings must comply with applicable codes.
- Materials & Finishes:**
 - All materials and finishes must match or exceed specifications in the project documents.
 - Substitutions must be approved in writing by the architect or owner.
- Accessibility:**
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 - Shop drawings and submittals shall be reviewed and approved before fabrication or installation.
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 - Protect existing structures, utilities, and landscape not scheduled for demolition.
- Revisions & Changes:**
 - Any changes to design or field conditions must be documented and approved via formal change order or architect's supplemental instruction (ASI).
- Inspections & Permits:**
 - Contractor is responsible for scheduling and passing all required inspections.
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Building 1 - Floor Plan

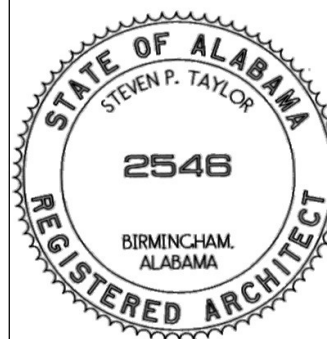
Partition Legend

- Exterior partition - 1/2" (Type 'X') Gyp Bd, 2x4 wood studs @ 16" o.c. with R-13 Continuous Batt Insulation, 7/16 OSB, House Wrap, and Cementitious Siding.
- Interior Partition - 2x4 @ 16" o.c. with 1/2" Gyp Bd Both Sides.



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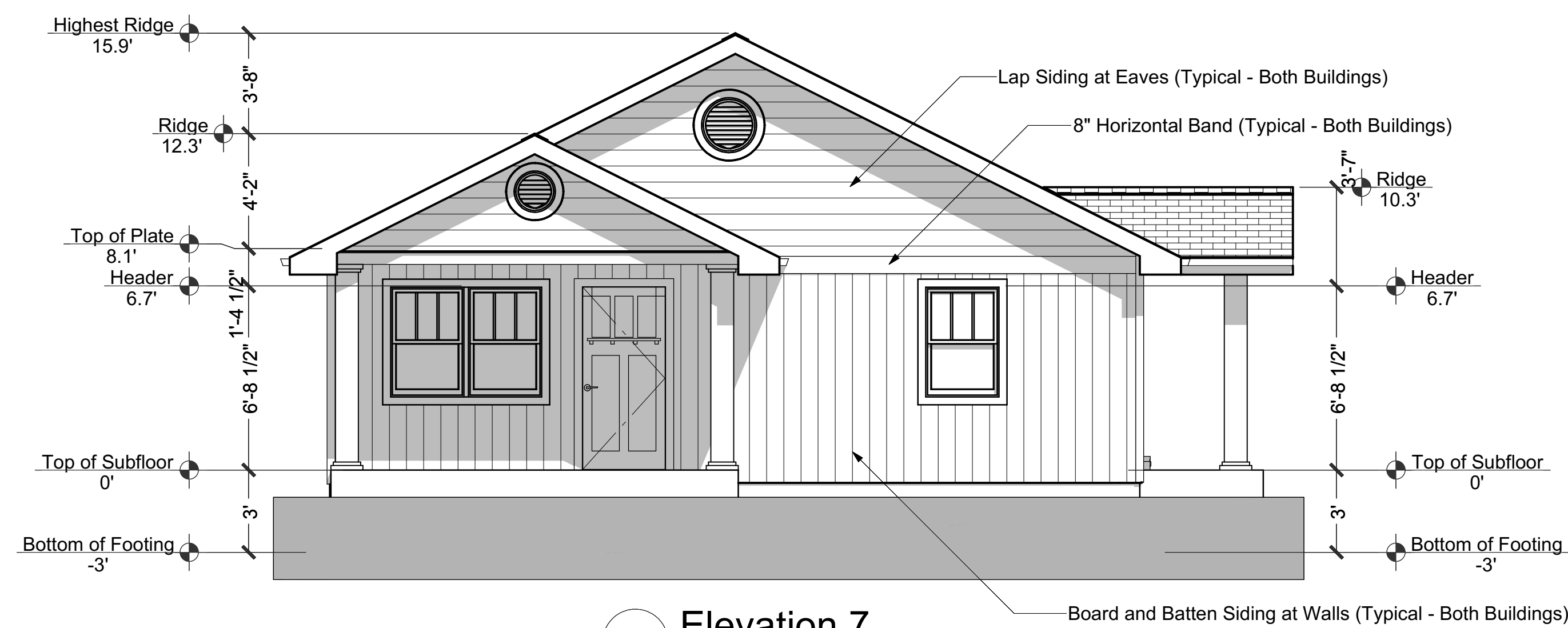
Building 1
Foundation
and Floor
Plan

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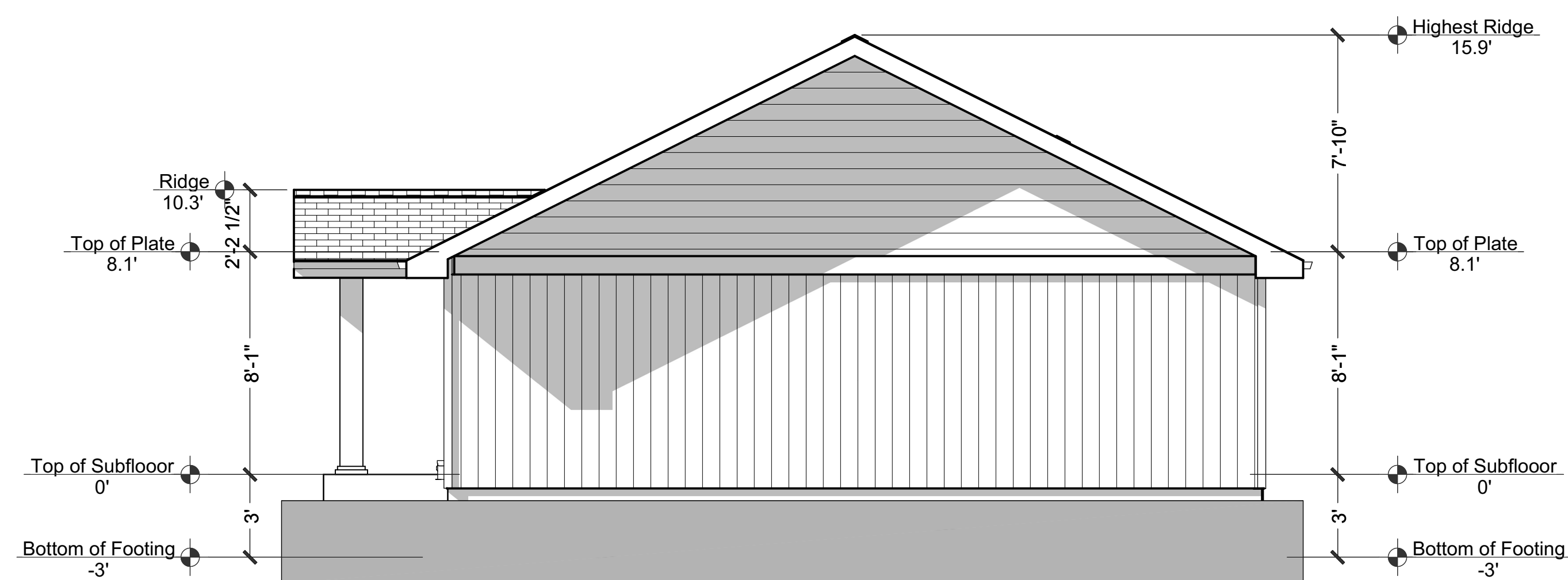
5



E7 Elevation 7
1/4 in = 1 ft



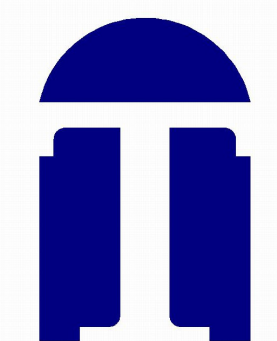
E8 Elevation 8
1/4 in = 1 ft



E9 Elevation 9
1/4 in = 1 ft



E10 Elevation 10
1/4 in = 1 ft



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Building 1
Elevations

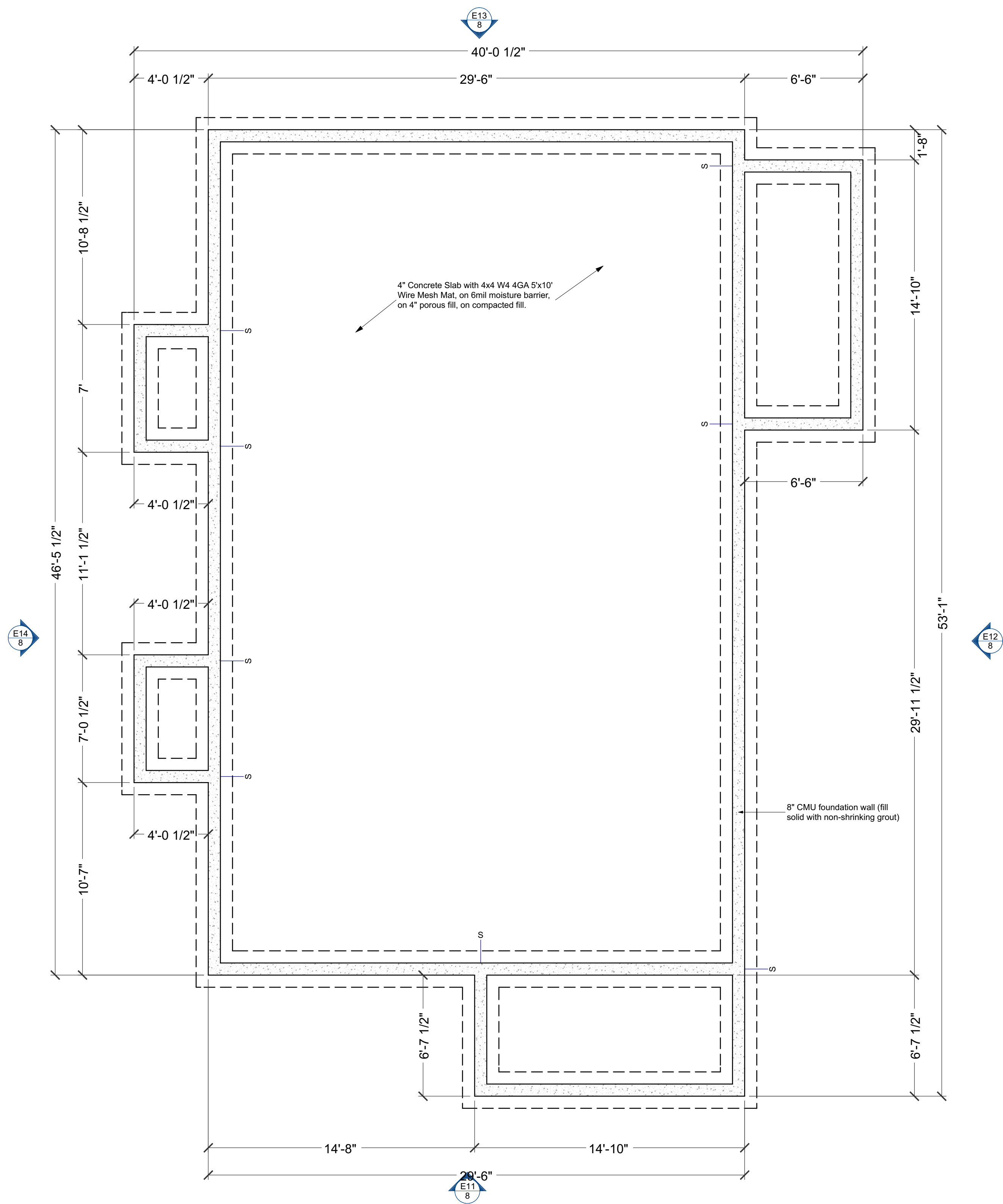
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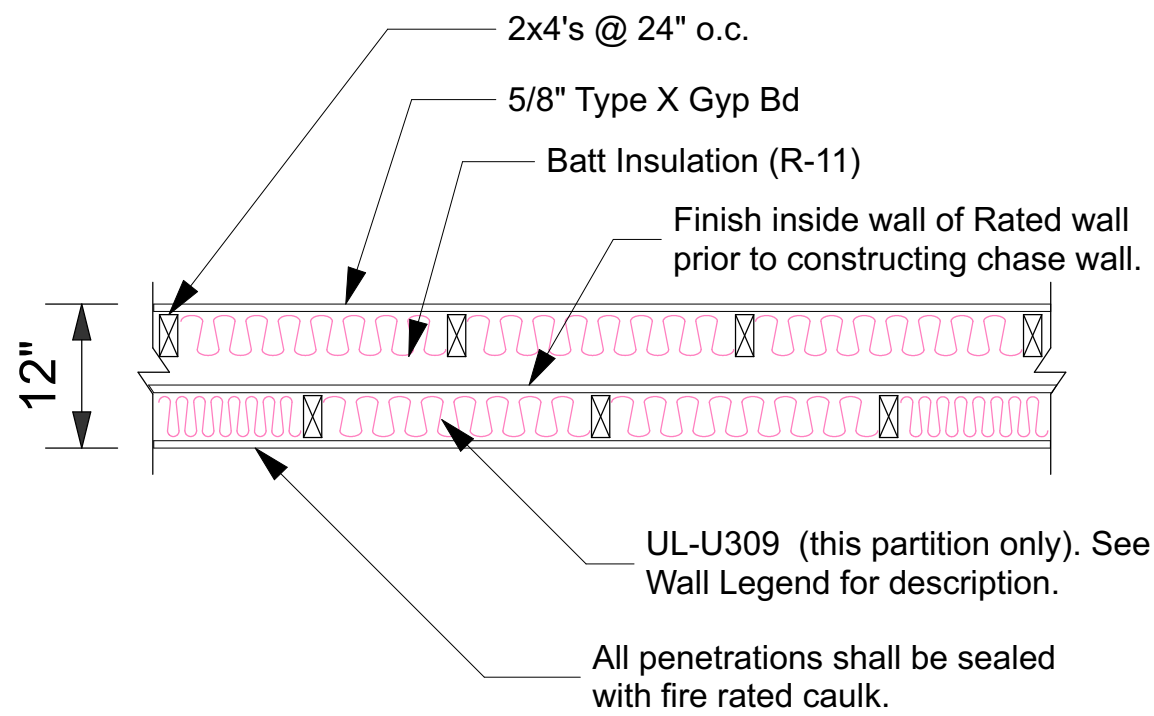
Building 1 - Elevations



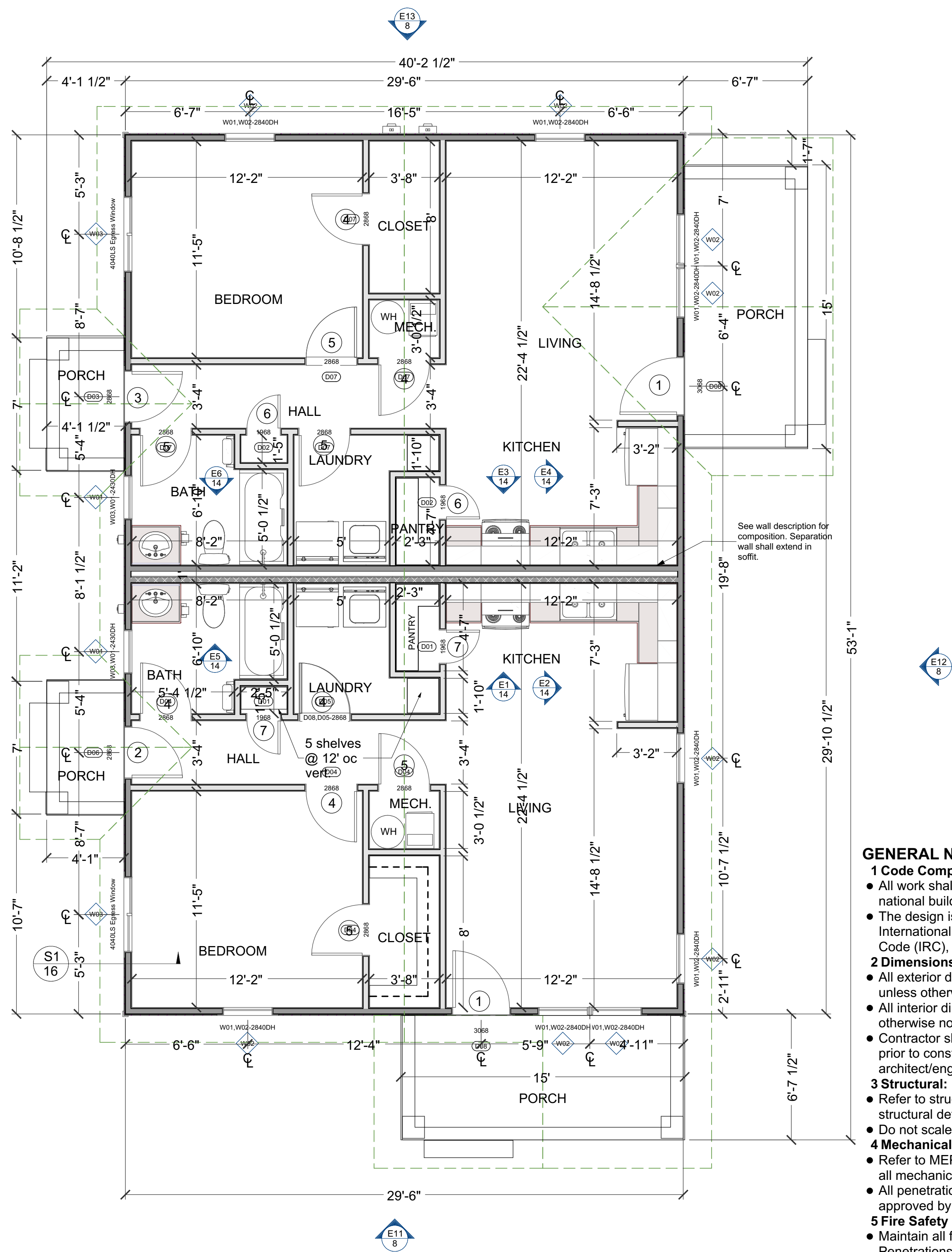
Building 1 - Foundation Plan

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Shelving



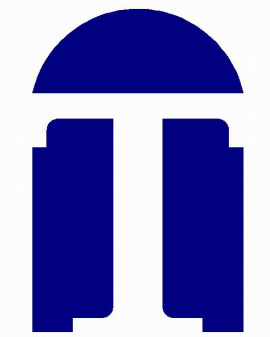
Building 1 - Floor Plan

Partition Legend

- Exterior partition - 1/2" (Type 'X') Gyp Bd, 2x4 wood studs @ 16" o.c. with R-19 Continuous Batt Insulation, 7/16 OSB, House Wrap, and Cementitious Siding.
- Interior Partition - 2x4 @ 16" o.c. with 1/2" Gyp Bd Both Sides.
- Separation Partition - One-Hour Wood-Frame Wall Assembly - UL-U309. 2x4 wood studs @ 24" o.c., horizontal fire break @ 48", one layer of 5/8" Type X (both sides), 4 ft wide, applied either horizontally or vertically, Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last two screws 1 and 4 in. from edge of board or nailed to studs and bearing plates with 6d cement coated nails min. 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads spaced 7 in. OC. Wallboard joints covered with paper tape and joint compound. Fastener heads covered with joint compound. Gypsum plaster not more than 1/8 in. thick may be applied over the wallboard in addition to the specified joint treatment. Finish Rating 27 Min. When used in widths other than 48 in., gypsum board to be installed horizontally and R-11 continuous batt insulation. Continue partition to underside of roof sheathing and seal. (See Detail - this Sheet)

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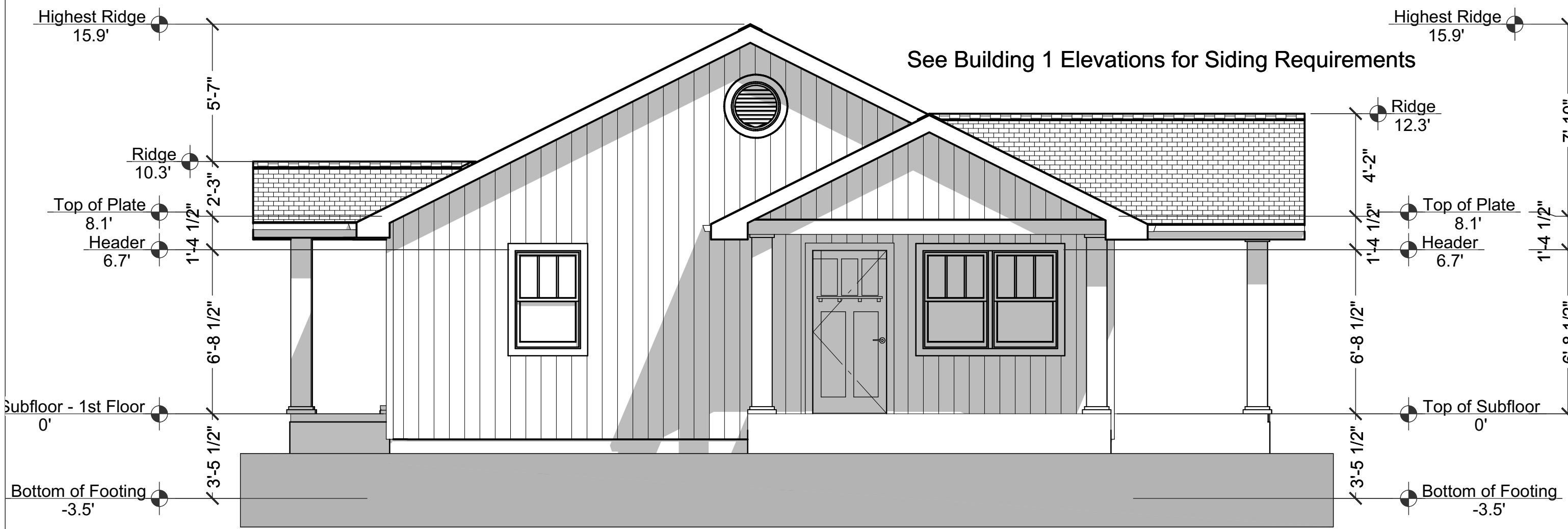
Building 2
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Plan

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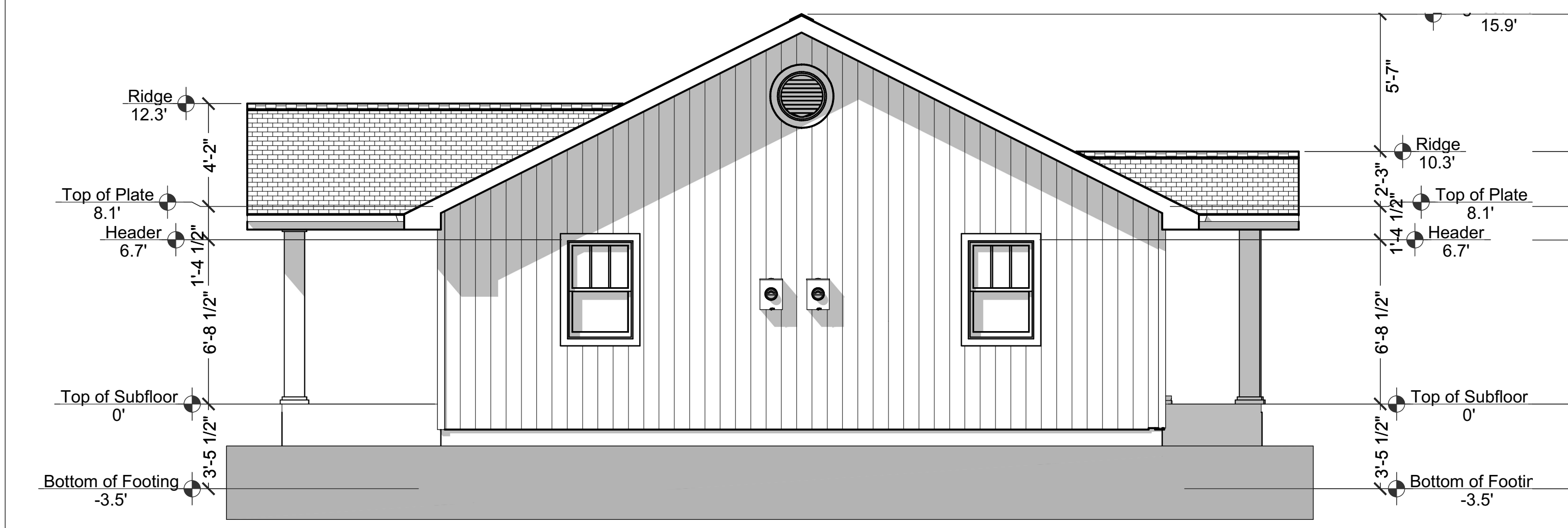
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E11 Elevation 11
1/4 in = 1 ft



E12 Elevation 12
1/4 in = 1 ft



E13 Elevation 13
1/4 in = 1 ft



E14 Elevation 14
1/4 in = 1 ft

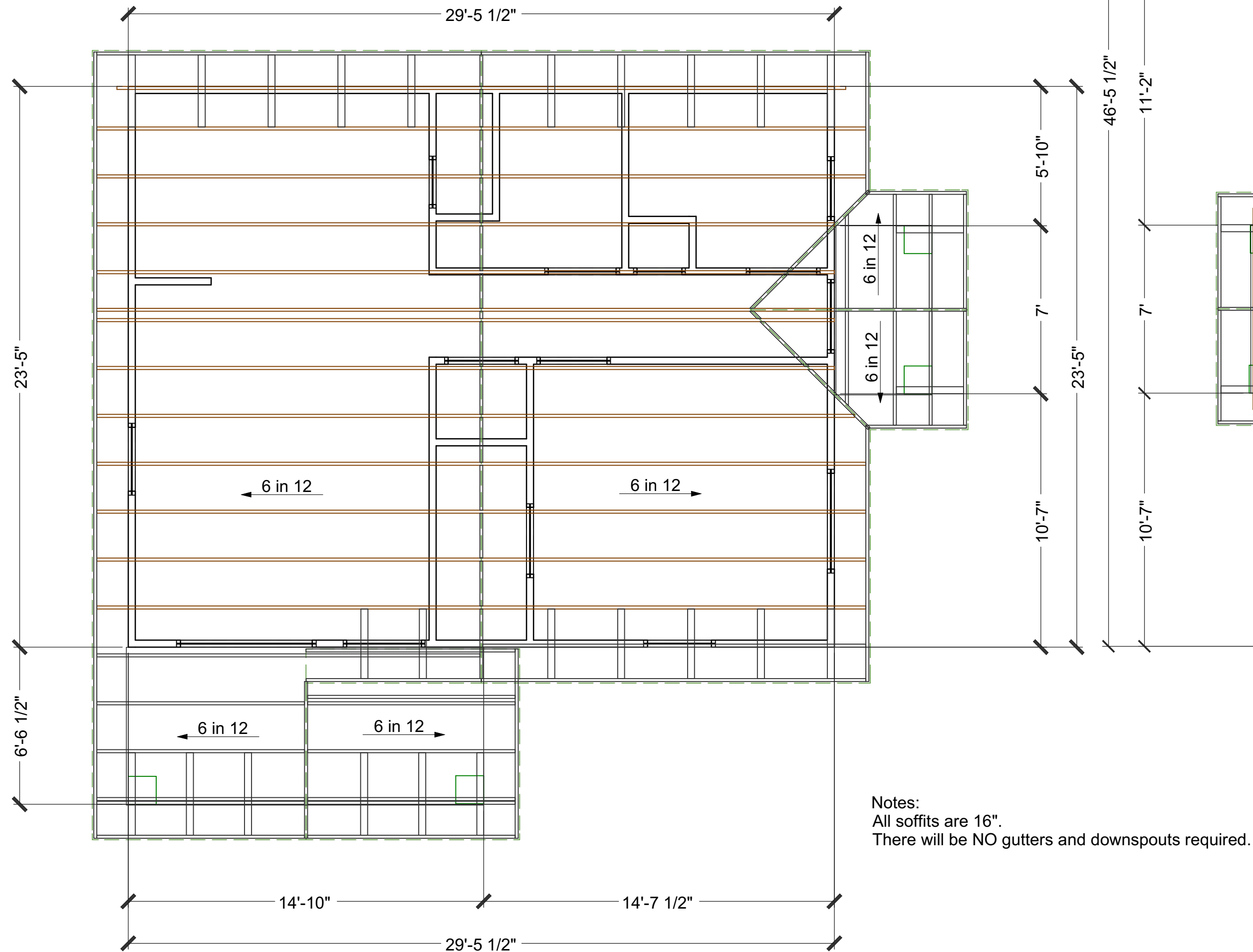
Building 2 - Elevations

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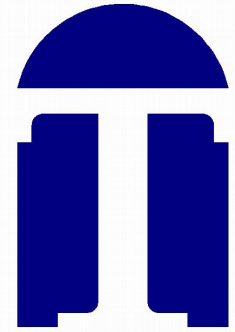
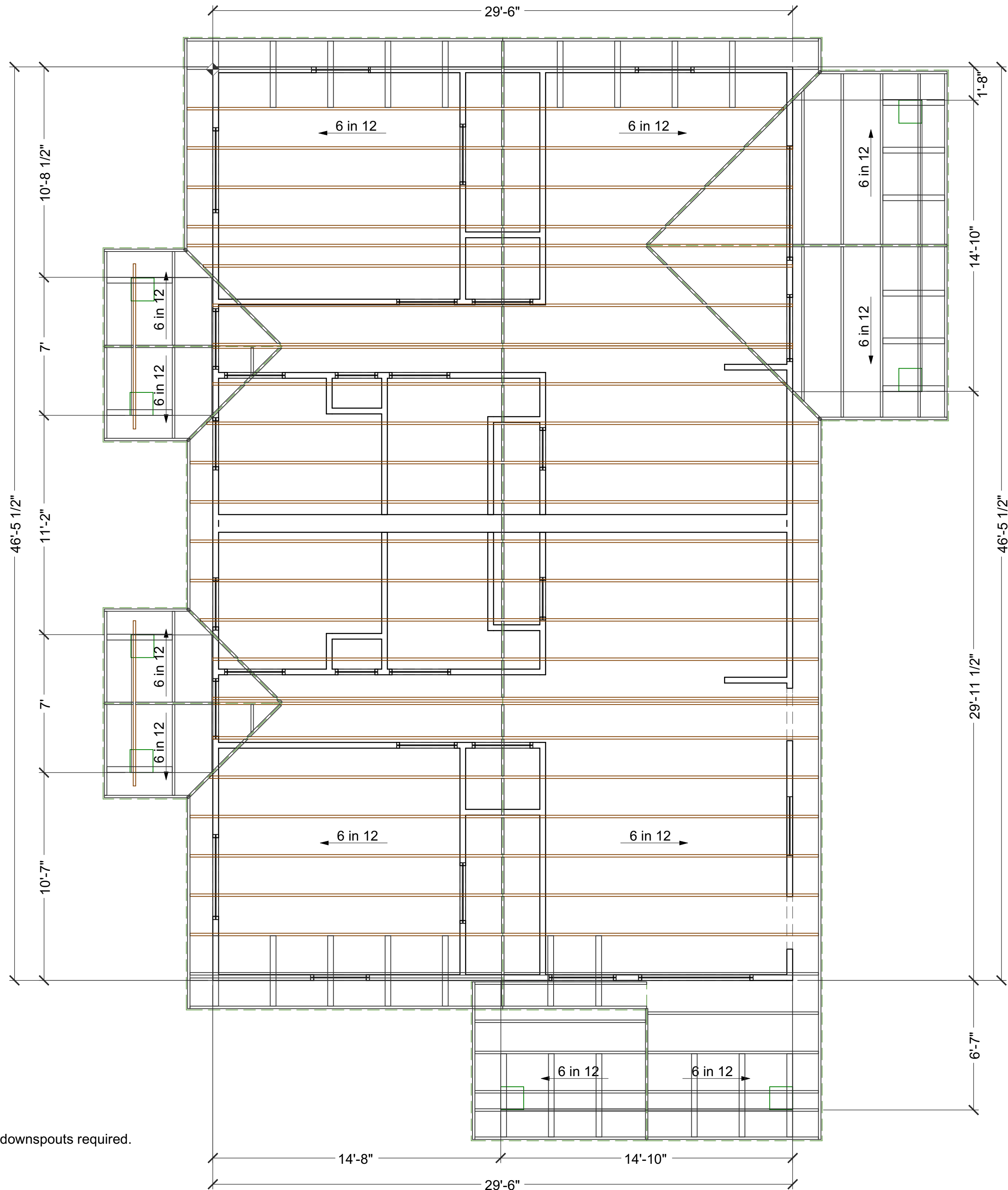
FRAMING NOTES:

1. ALL DIMENSIONAL LUMBER SHALL BE SOUTHERN PINE NO. 2, UNO.
2. ALL TRUSSES SHALL BE ENGINEERED AND STAMPED WITH A SEPARATE ENGINEERED DOCUMENT.
3. PRE-MANUFACTURED WOOD JOISTS & TRUSSES SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS, MANUFACTURED BY THE TRUSS OR JOIST COMPANY. NO MEMBERS SHALL BE MODIFIED AND MUST BE INSTALLED IN COMPLIANCE WITH THEIR LISTINGS. PROVIDE BRIDGING IN CONFORMANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MEMBERS AND BRIDGING SHALL BE CAPABLE OF RESISTING THE WIND UPLIFT NOTED ON THE DRAWINGS. THE MANUFACTURER SHALL VISIT JOB SITE AS REQUIRED AND VERIFY THE PROPER INSTALLATION OF THE JOISTS & TRUSSES IN WRITING TO THE CONTRACTOR/ ENGINEER. PRE-MANUFACTURED WOOD JOIST ALTERNATES WILL BE CONSIDERED, PROVIDED THE ALTERNATE IS COMPATIBLE WITH THE LOAD CAPACITY, STIFFNESS, DIMENSIONAL, AND FIRE RATING REQUIREMENTS OF THE PROJECT, AND IS ENGINEER OR ICBO APPROVED.
4. ALL JOISTS AND RAFTERS SHALL HAVE SOLID BLOCKING AT THEIR BEARING POINTS. CONNECT BLOCKING TO TOP OF WALL W/ SIMPSON FRAMING ANCHORS. ROOF JOIST TO HAVE HURRICANE CLIPS @ EACH OCCURRANCE OR SIMPSON H-1 HURRICANE CLIPS @ EACH TRUSS. INSTALL PRIOR TO ROOF SHEETING.
5. ALL WOOD & IRON CONNECTIONS MUST CARRY THE CAPACITY OF THE MEMBER. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONNECTIONS. IF OTHER THAN STANDARD CONNECTIONS ARE REQUIRED, CONTACT PROJECT ENGINEER FOR ASSISTANCE. USE SIMPSON OR OTHER ICC LISTED CONNECTIONS.
6. ALL HANGERS AND NAILS IN CONTACT WITH PRESSURE TREATED LUMBER SHALL BE SIMPSON Z-MAX HANGERS OR STAINLESS STEEL.
7. NAILS: ALL SHEAR WALL SHEATHING NAILS SHALL BE COMMON NAILS ALL FRAMING NAILS SHALL BE COMMON NAILS. OR HOT DIPPED GALVANIZED BOX NAILS. FRAMING NAILS SHALL BE PER IRC TABLE R602.3(1).
8. THRUST SHALL BE ELIMINATED BY THE USE OF COLLAR TIES OR CEILING JOISTS. WHERE REQUIRED.
9. ALL EXTERIOR WALLS SHALL BE SHEATHED WITH 1/2" THICK 2-M-W SHEATHING OR EQUAL W/ 8D COMMON NAILS @ 6" O.C. @ EDGES @ 12" O.C. IN FIELD, UNO. SHEATHING SHALL BE CONTINUOUS ACROSS ALL HORIZONTAL FRAMING JOINTS.
10. ALL ROOF SHEATHING AND SUB-FLOORING SHALL BE INSTALLED WITH FACE GRAIN PERPENDICULAR TO SUPPORTS, EXCEPT AS INDICATED ON THE DRAWINGS. ROOF SHEATHING SHALL EITHER BE BLOCKED, TONGUE-AND-GROOVE, OR HAVE EDGES SUPPORTED BY PLYCLIPS. SHEAR WALL SHEATHING SHALL BE BLOCKED WITH 2X FRAMING AT ALL PANEL EDGES. SHEATH ROOF PRIOR TO ANY OVER FRAMING.
11. PLYWOOD PANELS SHALL CONFORM TO THE REQUIREMENTS OF "U.S. PRODUCT STANDARD PS 1 FOR CONSTRUCTION AND INDUSTRIAL PLYWOOD" OR APA PRP-108 PERFORMANCE STANDARDS. UNO. PANELS SHALL BE APA RATED SHEATHING, EXPOSURE 1, OF THE THICKNESS AND SPAN RATING SHOWN ON THE DRAWINGS. PLYWOOD INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANELS ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.
12. ANY WOOD IN CONTACT W/ CONCRETE OR MASONRY SHALL BE PRESSURE TREATED.
13. ALL WOOD & IRON CONNECTORS SHALL BE INSTALLED W/ ALL REQUIRED FASTENERS IN COMPLIANCE W/ THEIR WRITTEN APPROVAL.
14. ALL HANGERS TO BE "SIMPSON" OR EQUAL WITH FASTENERS AS SPECIFIED BY MANUFACTURER.

Building 1 - Roof Framing & Plan



Building 2 - Roof Framing & Plan



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Anniston, Alabama

Revision Table		Description	
Number	Date		

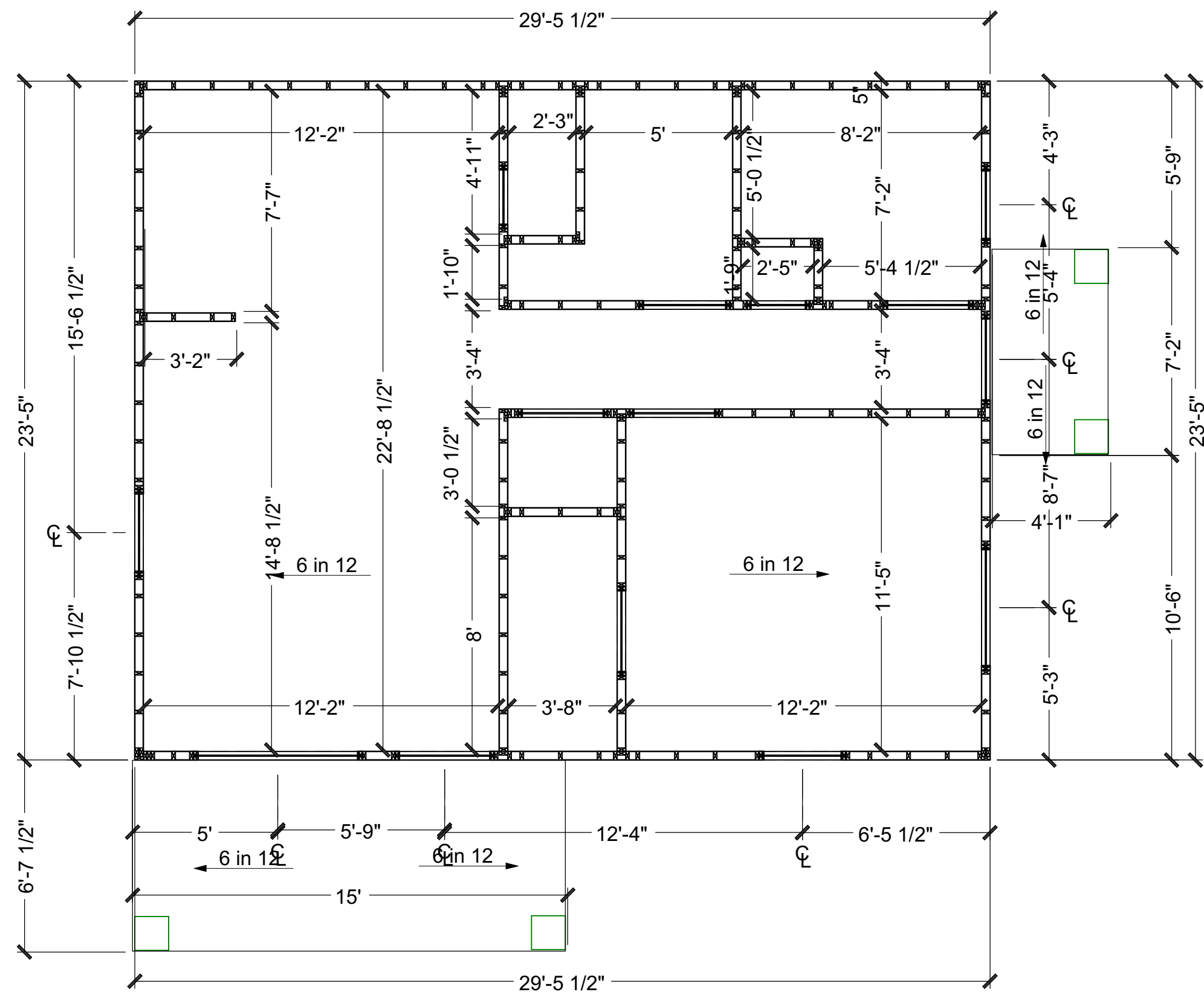
Roof
Framing
Plans

TDA 462

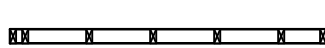
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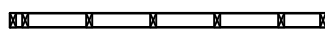
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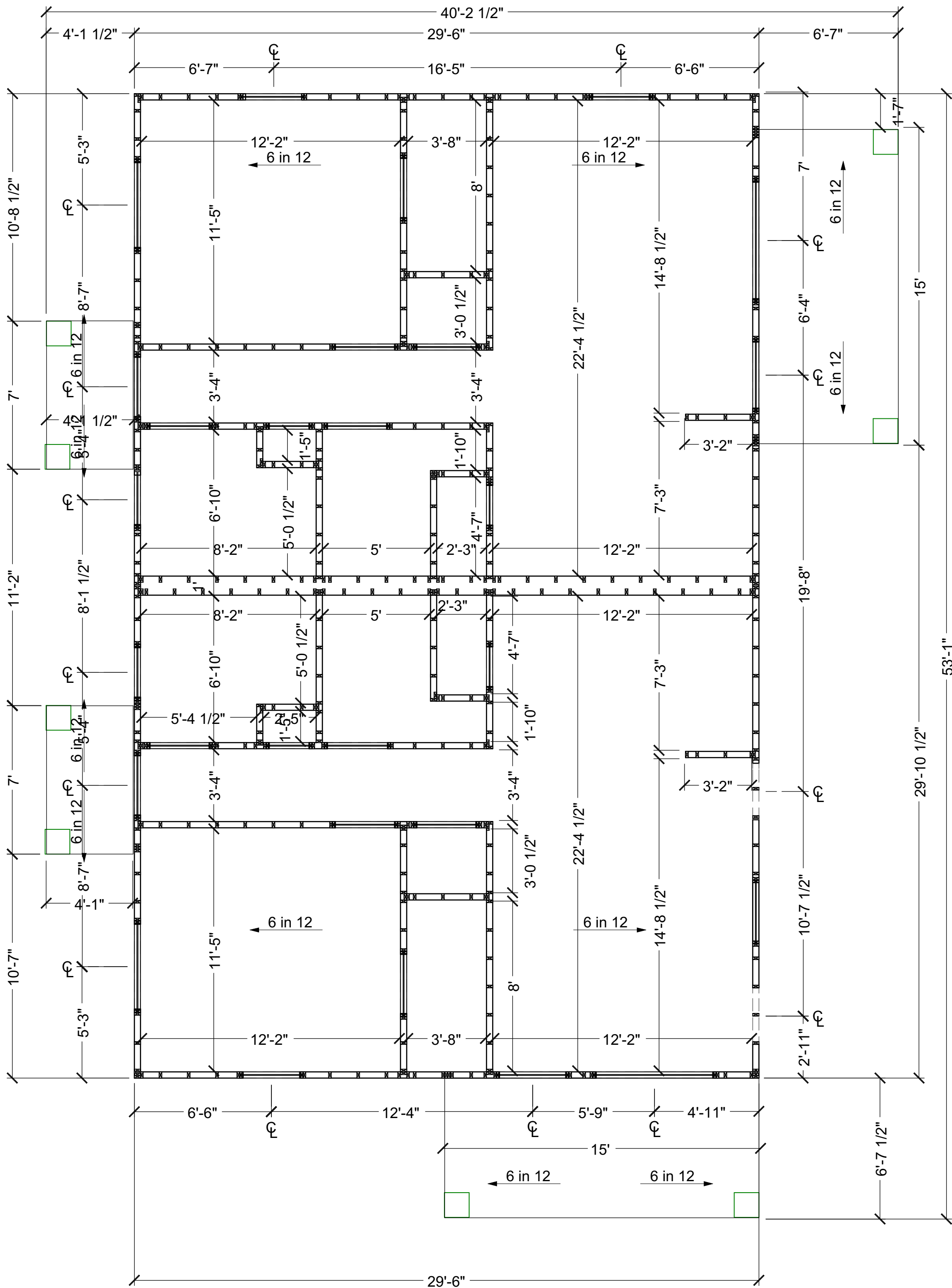


Building 1 - Framing Plan

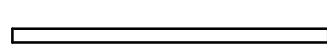
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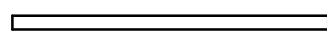
Exterior partition - 1/2 " (Type 'X') Gyp Bd, 2x4 wood studs @ 16" o.c. with R-13 Continuous Batt Insulation, 7/16 OSB, House Wrap, and Cementitious Siding.
- 

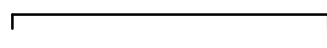
Interior Partition - 2x4 @ 16" o.c. with 1/2" Gyp Bd Both Sides.



Building 2 - Framing Plan

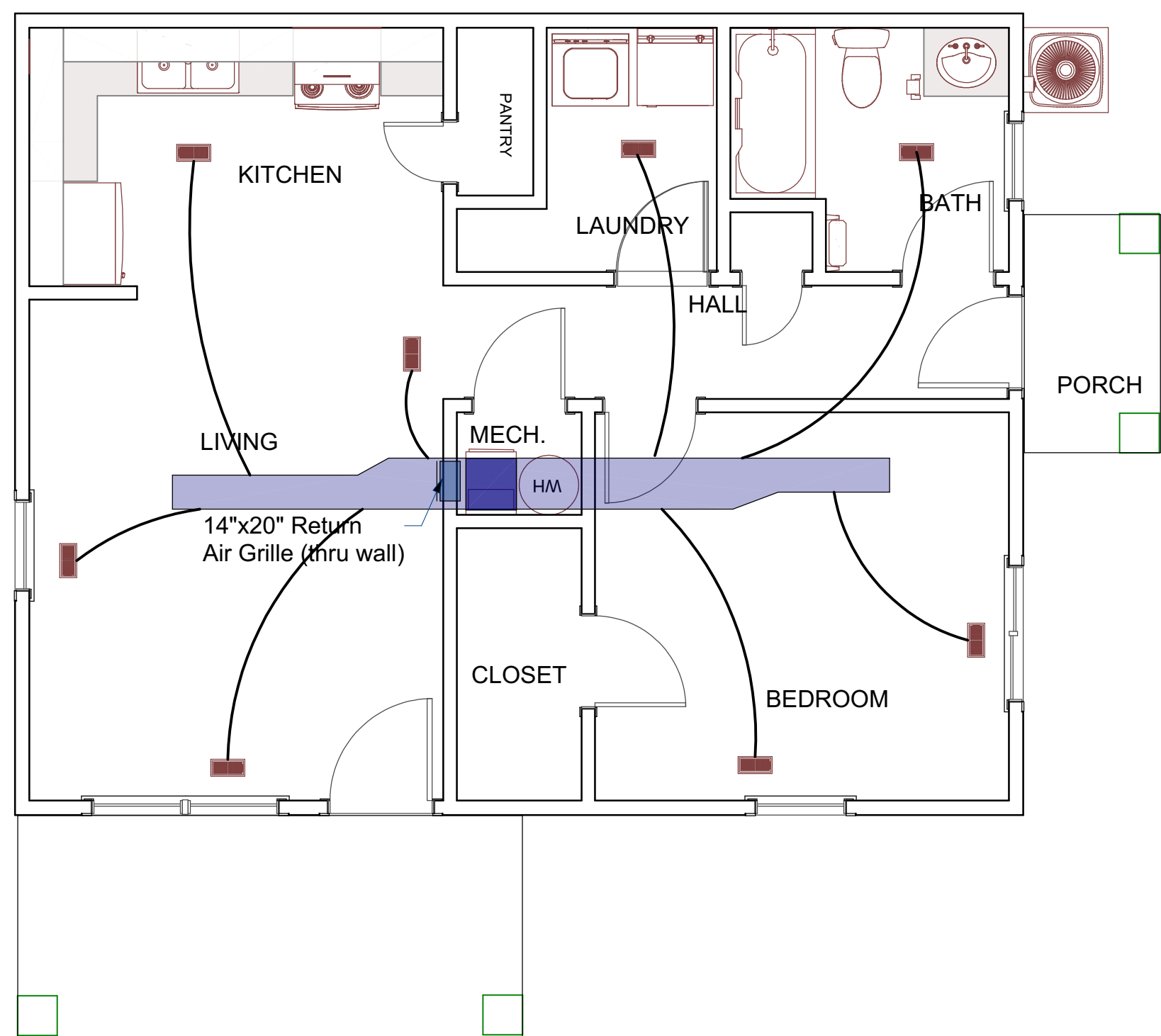
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Exterior partition - 1/2 " (Type 'X') Gyp Bd, 2x4 wood studs @ 16" o.c. with R-19 Continuous Batt Insulation, 7/16 OSB, House Wrap, and Cementitious Siding.
- 

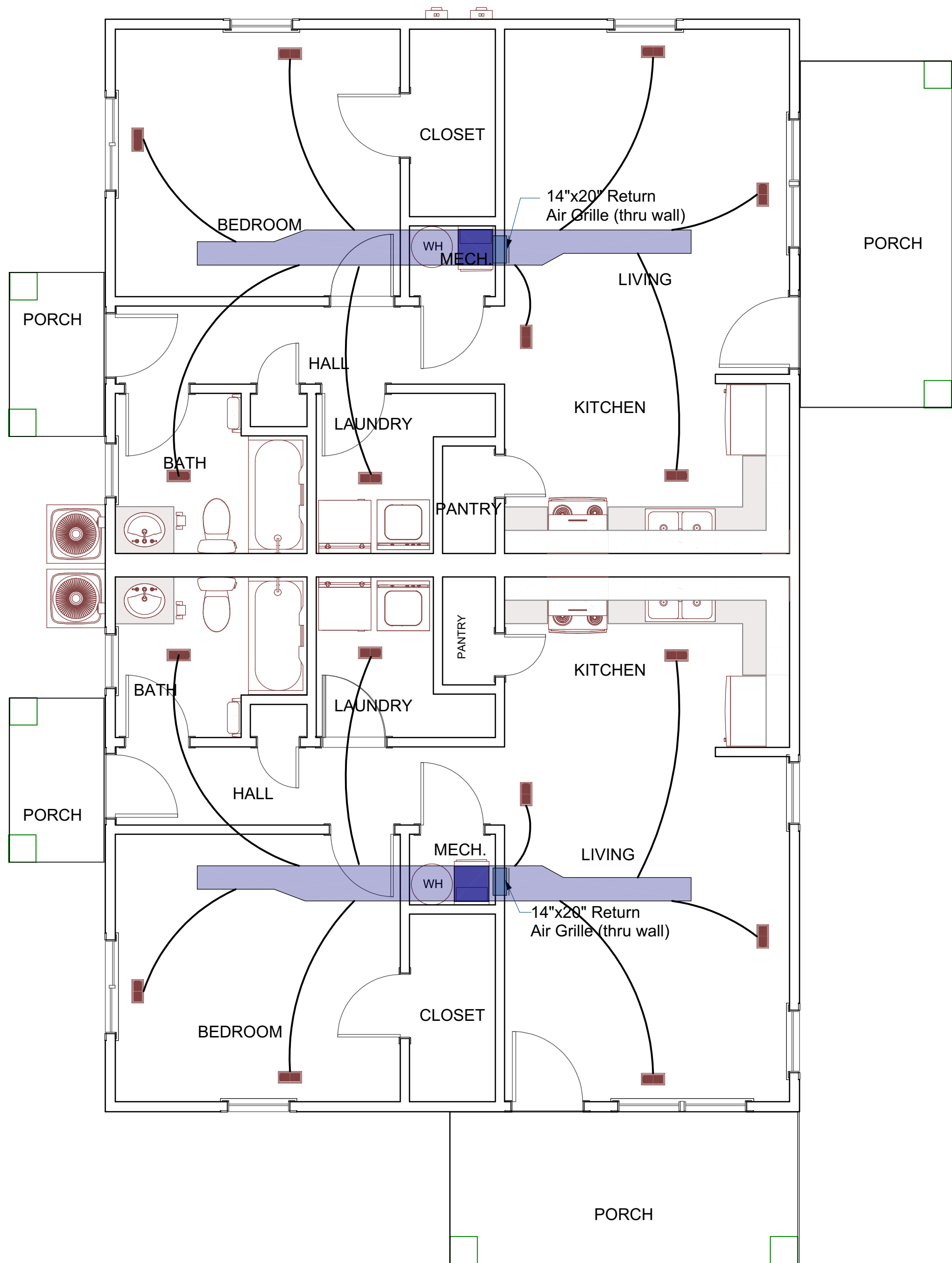
Interior Partition - 2x4 @ 16" o.c. with 1/2" Gyp Bd Both Sides.
- 

Separation Partition - One-Hour Wood-Frame Wall Assembly - UL -U309. 2x4 wood studs @ 24" o.c., horizontal fire break @ 48", one layer of 5/8 Type X (both sides), 4 ft wide, applied either horizontally or vertically, Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last two screws 1 and 4 in. from edge of board or nailed to studs and bearing plates with 6d cement coated nails min. 1-7/8 in. long, 0.0915 in. shank diam and 1/4 in. diam heads spaced 7 in. OC. Wallboard joints covered with paper tape and joint compound. Fastener heads covered with joint compound. Gypsum plaster not more than 1/8 in. thick may be applied over the wallboard in addition to the specified joint treatment.Finish Rating 27 Min. When used in widths other than 48 in., gypsum board to be installed horizontallyand R-11 continuous batt insulation. Continue partition to underside of roof sheathing and seal. (See Detail - this Sheet)

Revision Table		Description	
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Building 1 - HVAC Plan



Building 2 - HVAC Plan

Revision Table			Description
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HVAC
Plans and
Notes

TDA 462

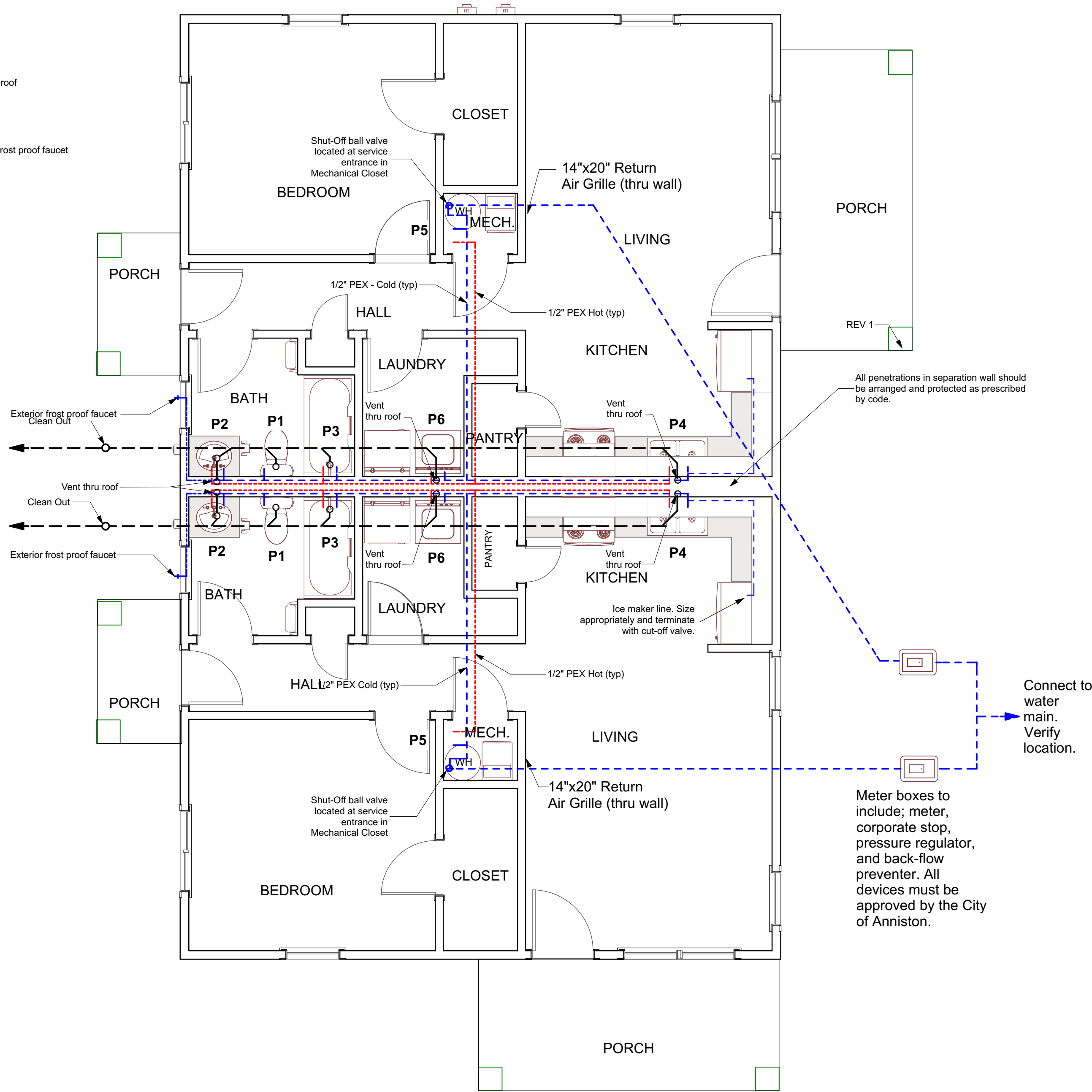
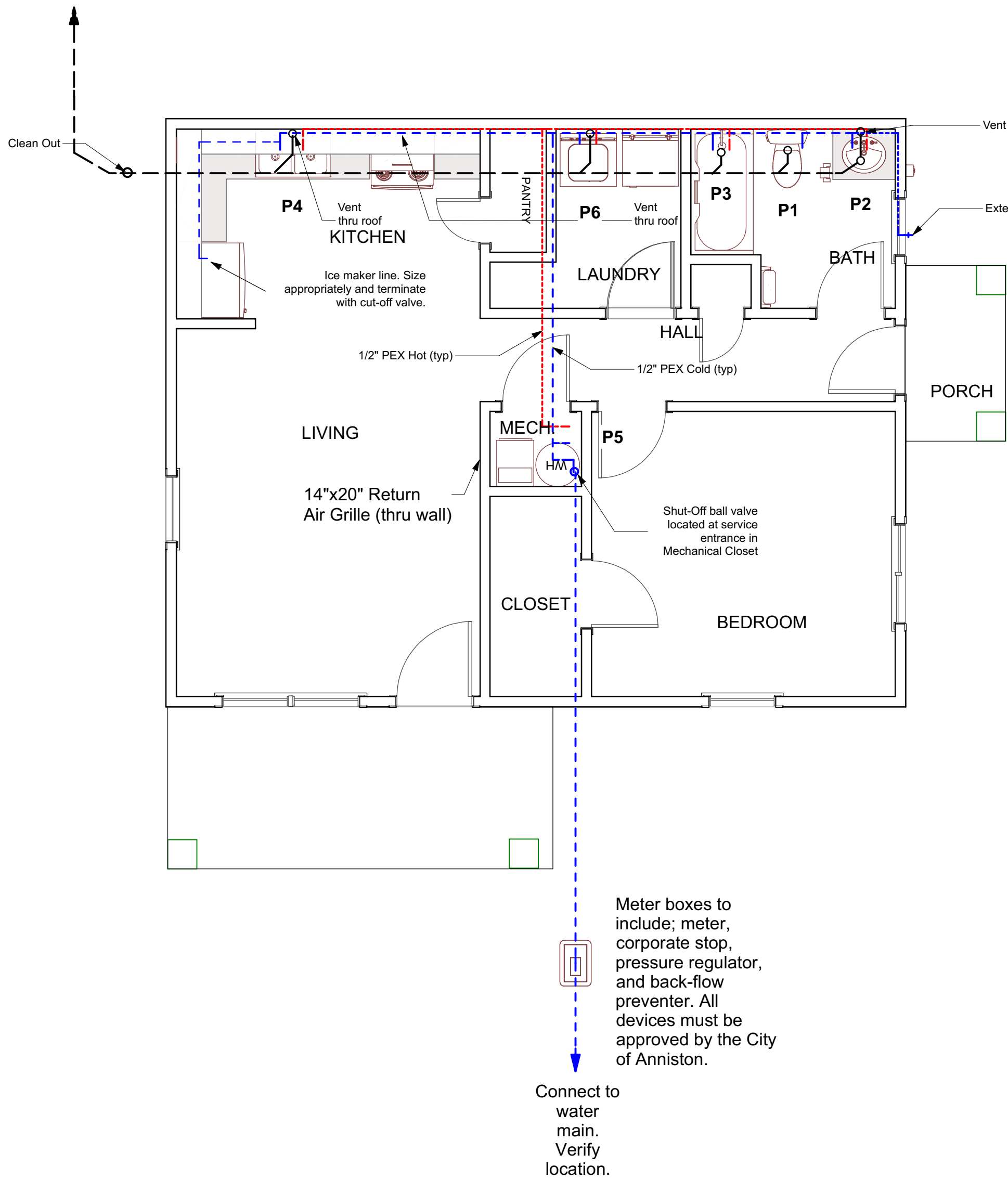
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Building 1 - Plumbing Plan

Building 2 - Plumbing Plan

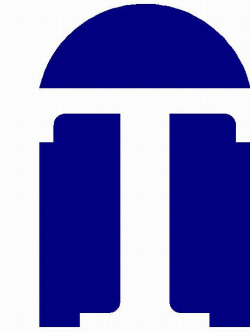


Plumbing Notes

1. THE CONTRACTOR SHALL FURNISH AND INSTALL THE PLUMBING SYSTEMS COMPLETE WITH ALL EQUIPMENT, PIPING, VALVES, INSULATION, CONTROLS, HANGERS, TRIM, ACCESSORIES AND ASSOCIATED WORK, IN ACCORDANCE WITH THE 2015 INTERNATIONAL PLUMBING CODE, ALL AUTHORITIES HAVING JURISDICTION, AND THE PROJECT SPECIFICATIONS. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, HOISTING AND RIGGING, SCAFFOLDING, LOADING AND UNLOADING, CLEAN-UP OF DEBRIS AND OTHER SERVICES, TO PROVIDE THE OWNER WITH FULLY OPERATIONAL SYSTEMS.
2. ALL WORK SHALL BE PROPERLY COORDINATED WITH THE WORK OF OTHER TRADES TO AVOID CONFLICTS. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR INFORMATION REGARDING CEILING ELEVATIONS, SPACE CLEARANCES, WALL AND PARTITION LOCATIONS ETC., USED TO PREPARE COORDINATED DRAWINGS.
3. ALL NECESSARY CUTTING AND PATCHING OF THE WORK OF GENERAL TRADES FOR THE INSTALLATION OF PLUMBING WORK SHALL BE PERFORMED BY THIS CONTRACTOR. RESTORE SURFACES TO MATCH EXISTING CONDITIONS.
4. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK. ENGAGE THE SERVICES OF VARIOUS MANUFACTURERS' SUPPLYING THE EQUIPMENT FOR THE PROPER START-UP ADJUSTMENT AND OPERATION OF THE EQUIPMENT, AND INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE PLUMBING SYSTEMS.
5. THIS CONTRACTOR SHALL SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT ORIGINALS TO THE OWNER FOR RECORD. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.
6. AN APPROVED REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER DEVICE SHALL BE INSTALLED IN THE POTABLE WATER SUPPLY TO EACH LOCATION WHERE SANITIZING CHEMICALS OR DETERGENTS WILL BE ASPIRATED OR PUSHED BY WATER PRESSURE INTO CLEANSING/SANITIZING OPERATION. SPILL PROOF OR PRESSURE VACUUM BREAKERS ARE PROHIBITED.
7. DEAD ENDS SHALL BE AVOIDED IN DRAINAGE SYSTEM, EXCEPT WHERE NECESSARY TO EXTEND THE SYSTEM TO INSTALL A CLEANOUT IN AN ACCESSIBLE LOCATION. THE DEAD ENDS INTENDED FOR FUTURE CONNECTION OR CREATED BY REMOVAL OR ABANDONMENT OF PIPE; WHICH IS MORE THAN TWO (2'-0") FEET ABOVE A FLOOR OR MORE THAN TEN (10'-0") FEET HORIZONTALLY FROM THE NEAREST VENTED CONNECTION MUST HAVE A VENTED CONNECTION TO THE OUTSIDE ATMOSPHERE.
8. WATER DISTRIBUTION PIPE THAT HAS BEEN TERMINATED OR IS AN UNUSED SEGMENT SHALL HAVE NO DEAD ENDS. NO UNUSED SEGMENT OF PIPE WITH A DEVELOPED LENGTH OF MORE THAN TWO (2'-0") FEET SHALL BE PERMITTED.
9. A STACK TEST IS REQUIRED ON ALL ROUGH AND UNDERGROUND PLUMBING.
10. HOT AND HOT WATER RETURN PIPING TO BE INSULATED IN ACCORDANCE WITH THE SPECIFICATIONS AND IN COMPLIANCE WITH THE 2015 IECC CODE.
11. COLD WATER PIPING TO BE INSULATED IN ACCORDANCE WITH THE PROJECT SPECIFICATION AS TO AVOID CONDENSATION ON THE PIPE OR PIPE INSULATION.
12. INSTALL ALL WATER PIPING ON WARM SIDE OF BUILDING INSULATION. ALL DOMESTIC WATER AND SANITARY PIPING LOCATED IN AREAS SUBJECT TO FREEZING SHALL BE INSULATED AS REQUIRED TO PREVENT PIPES FROM FREEZING.
13. PROVIDE CLEANOUTS PER LOCAL PLUMBING CODES. CONTRACTOR SHALL COORDINATE ACCESSIBLE LOCATIONS FOR ALL FLOOR AND WALL CLEANOUTS WITH ARCHITECTURAL.
14. VERIFY LOCATION OF PRESSURE REDUCING VALVE WITH WATER DEPARTMENT IF REQUIRED.
15. EACH BATHROOM GROUP SHALL HAVE HOT AND COLD LINE ISOLATION VALVES ON THE WATER SUPPLY PIPING. ALL VALVES SHALL BE LOCATED IN ACCESSIBLE LOCATIONS.
16. PIPING SHOWN IS DIAGRAMMATIC IN NATURE AND INDICATE GENERAL LOCATION AND LAYOUT OF PIPING AND EQUIPMENT USED FOR CALCULATIONS AND SIZING. DRAWINGS ARE NOT INTENDED TO BE SCALED FOR EXACT DIMENSIONS. CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION WITH OTHER TRADES, INCLUDING PROVIDING ALL OFFSETS AS REQUIRED TO AVOID CONFLICTS. DEVIATIONS FROM GENERAL LAYOUT AS SHOWN SHALL REQUIRE APPROVAL FROM ARCHITECT AND ENGINEER PRIOR TO INSTALLATION.
17. BIDDERS, PRIOR TO SUBMITTING PROPOSALS, SHALL VISIT THE SITE AND FULLY EXAMINE THE AREAS INVOLVED WITH THIS WORK, TO FAMILIARIZE THEMSELVES WITH THE EXACT CONDITIONS AND DIFFICULTIES THAT MAY ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED, FOR EXTRA LABOR, MATERIALS AND EQUIPMENT, REQUIRED BECAUSE OF ADDITIONAL DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.
18. SUBMIT PDFS OF THE PLUMBING INSTALLATION SHOP DRAWINGS, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT PLUMBING FIXTURE CUTS WITH TRIM, INSULATION, PIPE MATERIALS, FITTINGS, VALVES AND CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS. SUBMIT PDFS OF OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWINGS, FIXTURE AND EQUIPMENT CUTS, SERVICE INSTRUCTIONS.
19. THE POTABLE WATER SYSTEM SHALL BE DISINFECTED BY FILLING WITH A SOLUTION CONTAINING 200 PPM OF AVAILABLE CHLORINE AND ALLOWING IT TO STAND 3 HOURS. THEN FLUSH THE SYSTEM WITH CLEAN, POTABLE WATER UNTIL CHLORINE LEVELS ARE WITHIN ACCEPTABLE LIMITS. ALL TESTING SHALL BE IN ACCORDANCE WITH LOCAL PLUMBING CODES.
20. DRAINAGE AND VENTING SYSTEMS SHALL BE TESTED BY WATER OR AIR TO PROVE WATERTIGHT. TESTING SHALL BE IN ACCORDANCE WITH LOCAL PLUMBING CODES.
21. ALL FIXTURE TRAPS SUBJECT TO LOSS OF A TRAP SEAL BY EVAPORATION MUST HAVE A TRAP PRIMER INSTALLED IN COMPLIANCE WITH ASSE 1018.
22. ANY HOSE BIBB FIXTURES MUST BE PROVIDED WITH BACKFLOW PREVENTION AND BE IN COMPLIANCE WITH LOCAL PLUMBING CODES.
23. ALL PLUMBING FIXTURES SHALL BE PROVIDED AS PER THE FIXTURE SCHEDULE OR APPROVED EQUAL AS LISTED IN PROJECT SPECIFICATIONS.
24. PROVIDE A POSITIVE SLOPE TO ALL FLOOR DRAINS. COORDINATE REQUIREMENTS WITH ARCHITECTURAL.
25. ALL PENETRATIONS THROUGH ANY FIRE-RESISTANT RATED ASSEMBLIES MUST BE PROTECTED IN ACCORDANCE WITH THE LOCAL BUILDING CODE.
26. HANGERS, ANCHORS & SUPPORTS SHALL BE IN ACCORDANCE WITH LOCAL PLUMBING CODES.
27. ALL IN-SLAB PIPING SHALL BE PROTECTED FROM BREAKAGE CAUSED BY STRESS OR STRAIN BY A PROTECTIVE SLEEVE OR WRAP-ON MATERIAL.
28. ANY HOSE BIBB FIXTURES MUST BE PROVIDED WITH BACKFLOW PREVENTION AND BE IN COMPLIANCE WITH LOCAL PLUMBING CODES.

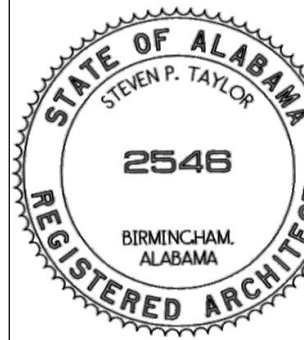
Fixture Schedule

- P1** Water Closet - Champion 4 right height elongated toilet Model No. 2002.014, Low consumption (1.6 GPF) elongated siphon action jetted bowl with Bemis plastic elongated seat Model No. 1200YC. Vitreous China tank and cover with Champion 4 flushing system, with chrome plated trip lever, pressure regulator, and backflow preventer. Install flange and brasscraft CR-19 5/8 O.D. x 3/8" O.D. 1/4 turn stop with (16) Stainless Steel Braided Polyvinyl supply. (1 ea. Toilet)
- P2** Kohler Bathroom Top Mount Sink - White K-R2202-4-O Brasscraft OCR19S112AC Braided Stainless Steel Lavatory supply kit (1/4 Turn).
- P3** American Standard #2390/2391 - McGuire 1221TL waste and overflow; Gerber G9-300, Single Lever Ceramic Disc, Pressure balancing shower valve with maintenance stop, head, arm, and flange as required.
- P4** Republic Model GN 3322 Sink ** deep, Satin Stainless Steel Finish, Double Bowl, Delta Model 100 Single Handle Kitchen Deck Faucet and 12 151A McGuire basket strainers, R-365, 1 1/2", 17 ga. C.P. P-trap with R7325H 1 1/4" x 16" end outlet waste, CR-19 Brasscraft 5/8 O.D. x 3/8 O.D. 1/4 turn stop with Stainless Steel Braided Polyvinyl supplies (as required). (2 ea.)
- P5** Rheem Tankless Water Heater RTEX-13, 4.0 GPM @ 22 degrees, 240V
- P6** Washer Box - Guy Gray #WB200, Provide Shock Arrestors on hot and cold supply lines (above ceiling if ware lines are above ceiling).



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Pine Avenue Development
Anniston Housing Authority
Anniston, Alabama

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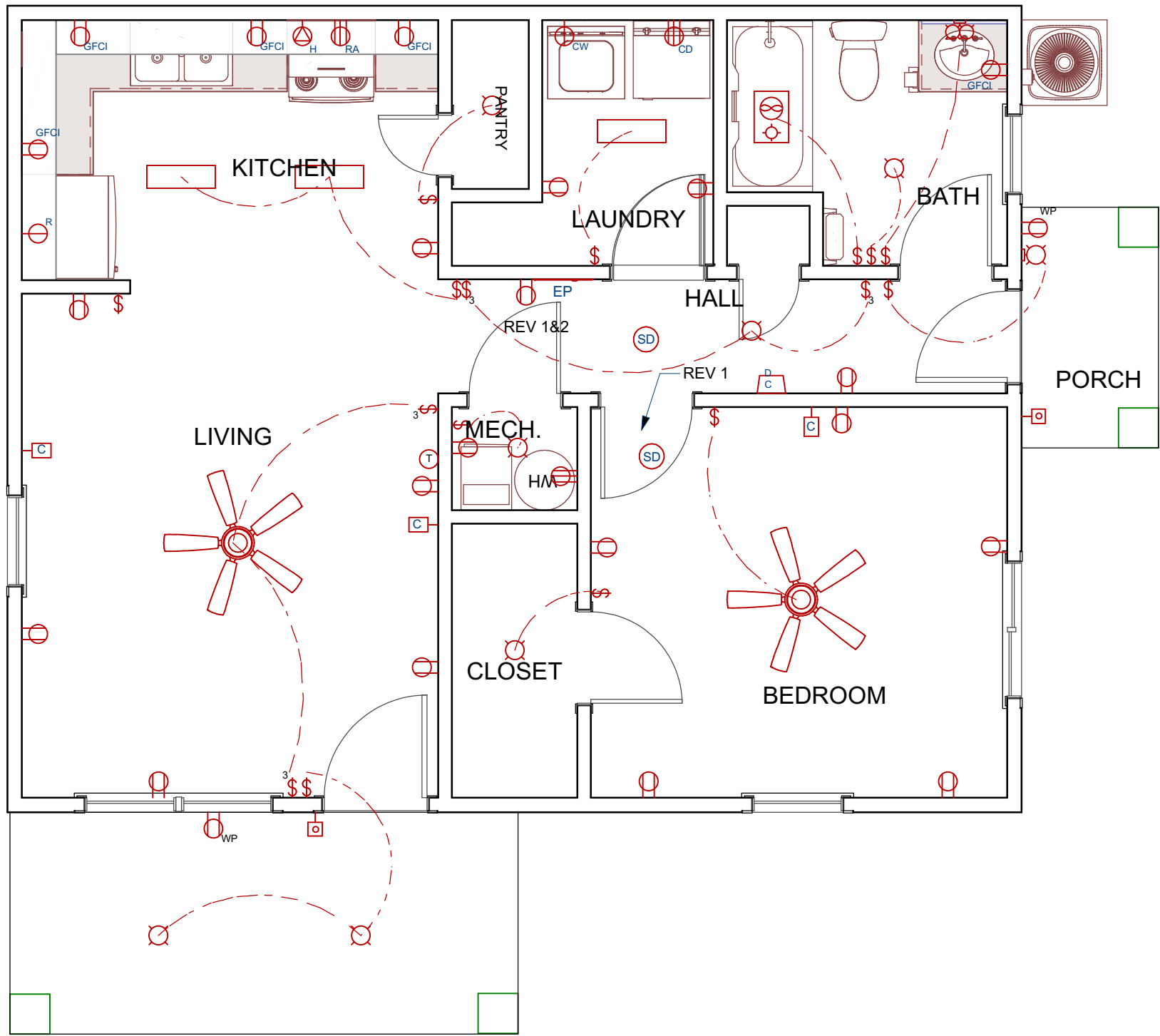
Plumbing
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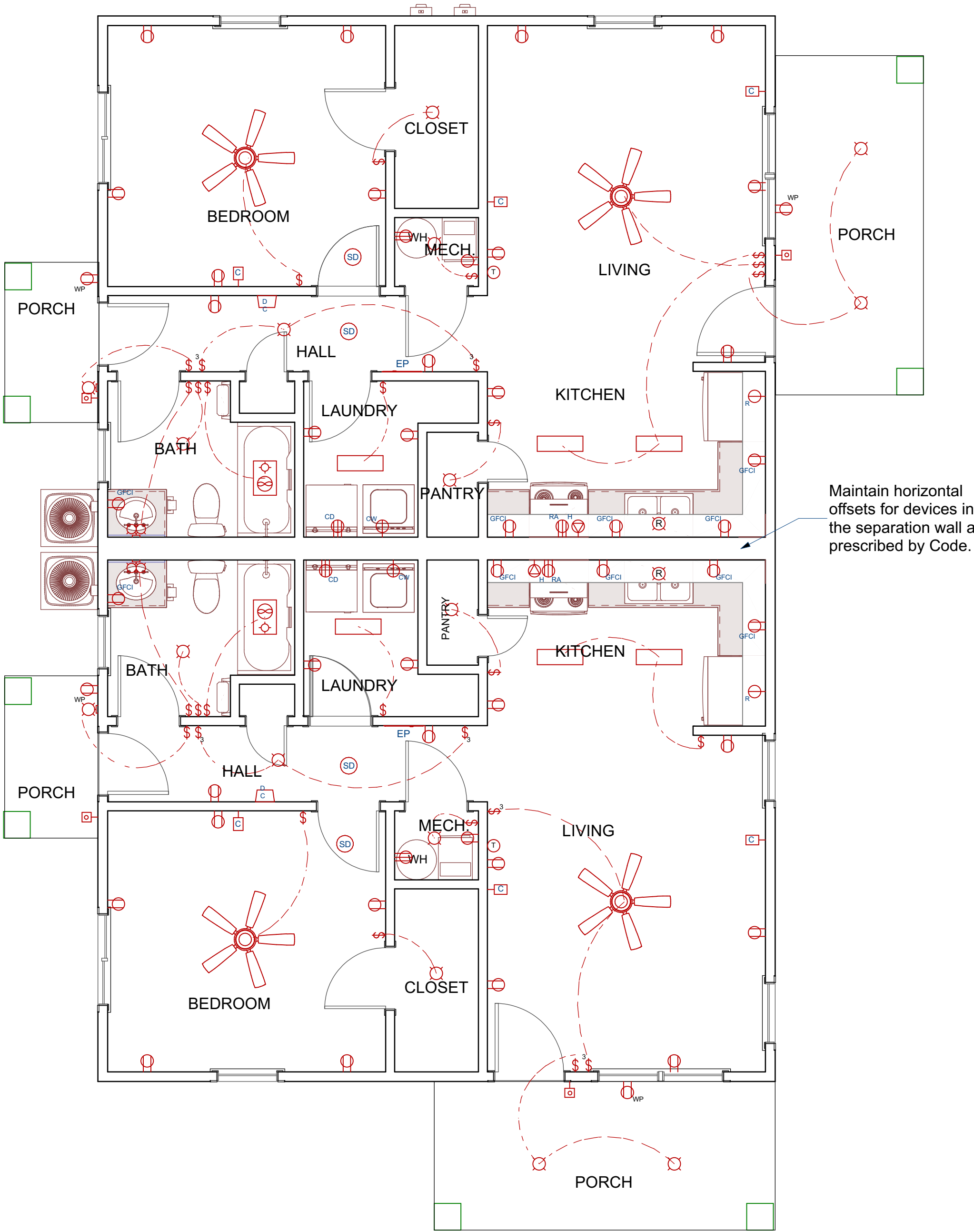
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Building 1 - Electrical Plan

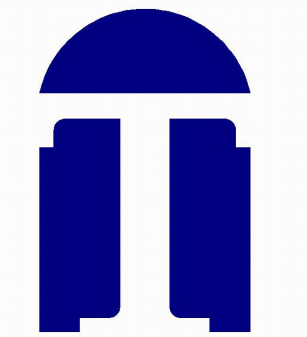
Electrical General Notes

1. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL ORDINANCES. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL DETAILS OF THE WORK AND ALL EXISTING FIELD CONDITIONS.
3. CONTRACTOR SHALL PROVIDE A COMPLETE ELECTRICAL INSTALLATION INCLUDING ALL WORK CUSTOMARILY INCLUDED EVEN IF NOT SPECIFICALLY CALLED OUT.
4. THE ELECTRICAL CONTRACTORS SHALL CAREFULLY COORDINATE HIS WORK WITH OTHER CONTRACTORS THROUGH THE GENERAL CONTRACTOR FOR SPACE REQUIREMENTS, ETC.
5. CONTRACTOR SHALL VERIFY ALL MECHANICAL EQUIPMENT NAMEPLATE DATA BEFORE ANY WORK IS DONE AND MAKE ANY ADJUSTMENTS IN BREAKER AND WIRE SIZE AS MAY BE REQUIRED.
6. SHOULD THE CONTRACTOR FIND DISCREPANCIES OR OMISSIONS IN THE CONTRACT DOCUMENTS OR BE IN DOUBT AS TO INTENT, HE SHALL IMMEDIATELY OBTAIN CLARIFICATION FROM THE ARCHITECT OR ENGINEER.
7. THE ELECTRICAL DRAWINGS ARE SCHEMATIC AND ARE NOT INTENDED TO SHOW THE EXACT LOCATION OF CONDUIT, OUTLETS, ETC.. THE CONTRACTOR SHALL REFER TO ARCHITECTURAL, MECHANICAL, AND PLUMBING DRAWINGS AND SHALL FIT HIS WORK TO CONFORM WITH THE BUILDING CONSTRUCTION AND WITH THE OTHER TRADES.
8. MOUNTING HEIGHTS OF ALL WALL OUTLETS SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:
WALL SWITCHES..... 4' -0"
RECEPTACLE S..... 1' -6"
TELEPHONE OUTLET..... 1' -6"
DATA OUTLET..... 1' -6"
CATV OUTLET..... 1' -6"
9. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT HEIGHT OF ALL COUNTER TOPS AND BACKSPLASHES ON CASEWORK SHOP DRAWINGS AND CHANGE SPECIFIED MOUNTING HEIGHT OF WALL OUTLETS AS REQUIRED SO THAT BOTTOM OF OUTLET BOX IS 2" ABOVE TOP OF BACKSPLASH OR IF NO BACKSPLASH IS USED, 4" ABOVE COUNTERTOP.
10. ALL OUTLET BOXES MOUNTED BACK-TO-BACK IN WALLS SHALL HAVE FIREPROOF SOUND INSULATING MATERIAL INSTALLED BETWEEN THE BOXES TO PREVENT SOUND TRANSMISSION FROM ONE ROOM TO ANOTHER.
11. VERIFY ALL DOOR SWINGS WITH THE ARCHITECT BEFORE ROUGHING IN LIGHT SWITCHES.
12. CONTRACTOR SHALL CHECK ALL LIGHT FIXTURES FOR EXACT MOUNTING TYPE AND SPACE REQUIRED PRIOR TO ROUGH-IN.
13. BRANCH CIRCUITS SHALL BE #12 AWG AND 1/2" CONDUIT MINIMUM. CONDUCTORS SHALL BE 98% CONDUCTIVITY COPPER. SEE SPECIFICATIONS FOR INSULATION TYPE.
14. ALL CONDUITS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION TYPE FITTINGS.
15. VERIFY EXACT LOCATION OF ALL MOTORS AND EQUIPMENT BEFORE ROUGHING IN.
16. SUPPORT OF ALL LIGHTING FIXTURES SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. SEE SPECIFICATIONS FOR SUPPORTING METHODS.
17. COORDINATE SERVICES WITH POWER AND COMMUNICATION COMPANIES. REMOVE OR RELOCATE ALL POWER AND COMMUNICATIONS CIRCUITS ABOVE OR BELOW GRADE THAT WOULD OBSTRUCT CONSTRUCTION OF THE PROJECT OR CONFLICT IN ANY MANNER WITH COMPLETION OF THE PROJECT OR ANY CODE PERTAINING THERETO. IF UTILITY COMPANY REQUIREMENTS ARE AT A VARIANCE WITH THESE DRAWINGS AND SPECIFICATIONS, THE CONTRACT PRICE SHALL INCLUDE THE ADDITIONAL COST.
18. THIS CONTRACTOR SHALL INSTALL EQUIPMENT GROUNDS THROUGHOUT THIS PROJECT, USING GREEN INSULATED CONDUCTORS. USE OF CONDUIT AS THE ONLY GROUND CONDUCTOR WILL NOT BE ALLOWED. SIZE GROUND CONDUCTORS PER N.E.C.
19. ALL UTILITY FEES ASSOCIATED WITH THIS PROJECT SHALL BE INCLUDED IN BID. IF THESE FEES CANNOT BE OBTAINED FROM THE UTILITY PRIOR TO BID, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY.
20. CONTRACTOR SHALL FIELD MARK ALL ELECTRICAL EQUIPMENT WITH ARC-FLASH WARNING LABELS PER NEC 110.16.
21. CONTRACTOR SHALL PROVIDE RECORD DRAWINGS AND MANUALS THAT PROVIDE INSTRUCTION ABOUT OPERATION AND MAINTENANCE OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE.
22. CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH PIECE OF ELECTRICAL EQUIPMENT WITH THE ELECTRICAL CONTRACTOR PRIOR TO SUBMITTING AND ORDERING EQUIPMENT.
23. VERIFY EXACT LOCATION AND EXACT MOUNTING HEIGHT OF ALL ELECTRICAL EQUIPMENT AND ELECTRICAL CONNECTIONS WITH THE ARCHITECT AND THE OWNER PRIOR TO ROUGH-IN.



Building 2 - Electrical Plan

ELECTRICAL SCHEDULE																									
																									
220V	BARE BULB	CABLE JACK	CLOTHES DRYER	CLOTHES WASHER	COMMON FLUSH MOUNT	DOOR CHIME	DOORBELL	DUPLEX	DUPLEX (WEATHERPROOF)	ELECTRIC RANGE	ELECTRICAL PANEL	EXHAUST (LIGHT)	EXTERIOR LANTERN 2	GFCI	GLOBE	HALF DOME	HEADINGLEY CEILING FAN	HOOD W/ VENT	REFRIGERATOR	SHORT SURFACE MOUNTED TUBE LIGHT (24W90D)	SINGLE POLE	SMOKE DETECTOR 1	THERMOSTAT	THREE WAY	VANITY LIGHT



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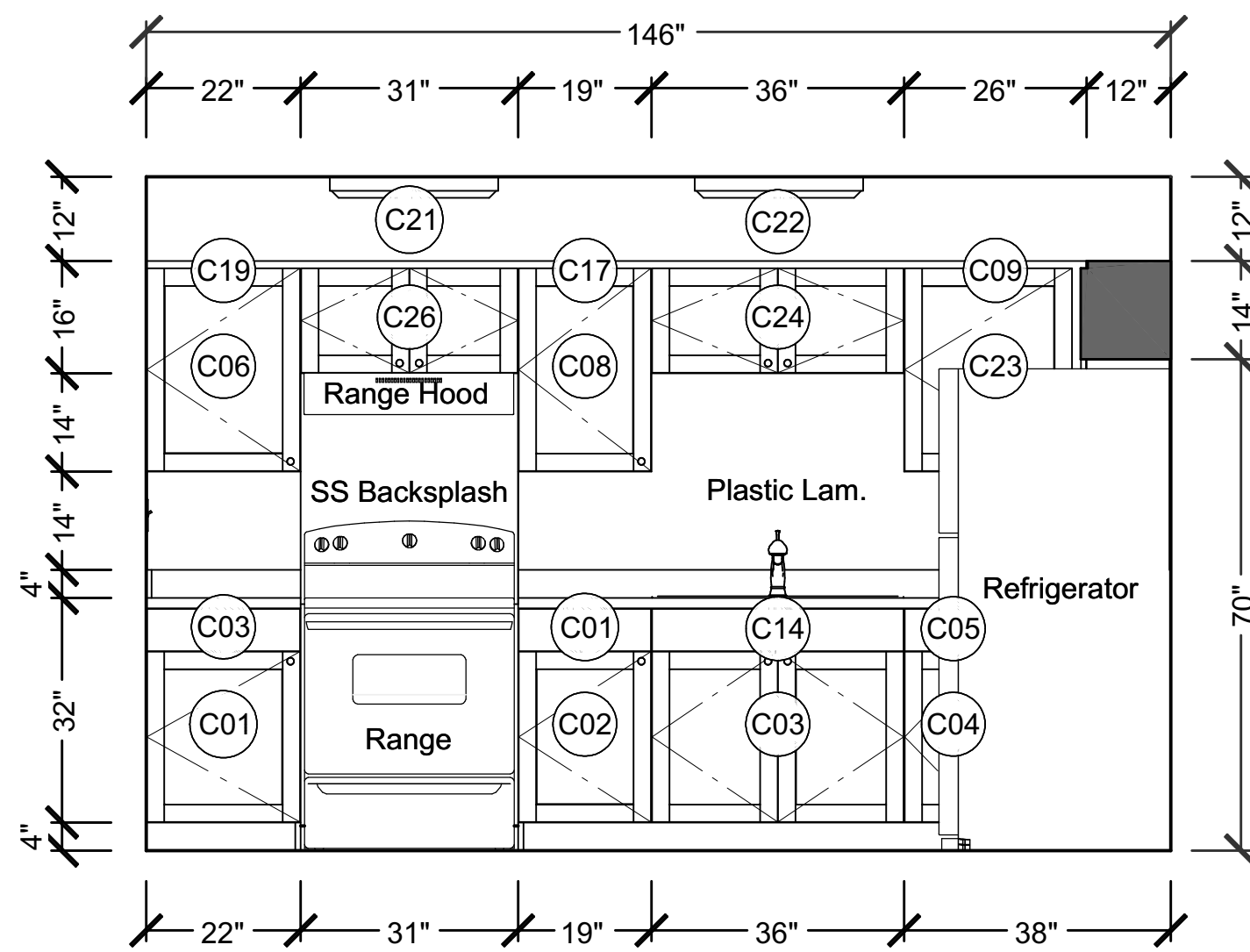
Electrical
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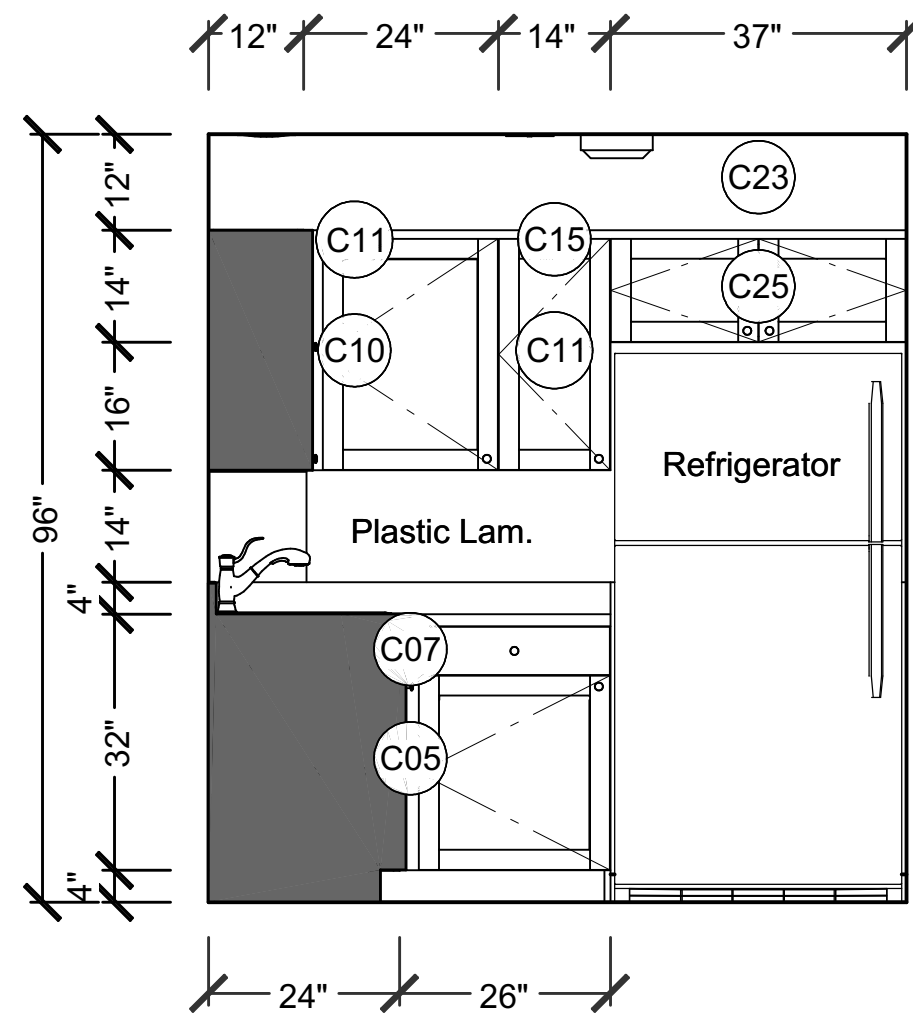
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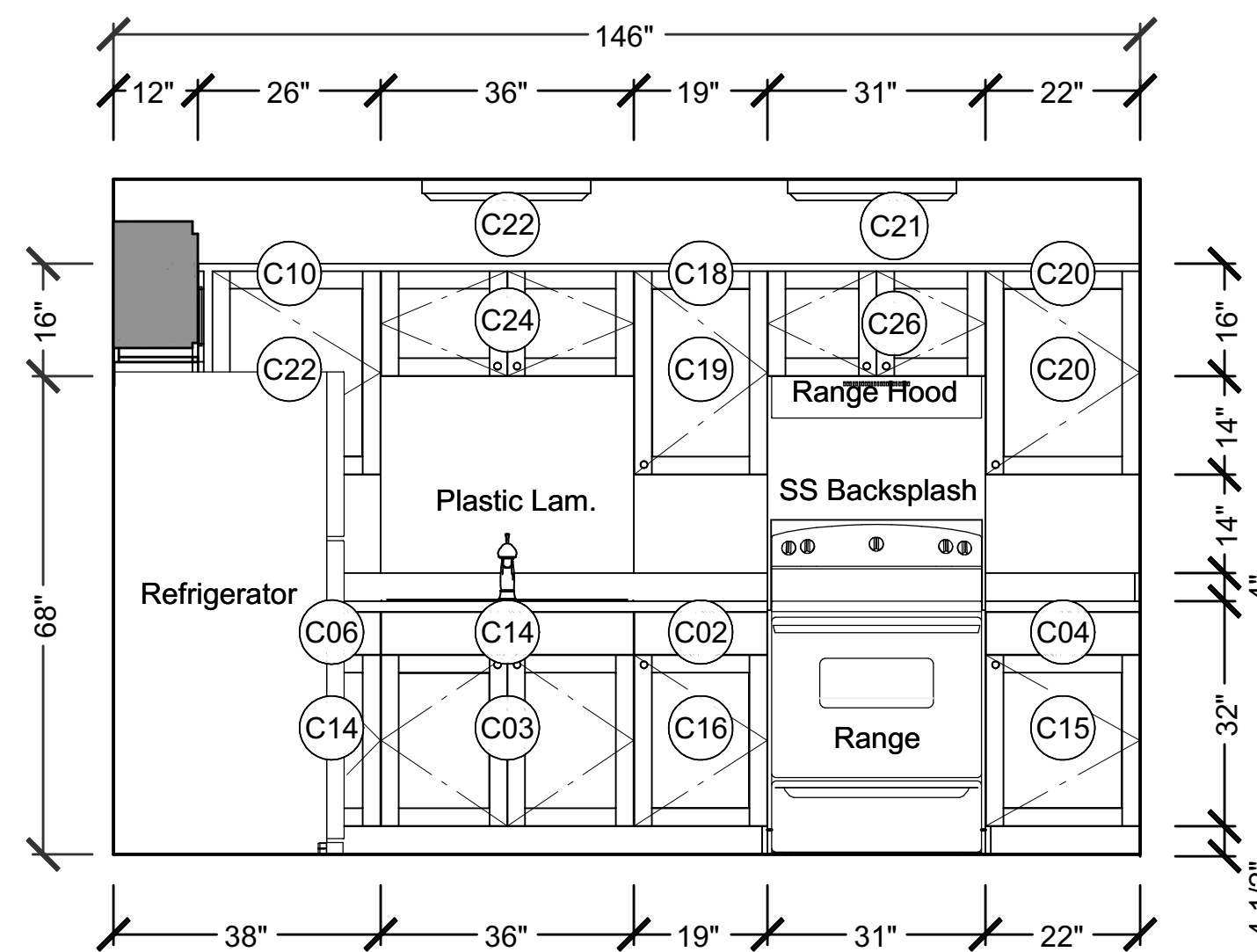
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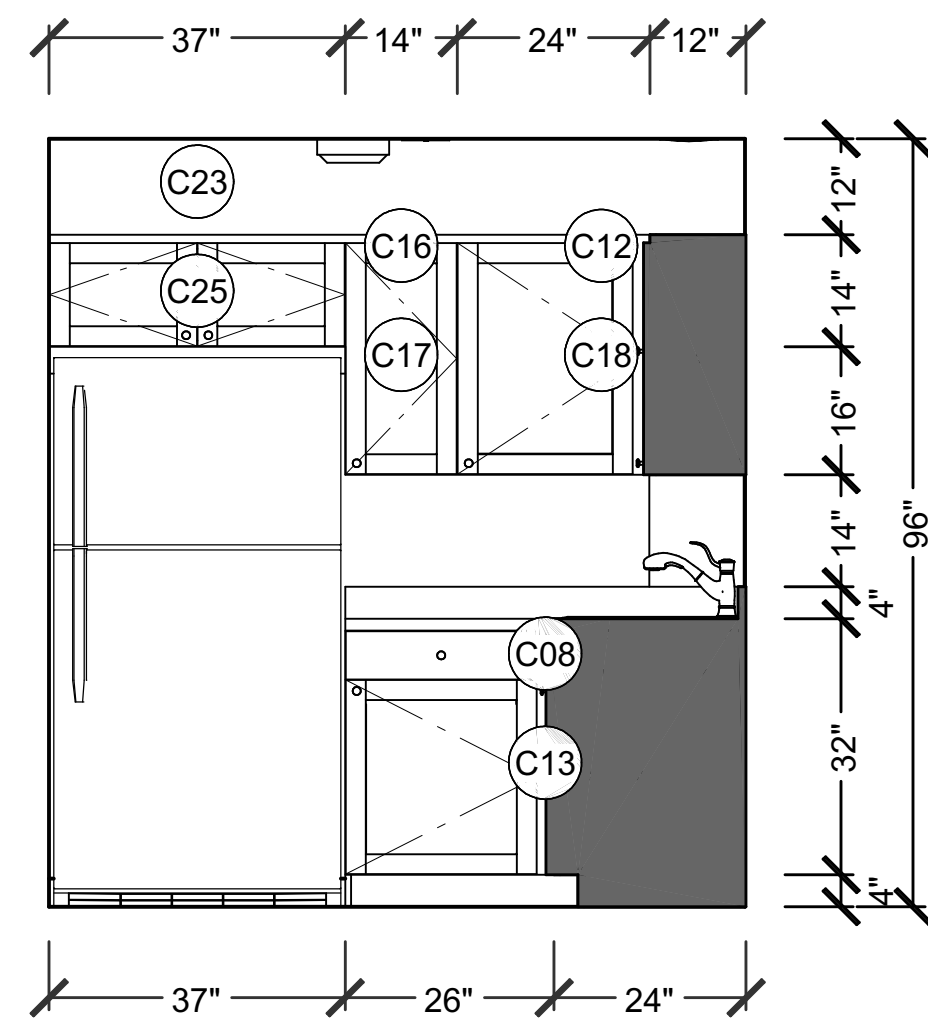
E1 Elevation 1
1/2 in = 1 ft



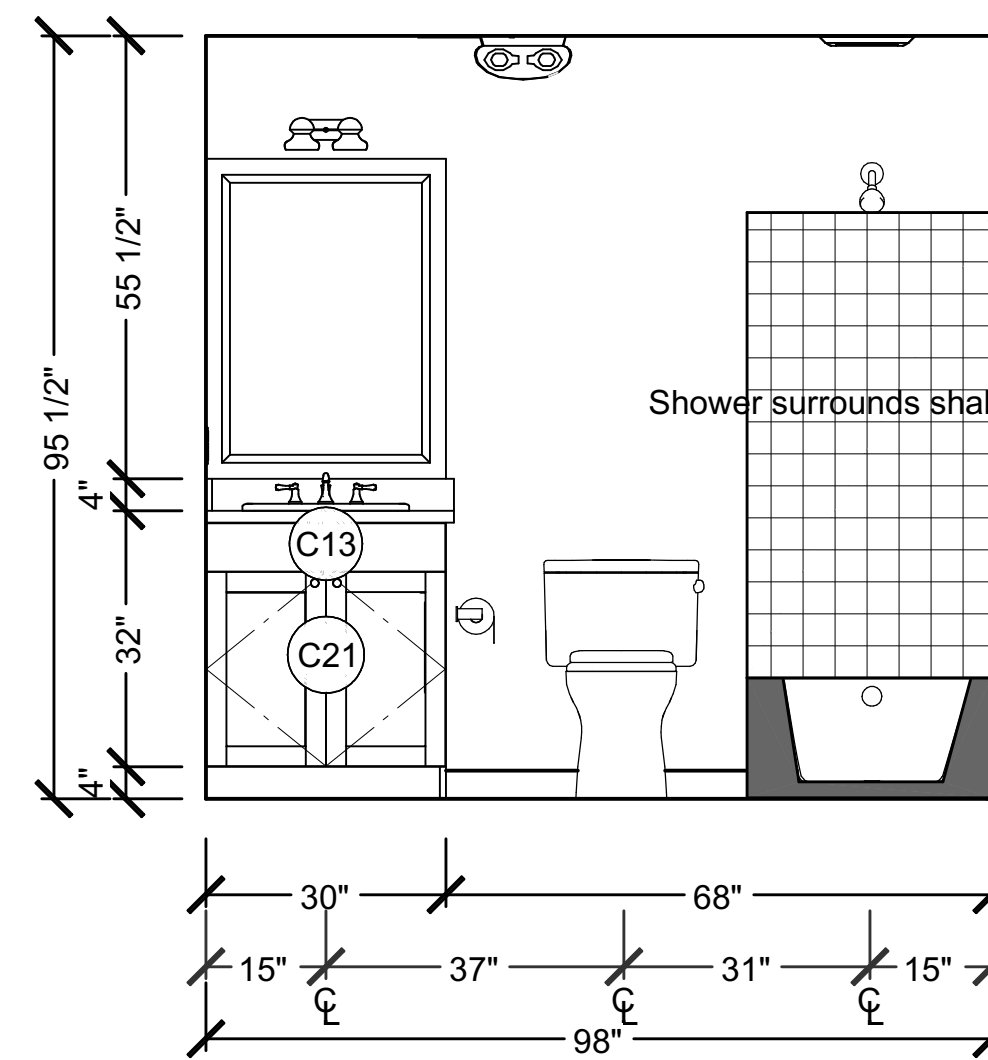
E2 Elevation 2
1/2 in = 1 ft



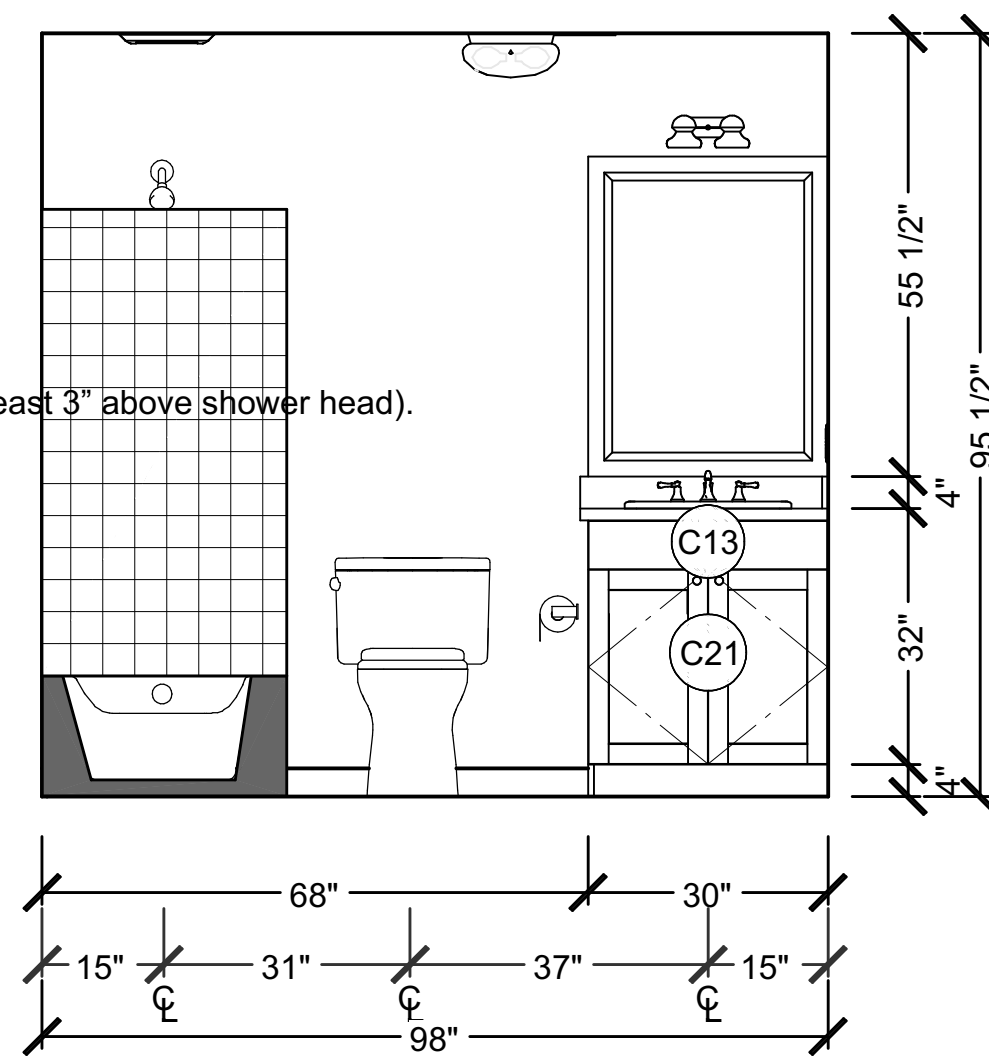
E3 Elevation 3
1/2 in = 1 ft



E4 Elevation 4
1/2 in = 1 ft



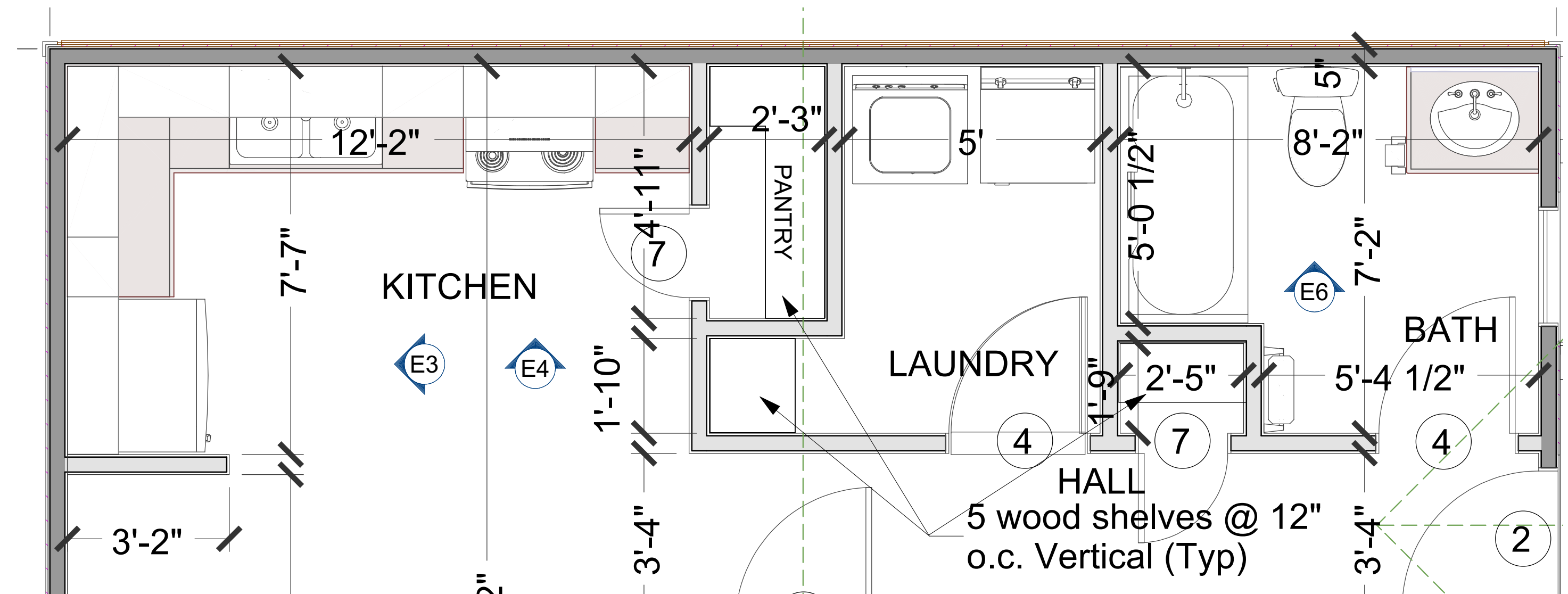
E5 Elevation 5
1/2 in = 1 ft



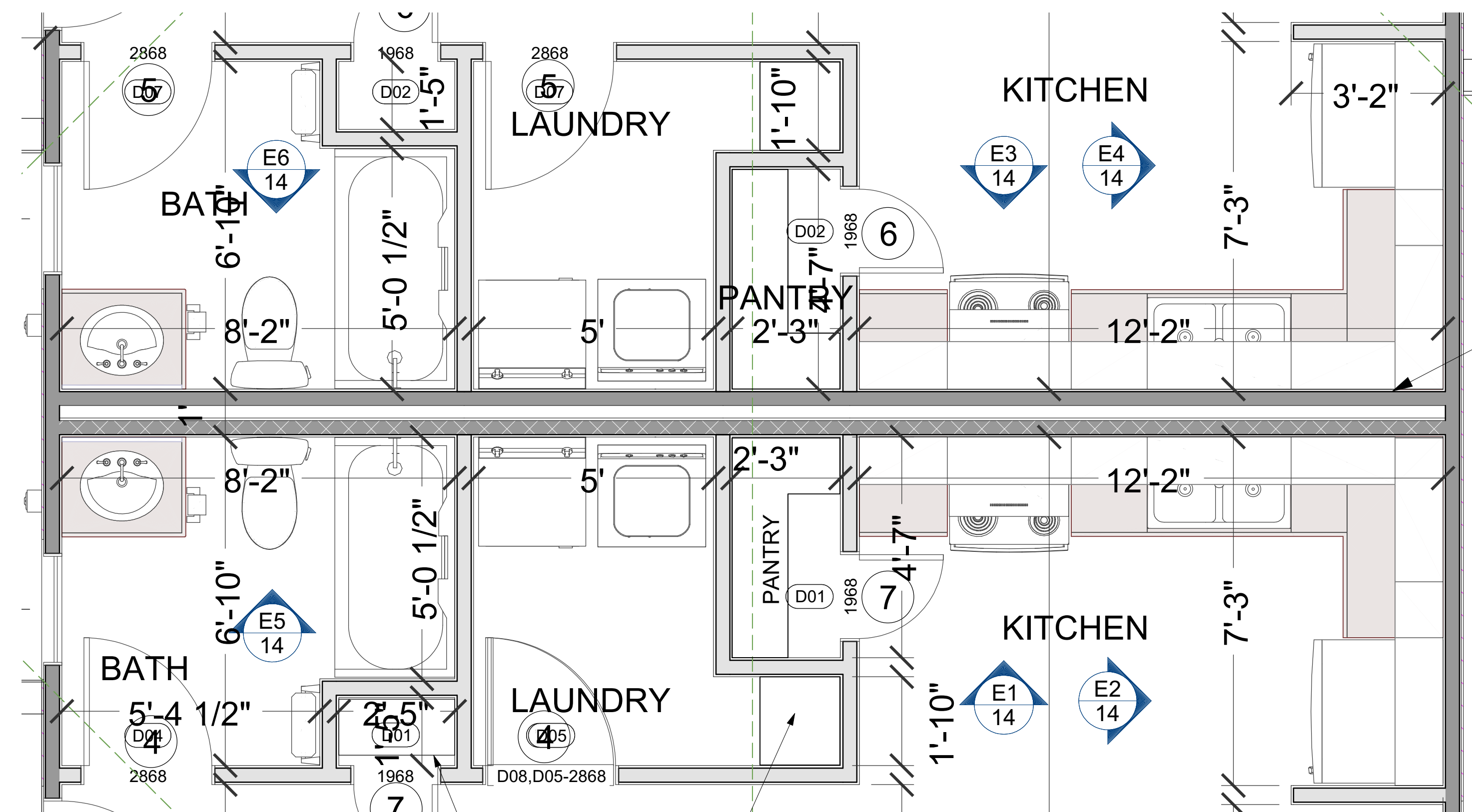
E6 Elevation 6
1/2 in = 1 ft

Cabinet General Notes

1. Plastic Laminate shall be installed to extend from Base Cabinet backsplash to Wall Cabinet bottom.
2. Corner cabinets shall extend full distance to corner. No voids will be acceptable.
3. All range splashes shall be stainless steel and shall extend from Range Hood to 6" below counter top.
4. All plastic laminate vertical and horizontal edges shall receive aluminum trim where they do not abut a perpendicular surface.
5. All filler strips shall continue at wall cabinet underside to seal all voids.
6. All cabinet hinges shall be adjustable.
7. All range openings shall be 31" clear.
8. Cabinet finishes shall be uniform within an apartment unit. Juxtaposed finishes will be rejected and shall be replaced.
9. All cabinet doors shall have three silencers per door. Each silencer shall be securely installed.
10. All drawer fronts shall be glued and screwed to sub-fronts.
11. Rangoon vent at cabinet penetration shall have a pre-fabricated flange at entry and exit points and shall receive fire-caulk at same.
12. Range hood vents shall be enclosed with either wood or drywall. Finish shall match existing.
13. Contractor shall field verify finished dimensions for unit cabinets prior to ordering materials.
14. Underside of wall cabinet at refrigerator and sink shall be considered as exposed and shall be finished.
15. Plastic laminate finish flush with face at any window openings.
16. No horizontal seams shall be used to install plastic laminate.
17. All Counter Tops shall be plastic laminate on two layers of 3/4" plywood. Backsplash shall be separate plastic laminate on one layer of 3/4" plywood.



Kitchen and Bath Plan - Building 1

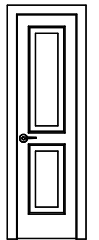

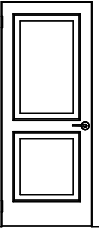
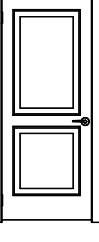
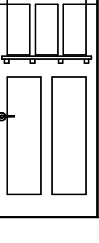


Kitchen and Bath Plan - Building 2

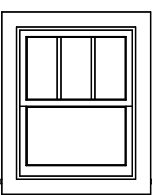
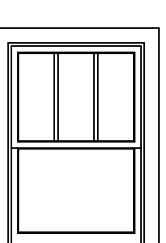
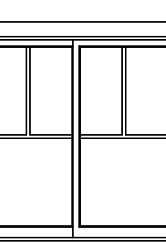
ALL shelving in closets, pantries, laundry rooms, and baths are to be wood. Finished plywood with hardwood edges are acceptable. All brackets are to be wood.

Revision Number	Date	Revised By	Description

Building 1 - Schedules

DOOR SCHEDULE						
NUMBER	3D EXTERIOR ELEVATION	QTY	FLOOR	SIZE	R/O	DESCRIPTION
HEADER						
D01		2	1	1968 R IN	23'X82 1/2"	HINGED-DOOR P04
						2'X6'X26" (2)
D02		1	1	2868 L EX	34'X83"	EXT. HINGED-DOOR E21
						2'X6'X37" (2)
D03		5	1	2868 R IN	34'X82 1/2"	HINGED-DOOR P04
						2'X6'X37" (2)
D04		1	1	2868 R IN	34'X82 1/2"	INTERIOR PANEL DOOR
						2'X6'X37" (2)
D05		1	1	3068 R EX	38'X83"	EXT. HINGED-DOOR E21
						2'X6'X41" (2)

CABINET SCHEDULE							
NUMBER	LABEL	QTY	FLOOR	WIDTH	DEPTH	HEIGHT	DESCRIPTION
COMMENTS							
C01	B19R	1	1	19"	24"	36"	BASE CABINET
C02	B22R	1	1	22"	24"	36"	BASE CABINET
C03	BCB14R	1	1	14"	24"	36"	BASE CABINET
C04	BCB54	1	1	54 1/8"	24"	36"	BASE CABINET
C05	SB30	1	1	30"	24"	36"	BASE CABINET
C06	SB36	1	1	36"	24"	36"	BASE CABINET
C07	W1430R	1	1	14"	12"	30"	WALL CABINET
C08	W1936R	1	1	19"	12"	36"	WALL CABINET
C09	W2236R	1	1	22"	12"	36"	WALL CABINET
C10	W2636	1	1	26"	12"	36"	WALL CABINET
C11	W3118	1	1	31"	12"	18"	WALL CABINET
C12	W3618	1	1	36"	12"	18"	WALL CABINET
C13	W3714	1	1	37"	12"	14"	WALL CABINET
C14	W4030	1	1	40 1/8"	12"	30"	WALL CABINET

WINDOW SCHEDULE									
3D EXTERIOR ELEVATION	NUMBER	LABEL	QTY	FLOOR	SIZE	R/O	EGRESS	DESCRIPTION	COMMENTS
HEADER									
	W01	W01-2430DH	1	1	2430DH	29'X36 7/8"		DOUBLE HUNG	2'X6'X32" (2)
	W02	W02-2840DH	4	1	2840DH	33'X49"		DOUBLE HUNG	2'X6'X36" (2)
	W03	4040LS EGRESS WINDOW	1	1	4040LS	49'X49"	YES	LEFT SLIDING	2'X6'X52" (2)

Windows – Window grilles shall be 5/8" Flat. Grilles shall be between the glass panes.

Doors - All Interior Doors are to be pre-hung, six panel, hollow core, Masonite. All Exterior Doors shall be 18 ga., Six Panel, Insulated Hollow Metal, Primed, Steel doors with 16 ga. Primed, Hollow Metal, Steel frames.

Door Hardware Schedule

FRONT ENTRANCES
36" Doors

3	Hinge	F179 4.5 X 4.5 X 652	ST
1	Passage Lever	L01SR X 306 X 626 X 2 3/4 ASA	AR
1	Deadlock	D61-IC X 626 X 144 X 340 (2 3/4" BS)	AR
1	Combinated Core	7100 X 626 Required Keyway	AR
1	Stop	442CP/406 X 630 As Required	RW
1	Door Bottom	35VA-36" / 32" X 628	NG
1	Threshold	425-36" / 36" X LES As Required	NG
1	Weatherstrip	160-36" / 36" X 84" X 628 As Required	NG
1	Knocker/Viewer	614V X 26D	RW
3	Silencers	608	RW

REAR ENTRANCES
36" and 32" Doors

3	Hinge	F179 4.5 X 4.5 X 652	ST
1	Passage Lever	L01SR X 306 X 626 X 2 3/4 ASA	AR
1	Deadlock	D61-IC X 626 X 144 X 340 (2 3/4" BS)	AR
1	Combinated Core	7100 X 626 Required Keyway	AR
1	Stop	442CP/406 X 630 As Required	RW
1	Door Bottom	35VA-36" / 32" X 628	NG
1	Threshold	425-36" / 36" X LES As Required	NG
1	Weatherstrip	160-36" / 36" X 84" X 628 As Required	NG
3	Silencers	608	RW

INTERIOR CLOSET DOORS

N/A	Pre-Hung		N/A
1	Passage Lever	L01SR X 306 X 626 X 2 3/4 ASA	AR
1	Wall Stop	409/Floor 440 as Required	RW

INTERIOR PRIVACY DOORS
Bedroom and Bath Doors

N/A	Pre-Hung		N/A
1	Privacy Lever	L02SR X 306 X 626 X 2 3/4 ASA	AR
1	Wall Stop	409/Floor Stop 440 as required	RW

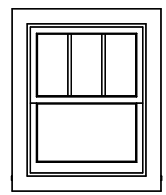
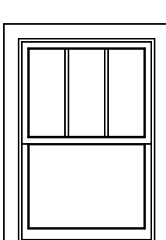
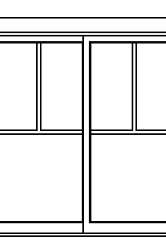
INTERIOR MECHANICAL CLOSET DOORS

N/A	Pre-Hung		N/A
1	Deadlock	D61-IC X 626 X 144 X 340 (2 3/4" BS)	AR
1	Combinated Core	7100 X 626 Required Keyway	AR

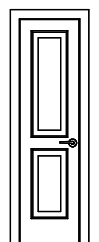
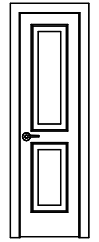
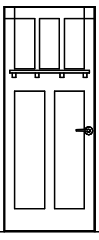
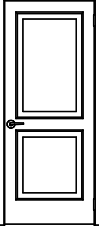
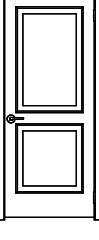
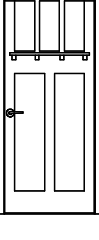
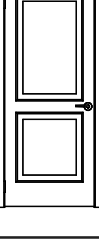
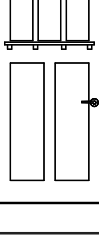
Room Finish Schedule											
Room	Floor		Base		Wainscot	Walls		Crown	Ceiling		Remarks
Room Name	Material	Finish Legend	Material	Finish Legend		Material	Finish Legend		Material	Height	Finish Legend
Living	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Mechanical	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Laundry	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	Varies	Paint 1
Bath	Ceramic Tile	2	Ceramic Tile		N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Kitchen	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Dining	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Bedroom	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Closets	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Pantry Closet	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1
Hall	Luxury Vinyl Plank	1	Wood	Paint	N/A	1/2" Gyp Bd	Paint	None	1/2" Gyp Bd	8"	Paint 1

Room Finish Schedule refers to all apartments.

Building 2 - Schedules

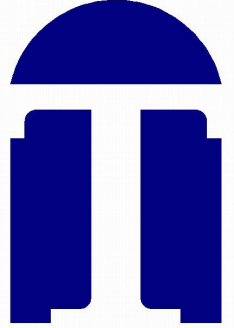
WINDOW SCHEDULE									
3D EXTERIOR ELEVATION	NUMBER	LABEL	QTY	FLOOR	SIZE	R/O	EGRESS	DESCRIPTION	COMMENTS
HEADER									
	W01	W03.W01-2430DH	2	1	2430DH	29'X36 7/8"		DOUBLE HUNG	2'X6'X32" (2)
	W02	W01.W02-2840DH	9	1	2840DH	33'X49"		DOUBLE HUNG	2'X6'X36" (2)
	W03	4040LS EGRESS WINDOW	2	1	4040LS	49'X49"	YES	LEFT SLIDING	2'X6'X52" (2)

Windows – Window grilles shall be 5/8" Flat. Grilles shall be between the glass panes.

DOOR SCHEDULE						
NUMBER	3D EXTERIOR ELEVATION	QTY	FLOOR	SIZE	R/O	DESCRIPTION
HEADER						
D01		2	1	1968 L IN	23'X82 1/2"	HINGED-DOOR P04
						2'X6'X26" (2)
D02		2	1	1968 R IN	23'X82 1/2"	HINGED-DOOR P04
						2'X6'X26" (2)
D03		1	1	2868 L EX	34'X83"	EXT. HINGED-DOOR E21
						2'X6'X37" (2)
D04		5	1	2868 L IN	34'X82 1/2"	HINGED-DOOR P04
						2'X6'X37" (2)
D05		1	1	2868 L IN	34'X82 1/2"	INTERIOR PANEL DOOR
						2'X6'X37" (2)
D06		1	1	2868 R EX	34'X83"	EXT. HINGED-DOOR E21
						2'X6'X37" (2)
D07		6	1	2868 R IN	34'X82 1/2"	HINGED-DOOR P04
						2'X6'X37" (2)
D08		2	1	3068 L EX	38'X83"	EXT. HINGED-DOOR E21
						2'X6'X41" (2)

Doors - All Interior Doors are to be pre-hung, six panel, hollow core, Masonite. All Exterior Doors shall be 18 ga., Six Panel, Insulated Hollow Metal, Primed, Steel doors with 16 ga. Primed, Hollow Metal, Steel frames.

CABINET SCHEDULE							
NUMBER	LABEL	QTY	FLOOR	WIDTH	DEPTH	HEIGHT	DESCRIPTION
COMMENTS							
C01	B19L	1	1	19"	24"	36"	BASE CABINET
C02	B19R	1	1	19"	24"	36"	BASE CABINET
C03	B22L	1	1	22"	24"	36"	BASE CABINET
C04	B22R	1	1	22"	24"	36"	BASE CABINET
C05	BCB14L	1	1	14"	24"	36"	BASE CABINET
C06	BCB14R	1	1	14"	24"	36"	BASE CABINET
C07	BCB50L	1	1	50"	24"	36"	BASE CABINET
C08	BCB50R	1	1	50"	24"	36"	BASE CABINET
C09	BCW2630L	1	1	26"	12"	30"	WALL CABINET
C10	BCW2630R	1	1	26"	12"	30"	WALL CABINET
C11	BCW3630L	1	1	36"	12"	30"	WALL CABINET
C12	BCW3630R	1	1	36"	12"	30"	WALL CABINET
C13	SB30	2	1	30"	24"	36"	BASE CABINET
C14	SB36	2	1	36"	24"	36"	BASE CABINET
C15	W1430L	1	1	14"	12"	30"	WALL CABINET
C16	W1430R	1	1	14"	12"	30"	WALL CABINET
C17	W1930L	1	1	19"	12"	30"	WALL CABINET
C18	W1930R	1	1	19"	12"	30"	WALL CABINET
C19	W2230L	1	1	22"	12"	30"	WALL CABINET
C20	W2230R	1	1	22"	12"	30"	WALL CABINET
C21	W3116	2	1	31"	12"	16"	WALL CABINET
C22	W3616	2	1	36"	12"	16"	WALL CABINET
C23	W3714	2	1	37"	12"	14"	WALL CABINET



TDA
architects
LLC

125 West Columbus Street
Dadeville, Alabama 36853



Pine Avenue Development
Anniston Housing Authority
Anniston, Alabama

Revision Table					
Number	Date	Revised By	Description		

Schedules

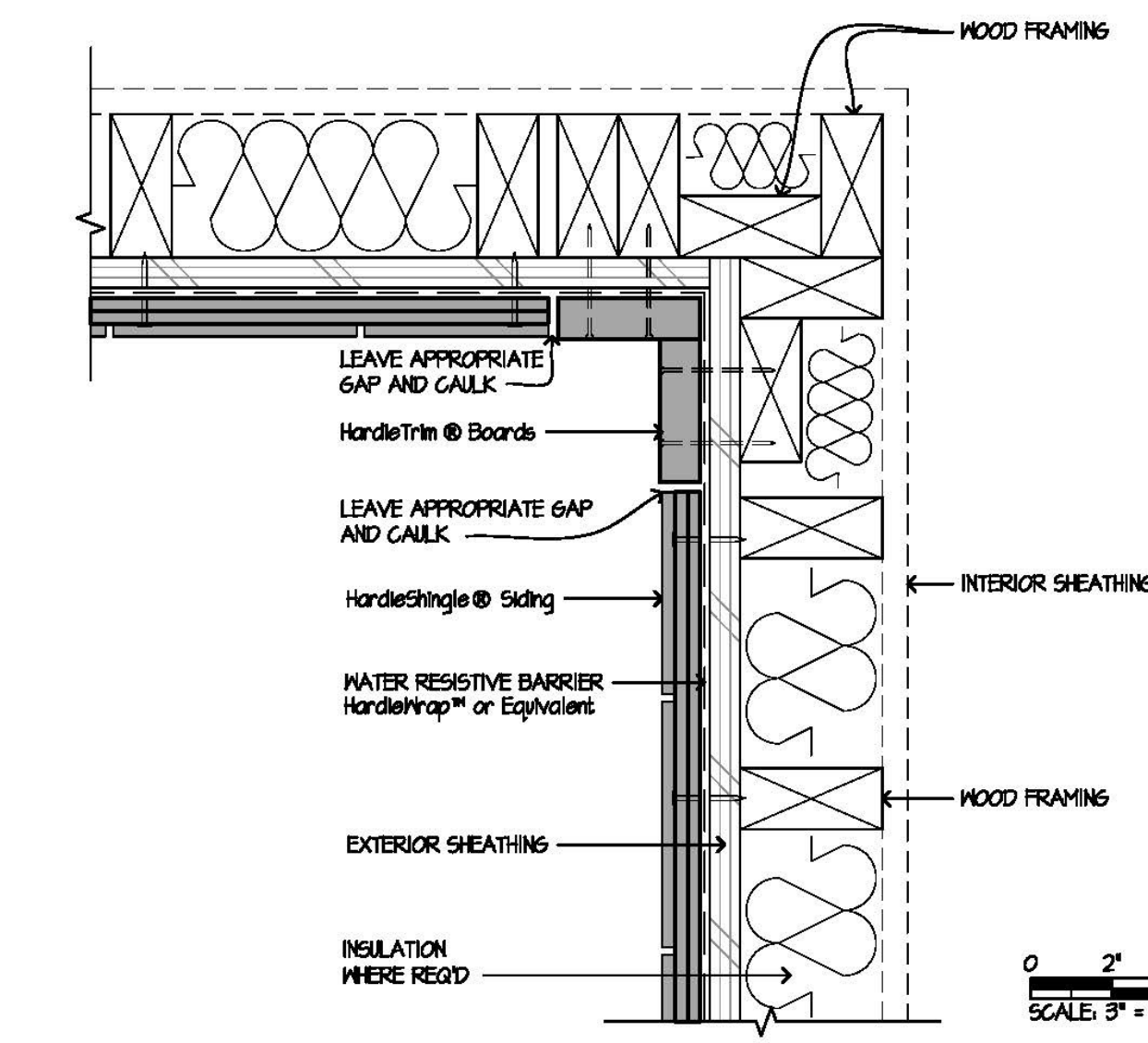
TDA 462

DATE:
3/25/2025

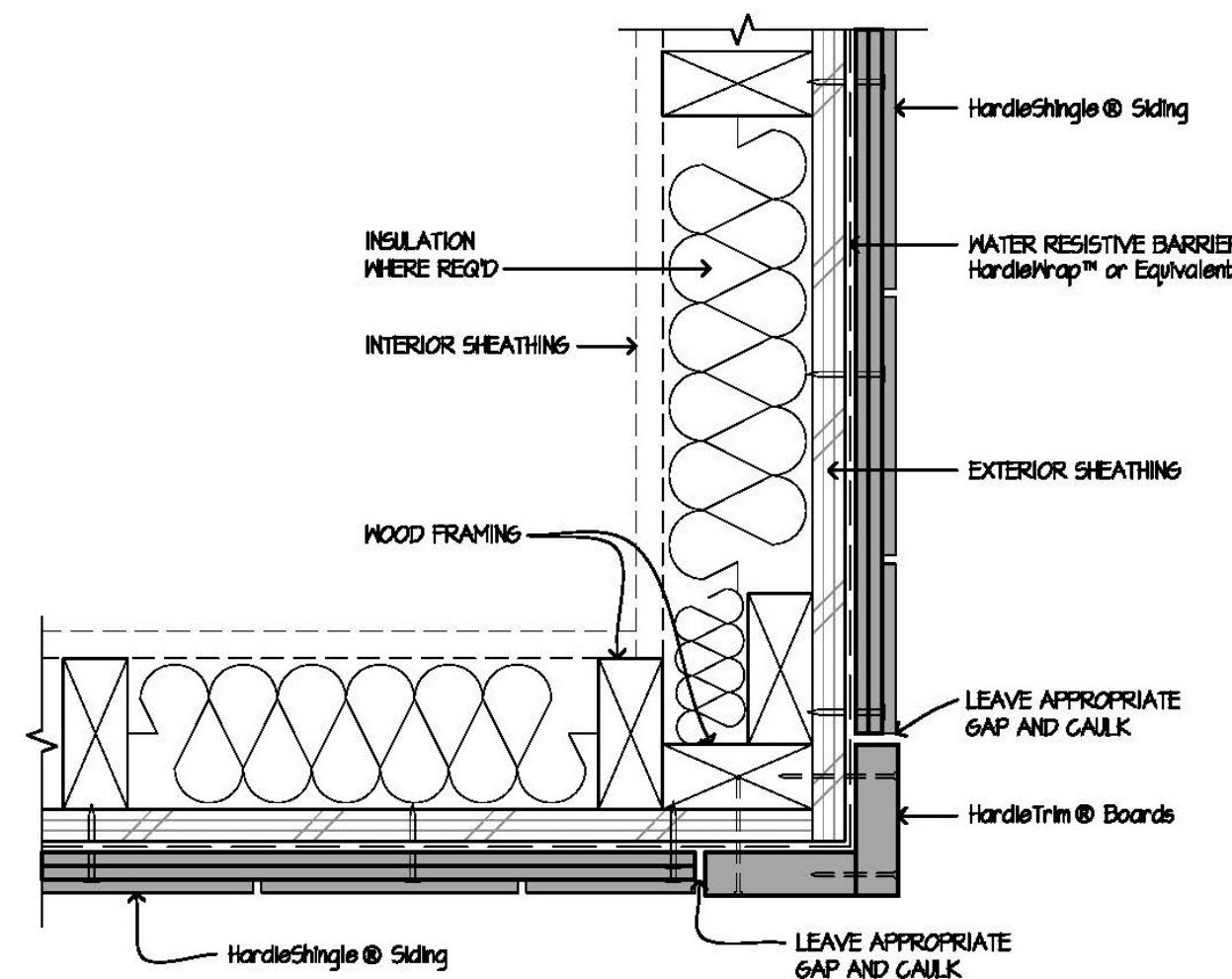
SHEET:

15

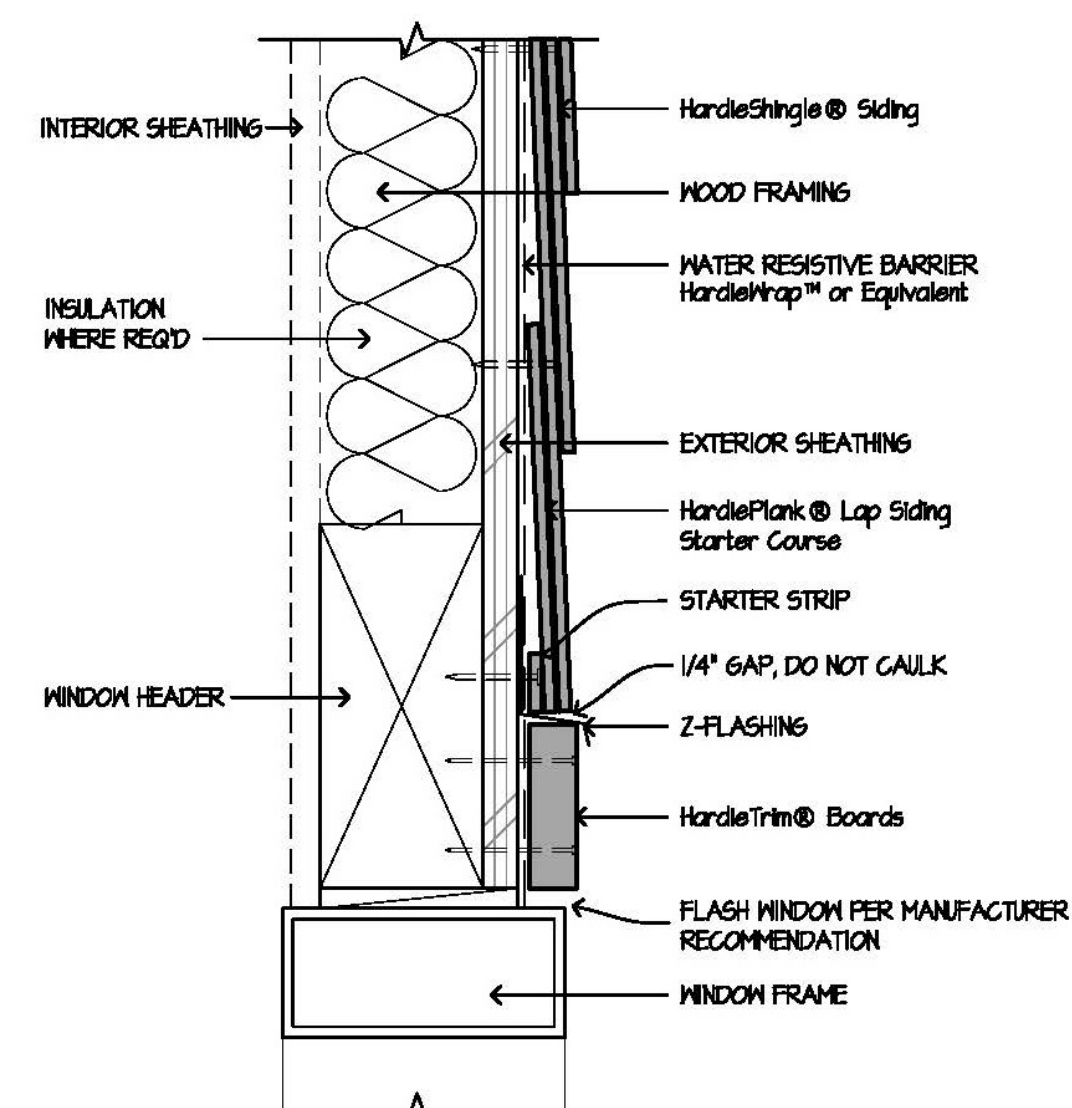
Cementitious Siding Details



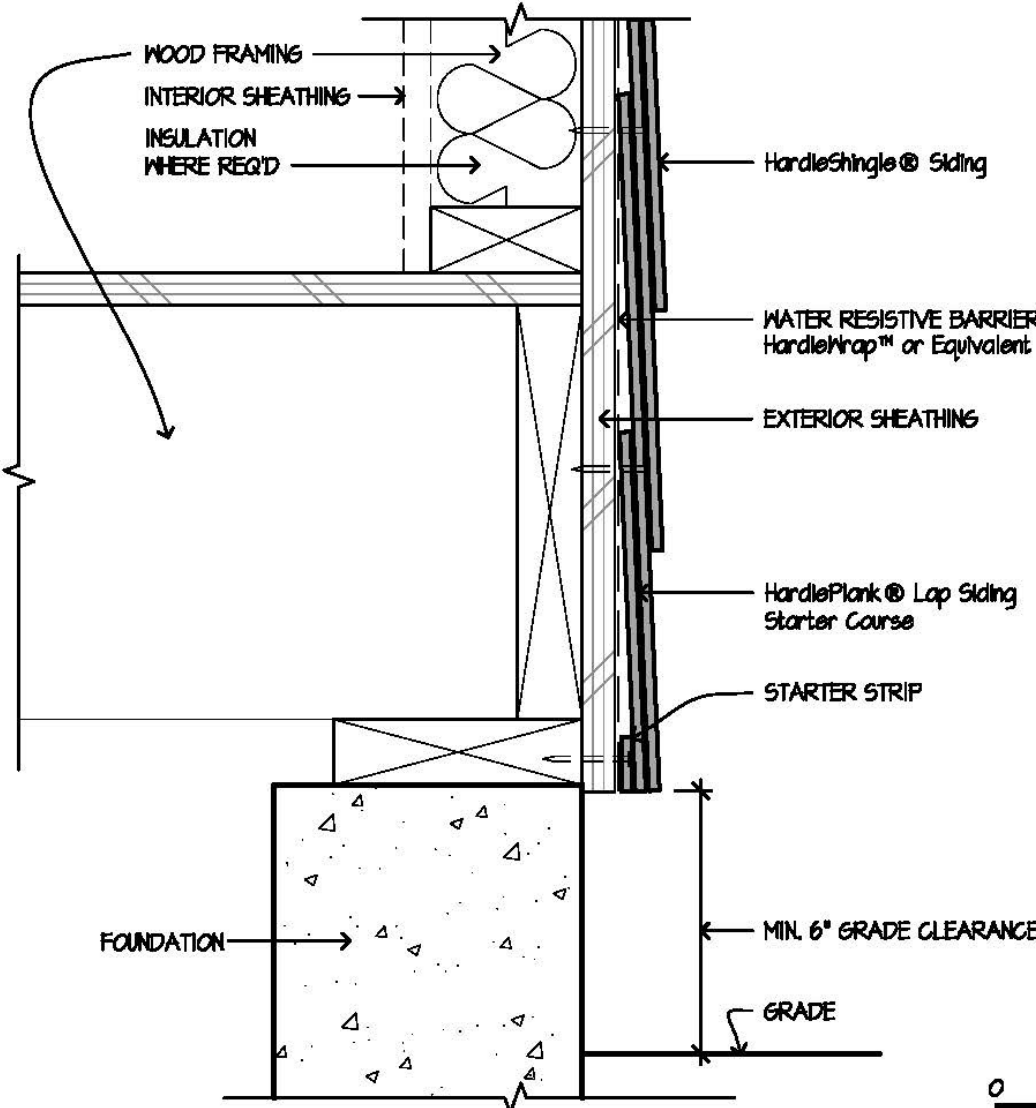
Inside Corner



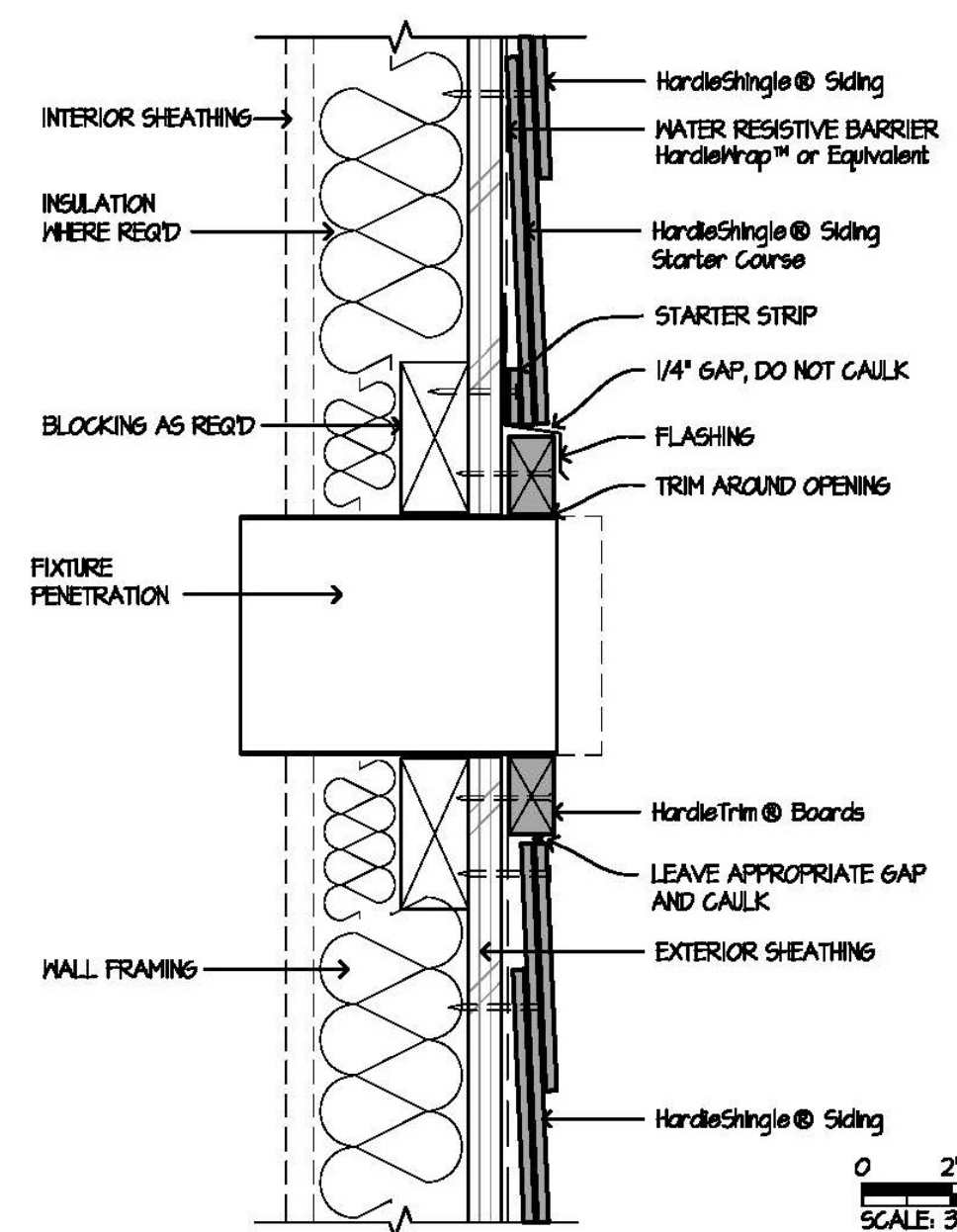
Outside Corner



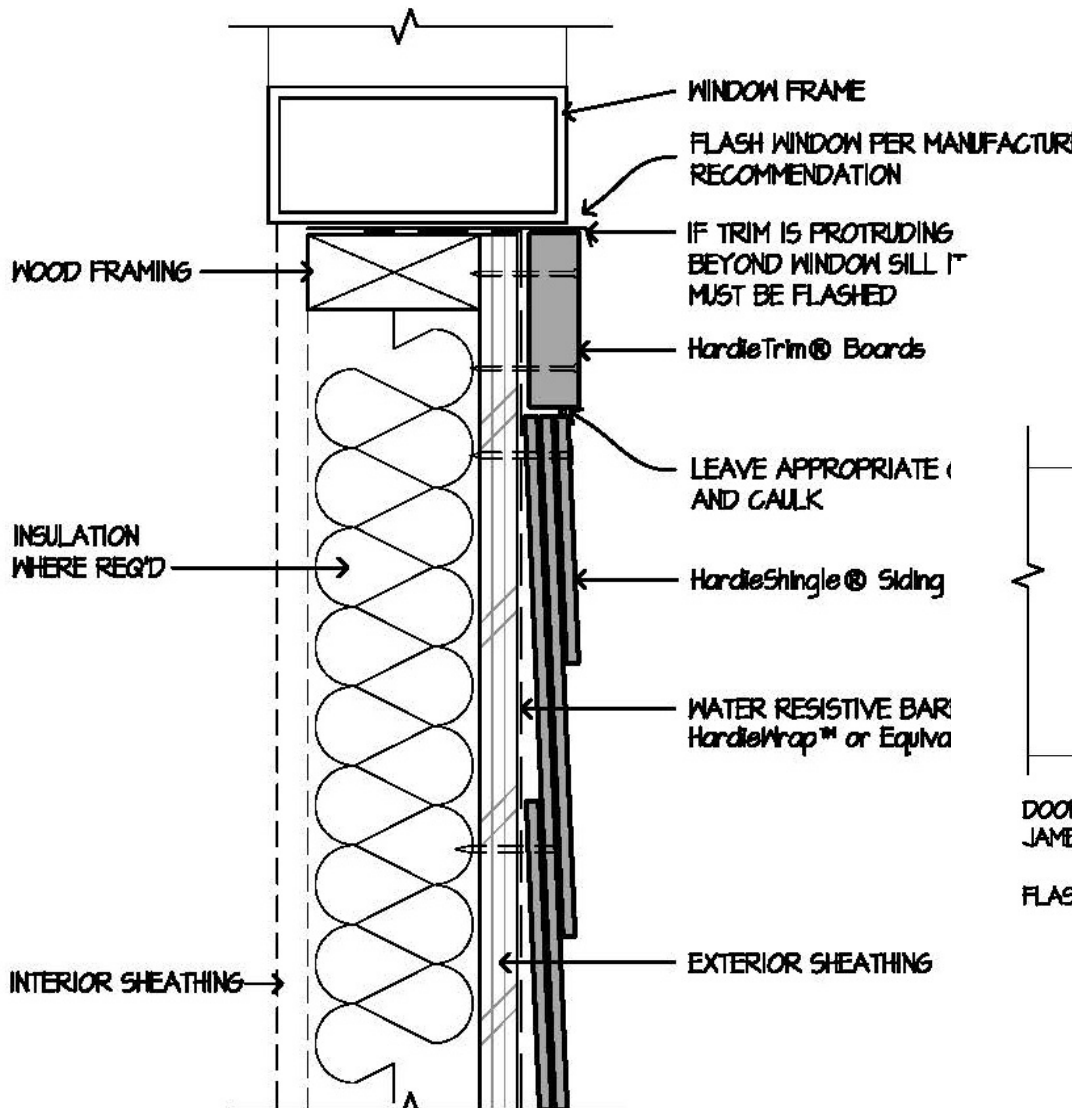
Window / Door Head



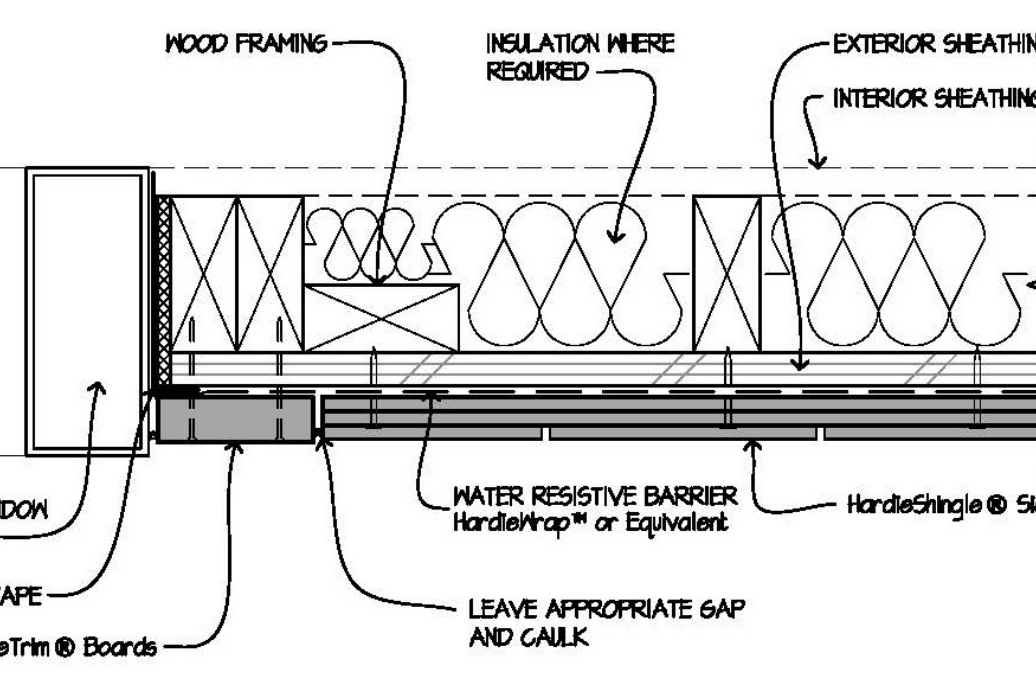
Grade Clearance



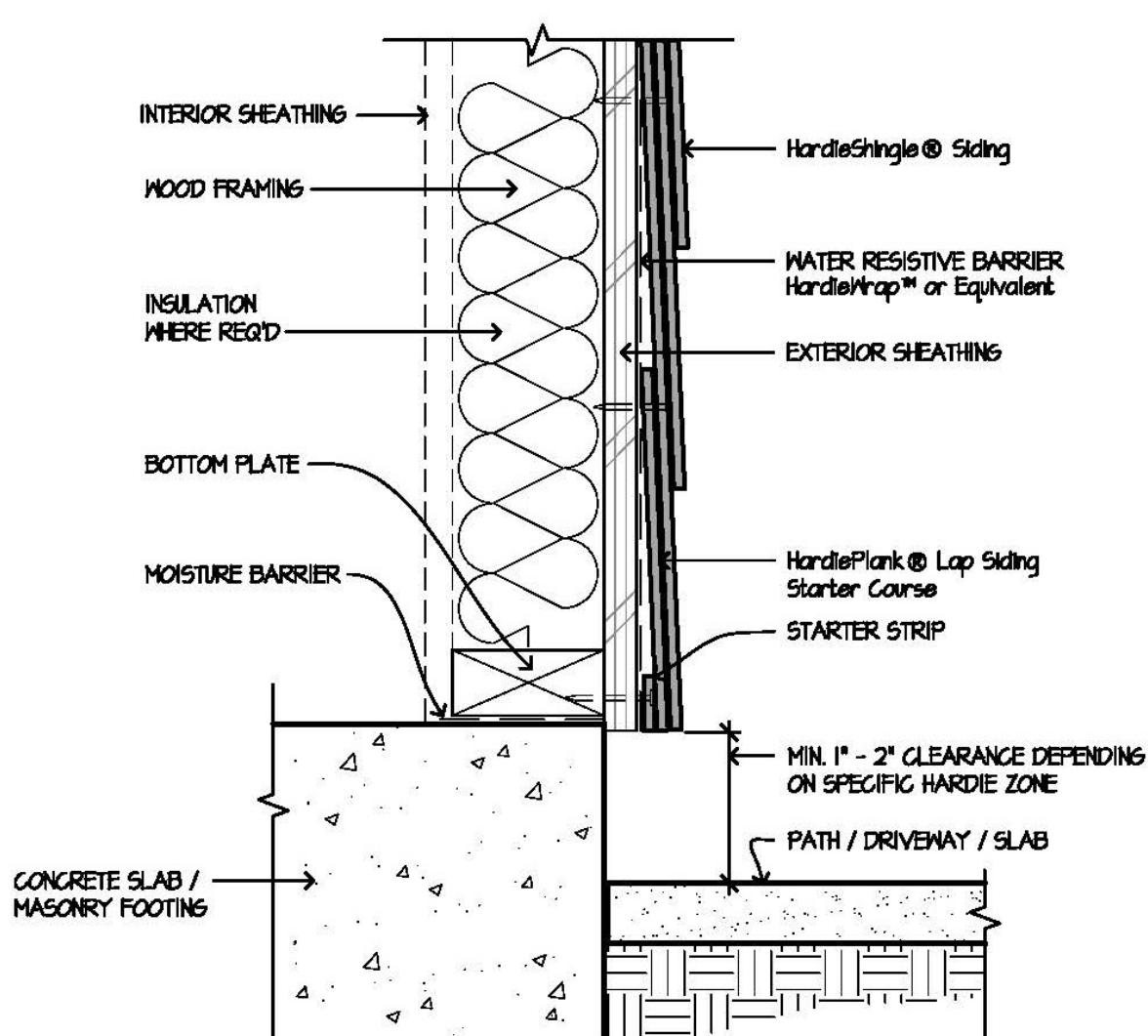
Detail at Penetrations



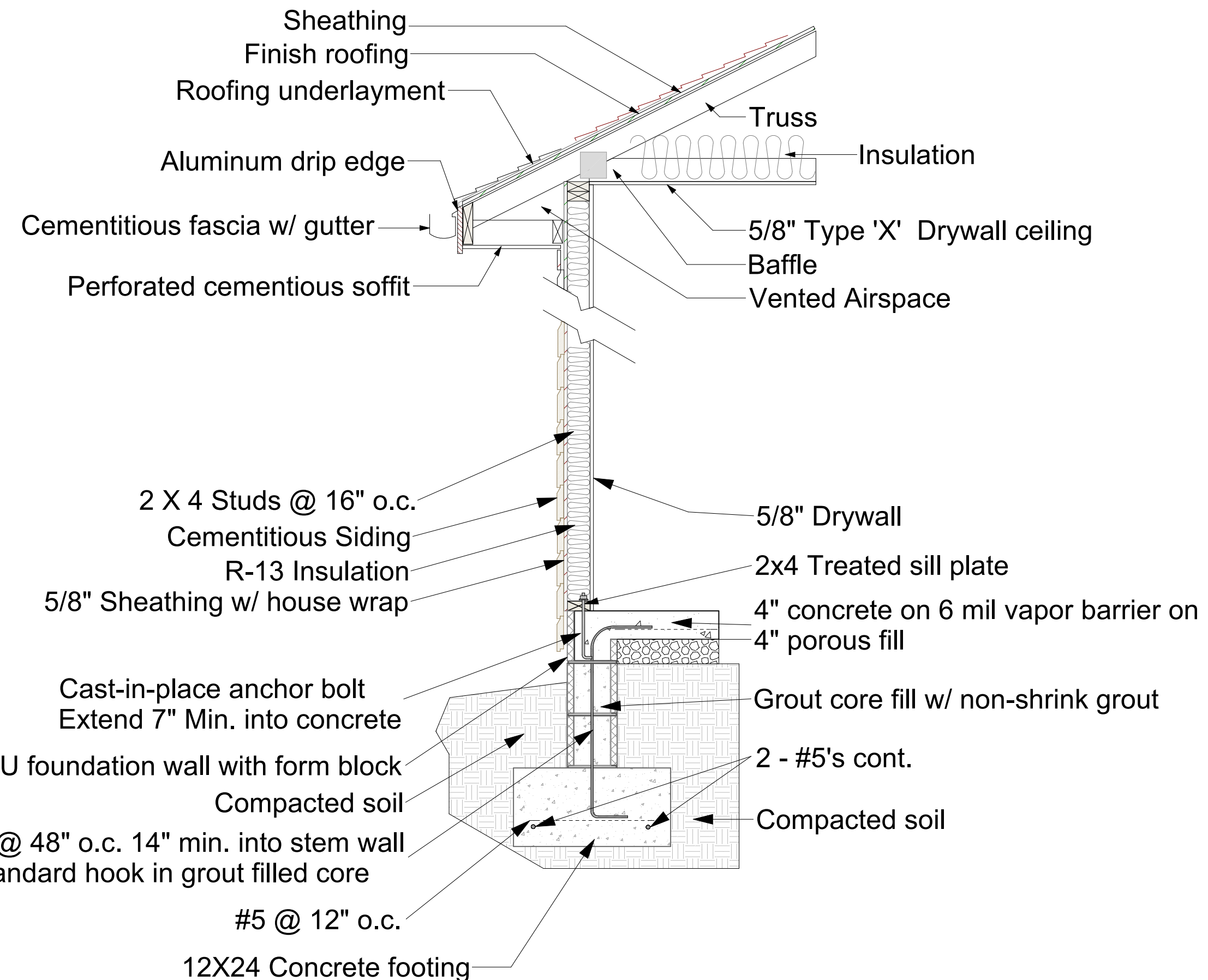
Window Sill



Door / Window Jamb



Hardscape Clearances



CMU Stem Wall with Concrete Slab

S1 Wall Details
16 3/4 in = 1 ft

Revision Table		Description
Number	Date	

CONTRACT SPECIFICATIONS

Pine Avenue Development

**Anniston Housing Authority /
Housing Development Corporation**
Anniston, Alabama

TDA 462



INDEX TO SPECIFICATIONS

South Allen Avenue Development Anniston Housing Authority / Housing Development Corporation

Anniston, Alabama

PROJECT DIRECTORY

ADDENDA (when issued)

BIDDING AND CONTRACT REQUIREMENTS

Advertisement for Bids

Instructions to Bidders for Contracts Public and Indian Housing Programs - HUD 5369 (10/2002)

Representations, Certifications, and Other Statements of Bidders - HUD 5369-A (11/1992)

General Conditions of the Contract for Construction - HUD 5370 (11/2006)

Supplemental General Conditions - HUD 4238-N

Bid Form

Form of Bid Bond (7460-8 Rev-1)

Previous Participation Certification - HUD 2530 (05/2001)

Non-Collusive Affidavit

Form of Performance Bond (7460-8 Rev-1)

Form of Payment Bond (7460-8 Rev-1)

Form of Contract - HUD 4238-F

Wage Rates

Section 3 Clause

Form of Advertisement of Completion

HUD CONSTRUCTION FORMS: (not included)

The following HUD construction forms shall be used by the Contractor during construction. A copy of these forms may be obtained from the Architect's office.

Form HUD-5282	Certificate from Contractor - Appointing Officer or Employee to Supervise Payment of Employees
Form HUD-5371	Request for Acceptance of Subcontractor
Form HUD-5372	Construction Progress Schedule
Form HUD-5378	Construction Report
Form HUD-51000a	Schedule of Amounts for Contract Payments
Form HUD-51001	Periodic Estimate for Partial Payment
Form HUD 51002	Schedule of Change Orders
Form HUD-51003	Schedule of Material Stored
Form HUD-51004	Summary of Materials Stored

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

00750 - Supplemental General Conditions
01010 - Summary
01045 - Cutting & Patching
01140 - Work Restrictions
01210 - Allowances
01310 - Project Management and Coordination
01320 - Construction Progress Documentation
01330 - Submittal Procedures
01400 - Quality Requirements
01600 - Product Requirements
01700 - Execution Requirements
01710 - Project Closeout
01740 - Final Cleaning

DIVISION 2 - SITEWORK

02280 - Soil Treatment
02300 - Earthwork
02361 - Termite Control

DIVISION 3 - CONCRETE

03300 – Cast in Place Concrete
03310 - Concrete

DIVISION 4 – MASONRY

04810 – Unit Masonry Assemblies

DIVISION 5 - METAL

05500 - Metal Fabrications

DIVISION 6 - WOOD & PLASTICS

06100 - Rough Carpentry
06113 – Roof Sheathing
06200 – Finish Carpentry
06400 – Architectural Woodwork

DIVISION 7 - THERMAL & MOISTURE PROTECTION

07115 – Sheet Waterproofing
07200 - Insulation
07270 - Firestopping
07311 - Asphalt Shingles
07462 - Siding and Trim
07600 - Flashing & Sheet Metal
07900 - Joint Sealants (Sealants and Caulking)

DIVISION 8 - DOORS, WINDOWS, & GLASS

08110 - Steel Doors & Frames
08210 - Wood Doors
08521 - Aluminum Windows
08700 - Finish Hardware

DIVISION 9 - FINISHES

09250 - Gypsum Drywall
09310 - Ceramic Tile
09651 - Resilient Tile Flooring LVT / LVP
09900 - Painting

DIVISION 10 - SPECIALTIES

10200 - Louvers & Vents
10440 - Specialty Signs
10522 - Fire Extinguishers, Cabinets & Accessories
10800 - Toilet Accessories

DIVISION 11 - EQUIPMENT - (not applicable)**DIVISION 12 - FURNISHINGS**

12390 - Cabinets

DIVISION 13 - SPECIAL CONSTRUCTION - (not applicable)**DIVISION 14 - CONVEYING SYSTEMS - (not applicable)****DIVISION 15 - MECHANICAL**

15010 – Basic Mechanical Requirements
15050 – Basic Mechanical Materials and Methods
15100 – Valves
15145 – Hangers and Supports
15150 – Sanitary Waste and Vent Piping
15170 – Motors
15183 – Refrigerant Piping
15250 – Mechanical Insulation
15411 – Water Distribution Piping
15430 – Plumbing Specialties
15440 – Plumbing Fixtures
15820 – Duct Accessories
15891 – Metal Ductwork
15932 – Air Outlets and Inlets
15990 – Testing, Adjusting, and Balancing

DIVISION 16 - ELECTRICAL

16050 – Basic Electrical Materials and Methods
16060 – Grounding and Bonding
16120 – Conductors and Cables
16130 – Raceways and Boxes
16140 – Wiring Devices
16442 – Panelboards
16475 – Fuses
16476 – Disconnect Switches
16511 – Interior Lighting
16521 – Exterior Lighting

PROJECT DIRECTORY

OWNER:

Anniston Housing Authority
Gregg Fortner, Executive Director
Doug Brooks, Contract Manager
500 Glen Addie Avenue
Anniston, Alabama 36202
(256) 236-1575 telephone
(256) 236-3981 facsimile

ARCHITECT:

TDA Architects, LLC
Steven P. Taylor
125 West Columbus Street
Dadeville, Alabama 36853
(205) 823-2969 telephone
steve@tdaarchitectsllc.com

ADVERTISEMENT FOR BIDS

The Anniston Housing Authority will receive bids for: **Pine Avenue Development, Anniston Housing Authority / Housing Development Corporation, Anniston, Alabama**, until **2:00 p.m.** local time on **Tuesday, May 20th, 2025**, at the Housing Authority central office located at 500 Glen Addie Avenue, Anniston, Alabama 36201 at which time and place all will be opened and read aloud.

Scope of work will include (but is not limited to): Construction of 3 new Apartments and site improvements.

Contract documents, including drawings and technical specifications, may be obtained by contacting the following:

Owner: The Anniston Housing Authority
Attention: Mr. Gregg Fortner, Executive Director
Attention: Mr. Doug Brooks, Construction Manager
500 Glen Addie Avenue
Anniston, AL 36201
(256) 236-1575 telephone / (256) 236-3981 facsimile

Architect: TDA Architects, LLC
Attn: Steve Taylor, Architect
125 West Columbus Street
Dadeville, AL 36853
(205)-542-5315
steve@tdaarchitectsllc.com

Interested Bidders are required to review the complete version of the Contract Documents, posted on the Housing Authority's website at www.annistonhousing.org. Anyone interested in bidding the Project must contact the Architect at the above email address.

Gregg Fortner, Executive Director
The Anniston Housing Authority

Advertise on the following dates: May 3rd, 7th, 10th, 14th, & 17th, 2025.

**U.S. Department of Housing and
Urban Development**
Office of Public and Indian Housing

**Instructions to Bidders for Contracts
Public and Indian Housing Programs**

Instructions to Bidders for Contracts

Public and Indian Housing Programs

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2. Explanations and Interpretations to Prospective Bidders	1
3. Amendments to Invitations for Bids	1
4. Responsibility of Prospective Contractor	1
5. Late Submissions, Modifications, and Withdrawal of Bids	1
6. Bid Opening	2
7. Service of Protest	2
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1. Bid Preparation and Submission

(a) Bidders are expected to examine the specifications, drawings, all instructions, and, if applicable, the construction site (see also the contract clause entitled **Site Investigation and Conditions Affecting the Work** of the *General Conditions of the Contract for Construction*). Failure to do so will be at the bidders' risk.

(b) All bids must be submitted on the forms provided by the Public Housing Agency/Indian Housing Authority (PHA/IHA). Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet which requires the entry of information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of that agent's authority. (Bidders should retain a copy of their bid for their records.)

(c) Bidders must submit as part of their bid a completed form HUD-5369-A, "Representations, Certifications, and Other Statements of Bidders."

(d) All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Bid Documents," the Invitation for Bids (IFB) number, any project or other identifying number, the bidder's name, and the date and time for receipt of bids.

(e) If this solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "No Bid" in the space provided for any item on which no price is submitted.

(f) Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.

(g) Unless expressly authorized elsewhere in this solicitation, bids submitted by telegraph or facsimile (fax) machines will not be considered.

(h) If the proposed contract is for a Mutual Help project (as described in 24 CFR Part 905, Subpart E) that involves Mutual Help contributions of work, material, or equipment, supplemental information regarding the bid advertisement is provided as an attachment to this solicitation.

2. Explanations and Interpretations to Prospective Bidders

(a) Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it at least 7 days before the scheduled time for bid opening. Requests may be oral or written. Oral requests must be confirmed in writing. The only oral clarifications that will be provided will be those clearly related to solicitation procedures, i.e., not substantive technical information. No other oral explanation or interpretation will be provided. Any information given a prospective bidder concerning this solicitation will be furnished promptly to all other prospective bidders as a written amendment to the solicitation, if that information is necessary in submitting bids, or if the lack of it would be prejudicial to other prospective bidders.

(b) Any information obtained by, or provided to, a bidder other than by formal amendment to the solicitation shall not constitute a change to the solicitation.

3. Amendments to Invitations for Bids

(a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

(b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date on the bid form, or (3) by letter, telegram, or facsimile, if those methods are authorized in the solicitation. The PHA/IHA must receive acknowledgement by the time and at the place specified for receipt of bids. Bids which fail to acknowledge the bidder's receipt of any amendment will result in the rejection of the bid if the amendment(s) contained information which substantively changed the PHA's/IHA's requirements.

(c) Amendments will be on file in the offices of the PHA/IHA and the Architect at least 7 days before bid opening.

4. Responsibility of Prospective Contractor

(a) The PHA/IHA will award contracts only to responsible prospective contractors who have the ability to perform successfully under the terms and conditions of the proposed contract. In determining the responsibility of a bidder, the PHA/IHA will consider such matters as the bidder's:

- (1) Integrity;
- (2) Compliance with public policy;
- (3) Record of past performance; and
- (4) Financial and technical resources (including construction and technical equipment).

(b) Before a bid is considered for award, the bidder may be requested by the PHA/IHA to submit a statement or other documentation regarding any of the items in paragraph (a) above. Failure by the bidder to provide such additional information shall render the bidder nonresponsible and ineligible for award.

5. Late Submissions, Modifications, and Withdrawal of Bids

(a) Any bid received at the place designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it:

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail, or if authorized by the solicitation, was sent by telegram or via facsimile, and it is determined by the PHA/IHA that the late receipt was due solely to mishandling by the PHA/IHA after receipt at the PHA/IHA; or

(3) Was sent by U.S. Postal Service Express Mail Next Day Service - Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and observed holidays.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) of this provision.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U.S. or Canadian Postal Service. Both postmarks must show a legible date or the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerk to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the PHA/IHA is the time/date stamp of PHA/IHA on the proposal wrapper or other documentary evidence of receipt maintained by the PHA/IHA.

(e) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. "Postmark" has the same meaning as defined in paragraph (c) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, bidders should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and Failure by a bidder to acknowledge receipt of the envelope or wrapper.

(f) Notwithstanding paragraph (a) of this provision, a late modification of an otherwise successful bid that makes its terms more favorable to the PHA/IHA will be considered at any time it is received and may be accepted.

(g) Bids may be withdrawn by written notice, or if authorized by this solicitation, by telegram (including mailgram) or facsimile machine transmission received at any time before the exact time set for opening of bids; provided that written confirmation of telegraphic or facsimile withdrawals over the signature of the bidder is mailed and postmarked prior to the specified bid opening time. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

6. Bid Opening

All bids received by the date and time of receipt specified in the solicitation will be publicly opened and read. The time and place of opening will be as specified in the solicitation. Bidders and other interested persons may be present.

7. Service of Protest

(a) Definitions. As used in this provision:

"Interested party" means an actual or prospective bidder whose direct economic interest would be affected by the award of the contract.

"Protest" means a written objection by an interested party to this solicitation or to a proposed or actual award of a contract pursuant to this solicitation.

(b) Protests shall be served on the Contracting Officer by obtaining written and dated acknowledgement from —

[Contracting Officer designate the official or location where a protest may be served on the Contracting Officer]

(c) All protests shall be resolved in accordance with the PHA's/IHA's protest policy and procedures, copies of which are maintained at the PHA/IHA.

8. Contract Award

(a) The PHA/IHA will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the PHA/IHA considering only price and any price-related factors specified in the solicitation.

(b) If the apparent low bid received in response to this solicitation exceeds the PHA's/IHA's available funding for the proposed contract work, the PHA/IHA may either accept separately priced items (see 8(e) below) or use the following procedure to determine contract award. The PHA/IHA shall apply in turn to each bid (proceeding in order from the apparent low bid to the high bid) each of the separately priced bid deductible items, if any, in their priority order set forth in this solicitation. If upon the application of the first deductible item to all initial bids, a new low bid is within the PHA's/IHA's available funding, then award shall be made to that bidder. If no bid is within the available funding amount, then the PHA/IHA shall apply the second deductible item. The PHA/IHA shall continue this process until an evaluated low bid, if any, is within the PHA's/IHA's available funding. If upon the application of all deductibles, no bid is within the PHA's/IHA's available funding, or if the solicitation does not request separately priced deductibles, the PHA/IHA shall follow its written policy and procedures in making any award under this solicitation.

(c) In the case of tie low bids, award shall be made in accordance with the PHA's/IHA's written policy and procedures.

(d) The PHA/IHA may reject any and all bids, accept other than the lowest bid (e.g., the apparent low bid is unreasonably low), and waive informalities or minor irregularities in bids received, in accordance with the PHA's/IHA's written policy and procedures.

(e) Unless precluded elsewhere in the solicitation, the PHA/IHA may accept any item or combination of items bid.

(f) The PHA/IHA may reject any bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

(g) A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.

9. Bid Guarantee (applicable to construction and equipment contracts exceeding \$25,000)

All bids must be accompanied by a negotiable bid guarantee which shall not be less than five percent (5%) of the amount of the bid. The bid guarantee may be a certified check, bank draft, U.S. Government Bonds at par value, or a bid bond secured by a surety company acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. In the case where the work under the contract will be performed on an Indian reservation area, the bid guarantee may also be an irrevocable Letter of Credit (see provision 10, Assurance of Completion, below). Certified checks and bank drafts must be made payable to the order of the PHA/IHA. The bid guarantee shall insure the execution of the contract and the furnishing of a method of assurance of completion by the successful bidder as required by the solicitation. Failure to submit a bid guarantee with the bid shall result in the rejection of the bid. Bid guarantees submitted by unsuccessful bidders will be returned as soon as practicable after bid opening.

10. Assurance of Completion

(a) Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation. This assurance may be [Contracting Officer check applicable items] —

☒ (1) a performance and payment bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

☐ (2) separate performance and payment bonds, each for 50 percent or more of the contract price;

☐ (3) a 20 percent cash escrow;

☐ (4) a 25 percent irrevocable letter of credit; or,

☐ (5) an irrevocable letter of credit for 10 percent of the total contract price with a monitoring and disbursements agreement with the IHA (applicable only to contracts awarded by an IHA under the Indian Housing Program).

(b) Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. Individual sureties will not be considered. U.S. Treasury Circular Number 570, published annually in the Federal Register, lists companies approved to act as sureties on bonds securing Government contracts, the maximum underwriting limits on each contract bonded, and the States in which the company is licensed to do business. Use of companies listed in this circular is mandatory. Copies of the circular may be downloaded on the U.S. Department of Treasury website <http://www.fms.treas.gov/c570/index.html>, or ordered for a minimum fee by contacting the Government Printing Office at (202) 512-2168.

(c) Each bond shall clearly state the rate of premium and the total amount of premium charged. The current power of attorney for the person who signs for the surety company must be attached to the bond. The effective date of the power of attorney shall not precede the date of the bond. The effective date of the bond shall be on or after the execution date of the contract.

(d) Failure by the successful bidder to obtain the required assurance of completion within the time specified, or within such extended period as the PHA/IHA may grant based upon reasons determined adequate by the PHA/IHA, shall render the bidder ineligible for award. The PHA/IHA may then either award the contract to the next lowest responsible bidder or solicit new bids. The PHA/IHA may retain the ineligible bidder's bid guarantee.

11. Preconstruction Conference (applicable to construction contracts)

After award of a contract under this solicitation and prior to the start of work, the successful bidder will be required to attend a preconstruction conference with representatives of the PHA/IHA and its architect/engineer, and other interested parties convened by the PHA/IHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract (e.g., Equal Employment Opportunity, Labor Standards). The PHA/IHA will provide the successful bidder with the date, time, and place of the conference.

12. Indian Preference Requirements (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

(a) HUD has determined that the contract awarded under this solicitation is subject to the requirements of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e(b)). Section 7(b) requires that any contract or subcontract entered into for the benefit of Indians shall require that, to the greatest extent feasible

(1) Preferences and opportunities for training and employment (other than core crew positions; see paragraph (h) below) in connection with the administration of such contracts or subcontracts be given to qualified "Indians." The Act defines "Indians" to mean persons who are members of an Indian tribe and defines "Indian tribe" to mean any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and,

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, except that the Indian ownership must constitute not less than 51 percent of the enterprise; "Indian organization" to mean the governing body of any Indian tribe or entity established or recognized by such governing body; "Indian" to mean any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act; and Indian "tribe" to mean any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including

corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

(b) (1) The successful Contractor under this solicitation shall comply with the requirements of this provision in awarding all subcontracts under the contract and in providing training and employment opportunities.

(2) A finding by the IHA that the contractor, either (i) awarded a subcontract without using the procedure required by the IHA, (ii) falsely represented that subcontracts would be awarded to Indian enterprises or organizations; or, (iii) failed to comply with the contractor's employment and training preference bid statement shall be grounds for termination of the contract or for the assessment of penalties or other remedies.

(c) If specified elsewhere in this solicitation, the IHA may restrict the solicitation to qualified Indian-owned enterprises and Indian organizations. If two or more (or a greater number as specified elsewhere in the solicitation) qualified Indian-owned enterprises or organizations submit responsive bids, award shall be made to the qualified enterprise or organization with the lowest responsive bid. If fewer than the minimum required number of qualified Indian-owned enterprises or organizations submit responsive bids, the IHA shall reject all bids and readvertise the solicitation in accordance with paragraph (d) below.

(d) If the IHA prefers not to restrict the solicitation as described in paragraph (c) above, or if after having restricted a solicitation an insufficient number of qualified Indian enterprises or organizations submit bids, the IHA may advertise for bids from non-Indian as well as Indian-owned enterprises and Indian organizations. Award shall be made to the qualified Indian enterprise or organization with the lowest responsive bid if that bid is -

(1) Within the maximum HUD-approved budget amount established for the specific project or activity for which bids are being solicited; and

(2) No more than the percentage specified in 24 CFR 905.175(c) higher than the total bid price of the lowest responsive bid from any qualified bidder. If no responsive bid by a qualified Indian-owned economic enterprise or organization is within the stated range of the total bid price of the lowest responsive bid from any qualified enterprise, award shall be made to the bidder with the lowest bid.

(e) Bidders seeking to qualify for preference in contracting or subcontracting shall submit proof of Indian ownership with their bids. Proof of Indian ownership shall include but not be limited to:

(1) Certification by a tribe or other evidence that the bidder is an Indian. The IHA shall accept the certification of a tribe that an individual is a member.

(2) Evidence such as stock ownership, structure, management, control, financing and salary or profit sharing arrangements of the enterprise.

(f) (1) All bidders must submit with their bids a statement describing how they will provide Indian preference in the award of subcontracts. The specific requirements of that statement and the factors to be used by the IHA in determining the statement's adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement shall be rejected as nonresponsive. The IHA may require that comparable statements be provided by subcontractors to the successful Contractor, and may require the Contractor to reject any bid or proposal by a subcontractor that fails to include the statement.

(2) Bidders and prospective subcontractors shall submit a certification (supported by credible evidence) to the IHA in any instance where the bidder or subcontractor believes it is infeasible to provide Indian preference in subcontracting. The acceptance or rejection by the IHA of the certification shall be final. Rejection shall disqualify the bid from further consideration.

(g) All bidders must submit with their bids a statement detailing their employment and training opportunities and their plans to provide preference to Indians in implementing the contract; and the number or percentage of Indians anticipated to be employed and trained. Comparable statements from all proposed subcontractors must be submitted. The criteria to be used by the IHA in determining the statement(s)'s adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement(s), or that includes a statement that does not meet minimum standards required by the IHA shall be rejected as nonresponsive.

(h) Core crew employees. A core crew employee is an individual who is a bona fide employee of the contractor at the time the bid is submitted; or an individual who was not employed by the bidder at the time the bid was submitted, but who is regularly employed by the bidder in a supervisory or other key skilled position when work is available. Bidders shall submit with their bids a list of all core crew employees.

(i) Preference in contracting, subcontracting, employment, and training shall apply not only on-site, on the reservation, or within the IHA's jurisdiction, but also to contracts with firms that operate outside these areas (e.g., employment in modular or manufactured housing construction facilities).

(j) Bidders should contact the IHA to determine if any additional local preference requirements are applicable to this solicitation.

(k) The IHA [] does [] does not [Contracting Officer check applicable box] maintain lists of Indian-owned economic enterprises and Indian organizations by specialty (e.g., plumbing, electrical, foundations), which are available to bidders to assist them in meeting their responsibility to provide preference in connection with the administration of contracts and subcontracts.

**U.S. Department of Housing
and Urban Development**
Office of Public and Indian Housing

**Representations, Certifications,
and Other Statements of Bidders**
Public and Indian Housing Programs

Representations, Certifications, and Other Statements of Bidders

Public and Indian Housing Programs

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1. Certificate of Independent Price Determination

(a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

[insert full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[] [Contracting Officer check if following paragraph is applicable]

(d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding \$50,000)

(1) Each bidder shall execute, in the form provided by the PHA/IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" [] is, [] is not included with the bid.

2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) [] has, [] has not employed or retained any person or company to solicit or obtain this contract; and

(2) [] has, [] has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding \$100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

- (a) Result in an unfair competitive advantage to the bidder; or,
- (b) Impair the bidder's objectivity in performing the contract work.

[] In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of [Contracting Officer insert time period] calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a) [] is, [] is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b) [] is, [] is not a women-owned business enterprise. "Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c) [] is, [] is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

- | | |
|------------------------|------------------------------|
| [] Black Americans | [] Asian Pacific Americans |
| [] Hispanic Americans | [] Asian Indian Americans |
| [] Native Americans | [] Hasidic Jewish Americans |

8. Indian-Owned Economic Enterprise and Indian Organization Representation (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

The bidder represents and certifies that it:

(a) [] is, [] is not an Indian-owned economic enterprise. "Economic enterprise," as used in this provision, means any commercial, industrial, or business activity established or organized for the purpose of profit, which is at least 51 percent Indian owned. "Indian," as used in this provision, means any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act.

(b) [] is, [] is not an Indian organization. "Indian organization," as used in this provision, means the governing body of any Indian tribe or entity established or recognized by such governing body. Indian "tribe" means any Indian tribe, band, group, pueblo, or

community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

9. Certification of Eligibility Under the Davis-Bacon Act (applicable to construction contracts exceeding \$2,000)

(a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

10. Certification of Nonsegregated Facilities (applicable to contracts exceeding \$10,000)

(a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.

(b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

(d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed \$10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed subcontractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

Note: The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

11. Clean Air and Water Certification (applicable to contracts exceeding \$100,000)

The bidder certifies that:

(a) Any facility to be used in the performance of this contract [] is, [] is not listed on the Environmental Protection Agency List of Violating Facilities:

(b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,

(c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

12. Previous Participation Certificate (applicable to construction and equipment contracts exceeding \$50,000)

(a) The bidder shall complete and submit with his/her bid the Form HUD-2530, "Previous Participation Certificate." If the successful bidder does not submit the certificate with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the certificate by that date may render the bid nonresponsive. No contract award will be made without a properly executed certificate.

(b) A fully executed "Previous Participation Certificate" [] is, [] is not included with the bid.

13. Bidder's Signature

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

(Signature and Date)

(Typed or Printed Name)

(Title)

(Company Name)

(Company Address)

General Conditions for Construction Contracts - Public Housing Programs

U.S. Department of Housing and Urban Development
Office of Public and Indian Housing
OMB Approval No. 2577-0157 (exp. 1/31/2017)

Applicability. This form is applicable to any construction/development contract greater than \$100,000.

This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 24 CFR 85.36, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 135. The form is required for construction contracts awarded by Public Housing Agencies (PHAs).

The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, HAs would be unable to enforce their contracts.

Public reporting burden for this collection of information is estimated to average 1.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Responses to the collection of information are required to obtain a benefit or to retain a benefit.

The information requested does not lend itself to confidentiality.

HUD may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB number.

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1. Definitions

- (a) "Architect" means the person or other entity engaged by the PHA to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When a PHA uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.
- (b) "Contract" means the contract entered into between the PHA and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor, any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.
- (c) "Contracting Officer" means the person delegated the authority by the PHA to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of the PHA in all dealings with the Contractor.
- (d) "Contractor" means the person or other entity entering into the contract with the PHA to perform all of the work required under the contract.
- (e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.
- (f) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Contract (ACC), to provide financial assistance to the PHA, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to the PHA for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.
- (g) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.
- (h) "PHA" means the Public Housing Agency organized under applicable state laws which is a party to this contract.
- (i) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.
- (l) "Work" means materials, workmanship, and manufacture and fabrication of components.
- (a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the PHA pursuant to the clause entitled Availability and Use of Utility Services herein.
- (b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least [] (12 percent unless otherwise indicated) of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the PHA.
- (c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.
- (d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save the PHA, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.
- (e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.
- (f) The Contractor shall confine all operations (including storage of materials) on PHA premises to areas authorized or approved by the Contracting Officer.
- (g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the PHA and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.
- (h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

3. Architect's Duties, Responsibilities, and Authority

- (a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

2. Contractor's Responsibility for Work

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- (b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.
- (c) The Architect's duties and responsibilities may include but shall not be limited to:
- (1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to the PHA which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;
 - (2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;
 - (3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,
 - (4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

4. Other Contracts

The PHA may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with PHA employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PHA employees

Construction Requirements

5. Pre-construction Conference and Notice to Proceed

- (a) Within ten calendar days of contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of the PHA, its Architect, and other interested parties convened by the PHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. The PHA will provide the Contractor with the date, time, and place of the conference.
- (b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice.

6. Construction Progress Schedule

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring labor, materials, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments or take other remedies under the contract until the Contractor submits the required schedule.
- (b) The Contractor shall enter the actual progress on the chart as required by the Contracting Officer, and immediately deliver three copies of the annotated schedule to the Contracting Officer. If the Contracting Officer determines, upon the basis of inspection conducted pursuant to the clause entitled Inspection and Acceptance of Construction, herein that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the PHA. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the Contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Default clause of this contract.

7. Site Investigation and Conditions Affecting the Work

- (a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is

reasonably ascertainable from an inspection of the site, including all exploratory work done by the PHA, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the PHA.

- (b) The PHA assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the PHA. Nor does the PHA assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

8. Differing Site Conditions

- (a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.
- (b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.
- (c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.
- (d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

9. Specifications and Drawings for Construction

- (a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be

promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

- (b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.
- (c) Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".
- (d) "Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.
- (e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.
- (f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.
- (g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be

required in the planning and production of the work. Such requests may be submitted as the need arises, but each such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

- (h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

10. As-Built Drawings

- (a) "As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. "As-built drawings" shall be synonymous with "Record drawings."
- (b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.
- (c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.

11. Material and Workmanship

- (a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.
- (b) Approval of equipment and materials.
 - (1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the

machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

- (2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.
- (3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.
- (4) Approval of a sample shall not constitute a waiver of the PHA right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.
- (5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.
- (6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.
- (c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.

12. Permits and Codes

- (a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any

waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer. Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

- (b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

13. Health, Safety, and Accident Prevention

- (a) In performing this contract, the Contractor shall:
- (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
 - (2) Protect the lives, health, and safety of other persons;
 - (3) Prevent damage to property, materials, supplies, and equipment; and,
 - (4) Avoid work interruptions.
- (b) For these purposes, the Contractor shall:
- (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and
 - (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.
- (c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.
- (d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.
- (e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

14. Temporary Heating

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the PHA in the condition and at the time required by the specifications.

15. Availability and Use of Utility Services

- (a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.
- (b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements

- (a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.
- (b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- (c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.
- (d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.
- (e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

- (f) New work which connects to existing work shall correspond in all respects with that to which it connects and/or be similar to existing work unless otherwise required by the specifications.
- (g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.
- (h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.
- (i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.
- (j) The Contractor shall indemnify and save harmless the PHA from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which the PHA may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.
- (k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

17. Temporary Buildings and Transportation of Materials

- (a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the PHA. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- (b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

18. Clean Air and Water

The contractor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

19. Energy Efficiency

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

20. Inspection and Acceptance of Construction

- (a) Definitions. As used in this clause -
 - (1) "Acceptance" means the act of an authorized representative of the PHA by which the PHA approves and assumes ownership of the work performed under this contract. Acceptance may be partial or complete.
 - (2) "Inspection" means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.
 - (3) "Testing" means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.
- (b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to PHA inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.
- (c) PHA inspections and tests are for the sole benefit of the PHA and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of the PHA after acceptance of the completed work under paragraph (j) below.
- (d) The presence or absence of the PHA inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer's written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.
- (e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The PHA may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The PHA shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

- (f) The PHA may conduct routine inspections of the construction site on a daily basis.
- (g) The Contractor shall, without charge, replace or correct work found by the PHA not to conform to contract requirements, unless the PHA decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.
- (h) If the Contractor does not promptly replace or correct rejected work, the PHA may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.
- (i) If any work requiring inspection is covered up without approval of the PHA, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, the PHA considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.
- (j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, the PHA will promptly arrange for the inspection. Unless otherwise specified in the contract, the PHA shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the PHA's right under any warranty or guarantee.

21. Use and Possession Prior to Completion

- (a) The PHA shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the PHA intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The PHA's possession or use shall not be deemed an acceptance of any work under the contract.
- (b) While the PHA has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the PHA's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas

occupied without proper remuneration therefore. If prior possession or use by the PHA delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

22. Warranty of Title

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

23. Warranty of Construction

- (a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of _____ (one year unless otherwise indicated) from the date of final acceptance of the work. If the PHA takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the PHA takes possession.
- (b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to PHA-owned or controlled real or personal property when the damage is the result of—
 - (1) The Contractor's failure to conform to contract requirements; or
 - (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.
- (c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.
- (d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.
- (e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the PHA shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- (f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:
 - (1) Obtain all warranties that would be given in normal commercial practice;
 - (2) Require all warranties to be executed in writing, for the benefit of the PHA; and,
 - (3) Enforce all warranties for the benefit of the PHA.
- (g) In the event the Contractor's warranty under paragraph (a) of this clause has expired, the PHA may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

- (h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defect of material or design furnished by the PHA nor for the repair of any damage that results from any defect in PHA furnished material or design.
- (i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligation other than specifically to correct the work.
- (j) This warranty shall not limit the PHA's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.

24. Prohibition Against Liens

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

Administrative Requirements

25. Contract Period

this contract within _____ calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

26. Order of Provisions

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

27. Payments

- (a) The PHA shall pay the Contractor the price as provided in this contract.
- (b) The PHA shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. The PHA may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.
- (c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a

basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to HUD. If the contract covers more than one project, the Contractor shall furnish a separate breakdown for each. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

- (d) The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved

submitted not later than _____ days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

- (e) Along with each request for progress payments and the required estimates, the Contractor shall furnish the following certification, or payment shall not be made: I hereby certify, to the best of my knowledge and belief, that:

- (1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;
- (2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,
- (3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

Name:

Title:

Date:

- (f) Except as otherwise provided in State law, the PHA shall retain ten (10) percent of the amount of progress payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, the PHA shall reinstate the ten (10) percent (or other percentage as provided in State law) retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.
- (g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments.

Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contracting Officer may require to assure the protection of the PHA's interest in such materials. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the PHA.

- (h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the PHA, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of the PHA to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of the PHA in the course of their employment, the Contractor shall restore such damaged work without cost to the PHA and to seek redress for its damage only from those who directly caused it.
- (i) The PHA shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against the PHA arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.
- (j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.
- (k) The PHA shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of the PHA to withhold moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

28. Contract Modifications

- (a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.
- (b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or

responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

- (c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

29. Changes

- (a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
 - (1) In the specifications (including drawings and designs);
 - (2) In the method or manner of performance of the work;
 - (3) PHA-furnished facilities, equipment, materials, services, or site; or,
 - (4) Directing the acceleration in the performance of the work.
- (b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.
- (c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.
- (d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.
- (e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.
- (f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

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- (1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.
 - (2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.
 - (3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change. The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.
 - (g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.
 - (h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.
 - (i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.
 - (j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

30. Suspension of Work

- (a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the PHA.
- (b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment shall be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have

been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

- (c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and, (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

31. Disputes

- (a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.
- (b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.
- (c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.
- (d) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.
- (e) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.
- (f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

32. Default

- (a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to

proceed with the work (or separable part of the work) that has been delayed. In this event, the PHA may take over the work and complete it, by contract or otherwise, and may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the PHA resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

- (b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—
 - (1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of the PHA or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with the PHA, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and
 - (2) The Contractor, within days (10 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.
- (c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of the PHA.

33. Liquidated Damages

- (a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor shall pay to the PHA as liquidated damages, the sum of \$ _____ [Contracting Officer insert amount] for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due the PHA. The Contractor remains liable for damages caused other than by delay.
- (b) If the PHA terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final

completion of the work together with any increased costs occasioned the PHA in completing the work.

- (c) If the PHA does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

34. Termination for Convenience

- (a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.
- (b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.
- (c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.
- (d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

35. Assignment of Contract

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from the PHA under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

36. Insurance

- (a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:
 - (1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.
 - (2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than \$ _____ [Contracting Officer insert amount]

per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "daims- made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

- (3) Automobile Liability on owned and non -owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than \$ _____ [Contracting Officer insert amount] per occurrence.

- (b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.
- (c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non-renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

37. Subcontracts

- (a) Definitions. As used in this contract -
- (1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

- (2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.

- (b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.
- (c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.
- (d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.
- (e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the PHA or between the subcontractor and HUD.

38. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

- (a) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
- (b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;
- (c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;
- (d) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and
- (e) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

39. Equal Employment Opportunity

During the performance of this contract, the Contractor agrees as follows:

- (a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap.
- (b) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, (1) employment, (2) upgrading, (3) demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship.

- (c) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.
- (d) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.
- (e) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- (f) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.
- (g) The Contractor shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (h) In the event of a determination that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, or Federally assisted construction contracts under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.
- (i) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.
- (j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.

40. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.

- (a) The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- (b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.
- (c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.
- (d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.
- (e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.
- (f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.
- (g) With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b) agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

41. Interest of Members of Congress

No member of or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

42. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees

No member, officer, or employee of the PHA, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which the PHA was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

43. Limitations on Payments made to Influence Certain Federal Financial Transactions

- (a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.
- (b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

44. Royalties and Patents

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save the PHA harmless from loss on account thereof; except that the PHA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

45. Examination and Retention of Contractor's Records

- (a) The PHA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.
- (b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding \$10,000.
- (c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the PHA, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

46. Labor Standards - Davis-Bacon and Related Acts

If the total amount of this contract exceeds \$2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

- (a) Minimum Wages.
 - (1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the regular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall

be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- (2) (i) Any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
- (iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.
- (iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.
- (3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the

amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

- (b) Withholding of funds. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.
- (c) Payrolls and basic records.
- (1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)
- (ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;
- (B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3; and
- (C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.
- (iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.
- (3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to

make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

- (d) (1) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by OATELS or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (2) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under

the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.
- (e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.
- (f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.
- (g) Compliance with Davis-Bacon and related Act requirements. All rulings and interpretations of the Davis-Bacon and related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.
- (i) Certification of eligibility.
 - (1) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

- (2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.
- (j) Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.
 - (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, including watchmen and guards, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.
 - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in subparagraph (j)(1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic (including watchmen and guards) employed in violation of the provisions set forth in subparagraph (j)(1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in subparagraph (j)(1) of this clause.
 - (3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in subparagraph (j)(2) of this clause.
- (k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

47. Non-Federal Prevailing Wage Rates

- (a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds:
 - (1) The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;
- (b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL-recognized State Apprenticeship Agency; or
- (c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

48. Procurement of Recovered Materials.

- (a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The Contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time; (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.
- (b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of \$10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of \$10,000 of the item both under and outside that contract.

SUPPLEMENTAL GENERAL CONDITIONS

1. Reference Clause 10, (HUD 5369) - Assurance of Completion, Subparagraph (a)., Item (1):
 - (1) A performance bond and a payment bond in a penal sum of 100 percent (100%) of the contract price are required for execution of the contract. Separate bonds for performance and payment are required.
2. Reference Clause 27, (HUD 5370) - Payments, Subparagraph (f) Change to Read:
 - (f) Except as otherwise provided in State law, the PHA/IHA shall retain ten (10) percent of the amount of progress payments until completion and acceptance of all work under the contract.

REVISED BID FORM

Pine Avenue Development
Anniston Housing Authority / Housing Development Corporation

Proposal of _____

(hereinafter called "Bidder") (a/an _____ corporation/a partnership/an individual
(State) (Strike out inapplicable terms)

doing business as _____) to

Anniston Housing Authority / Housing Development Corporation (hereinafter called "Owner").

Gentlemen:

The Bidder, in compliance with your invitation for bids for the **Pine Avenue Development**. The Bidder, having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project within **365** consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages, the sum of **\$100** for each consecutive calendar day thereafter as hereinafter provided in Paragraph 33 of "General Conditions of the Contract for Construction" HUD-5370 (11-92).

Bidder acknowledges receipt of the following addenda:

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

BASE PROPOSAL: Bidder agrees to perform all of the work as described in the specifications and shown on the plans for each site as follows:

TOTAL BASE BID: _____

_____ (\$_____).

(Amounts shall be shown in both words and figures. In case of discrepancy, amount shown in words shall govern.)

ALTERNATE PROPOSALS: (N/A)

UNIT PRICES: (see Unit Prices – Bid Attachment)

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The bidder agrees that this bid shall be good and may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, Bidder will execute the formal contract and deliver to the owner the Performance Bond, Labor, and Material Payment Bond and proof of required insurance coverage within 10 days of notification as required by Clause 9 "Instruction to Bidders for contracts Public and Indian Housing Programs" HUD-5369 (10/2002).

The bid security attached in the sum of _____ (\$ _____) is to become the property of the Owner in the event the contract and bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

Respectfully Submitted:

NOTE: If bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

AL. G.C. LICENSE NO.: _____ PHONE NO.: _____

CONTRACTOR: _____

BUSINESS ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

BIDDER'S SIGNATURE: _____ DATE: _____

(Seal if Bid is by a Corporation)

BID BOND

KNOW all by these presents, that we _____ as Principal,

 (Contractor)
 hereinafter called the Principal, and _____ a corporation

 (Bonding Company)
 duly organized under the laws of the _____ as Surety, hereinafter called the

 (State Organized)
 Surety, are held and firmly bound unto **Anniston Housing Authority / Housing Development Corporation** for the sum of _____ Dollars (\$ _____)
 for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for **Pine Avenue Development.**

NOW, therefore, if the **Anniston Housing Authority / Housing Development Corporation** shall accept the bid of the Principal and the Principal shall enter into a contract with the **Anniston Housing Authority / Housing Development Corporation** in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract documents with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay the **Anniston Housing Authority / Housing Development Corporation** the difference not to exceed the penalty hereof between the amount hereof between the amount specified in said bid and such amount hereof between the amount specified in said bid and such larger amount for which the **Anniston Housing Authority / Housing Development Corporation** may in good faith contract with another party to work covered by said bid or an appropriate required amount as specified in the Invitation for Bids, then this obligation shall be null and void, otherwise to remain in full force and effect.

BID BOND
(continued)

Signed and sealed this _____ day of _____, 2025.

(Principal) (Seal)

(Witness)

(Title)

(Witness)

(Bonding Company)

BY: _____

Previous Participation Certification

OMB Approval No. 2502-0118

(Exp. 05/31/2019)

US Department of Housing and Urban Development Office of Housing/Federal Housing Commissioner

US Department of Agriculture Farmers Home Administration

Part I to be completed by Controlling Participant of Covered Projects (See instructions) Reason for submission:		For HUD HQ/FmHA use only	
1. Agency name and City where the application is filed		2. Project Name, Project Number, City and Zip Code	
3. Loan or Contract amount \$	4. Number of Units or Beds	5. Section of Act	6. Type of Project (check one) <input type="checkbox"/> Existing <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Proposed (New)

7. List all proposed Controlling Participants and attach organization chart for all organizations

Name and address of Principals and Affiliates (Name: Last, First, Middle Initial) proposing to participate	8 Role of Each Principal in Project	9. SSN or IRS Employer Number

Certifications: The controlling participants(s) listed above hereby apply to HUD or USDA FmHA, as the case maybe, for approval to participate as controlling participant(s) in the role(s) and project listed above. The controlling participant(s) each certify that all the statements made on this form are true, complete and correct to the best of their knowledge and belief and are made in good faith, including any Exhibits attached to this form.

Warning: HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. The controlling participants(s) further certify that to the best of their knowledge and belief:

- Schedule A contains a listing, for the last ten years, of every project assisted or insured by HUD, USDA FmHA and/or State and local government housing finance agencies in which the controlling participant(s) have participated or are now participating.
- For the period beginning 10 years prior to the date of this certification, and except as shown on the certification:
 - No mortgage on a project listed has ever been in default, assigned to the Government or foreclosed, nor has it received mortgage relief from the mortgagee;
 - The controlling participants have no defaults or noncompliance under any Conventional Contract or Turnkey Contract of Sale in connection with a public housing project;
 - There are no known unresolved findings as a result of HUD audits, management reviews or other Governmental investigations concerning the controlling participants or their projects;
 - There has not been a suspension or termination of payments under any HUD assistance contract due to the controlling participant's fault or negligence;
 - The controlling participants have not been convicted of a felony and are not presently the subject of a complaint or indictment charging a felony. (A felony is defined as any offense punishable by imprisonment for a term exceeding one year, but does not include any offense classified as a misdemeanor under the laws of a State and punishable by imprisonment of two years or less);
 - The controlling participants have not been suspended, debarred or otherwise restricted by any Department or Agency of the Federal Government or of a State Government from doing business with such Department or Agency;
 - The controlling participants have not defaulted on an obligation covered by a surety or performance bond and have not been the subject of a claim under an employee fidelity bond;
- All the names of the controlling participants who propose to participate in this project are listed above.
- None of the controlling participants is a HUD/FmHA employee or a member of a HUD/FmHA employee's immediate household as defined in Standards of Ethical Conduct for Employees of the Executive Branch in 5 C.F.R. Part 2635 (57 FR 35006) and HUD's Standard of Conduct in 24 C.F.R. Part 0 and USDA's Standard of Conduct in 7 C.F.R. Part 0 Subpart B.
- None of the controlling participants is a participant in an assisted or insured project as of this date on which construction has stopped for a period in excess of 20 days or which has been substantially completed for more than 90 days and documents for closing, including final cost certification, have not been filed with HUD or FmHA.
- None of the controlling participants have been found by HUD or FmHA to be in noncompliance with any applicable fair housing and civil rights requirements in 24 CFR 5.105(a). (If any controlling participants have been found to be in noncompliance with any requirements, attach a signed statement explaining the relevant facts, circumstances, and resolution, if any).
- None of the controlling participants is a Member of Congress or a Resident Commissioner nor otherwise prohibited or limited by law from contracting with the Government of the United States of America.
- Statements above (if any) to which the controlling participant(s) cannot certify have been deleted by striking through the words with a pen, and the controlling participant(s) have initialed each deletion (if any) and have attached a true and accurate signed statement (if applicable) to explain the facts and circumstances.

Name of Controlling Participant	Signature of Controlling Participant	Certification Date (mm/dd/yyyy)	Area Code and Tel. No.
This form prepared by (print name)		Area Code and Tel. No.	

Previous Participation Certification

OMB Approval No. 2502-0118

(Exp. 05/31/2019)

Schedule A: List of Previous Projects and Section 8 Contracts. Below is a complete list of the controlling participants' previous participation projects and participation history in multifamily Housing programs of HUD/FmHA, State and local Housing Finance Agencies. **Note:** Read and follow the instruction sheet carefully. Make full disclosure. Add extra sheets if you need more space. Double check for accuracy. If no previous projects, write by your name, **"No previous participation, First Experience"**.

1. Controlling Participants' Name (Last, First)	2. List of previous projects (Project name, project ID and, Govt. agency involved)	3. List Participants' Role(s) (indicate dates participated, and if fee or identity of interest participant)	4. Status of loan (current, defaulted, assigned, foreclosed)	5. Was the Project ever in default during your participation Yes No If yes, explain		6. Last MOR rating and Physical Insp. Score and date

Part II- For HUD Internal Processing Only

Received and checked by me for accuracy and completeness; recommend approval or refer to Headquarters after checking appropriate box.

Date (mm/dd/yyyy)	Tel No. and area code	<input type="checkbox"/> A. No adverse information; form HUD-2530 approval recommended. <input type="checkbox"/> B. Name match in system	<input type="checkbox"/> C. Disclosure or Certification problem <input type="checkbox"/> D. Other (attach memorandum)
Staff	Processing and Control		
Signature of authorized reviewer		Signature of authorized reviewer	Approved <input type="checkbox"/> Yes <input type="checkbox"/> No
			Date (mm/dd/yyyy)

Instructions for Completing the Previous Participation Certificate, form HUD-2530

Carefully read these instructions and the applicable regulations. A copy of those regulations published at 24 C.F.R. part 200, subpart H, can be obtained on-line at www.gpo.gov and from the Account Executive at any HUD Office. Type or print neatly in ink when filling out this form. Mark answers in all blocks of the form. If the form is not filled completely, it will delay approval of your application.

Attach extra sheets as you need them. Be sure to indicate "Continued on Attachments" wherever appropriate. Sign each additional page that you attach if it refers to you or your record. **Carefully read the certification before you sign it.** Any questions regarding the form or how to complete it can be answered by your HUD Account Executive.

Purpose: This form provides HUD with a certified report of all previous participation in HUD programs by those parties making application. The information requested in this form is used by HUD to determine if you meet the standards established to ensure that all controlling participants in HUD projects will honor their legal, financial and contractual obligations and are acceptable risks from the underwriting standpoint of an insurer, lender or governmental agency. HUD requires that you certify your record of previous participation in HUD/USDA-FmHA, State and Local Housing Finance Agency projects by completing and signing this form, before your project application or participation can be approved.

HUD approval of your certification is a necessary precondition for your participation in the project and in the capacity that you propose. If you do not file this certification, do not furnish the information requested accurately, or do not meet established standards, HUD will not approve your certification.

Note that approval of your certification does not obligate HUD to approve your project application, and it does not satisfy all other HUD program requirements relative to your qualifications.

Who Must Sign and File Form HUD-2530: Form HUD-2530 must be completed and signed by all Controlling Participants of Covered Projects, as such terms are defined in 24 CFR 200.212, and as further clarified by the Processing Guide referenced in 24 CFR 200.210(b) and made available on the HUD website at: http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/mfh/prevparticipation.

Where and When Form HUD-2530 Must Be Filed: The original of this form must be submitted to the HUD Office where your project application will be processed at the same time you file your initial project application. This form must be filed with applications for projects listed in 24 CFR 200.214 and for the Triggering Events listed at 24 CFR 200.218.

Review of Adverse Determination: If approval of your participation in a HUD project is denied, withheld, or conditionally granted on the basis of your record of previous participation, you will be notified by the HUD Office. You may request reconsideration in accordance with 24 CFR 200.222 and further clarified by the Processing Guide. Request must be made in writing within 30 days from your receipt of the notice of determination.

Specific Line Instructions are set forth in the Processing Guide.

The Department of Housing and Urban Development (HUD) is authorized to collect this information by law (42 U.S.C. 3535(d) and 24 C.F.R. 200.217) and by regulation at 24 CFR 200.210. This information is needed so that principals applying to participate in multifamily programs can become HUD-approved controlling participants. The information you provide will enable HUD to evaluate your record with respect to established standards of performance, responsibility and eligibility. Without prior approval, a controlling participant may not participate in a proposed or existing multifamily or healthcare project. HUD uses this information to evaluate whether or not controlling participants pose an unsatisfactory underwriting risk. The information is used to evaluate the potential controlling participants and approve only individuals and organizations that will honor their legal, financial and contractual obligations.

Privacy Act Statement: The Housing and Community Development Act of 1987, 42 U.S.C. 3543 requires persons applying for a Federally-insured or guaranteed loan to furnish his/her Social Security Number (SSN). HUD must have your SSN for identification of your records. HUD may use your SSN for automated processing of your records and to make requests for information about you and your previous records with other public agencies and private sector sources. HUD may disclose certain information to Federal, State and local agencies when relevant to civil, criminal, or regulatory investigations and prosecutions. It will not be otherwise disclosed or released outside of HUD, except as required and permitted by law. You must provide all of the information requested in this application, including your SSN.

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

A response is mandatory. Failure to provide any of the information will result in your disapproval of participation in this HUD program.

NON-COLLUSIVE AFFIDAVIT
(Contractor's form)

State of _____

County of _____

_____, being first duly sworn, deposes and says that
he is _____, the party making the foregoing proposal or bid,
(a partner or officer of the firm, etc.)

that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against **Anniston Housing Authority / Housing Development Corporation** of any

(Local Housing Authority)

person interested in the proposed contract and that all statements in said proposal or bid are true.

(Bidder, if the bidder is individual;
Partner, if the bidder is a partnership;
Officer, if the bidder is a corporation)

Notary Public

Subscribed and sworn to before me this _____ day of _____, 2023.

My commission expires _____.

NON-COLLUSIVE AFFIDAVIT
(Subcontractor's form)

State of _____

County of _____

_____, being first duly sworn, deposes and says that
he is _____, the party making the foregoing proposal or bid,
(a partner or officer of the firm, etc.)

that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, or to fix overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against **Anniston Housing Authority / Housing Development Corporation** of any

(Local Housing Authority)

person interested in the proposed contract and that all statements in said proposal or bid are true.

(Bidder, if the bidder is individual;
Partner, if the bidder is a partnership;
Officer, if the bidder is a corporation)

Notary Public

Subscribed and sworn to before me this _____ day of _____, 2023.

My commission expires _____.

PERFORMANCE BOND

Bond No. _____.

KNOW all by these presents that _____

(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called Contractor, and _____,
(Bonding Company)a corporation duly organized under the laws of the state of _____, a Surety,
(State Organized)hereinafter called Surety, are held and firmly bound unto the **Anniston Housing Authority / Housing Development Corporation**, as Obligee, in the amount
of _____ Dollars

(\$ _____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 2025, entered into a contract with the **Anniston Housing Authority / Housing Development Corporation** for **Pine Avenue Development** in accordance with drawings and specifications prepared by TDA Architects, LLC, 125 West Columbus Street, Dadeville AL 36853, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

Now, therefore, the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract then this obligation shall be null and void; otherwise it shall remain in full force and effect. The Surety hereby waives notice of any such alteration or extension of time made by the **Anniston Housing Authority / Housing Development Corporation**, and its obligation is not affected by any such alteration or extension provided the same is within the scope of the Contract. Whenever Contractor shall be, and is declared by, the **Anniston Housing Authority / Housing Development Corporation**, to be in default under the Contract, the **Anniston Housing Authority / Housing Development Corporation**, having performed the **Anniston Housing Authority / Housing Development Corporation**.

obligations thereunder, the Surety may promptly remedy the default or shall promptly:

- 1) Complete the Contract in accordance with its terms and conditions; or
- 2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the **Anniston Housing Authority / Housing Development**

Corporation, and the Surety jointly of the lowest responsive, responsible bidder, arrange for a Contract between such bidder and the **Anniston Housing Authority / Housing Development Corporation**, and make available as work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term, "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the **Anniston Housing Authority / Housing Development Corporation**, to Contractor under the Contract and any amendments thereunto, less the amount properly paid the **Anniston Housing Authority / Housing Development Corporation** by the Contractor. No right of action shall accrue on this bond to or for the use of any person or corporation other than the **Anniston Housing Authority / Housing Development Corporation** successors of the **Anniston Housing Authority / Housing Development Corporation**.

Signed and sealed this _____ day of _____, 2025.

(Witness)

(Principal) (Seal)

(Title) (Bonding Company)

(Witness)

BY: _____
(Attorney-in-Fact)

LABOR AND MATERIAL PAYMENT BOND

Bond No. _____

KNOW all by these presents that _____

as

(Here insert full name and address or legal title of Contractor)

Principal, hereinafter called Principal, and _____, a

corporation duly organized under the laws of the state of _____, as Obligee,
(State Organized)hereinafter called the **Anniston Housing Authority / Housing Development Corporation** for
the use and benefit of claimants as herein below defined, in the amount of
Dollars (\$ _____)for the payment whereof Principal and Surety bind themselves, their heirs, executors,
administrators, successors and assigns, jointly and severally, firmly by these presents.WHEREAS, Principal has by written agreement dated _____, 2025, entered into a
contract with the **Anniston Housing Authority / Housing Development Corporation** for **Pine**
Avenue Development.

(Describe project and insert project number)

in accordance with drawings and specifications prepared by TDA Architects, LLC, 125 West
Columbus Street, Dadeville, Alabama 36853, which contract is by reference made a part hereof,
and is hereinafter referred to as the Contract.NOW, therefore, the condition of this obligation is such that, if promptly make payment to all claim-
ants as hereinafter defined, for all labor and material used or reasonably required for use in the
performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force
and effect, subject, however, to the following conditions:

- 1) A claimant is defined as one having a direct contract with the Principal or with a subcontractor of
the Principal for labor, material, or both, used or reasonably required for use in the performance
of the Contract, labor and material being construed to include that part of water, gas, power,
light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the
Contract.
- 2) The above-named Principal and Surety hereby jointly and severally agree with the **Anniston**
Housing Authority / Housing Development Corporation that every claimant as herein
defined, who has not been paid in full before the expiration of a period of ninety (90) days after

the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The **Anniston Housing Authority / Housing Development Corporation** shall not be liable for payment of any costs or expenses of any such suit.

- 3) No suit or action shall be commenced herein under by any claimant:
- a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: the Principal, the **Anniston Housing Authority / Housing Development Corporation**, or the Surety above named, within ninety (90) days after such claimant did or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be personally served or served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal at any place the Principal maintains an office or conducts its business.
 - b) After the expiration of one (1) year following the date on which the last of the labor was performed or material was supplied by the party bringing suit.
 - c) Other than in a court of competent jurisdiction for the county or district in which the construction contract was to be performed.
- 4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith herein under, inclusive of the payment or payments made in good faith herein under, inclusive of the payment by Surety of mechanics; liens which may be filled or record against said improvement, weather or not claim for the amount of such lien be presented under the against this bond.

Signed and sealed this _____ day of _____, 2025.

(Witness)

(Principal)

(Seal)

(Bonding Company)

(Title)

(Witness)

BY: _____
(Attorney-in-Fact)

CONTRACT

THIS AGREEMENT, made this _____ day of _____, **2023**, by and between **Anniston Housing Authority / Housing Development Corporation**, herein called "Owner", acting herein through its **Contracting Officer**, and _____, a corporation of _____, County of _____, and State of _____, herein called "Contractor".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER. The CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

**Pine Avenue Development
Anniston Housing Authority / Housing Development Corporation
Anniston, Alabama**

hereinafter called the Project, for the sum of _____ dollars (**\$ _____**) and all extra work in connection therewith, under the terms as stated in the General and Special Conditions of the Contract; and at its own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and Special Conditions of the Contract, the plans, which include all maps, plats, blue prints, and other drawings and printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by **TDA Architects, LLC.**, herein entitled the Architect/Engineer.

The CONTRACTOR hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" by the OWNER and to fully complete the project within **120** consecutive calendar days thereafter. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of **\$ 100** per day thereafter as hereinafter provided in Paragraph 17 of "Instructions to Bidders".

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Paragraph 8, "Payments to Contractor," of the General Conditions.

IN WITNESS WHEREOF, the parties to those present have executed this contract in three (3) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(Seal)

Anniston Housing Authority / Housing
Development Corporation

Attest:

(Owner)

(Secretary)

By: _____
Gregg Fortner

(Witness)

Executive Director
(Title)

(Seal)

(Contractor)

(Secretary)

By: _____

(Witness)

President
(Title)

(Address)

NOTE: Secretary of the Owner should attest. If Contractor is a corporation, Secretary should attest.

"General Decision Number: AL20220038 02/25/2022

Superseded General Decision Number: AL20210038

State: Alabama

Construction Type: Residential

County: Calhoun County in Alabama.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2022.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Modification Number	Publication Date
0	01/07/2022
1	02/25/2022

* SUAL2007-122 10/23/2007

	Rates	Fringes
BRICKLAYER.....	\$ 13.29 **	0.00
CARPENTER, Includes Form Work....	\$ 12.94 **	0.27
CEMENT MASON/CONCRETE FINISHER...	\$ 9.78 **	0.00
ELECTRICIAN.....	\$ 11.91 **	0.00
IRONWORKER, ORNAMENTAL.....	\$ 10.46 **	0.00
IRONWORKER, STRUCTURAL.....	\$ 11.91 **	3.40
LABORER: Common or General.....	\$ 8.38 **	0.00
LABORER: Landscape.....	\$ 7.66 **	0.00
LABORER: Mason Tender - Cement/Concrete.....	\$ 7.88 **	0.00
LABORER: Pipelayer.....	\$ 9.00 **	0.00
OPERATOR: Backhoe.....	\$ 11.20 **	0.00
OPERATOR: Bulldozer.....	\$ 12.60 **	0.00
OPERATOR: Loader (Front End)....	\$ 12.52 **	0.00
PAINTER.....	\$ 9.38 **	0.00
PLUMBER.....	\$ 12.27 **	0.00
ROOFER, Includes Built Up, Metal, Shake & Shingle, and Single Ply Roofs.....	\$ 10.00 **	0.00
SHEET METAL WORKER, Includes HVAC Duct Installation.....	\$ 13.17 **	0.00
TRUCK DRIVER.....	\$ 9.86 **	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$15.00) or 13658 (\$11.25). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the

most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter

* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

**FORM OF
ADVERTISEMENT OF COMPLETION**

Legal Notice

In accordance with Section 16, Title 50 Code of Alabama, 1940, notice is hereby given that
_____ Contractor(s) have completed
the Contract for (Construction, Reconstruction, Alteration, Equipment, or Improvements) of

(insert location data in County of City)

for **The Anniston Housing Authority**, Owner(s), and have made request for final settlement of
said Contract.

Contractor(s)

SECTION 3 CLAUSE

All Section 3 covered contracts shall include the following clause (referred to as the Section 3 clause):

- A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.
- B. The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.
- C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person (s) taking applications for each of the positions; and the anticipated date the work shall begin.
- D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulation in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.
- E. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.
- F. Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

AHA has identified two ways that contractors and consultants may choose to satisfy Section 3 requirements.

- A. Direct employment of qualified candidates (preferred method of participation)
AHA promotes family self-sufficiency and strongly encourages the direct hiring of qualified residents from the communities (Public Housing, Housing Choice Voucher and by Tax Credit residents) impacted by work awarded to contractors and subcontractors. All developers, general contractors and /or subcontractors shall ensure that 30% of new hires will be Section 3 residents.
- B. Contribution to AHA Section 3 Resident Training Fund.
Smaller contractors and consultants may contribute to AHA's Section 3 training fund in an amount based on the Resident Hiring Scale contained in AHA Section 3 Policy. The current hiring scale is a minimum \$250 or a maximum 1.5% of the labor dollars.

**SECTION 00750
SUPPLEMENTARY GENERAL CONDITIONS**

PART 1 - GENERAL

1.1 SUMMARY

- A. The following supplements modify, delete and/or add to the General Conditions, Section 00700. The paragraphs or subparagraphs modified herein shall be added thereto, amended, voided, or superseded as herein instructed.

PART 2 - SPECIFIC MODIFICATIONS

2.1 PARAGRAPH 1 - DEFINITIONS:

- A. Revise Subparagraph 1 (h) as follows:
 - 1. "(h) The terms "LHA", "PHA", "HA", "LA", "Local Authority", or "Housing Authority" are synonymous with the term "Owner" and shall mean ANNISTON HOUSING AUTHORITY, as organized under applicable State law."

2.2 PARAGRAPH 2 - Contractor's Responsibility for Work:

- A. Add to Subparagraph 2(e) the following sentences as condition to fitting and coordination of work.
 - 1. "Contractor shall be responsible for proper fitting of all work for coordination of operations of all trades, subcontractors, or material men employed by him engaged upon the Work. He shall be prepared to guarantee to each of his subcontractors the dimensions required for fitting of their work to all surrounding work, and shall do all cutting, fitting, adjusting, and patching as necessary to make the several parts of the Work come together properly and to fit the work to receive, or be received by, that of other contractors."
- B. Add Subparagraph 2(i) as to mutual responsibility of contractors.
 - 1. "(i) If, through acts or neglect on the part of the Contractor, any other contractor or subcontractor shall suffer loss or damage on the work. The agreement or arbitration, if such other contractor will so settle. If such other contractor or subcontractor shall assert any claim against the Owner on account of any damages alleged to have been so sustained, the Owner shall notify the Contractor, who shall defend, at his own expense, any suit based upon such claim and pay all costs and expenses in connection therewith."

2.3 PARAGRAPH 3 - Architect's Duties, Responsibilities and Authority:

- A. Add Subparagraph (d) as follows:
 - 1. "(d) The Architect does not have the authority to stop the work or any part thereof. Only the PHA/LA has the authority to stop the work or any part thereof. If the Contractor stops work due to an observation or report by the Architect, he does so at his sole discretion and neither the PHA/LA nor the Architect shall be liable for any delays or costs resulting therefrom."

2.4 PARAGRAPH 8 - Differing Site Conditions:

- A. Add Subparagraph 8(e) to clarify responsibility for live utilities and other property:
 - 1. "(e) Contractor shall assume all responsibility for damage to any property upon, or passing through, the site but excluded from the Work or not owned by the Owner, such as utility lines or like items. Where disconnections of underground services are required to be made at street mains, Contractor shall, at his own expense, restore paving, curb, gutter, etc., over such cuts in accordance with local regulations."

2.5 PARAGRAPH 9 - Specifications and Drawings for Construction:

- A. "(j) The Owner will furnish, free of charge, to the Contractor five (5) copies of the Drawings and Project Manual. Additional copies requested by the Contractor will be furnished at the cost of reproduction, plus shipping and handling."

2.6 PARAGRAPH 11 - Materials and Workmanship:

A. Revise Subparagraph 11(a) beginning with the second sentence as follows:

1. "Specific reference in the Technical specifications to article, device, product, material, fixture, form or type, or construction by trade name, make or catalog number shall be interpreted as a mandatory work requirement except where substitutions are specifically allowed or the Technical Specifications are not proprietary in nature. Substitutions for the mandatory items will only be considered if submitted to the Architect at least fifteen (15) days prior to the date of the bid opening. Requests for approval of substitutions in written form and include such detailed information as to provide for a complete comparison of the products. All approved substitutions will be listed by addenda. Only the specified products or those substitutions listed by addenda shall be used in the preparation of the Contractors bid proposal and incorporated into the Work. The approval of substitutions shall be at the sole discretion of the Architect."

B. Revise the first sentence of Subparagraph 11(b) to read as follows:

1. "When requesting approval for a substitution prior to bid opening, the Contractor shall....."

2.7 PARAGRAPH 12 - Permits and Codes:

- A. "(b) The Contractor shall secure and pay for all permits, fees, licenses, and utility charges for this project necessary for the proper execution and completion of the work. The utility charges shall include all tap-on charges, meter charges, and any other fees or charges required by any utility company or public agency which sets such fees to accomplish all work required by these Contract Documents. Where the Owner can arrange for the issuance of all or part of these permits, fees and licenses without cost to the Contractor, the Contract amount will be reduced accordingly."

2.8 PARAGRAPH 25 - Contract Period:

- A. (a) The following chart shows rain days anticipated in **Anniston, Alabama** each year. These days are included in the time allowed for completion. Only rain days in addition to these will be considered as a time extension to the contract for "unusually severe weather" as provided for in Paragraph 32(b)(1)(x) of the General Conditions.

<u>Month</u>	<u>Rain Days</u>
January	11
February	10
March	11
April	09
May	09
June	10
July	12
August	10
September	08
October	06
November	09
December	10

- B. (b) If the Contractor falls more than thirty (30) days behind in his work, as shown on his progress schedule, and cannot demonstrate, to the satisfaction of the Owner, an effective recover schedule, the Owner reserves the right to terminate his contract under Article 32 of the General Conditions. Refer to Section 01310 for requirements of the Progress Schedule.

2.9 PARAGRAPH 27 - Payments:

A. Add Subparagraph (I) as follows:

1. "(I) Along with each progress payment, the Contractor shall submit a revised progress schedule as specified in Section 01310. Payment request will not be processed without this schedule attached."

2.10 PARAGRAPH 33 - Liquidated Damages:

- A. Add Subparagraph 33(a)(1) and (2) to establish amount of liquidated damages.
 - 1. "(1) Since the actual amount of damages for any delay in completion are impossible to determine, the Contractor and his sureties hereby agree to be liable for and shall pay to the Owner the sums hereinafter stipulated as fixed, agreed and liquidated damages, for each calendar day of delay until the Work is completed or accepted."
 - 2. "(2) \$75.00 applicable to all work per calendar day per building for each building not completed and accepted by the date established for completion of each phase, by the phasing plan of the Contract Documents."

2.11 PARAGRAPH 36 - Insurance:

- A. Revise Subparagraph 36(a)(2) to require Commercial General Liability Insurance in the amount of \$1,000,000.00.
- B. Revise Subparagraph 36(a)(3) to require Automobile Liability Insurance in the amount of \$500,000.00.

2.12 PARAGRAPH 50 - Communications:

- A. Add Paragraph 50: Communications, with Subparagraphs (a), (b), (c), and (d) as follows:
 - 1. "(a) All notices, demands, request, instructions, approvals, proposals and claims must be in writing."
 - 2. "(b) Any notice to, or demand upon, the Contractor shall be sufficiently given if delivered at the Office of the Contractor (or at such office as he may designate in writing to the Owner), or deposited in the United States mail in a sealed, postage-prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office."
 - 3. "(c) All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to:
ANNISTON HOUSING AUTHORITY
500 GLEN ADDIE AVENUE
ANNISTON, ALABAMA 36202
ATTN.: CONTRACTING OFFICER
And any notice to, or demand upon, the Owner shall be sufficiently given so delivered, or deposited in the United States mail in a sealed postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said person at such address, or to such other representatives that the Owner may subsequently specify in writing to the Contractor for such purpose."
 - 4. "(d) Any such notice shall be deemed to have been given as of the time of actual delivery or (in case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be."

2.13 PARAGRAPH 51 - Taxes:

- A. Add Paragraph 51 - Taxes, as follows:
 - 1. "39. Taxes: The Contractor shall include applicable taxes in his bid proposal and the Contract Sum."

2.14 PARAGRAPH 52 - Equal Employment:

- A. Add Paragraph 52 – Equal Employment, as follows:
 - 1. "52. Add provisions for Equal Employment Opportunity, as enumerated in Exhibit "A" following this Section."

END OF SECTION 00750

SECTION 01010 SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Pine Avenue Development.
 - 1. Project location: Anniston, Calhoun County, Alabama.
 - 2. Owner: Anniston Housing Authority / Housing Development Corporation
500 Glen Addie Avenue
Anniston, AL 36202
- B. Architect Identification: The Contract Documents, dated March 25, 2025, were prepared for the Project by TDA Architects, LLC.
- C. Owner's Representative: The Owner's Representative is Mr. Doug Brooks, Contract Manager.
- D. The Work consists of three new apartments in two new buildings.

1.3 PROJECT DESCRIPTION

- A. The Anniston Housing Authority, South Allen Avenue Development.
 - 1. The project consists of site work and new construction for 3 New Apartments as described in the drawings and specifications.

1.4 CONTRACT

- A. Project will be constructed under a general construction contract.

1.5 WORK SEQUENCE

- A. Work shall commence on the Notice to Proceed date and shall be completed within the allowed time frame.

1.6 USE OF PREMISES

- A. General: Contractor shall have full use of the building site for construction operations during the construction period.

1.7 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.
 - 1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows.
 - Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

- a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01010

SECTION 01045 CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and other General Requirements sections, apply to the work specified in this section.

1.2 DESCRIPTION OF REQUIREMENTS

- A. Definition: "Cutting-and patching" is hereby defined to include but is not necessarily limited to the cutting and patching of nominally completed and previously existing work, in order to accommodate the coordination of work, or the installation of other work, or to uncover other work for access or inspection, or to obtain samples for testing, or for similar purposes; and is defined to exclude integral cutting-and-patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting-and-patching.
- B. Refer to other sections of these specifications for specific cutting-and-patching requirements and limitations applicable to individual units of work.
 - 1. Refer to Divisions 15 and 16 Series sections, for additional requirements and limitation of the cutting-and-patching of mechanical and electrical work, respectively. The requirements of this section apply to mechanical and electrical work, unless otherwise indicated.

1.3 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do no cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.
- B. Operational and Safety Limitations: Do not cut-and-patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
- C. Visual Requirements: Do not cut-and-patch work which is exposed on the exteriors or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut-and-patch work, both as judged solely by the Architect. Remove and replace work judged by the Architect to be cut-and-patched in a visually unsatisfactory manner.

1.4 SUBMITTALS

- A. Proposals for Cutting-and-Patching: Where prior approval of cutting-and-patching is required, submit proposal will in advance of time work will be performed, and request approval to proceed. Include description of why cutting-and-patching cannot (reasonably) be avoided, how it will be performed, how structural elements (if any) will be reinforced, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance). Where applicable, include cost proposal, suggested alternatives to the cutting-and-patching procedure proposed, and a description of the circumstances which lead to the need for cutting-and-patching.
 - 1. Approval by Architect/Engineer to proceed with proposed cutting-and-patching does not waive right to later required complete removal and replacement of work found to be cut-and-patched in an unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Except as otherwise indicated or approved by the Architect/Engineer, provide materials for cutting-and-patching which will result in equal-or-better work than the work being cut-and-patched, in terms of performance characteristics and including visual effect where applicable. Comply with

the requirements, and use materials identical with the original materials where feasible and where recognized that satisfactory results can be produced thereby.

PART 3 – EXECUTION

3.1 MATERIALS

- A. Temporary Support: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.
- B. Protection: Provide adequate protection of other work during cutting-and-patching, to prevent damage; and provide protection of the work from adverse weather exposure.

3.2 CUTTING AND PATCHING

- A. General: Employ skilled tradesmen to perform cutting-and-patching. Except as otherwise indicated or approved by the Architect/Engineer, proceed with cutting-and-patching at the earliest feasible time, in each instance, and perform the work promptly.
- B. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original installer where possible, and comply with his recommendations.
 - 1. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.
- C. Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
- D. Restore exposed finishes of patched areas; and, where necessary, extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.
 - 1. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch, after patched area has received prime and base coats.

END OF SECTION 01045

**SECTION 01140
WORK RESTRICTIONS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 USE OF PREMISES

- A. Use of Site: Selective demolition can be initiated and completed by the Contractor in coordination with the Owner. The Owner will designate areas on the site for storage of materials. The Contractor shall be responsible for any security measures related to work in progress or storage of materials
 - 1. Limits: Confine constructions operations to those portions of the site for which work is indicated to take place. The Contractor may execute site improvement work at any time during the construction period. This work must be coordinated with the Owner.

1.3 OCCUPANCY REQUIREMENTS

- A. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.

END OF SECTION 01140

SECTION 01210 ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.
 - 2. Unit-cost allowances.
 - 3. Contingency allowances.
 - 4. Quantity allowances.
- C. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures: for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Unit Prices" for procedures for using unit prices.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise the Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. **Allowance No. 1:** Include the cost of \$450 per thousand for face brick as specified in Division 4, Section 04810 "Unit Masonry Assemblies" and as shown on drawings.

END OF SECTION 01210

**SECTION 01310
PROJECT MANAGEMENT AND COORDINATION**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
 - 2. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
- B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.

5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
 - E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.
- 1.4 SUBMITTALS
- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 1. Indicate relationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Refer to Division 15 Section "Basic Mechanical Materials and Methods" and Division 16 Section "Basic Electrical Materials and Methods" for specific Coordination Drawing requirements for mechanical and electrical installations.
 - B. Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.
- 1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL
- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
 1. Include special personnel required for coordination of operations with other contractors.
- 1.6 PROJECT MEETINGS
- A. Pre-Bid Meeting: **A Pre-Bid Meeting will be held on XXXXXXXXXXXX at 2:00 p.m. at the Anniston Housing Authority office, 500 Glen Addie Avenue, Anniston, Alabama 36202.** The meeting will be conducted to review the project scope of work and to answer any questions that the contractors may have. It is imperative that a representative from each General Contractor and subcontractor be present.
 1. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 2. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 3. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 4. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 3 days of the meeting.
 - B. Preconstruction Conference: The Architect shall schedule a preconstruction conference at a time convenient to the Owner. The execution of the Construction Contract shall take place at the Preconstruction Conference. The Contractor shall obtain all required bonding dated the day of the conference. The conference shall take place at a convenient location. The Architect and Owner shall review any pertinent information related to a HUD funded project. The Contractor shall review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: The Contractor shall discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. First aid.
 - p. Security.
 - q. Progress cleaning.
 - r. Working hours.
- C. Pre-Installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Submittals.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Compatibility problems.
 - j. Time schedules.
 - k. Weather limitations.
 - l. Manufacturer's written recommendations.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Required performance results.
 - u. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements.
 4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at biweekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
 - 14) Documentation of information for payment requests.
 3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- E. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or

- recognized. Issue revised schedule concurrently with report of each meeting.
- c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
 - 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01320 CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Field condition reports.
 - 5. Special reports.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- G. Major Area: A story of construction, a separate building, or a similar significant construction element.
- H. Milestone: A key or critical point in time for reference or measurement.
- I. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

1.4 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article and in-house scheduling personnel to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Submittals Schedule: Submit **four** copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- C. Preliminary Construction Schedule: Submit **four** printed copies.
- D. Preliminary Network Diagram: Submit **four** printed copies large enough to show entire network for entire construction period.
- E. Contractor's Construction Schedule: Submit **four** printed copies of initial schedule large enough to show entire schedule for entire construction period.
- F. CPM Reports: Concurrent with CPM schedule, submit **four** printed copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- G. Field Condition Reports: Submit **four** copies at time of discovery of differing conditions.
- H. Special Reports: Submit **four** copies at time of unusual event.

1.5 QUALITY ASSURANCE

- A. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review time required for review of submittals and resubmittals.
 - 6. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 7. Review time required for completion and startup procedures.
 - 8. Review and finalize list of construction activities to be included in schedule.
 - 9. Review submittal requirements and procedures.
 - 10. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for **the Notice to Proceed** to date of **Final Completion**.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each building as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than **20** days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less than 21 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 4. Work Restrictions: Show the effect of the following items on the schedule:

- a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Deliveries.
 - g. Installation.
 - h. Tests and inspections.
 - i. Adjusting.
 - j. Curing.
 - k. Startup and placement into final use and operation.
 6. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Permanent space enclosure.
 - b. Completion of mechanical installation.
 - c. Completion of electrical installation.
 - d. Substantial Completion.
 7. Other Constraints: Site improvements and landscape development.
 - E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
 - F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
 1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.
 - G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.
 - H. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.
- 2.3 PRELIMINARY CONSTRUCTION SCHEDULE
- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within **seven** days of date established for **the Notice to Proceed**.
 - B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first **60** days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- 2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)
- A. General: Prepare network diagrams using AON (activity-on-node) format.
 - B. CPM Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than **30** days after date established for **the Notice to Proceed**.
2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time.
- C. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Purchase of materials.
 - c. Delivery.
 - d. Fabrication.
 - e. Installation.
 2. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- D. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the Schedule of Values).
- E. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- F. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
 1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.

4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts **two days** before each regularly scheduled progress meeting.

2.5 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. High and low temperatures and general weather conditions.
 5. Accidents.
 6. Meetings and significant decisions.
 7. Unusual events (refer to special reports).
 8. Stoppages, delays, shortages, and losses.
 9. Meter readings and similar recordings.
 10. Emergency procedures.
 11. Orders and requests of authorities having jurisdiction.
 12. Change Orders received and implemented.
 13. Construction Change Directives received.
 14. Services connected and disconnected.
 15. Equipment or system tests and startups.
 16. Partial Completions and occupancies.
 17. Substantial Completions authorized.
- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.6 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At **monthly** intervals, update schedule to reflect actual construction progress and activities. Issue schedule **two days** before each regularly scheduled progress meeting or each application for payment.
 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.

- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01330 SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's and Owner's responsive action.
- B. Informational Submittals: Written information that does not require Architect's and Owner's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings **will not** be provided by the Architect for the Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal.
 - 1. Initial Review: Allow **10** days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow **14** days for initial review of each submittal.
 - 3. Direct Transmittal to Consultant: Where the Contract Documents indicate that submittals may be transmitted directly to Architect's consultants, provide duplicate copy of transmittal to Architect. Submittal will be returned to Architect before being returned to Contractor.
 - 4. If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 5. Allow **14** days for processing each resubmittal.
 - 6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- E. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.

- b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Owner.
 - e. Name and address of Contractor.
 - f. Name and address of subcontractor.
 - g. Name and address of supplier.
 - h. Name of manufacturer.
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Other necessary identification.
- F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
- 1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect. **(Six copies to Architect)**
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will **return submittals, without review**, received from sources other than Contractor.
- 1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
 - 2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 - 3. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Submittal and transmittal distribution record.
 - i. Remarks.
 - j. Signature of transmitter.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 – PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- 1. Number of Copies: Submit **six** copies of each submittal, unless otherwise indicated. Architect will return **three** copies. Mark up and retain one returned copy as a Project Record Document.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
- 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operating and maintenance manuals.
 - k. Compliance with recognized trade association standards.
 - l. Compliance with recognized testing agency standards.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 1. Preparation: Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shop-work manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches.
 4. Number of Copies: Submit copies of each submittal, as follows:
 - a. Submittal: Submit **six** blue or black-line prints. Architect will return one print.
- D. Samples: Prepare physical units of materials or products, including the following:
 1. Comply with requirements in Division 1 for mockups.
 2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:
 - a. Generic description of Sample.
 - b. Product name or name of manufacturer.
 - c. Sample source.

5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
 - a. Size limitations.
 - b. Compliance with recognized standards.
 - c. Availability.
 - d. Delivery time.
6. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
 - a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least **six** sets of paired units that show approximate limits of the variations.
 - b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
7. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
- E. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- F. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

PART 3 – EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01400 QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 3. Divisions 2 through 16 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.
- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.

7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
 1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Ambient conditions at time of sample taking and testing and inspecting.
 11. Name and signature of laboratory inspector.
 12. Recommendations on retesting and re-inspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- D. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
- E. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect **seven** days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.6 QUALITY CONTROL

- A. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 2. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. **Manufacturer's Field Services:** Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- C. **Retesting/Re-inspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- D. **Testing Agency Responsibilities:** Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 5. Do not perform any duties of Contractor.
- E. **Associated Services:** Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. **Schedule of Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within **30** days of date established for the Notice to Proceed.
1. **Distribution:** Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS - (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
 - 2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

SECTION 01600 PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 1 Section "Alternates" for products selected under an alternate.
 - 2. Division 1 Section "References" for applicable industry standards for products specified.
 - 3. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.
 - 4. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, which is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- D. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
 - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 - 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.

- f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 - 3. Initial Submittal: Within **21** days after date of commencement of the Work, submit **2** copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 - 4. Completed List: Within **30** days after date of commencement of the Work, submit **6** copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 5. Architect's Action: Architect will respond in writing to Contractor within **15** days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.
 - B. Requests for Approved Equals: **All requests for materials to be considered as an approved equal must be submitted within 10 days prior to bid. No substitutions shall be considered after this deadline.** Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - b. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - c. Samples, where applicable or requested.
 - d. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - 2. Architect's Action: Architect will issue an Addendum no later than seven days prior to the Bid Date to address all Approved Equals.
 - a. Use product specified if a proposed substitution is not approved by Addendum.
 - C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.
- 1.5 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.
- 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products to allow for inspection and measurement of quantity or counting of units.
 6. Store materials in a manner that will not endanger Project structure.
 7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 9. Protect stored products from damage.
 - B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by construction forces. Coordinate location with Owner.
- 1.7 PRODUCT WARRANTIES
- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Refer to Divisions 2 through 8 Sections for specific content requirements and particular requirements for submitting special warranties.
 - C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Request for Approved Equals" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures: Procedures for product selection include the following:
 1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer followed by "or approved equal", provide the product named or a substitution that has been approved by Addendum prior to Bid.
 - a. Substitutions will not be considered unless specifically approved by Addendum.
 2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements unless other manufacturers or sources have been approved by Addendum prior to Bid.
 - a. Substitutions will not be considered unless specifically approved by Addendum.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 - a. Substitutions will not be considered unless specifically approved by Addendum.
4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Substitutions will not be considered unless specifically approved by Addendum..
5. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
6. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution or "approved equals" if received within **10 days prior to the bid date**. Requests received after this time may be considered or rejected at discretion of Architect.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution does not require extensive revisions to the Contract Documents.
 2. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 3. Substitution request is fully documented and properly submitted.
 4. Requested substitution has been coordinated with other portions of the Work.
 5. Requested substitution provides specified warranty.
 6. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
 7. Request is received by the Architect within **10 days prior to the Bid Date**.

2.3 COMPARABLE PRODUCTS

- A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product. **All requests for materials to be considered as an approved equal must be submitted within 10 days prior to bid. No substitutions shall be considered after this deadline.**
 1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents, and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. Samples, if requested.

PART 3 - EXECUTION - (Not Applicable)

END OF SECTION 01600

SECTION 01700 EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 1 Section "Submittal Procedures" for submitting surveys.
 - 3. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect and Owner not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. **Submit requests on CSI Form 13.2A, "Request for Interpretation."**

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor (if required) to lay out the Work using accepted surveying practices.
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points

- promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 1. Make vertical work plumb and make horizontal work level.
 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
- G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 1. Remove liquid spills promptly.
 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
 - H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
 - I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
 - J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
 - K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- 3.7 STARTING AND ADJUSTING
- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
 - B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
 - C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."
- 3.8 PROTECTION OF INSTALLED CONSTRUCTION
- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
 - B. Comply with manufacturer's written instructions for temperature and relative humidity.
- 3.9 CORRECTION OF THE WORK
- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."
 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
 - B. Restore permanent facilities used during construction to their specified condition.
 - C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
 - D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
 - E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01700

SECTION 01710 PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 REQUIREMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF CLOSEOUT DOCUMENTS

- A. Prior to approval of final payment on this project the following will be required by the Owner:
 - 1. Six (6) "Periodic Estimate for Partial Payment" forms each complete with original signatures and notarized. Type "Final Payment" at the top of the form.
 - 2. Three (3) copies of "Certificate of Substantial Completion" form.
 - 3. Three (3) copies of final certification of completion ("Field Observation Report" indicating no non-conformance).
 - 4. Four (4) original "Guarantees and Warranties" with original signatures in accordance with Contract Specifications.
 - 5. Four (4) copies of Certificate of Insurance covering the Warranty period.
 - 6. Four (4) copies of final acceptance by the local inspection department.
 - 7. Four (4) copies of "Contractors Affidavit of Payment of Debts and Claims" (if applicable).
 - 8. One (1) notarized original and two (2) copies of the "Certificate and Release".
 - 9. Three (3) originals of Certified Proof of Advertisement of Completion - each notarized with original signatures.
 - 10. One (1) blueline print of all "as-built" drawings.
 - 11. One (1) copies of bound specifications to include all changes and addenda; signed, dated and marked "as-built".

Label the back spine and front cover of the binders with the project name, project number and date. NOTE: These binders are to be supplied within 7 days of the date of Substantial Completion.

Do not submit close-out documents piecemeal. Assemble everything required before forwarding to the Architect.

END OF SECTION 01710

SECTION 01740 FINAL CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This section specifies administrative and procedural requirements for final cleaning at Substantial Completion.
 - 1. Special cleaning requirements for specific elements of the Work are included in appropriate Sections of Divisions-2 through -16.
- B. General Project closeout requirements are included in Section "Project Closeout".
- C. General clean-up and waste removal requirements are included in Section "Temporary Facilities".
- D. Environmental Requirements: Conduct cleaning and waste disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.
 - 1. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.
 - 2. Burning or burying of debris, rubbish or other waste material on the premises will not be permitted.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.

PART 3 - EXECUTION

3.01 FINAL CLEANING

- A. General: provide final cleaning operations. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning of equipment and, or furniture.
- B. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion for the entire Project or a portion of the Project.
 - 1. Clean the Project site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains and other foreign deposits. Rake grounds that are neither planted nor paved, to a smooth even-textured surface.
 - 2. Remove tools, construction equipment, machinery and surplus material from the site.
 - 3. Remove snow and ice to provide safe access to the building.
 - 4. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - 5. Remove debris and surface dust from limited access spaces, including roofs, plenums,

- shafts, trenches, equipment vaults, manholes, attics and similar spaces.
- 6. Broom clean concrete floors in unoccupied spaces.
- 7. Clean, mop and apply finish (wax) to V.C.T., base and similar surfaces as per manufacturers recommendation.
- 8. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
- 9. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- 10. Remove labels that are not permanent labels.
- 11. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that can not be satisfactorily repaired or restored, or that show evidence of repair or restoration. do not paint over "UL" and similar labels, including mechanical and electrical name plates.
- 12. Wipe surfaces of mechanical and electrical equipment, elevator equipment and similar equipment. Remove excess lubrication, paint and mortar drippings and other foreign substances.
- 13. Clean plumbing fixtures and ceramic tile to a sanitary condition, free of stains, including stains resulting from water exposure.
- 14. Replace air disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
- 15. Clean food service equipment to a sanitary condition, ready and acceptable for its intended use.
- 16. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
- 17. Leave the Project clean and ready for occupancy.
- C. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.
- D. Compliance: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of in lawful manner.
 - 1. Where extra materials of value remain after completion of associated construction have become the Owner's property, dispose of these materials as directed.

END OF SECTION 01740

SECTION 02280 SOIL TREATMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Termite control at and around new construction.
- B. Examine all existing construction, and treat infestation or evidence of termite infestation as required.
- C. Coordination of treatment with other required pest control activities.

1.2 RELATED SECTIONS

- A. Section 02220: Earthwork and grading.

1.3 QUALITY ASSURANCE

- A. Engage a professional pest control operator, licensed in accordance with regulations of governing authorities for application of soil treatment solutions.
- B. In addition to the requirements of these Specifications, comply with the manufacturer's instructions and recommendations for the work, including preparation of the substrate and application.

1.4 JOB CONDITIONS

- A. Do not apply soil treatment solution until excavation, filling, and grading operations are complete, except as otherwise required by construction operations.
- B. To insure penetration, do not apply soil treatment to frozen or excessively wet soils, or during inclement weather. Comply with handling and application instructions of the toxicant manufacturer.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01340.
- B. Manufacturer's Installation Instructions: Technical data and application instructions.

1.6 WARRANTY

- A. Furnish written warranty certifying that applied soil poisoning treatment will prevent infestation of subterranean termites, and that if subterranean termite activity is discovered during the warranty period, the Contractor shall re-treat the soil, and repair or replace damage caused by termite infestation.
- B. Provide a written warranty for a period of five (5) years from the date of treatment, signed by the licensed Applicator and the Contractor.

PART 2 PRODUCTS

2.1 SOIL TREATMENT SOLUTION

- A. Use an emulsible concentrate insecticide for dilution with water, specifically formulated to prevent infestation by termites. Fuel oil will not be permitted as a diluent.
- B. Provide a working solution of one of the following elements and concentrations:
 - 1. Aldrin; 0.5% in water emulsion.
 - 2. Dieldrin; 0.5% in water emulsion.
 - 3. Petachlor; 0.5% in water emulsion.
- C. Other solutions may be used as recommended by the Applicator provided such solutions are approved by the local governing authorities.
- D. Use only soil treatment solutions which are not injurious to planting.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. Remove foreign matter which could decrease effectiveness of treatment from the application area.
- B. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations.
- C. Toxicant may be applied before placement of compacted fill under slabs, if recommended by the toxicant manufacturer.
- D. Reapply soil treatment solution to areas where solution was previously applied and subsequently disturbed by excavation or other construction activities.

3.2 APPLICATION

- A. For slab-on-grade structures, apply treatment as follows:
 - 1. Treat soil before concrete slabs are placed using either a power sprayer or tank-type garden sprayer.
 - 2. Apply 4 gallons of chemical solution per 10 lineal feet as an overall under slab treatment such as, along the inside of foundation walls, along both sides of interior partition walls, and around plumbing, etc.
 - 3. Apply 4 gallons of chemical solution per 10 lineal feet of trench for each foot of depth from grade to footing, along the outside edge of the building. Dig a trench 6" to 8" wide along the outside of the foundation to a minimum depth of 12". Punch holes to top of footing at not more than 12" o.c., and apply chemical solution. Mix chemical solution with the soil as it is being replaced in trench.
- B. Allow a minimum of 12 hours for drying after application, and before beginning concrete placement or other construction activities.

3.3 SIGNS

- A. Post signs in areas of application warning workers and visitors that soil poisoning has been applied.
- B. Remove signs when treated areas are covered by other construction.

END OF SECTION 02280

SECTION 02300 EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Drainage course for slabs-on-grade.
 - 4. Subbase course for concrete walks and pavements.
 - 5. Base course for asphalt paving.
 - 6. Subsurface drainage backfill for walls and trenches.
 - 7. Excavating and backfilling trenches within building lines.
 - 8. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
- B. Related Sections include the following:
 - 1. Division 1 Section "Unit Prices" for a schedule of unit prices.
 - 2. Division 2 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
 - 3. Division 2 Section "Excavation Support and Protection."
 - 4. Division 2 Section "Foundation Drainage Systems" for drainage of footings, slabs-on-grade, and walls.
 - 5. Division 3 Section "Cast-in-Place Concrete" for granular course over vapor retarder.
 - 6. Division 15 and 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 UNIT PRICES

- A. Unit prices for rock excavation include replacement with approved materials.

1.4 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the sub base course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations.
 - 1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material exceeding 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing,

trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

- I. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material 3/4 cu. yd. or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- L. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- M. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Each type of plastic warning tape.
 - 2. Drainage fabric.
 - 3. Separation fabric.
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- B. Pre-excavation Conference: Conduct a Pre-excavation Conference at the Project site.

1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Backfill and Fill: Satisfactory soil materials.

- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- I. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.
- J. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1- inch sieve and 0 to 5 percent passing a No. 4 sieve.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 ACCESSORIES

- A. Warning Tape: Coordinate with local utilities for requirements.
- B. Detectable Warning Tape: Coordinate with local utilities for requirements.
- C. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
 - 1. Grab Tensile Strength: 110 lbf; ASTM D 4632.
 - 2. Tear Strength: 40 lbf; ASTM D 4533.
 - 3. Puncture Resistance: 50 lbf.; ASTM D 4833.
 - 4. Water Flow Rate: 150 gpm per sq. ft.; ASTM D 4491.
 - 5. Apparent Opening Size: No. 50; ASTM D 4751.
- D. Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D 4759 and referenced standard test methods:
 - 1. Grab Tensile Strength: 200 lbf ; ASTM D 4632.
 - 2. Tear Strength: 75 lbf ; ASTM D 4533.
 - 3. Puncture Resistance: 90 lbf ; ASTM D 4833.
 - 4. Water Flow Rate: 4 gpm per sq. ft.; ASTM D 4491.
 - 5. Apparent Opening Size: No. 30; ASTM D 4751.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.
- 3.3 EXPLOSIVES
- A. Explosives: Do not use explosives.
- 3.4 EXCAVATION, GENERAL
- A. Classified Excavation: Excavation to subgrade elevations classified as earth and rock. Rock excavation will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
 2. Rock excavation includes removal and disposal of rock.
 - a. Do not excavate rock until it has been classified and cross-sectioned by Architect.
- 3.5 EXCAVATION FOR STRUCTURES
- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.
- 3.6 EXCAVATION FOR WALKS AND PAVEMENTS
- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.
- 3.7 EXCAVATION FOR UTILITY TRENCHES
- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
 - B. Excavate trenches to meet requirements of local utility companies. Coordinate requirements with local utilities.
- 3.8 APPROVAL OF SUBGRADE
- A. Notify Architect when excavations have reached required subgrade.
 - B. If Geotechnician determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
 1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
 - D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.
- 3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.
- 3.10 STORAGE OF SOIL MATERIALS
 - A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
- 3.11 BACKFILL
 - A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for record documents.
 - 3. Inspecting and testing underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- 3.12 UTILITY TRENCH BACKFILL
 - A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
 - B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.
 - C. Coordinate backfilling with utilities' requirements and testing
 - D. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
 - E. Place and compact final backfill of satisfactory soil material to final subgrade.
- 3.13 FILL
 - A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.
 - B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
 - C. Place and compact fill material in layers to required elevations as follows:
 - 1. Under walks and pavements, use satisfactory soil material.
 - 2. Under steps and ramps, use engineered fill.
 - 3. Under building footings, foundations & slabs, use engineered fill.
- 3.14 MOISTURE CONTROL
 - A. See Geotechnical Engineer's report for recommendations.
- 3.15 COMPACTION OF BACKFILLS AND FILLS
 - A. See Geotechnical Engineer's report for recommendations.
- 3.16 GRADING
 - A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
 - B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 1. Walks: Plus or minus 1 inch.
 2. Pavements: Plus or minus 1/2 inch.
 - C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.
- 3.17 SUBSURFACE DRAINAGE
- A. Drainage Piping: Drainage pipe is specified in Division 2 Section "Foundation Drainage Systems."
 - B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.
 - C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.
- 3.18 SUBBASE AND BASE COURSES
- A. Under pavements and walks, place subbase course on separation fabric according to fabric manufacturer's written instructions and as follows:
 1. Coordinate with local building authorities for requirements.
- 3.19 DRAINAGE COURSE
- A. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
 1. Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
 2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
 3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- 3.20 FIELD QUALITY CONTROL
- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
 - B. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
 - C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.
- 3.21 PROTECTION
- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
 - B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and re-compact.

- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.
- 3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS
 - A. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
 - 1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02361 TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following for termite control:
 - 1. Soil treatment.

1.3 SUBMITTALS

- A. Product Data: Treatments and application instructions, including EPA-Registered Label.
- B. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes, and rates of application used.
 - 6. Areas of application.
 - 7. Water source for application.
- E. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.
- B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.6 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

1.7 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- B. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
- C. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AgrEvo Environmental Health, Inc.; a Company of Hoechst and Schering, Berlin.
 - 2. Bayer Corp.; Garden & Professional Care.
 - 3. DowElanco.
 - 4. FMC Corp.; Pest Control Specialties.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and
- B. other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.
- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.
- C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.
 - 1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.
 3. Masonry: Treat voids.
 4. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 02361

SECTION 03300 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section specifies cast in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.
- B. Related Sections include the following:
 - 1. Division 2 Section "Earthwork" for drainage fill under slabs on grade.
 - 2. Division 2 Section "Cement Concrete Pavement" for concrete pavement and walks.

1.03 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mix water to be withheld for later addition at Project site.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

- F. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
- G. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- H. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.02 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
 - 1. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as drawn steel wire into flat sheets.

2.03 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber reinforced concrete of greater compressive strength than concrete, and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic protected or CRSI Class 2 stainless steel bar supports.
 - 2. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

2.04 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type as required.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
 - 1. Class: Moderate weathering region, but not less than 3M.
 - 2. Nominal Maximum Aggregate Size: 3/4 inch.
 - 3. Water: Potable and complying with ASTM C 94.

2.05 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
 - 1. Air-Entraining Admixture: ASTM C 260.
 - 2. Water Reducing Admixture: ASTM C 494, type as required to suit project conditions. Only use admixtures which have been tested and accepted in mix designs.

2.06 VAPOR RETARDERS

- A. Vapor Retarder: ASTM E 1745, Class C, polyethylene sheet, ASTM D 4397, not less than 6 mils thick:
 - 1. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

2.07 RELATED MATERIALS

- A. Joint Filler Strips: ASTM D 1751, asphalt saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non redispersible, acrylic emulsion or styrene butadiene.
 - 1. Types I and II, non load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 - 2. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- C. Reglets: Fabricate reglets of not less than 0.0217-inch- thick galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- D. Dovetail Anchor Slots: Hot dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.08 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
- B. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
 - 2. Footings and Foundation Walls: Proportion normal-weight concrete mix as follows:
 - a. Compressive Strength (28 Days): 3000 psi.
 - b. Maximum Slump: 4 inches.
 - 3. Slab-on-Grade: Proportion normal-weight concrete mix as follows:
 - a. Compressive Strength (28 Days): 3000 psi.
 - b. Maximum Slump: 5 inches.

2.09 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

- A. Ready Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

PART 3 - EXECUTION

3.01 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 - 1. Class B, 1/4 inch.
Construct forms tight enough to prevent loss of concrete mortar.
 - 2. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

3. Do not use rust stained steel form facing material.
4. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike off templates or compacting type screeds.
5. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
6. Chamfer exterior corners and edges of permanently exposed concrete.
7. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
8. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
9. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
10. Coat contact surfaces of forms with form release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast in place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
- B. Install anchor bolts, accurately located, to elevations required.
- C. Install reglets to receive top edge of foundation sheet waterproofing and to receive through wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
- D. Install dovetail anchor slots in concrete structures as indicated.

3.03 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
 1. 28_day design compressive strength.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.04 SHORES AND RESHORES

- A. Comply with ACI 318, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.
 1. Plan sequence of removal of shores and reshore to avoid damage to

concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.05 VAPOR RETARDERS

- A. Vapor Retarder: Place, protect, and repair vapor retarder sheets according to ASTM E 1643 and manufacturer's written instructions.
- B. Granular Fill: Cover vapor retarder with granular fill, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.

3.06 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- C. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.07 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
- D. Form from preformed galvanized steel, plastic keyway section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
- E. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- F. Contraction Joints in Slabs-on-Grade: Form weakened plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
 - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
 - 2. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 3. Extend joint filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

4. Install joint filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.08 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints as indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

3.09 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Do not add water to concrete after adding high range water reducing admixtures to mix.
- D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- E. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
 1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- G. Cold Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F

- at point of placement.
- 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- H. Hot Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.10 FINISHING FORMED SURFACES

- A. Rough Formed Finish: As cast concrete texture imparted by form facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.
- B. Smooth Formed Finish: As cast concrete texture imparted by form facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.
- C. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
- D. Do not apply rubbed finish to smooth formed finish.

3.11 FINISHING FLOORS AND SLABS

- A. General: Comply with recommendations in ACI 302.1R for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
- C. Apply float finish to slabs-on-grade.
- D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film finish

coating system

- E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
- F. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.12 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings.

3.13 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold weather protection and with recommendations in ACI 305R for hot weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. Ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

3.14 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry pack patching mortar, consisting of one part portland cement to two and one half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than ½ inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
- C. Testing Frequency: Obtain at least one composite sample for each 50 cu. yd. or fraction thereof of each concrete mix placed each day.
1. When frequency of testing will provide fewer than five compressive strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
- D. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
- E. Air Content: ASTM C 231, pressure method, for normal weight concrete;

- ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
- F. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 - G. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
 - H. Compressive Strength Tests: ASTM C 39; test two laboratory cured specimens at 7 days and two at 28 days.
 - 1. compressive strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
 - I. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive strength tests equals or exceeds specified compressive strength and no compressive strength test value falls below specified compressive strength by more than 500 psi.
 - J. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7 and 28 day tests.
 - K. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 - L. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 03300

SECTION 03310 CONCRETE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

- A. Codes and Standards: ACI 301 "Specifications for Structural Concrete Buildings"; ACI 318, "Building Code Requirements for Reinforced Concrete"; comply with applicable provisions except as otherwise indicated.
- B. Concrete Testing Service: Employ acceptable testing laboratory to perform materials evaluation, testing and design of concrete mixes.
- C. Employ separate testing laboratory to evaluate concrete delivered to and placed at site.
- D. Certificates, signed by concrete producer and Contractor, may be submitted in lieu of material testing when acceptable to Architect.
- E. Quality Control: Perform sampling and testing during concrete placement, as follows:
- F. Quality Control: Testing laboratory will perform sampling and testing during concrete placement, which may include the following, as directed by Architect. This testing does not relieve Contractor of responsibility of providing concrete in compliance with specifications. Contractor may perform additional testing as necessary, at no expense to Owner, to ensure quality of concrete.
 - 1. Sampling: ASTM C 172.
 - 2. Slump: ASTM C 143, one test for each load at point of discharge.
 - 3. Air Content: ASTM C 173, one for each set of compressive strength specimens.
 - 4. Compressive Strength: ASTM C 39, one set for each 50 cu. yds. or fraction thereof of each class of concrete; one specimen tested at 7 days, one specimen tested at 28 days, and one retained for later testing if required.
 - 5. When the total quantity of a given class of concrete is less than 50 cu. yds., strength tests may be waived by Architect if field experience indicates evidence of satisfactory strength.
- G. Test results will be reported in writing to Architect, Contractor, and concrete producer within 24 hours after tests are made.
- H. Manufacturer's Data: Submit manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, admixtures, joint materials, hardeners, curing materials and others as requested by Architect.
- I. Laboratory Reports: Submit 2 copies of laboratory test or evaluation reports for concrete materials and mix designs.
- J. Mix Proportions and Design: Proportion mixes complying with mix design procedures specified in ACI 301.
 - 1. Submit written report to Architect for each proposed concrete mix at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and are acceptable to Architect.
 - 2. Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Architect.
 - 3. Use air-entering admixture in all concrete, providing not less than 4 percent nor more than 6 percent entrained air for concrete exposed to freezing and thawing, and from 2 percent to 4 percent for other concrete.

1.02 CONCRETE MATERIALS:

- A. Portland Cement: ASTM C 150, Type as required.
- B. Fly Ash: ASTM C 618, Type C or F.
 - 1. Limit use of fly ash in concrete mix design to not exceed 25 percent of cement content by weight.
- C. Aggregates: ASTM C 33, except local aggregates of proven durability may be used when acceptable to Architect.
- D. Water: Drinkable.

- E. Air-Entraining Admixture: ASTM C 260.
- F. Water-Reducing Admixture: ASTM C 494; type as required to suit project conditions. Only use admixtures which have been tested and accepted in mix designs, unless otherwise acceptable.

1.03 RELATED MATERIALS:

- A. Waterstops: Flat dumbbell or centerbulb type, size to suit joints, of either rubber (CRD C 513) or PVC (CRD C 572).
- B. Moisture Barrier: Clear 6-mils thick polyethylene.
- C. Membrane-Forming Curing Compound: ASTM C 309, Type I.
- D. Joint Fillers: See Division-7.

1.04 MATERIALS:

- A. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.
- B. Exposed Concrete Surfaces: Suitable material to suit project conditions.

1.05 REINFORCING MATERIALS:

- A. Deformed Reinforcing Bars: ASTM A 615, Grade 60, unless otherwise indicated.
- B. Welded Wire Fabric: ASTM A 185.

1.06 FORMING AND PLACING CONCRETE:

- A. Ready-Mix Concrete: ASTM C 94.
- B. Formwork: Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position.
- C. Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.
- D. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate mortar leaks.
- E. Reinforcement: Position, support and secure reinforcement against displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers, as required. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- F. Install welded wire fabric in as long lengths as practicable, lapping at least one mesh.
- G. Joints: Provide construction, isolation, and control joints as indicated or required. Locate construction joints so as to not impair strength and appearance of structure. Place isolation and control joints in slabs-on-ground to stabilize differential settlement and random cracking.
- H. Installation of Embedded Items: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.
- I. Concrete Placement: Comply with ACI, placing concrete in a continuous operation within planned joints or sections. Do not begin placement until work of other trades affecting concrete is completed.
- J. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.
- K. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.
 - 1. In cold weather comply with ACI 306.
 - 2. In hot weather comply with ACI 305.

1.07 CONCRETE FINISHES:

- A. Exposed-to-view Surfaces: Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.
- B. Slab Trowel Finish: Apply trowel finish to monolithic slab surfaces that are exposed-to-view or are

- to be covered with resilient flooring, paint or other thin film coating. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.
- C. Curing: Begin initial curing as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing by use of moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until forms are removed. Provide protections as required to prevent damage to exposed concrete surfaces.

END OF SECTION 03310

**SECTION 04810
UNIT MASONRY ASSEMBLIES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
1. Concrete masonry units.
 2. Face brick.
 3. Mortar and grout.
 4. Reinforcing steel.
 5. Masonry joint reinforcement.
 6. Ties and anchors.
 7. Embedded flashing.
 8. Miscellaneous masonry accessories.
 9. Cavity-wall insulation.
- B. Related Sections include the following:
1. Division 7 Section "Bituminous Dampproofing" for dampproofing applied to cavity face of backup wythes of cavity walls.
 2. Division 7 Section "Water Repellents" for water repellents applied to unit masonry assemblies.
 3. Division 7 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
 4. Division 7 Section "Firestopping" for firestopping at tops of masonry walls and at openings in masonry walls.
 5. Division 10 Section "Louvers and Vents" for wall vents (brick vents).
- C. Products furnished, but not installed, under this Section include the following:
1. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 5 Section "Structural Steel."
- D. Products installed, but not furnished, under this Section include the following:
1. Steel lintels for unit masonry, furnished under Division 5 Section "Metal Fabrications."
 2. Manufactured reglets in masonry joints for metal flashing, furnished under Division 7 Section "Sheet Metal Flashing and Trim."
 3. Hollow-metal frames in unit masonry openings, furnished under Division 8 Section "Steel Doors and Frames."
- E. Allowances: Furnish the following under the allowances indicated, as specified in Division 1 Section "Allowances":
1. Face brick under the Face Brick Allowances.

1.3 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following net-area compressive strengths (f_m) at 28 days. Determine compressive strength of masonry by testing masonry prisms according to ASTM C 1314.
1. For Concrete Unit Masonry: $f_m = 1500$ psi.
 2. For Brick Unit Masonry: $f_m = 2000$ psi.

1.5 SUBMITTALS

- A. Product Data: For each different masonry unit, accessory, and other manufactured product specified.

- B. Shop Drawings: Show fabrication and installation details for the following:
 - 1. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
 - 2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Initial Selection: For the following:
 - 1. Unit masonry Samples in small-scale form showing the full range of colors and textures available for each different exposed masonry unit required.
 - 2. Colored mortar Samples showing the full range of colors available.
- D. Samples for Verification: For the following:
 - 1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.
 - 2. Colored mortar Samples for each color required, showing the full range of colors expected in the finished construction. Make samples using the same sand and mortar ingredients to be used on Project.
 - 3. Weep holes/vents in color to match mortar color.
 - 4. Accessories embedded in the masonry.
- E. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents, unless such deviations are specifically brought to the attention of the Architect and approved in writing.
- F. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- G. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
 - 1. Each type of masonry unit required.
 - a. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.
 - b. Include test results, measurements, and calculations establishing net-area compressive strength of masonry units.
- H. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Each type of masonry unit required.
 - a. Include size-variation data for brick, verifying that actual range of sizes falls within specified tolerances.
 - b. Include test data, measurements, and calculations establishing net-area compressive strength of masonry units.
 - 2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
 - 3. Each material and grade indicated for reinforcing bars.
 - 4. Each type and size of joint reinforcement.
 - 5. Each type and size of anchor, tie, and metal accessory.
- I. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.6 QUALITY ASSURANCE

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- C. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and

inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.

- D. Sample Panels: Before installing unit masonry, build sample panels, using materials indicated for the completed Work, to verify selections made under sample Submittals and to demonstrate aesthetic effects. Build sample panels for each type of exposed unit masonry assembly in sizes approximately 48 inches long by 48 inches high by full thickness.
 - 1. Locate panels in the locations indicated or, if not indicated, as directed by Architect.
 - 2. Clean exposed faces of panels with masonry cleaner indicated.
 - 3. Where masonry is to match existing, erect panels adjacent and parallel to existing surface.
 - 4. Protect approved sample panels from the elements with weather-resistant membrane.
 - 5. Maintain sample panels during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
 - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels, unless such deviations are specifically approved by Architect in writing.
 - 7. Demolish and remove sample panels when directed.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
 - 1. When ambient temperature exceeds 100 deg F, or 90 deg F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated.
- B. Concrete Masonry Units: ASTM C 90 and as follows:
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 - 2. Weight Classification: Lightweight.
 - 3. Provide Type II, nonmoisture-controlled units.
 - 4. Size (Width): Manufactured to the following dimensions:
 - a. 4 inches nominal; 3-5/8 inches actual.
 - b. 6 inches nominal; 5-5/8 inches actual.
 - c. 8 inches nominal; 7-5/8 inches actual.
 - d. 12 inches nominal; 11-5/8 inches actual.
 - 5. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

2.2 BRICK

- A. General: Provide shapes indicated and as follows for each form of brick required:
 - 1. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces.
- B. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
 - 1. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- C. Face Brick: ASTM C 216, Grade SW, Type FBS, and as follows:
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
 - 2. Initial Rate of Absorption: Less than 20 g/30 sq. in. per minute when tested per ASTM C 67.
 - 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
 - 4. Surface Coloring: Brick with surface coloring, other than flashed or sand-finished brick, shall withstand 50 cycles of freezing and thawing per ASTM C 67 with no observable difference in the applied finish when viewed from 10 feet.
 - 5. Size: Manufactured to the following actual dimensions:
 - a. Modular: 3-1/2 to 3-5/8 inches wide by 2-1/4 inches high by 7-1/2 to 7-5/8 inches long.
 - 6. Application: Use where brick is exposed, unless otherwise indicated.
 - 7. Where shown to "match existing," provide face brick matching color range, texture, and

- size of existing adjacent brickwork.
8. Color and Texture: For brick not required to match existing, color and texture shall be selected from Manufacturer's standard.
- 2.3 REINFORCING STEEL
- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; ASTM A 616/A 616M, including Supplement 1; or ASTM A 617/A 617M, Grade 60.
- 2.4 MASONRY JOINT REINFORCEMENT
- A. General: ASTM A 951 and as follows:
1. Hot-dip galvanized, carbon-steel wire for both interior and exterior walls.
 2. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
 3. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
 4. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units where indicated.
- B. For single-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches o.c.
- C. For multiwythe masonry, provide types as follows:
1. Tab type with single pair of side rods spaced for embedment within each face shell of backup wythe and rectangular box-type cross ties spaced not more than 16 inches o.c. Size ties to extend at least halfway through outer wythe but with at least 5/8-inch cover on outside face.
- 2.5 TIES AND ANCHORS, GENERAL
- A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.
- B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
- C. Galvanized Steel Sheet: ASTM A 653/A 653M, G60, commercial-quality, steel sheet zinc coated by hot-dip process on continuous lines before fabrication.
- 2.6 ADJUSTABLE MASONRY-VENEER ANCHORS
- A. General: Provide two-piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
1. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
- B. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie section and a metal anchor section complying with the following requirements:
1. Anchor Section: Sheet metal plate with screw holes top and bottom and with raised rib-stiffened strap stamped into center to provide a slot between strap and plate for connection of wire tie.
- 2.7 MISCELLANEOUS ANCHORS
- A. Anchor Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated and in the following configurations:
1. Headed bolts.
 2. Nonheaded bolts, bent in manner indicated.
- 2.8 EMBEDDED FLASHING MATERIALS
- A. Metal Flashing: Fabricate from the following metal complying with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim" and below:
1. Stainless Steel: 0.0156 inch thick.
 2. Fabricate metal expansion-joint strips from sheet metal indicated above, formed to shape indicated.

3. Fabricate metal drip edges from sheet metal indicated above. Extend at least 3 inches into wall and ½ inch out from wall, with a hemmed outer edge bent down 30 degrees.
- B. Contractor's Option for Concealed Flashing: For flashing partly exposed to the exterior, use metal flashing specified above. For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
 1. Rubberized-Asphalt Flashing: Manufacturer's standard composite flashing product consisting of a pliable and highly adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of 0.030 inch.
 2. Elastomeric Thermoplastic Flashing: Manufacturer's standard composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy 0.040 inch thick with a 0.015-inch-thick layer of rubberized-asphalt adhesive.
 - a. Provide flashing as a complete system with preformed corners, end dams, other special shapes, and seaming materials; all produced by flashing sheet manufacturer.
 3. EPDM Flashing: Manufacturer's standard flashing product formed from a terpolymer of ethylene-propylene diene, complying with ASTM D 4637, 0.040 inch thick.
- C. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by the flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Material as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
 1. Styrene-Butadiene-Rubber Compound: ASTM D 2000, Designation M2AA-805.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD by 4 inches long.
- E. Wicking Material: Cotton or polyester rope, 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity between wythes.
- F. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication.
 1. Provide units with either two loops or four loops as needed for number of bars indicated.

2.10 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gal. of water. This product, or the manufacturer's recommended solution, shall be used on all pre-faced CMUs.
- B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 1. Available Products: Subject to compliance with requirements, products that may be used to clean unit masonry surfaces include the following, or approved equal:
 - a. Cleaners for Red and Light-Colored Brick Not Subject to Metallic Staining with Mortar Not Subject to Bleaching:
 - 1) 202 New Masonry Detergent; Diedrich Technologies, Inc.
 - 2) Sure Klean No. 600 Detergent; ProSoCo, Inc.
 - b. Cleaners for Red and Dark-Colored Brick Not Subject to Metallic Staining:
 - 1) 200 Lime Solv; Diedrich Technologies, Inc.

- 2) Sure Klean No. 101 Lime Solvent; ProSoCo., Inc.
- c. Cleaners for Brick Subject to Metallic Staining:
 - 1) 202V Vana-Stop; Diedrich Technologies, Inc.
 - 2) Sure Klean Vana Trol; ProSoCo, Inc.

2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification.
 - 1. Extended-Life Mortar for Unit Masonry: Mortar complying with ASTM C 1142 may be used instead of mortar specified above, at Contractor's option.
 - 2. Limit cementitious materials in mortar for exterior and reinforced masonry to portland cement, mortar cement, and lime.
 - 3. For masonry below grade, in contact with earth, and where indicated, use Type S.
 - 4. For reinforced masonry and where indicated, use Type S.
 - 5. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 6. For interior non-load-bearing partitions, Type O may be used instead of Type N.
- D. Pigmented Mortar: Select and proportion pigments with other ingredients to produce color required. Limit pigments to the following percentages of cement content by weight:
 - 1. For mineral-oxide pigments and portland cement-lime mortar, not more than 10 percent.
 - 2. For carbon-black pigment and portland cement-lime mortar, not more than 2 percent.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates combined with selected cementitious materials.
 - 1. Mix to match existing.
- F. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 - 2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.
- G. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's directions.

2.12 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Verify that reinforcing dowels are properly placed.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

2.13 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

2.14 CONSTRUCTION TOLERANCES

- A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:
- B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
- C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, nor 1/2 inch maximum.
- D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, nor 1/2 inch maximum.
- E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
- F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

2.15 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
 - 1. One-half running bond with vertical joint in each course centered on units in courses above and below.
- C. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
- E. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- H. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.

2.16 MORTAR BEDDING AND JOINTING

- A. Lay hollow masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed,

including areas under cells.

- B. Lay solid brick-size masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
 - 1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against the cavity face of the brick.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.
 - 1. For glazed masonry units, use a nonmetallic jointer 3/4 inch or more in width.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.

2.17 CAVITIES

- A. Keep cavities clean of mortar droppings and other materials during construction.
 - 1. Use wood strips temporarily placed in cavity to collect mortar droppings. As work progresses, remove strips, clean off mortar droppings, and replace in cavity.
- B. Installing Cavity-Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
 - 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

2.18 MASONRY JOINT REINFORCEMENT

- A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

2.19 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 - 1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
 - 2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

2.20 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten each anchor section to wall framing with two metal fasteners of type indicated.
 - 2. Embed tie sections in masonry joints.
 - 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 4. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than 1 anchor for each 2 sq. ft. of wall area. Install

additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around the perimeter.

2.21 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install preformed control-joint gaskets designed to fit standard sash block.
- C. Form expansion joints in brick made from clay or shale as follows:
 - 1. Build in joint fillers where indicated.
 - 2. Form open joint of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 7 Section "Joint Sealants." Keep joint free and clear of mortar.

2.22 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
 - 1. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.
- C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

2.23 FLASHING, WEEP HOLES, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Unless otherwise indicated, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
- C. Install flashing as follows:
 - 1. At multiwythe masonry walls, including cavity walls, extend flashing from exterior face of outer wythe of masonry, through outer wythe, turned up a minimum of 4 inches, and through inner wythe to within 1/2 inch of the interior face of the wall in exposed masonry. Where interior surface of inner wythe is concealed by furring, carry flashing completely through inner wythe and turn flashing up approximately 2 inches, unless otherwise indicated.
 - 2. At masonry-veneer walls, extend flashing from exterior face of veneer, through veneer, up face of sheathing at least 8 inches, and behind air-infiltration barrier or building paper.
 - 3. At lintels and shelf angles, extend flashing a minimum of 4 inches into masonry at each end. At heads and sills, extend flashing 4 inches at ends and turn flashing up not less than 2 inches to form a pan.
 - 4. Cut flashing off flush with face of wall after masonry wall construction is completed.
- D. Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:
 - 1. Use round plastic tubing or wicking material to form weep holes.
 - 2. Use wicking material to form weep holes above flashing in brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
 - 3. Space weep holes formed from plastic tubing or wicking material 16 inches o.c.
- E. Trim wicking material used in weep holes flush with outside face of wall after mortar has set.
- F. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

2.24 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
 - 1. Construct formwork to conform to shape, line, and dimensions shown. Make it sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.
 - 1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2.25 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing the surfaces thoroughly with clear water.
 - 5. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
 - 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

END OF SECTION 04810

SECTION 05500 METAL FABRICATIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This section includes the following metal fabrications:
 - 1. Loose bearing and leveling plates.
 - 2. Loose steel lintels.
 - 3. Miscellaneous framing and supports for the following:
 - a. Applications where framing and supports are not specified in other sections.
 - 4. Miscellaneous steel trim.
 - 5. Shelf and relieving angles.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 13 Section "Metal Building Systems" for structural steel framing components of pre-engineered metal building systems.

1.03 DEFINITIONS

- A. Definitions in ASTM E 985 for railing-related terms apply to this section.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for products used in miscellaneous metal fabrications, including paint products and grout.
- C. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.
 - 1. Where installed metal fabrications are indicated to comply with certain design loadings, include structural computations, material properties, and other information needed for structural analysis that has been signed and sealed by the qualified professional engineer who was responsible for their preparation.
 - 2. Samples representative of materials and finished products as may be requested by Architect.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Installer Qualifications: Arrange for installation of metal fabrications specified in this section by same firm that fabricated them.
- C. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code - Steel."
 - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction

progress to avoid delay of Work.

1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabrication of products without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 – PRODUCTS

2.01 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
- B. Steel Plates, Shapes, and Bars: ASTM A 36.
- C. Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade, as follows:
 1. Cold-Rolled Structural Steel Sheet: ASTM A 611, grade as follows:
 - a. Grade A, unless otherwise indicated or required by design loading.
 2. Hot-Rolled Structural Steel Sheet: ASTM A 570, grade as follows:
 - a. Grade 30, unless otherwise indicated or required by design loading.
- D. Uncoated Steel Sheet: Commercial quality, product type (method of manufacture) as follows:
 1. Cold-Rolled Steel Sheet: ASTM A 366.
 2. Hot-Rolled Steel Sheet: ASTM A 569
- E. Steel Pipe: ASTM A 53; finish, type, and weight class as follows:
 1. Black finish, unless otherwise indicated.
 2. Galvanized finish for exterior installations and where indicated.
- F. Malleable Iron Castings: ASTM A 47, grade 32510.
- G. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- H. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.
- I. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

2.02 GROUT AND ANCHORING CEMENT

- A. Nonshrink Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with CE CRD- C 621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include but are not limited to the following:
 - 1 Nonshrink Nonmetallic Grouts:
 - a. "Bonsal Construction Grout"; W. R. Bonsal Co.
 - b. "Masterflow 713"; Master Builders.
 - c. "Sealtight 588 Grout"; W. R. Meadows, Inc.

2.03 FASTENERS

- A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
- C. Lag Bolts: Square head type, FS FF-B-561.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92.
- E. Wood Screws: Flat head carbon steel, FS FF-S-111.

- F. Plain Washers: Round, carbon steel, FS FF-W-92.
- G. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [nondrilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.
- H. Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.
- I. Lock Washers: Helical spring type carbon steel, FS FF-W-84.

2.04 PAINT

- A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-645.
- B. Galvanizing Repair Paint: High zinc dust content paint for reglazing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint-20.

2.05 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 100 deg F (55.5 deg C).
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Weld corners and seams continuously to comply with AWS recommendations and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- K. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.06 ROUGH HARDWARE

- A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.07 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

2.08 LOOSE STEEL LINTELS

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated.
- D. Galvanize loose steel lintels located in exterior walls.

2.9 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated or which are not parts of structural steel framework, as required to complete work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
 - a. Except as otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide x 1/4 inch x 8 inches long.
- C. Fabricate support for suspended toilet partitions as follows:
 - 1. Beams: Continuous steel shapes of size required to limit deflection to L/360 between hangers, but use not less than C 8 x 11.5 channels or another shape with equivalent structural properties.
 - 2. Hangers: Steel rods, 1/2 inch in diameter, spaced not more than 36 inches o.c. Thread rods to receive anchor and stop nuts. Fit hangers with wedge shape washers for full bearing on sloping flanges of support beam.
 - 3. Braces and Angles: Steel angles of size required for rigid support of beam and for secure anchorage.
- D. Galvanize miscellaneous framing and supports in the following locations:
 - 1. Exterior locations.
 - 2. Interior locations where indicated.

2.10 MISCELLANEOUS STEEL TRIM

- A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.
- B. Galvanize miscellaneous framing and supports in the following locations:
 - 1. Exterior locations.
 - 2. Interior locations where indicated.

2.11 SHELF AND RELIEVING ANGLES

- A. Fabricate shelf and relieving angles from steel angles of sizes indicated and for attachment to concrete framing. Provide slotted holes to receive $\frac{3}{4}$ inch bolts, spaced not more than 6 inches from ends and not more than 24 inches o.c., unless otherwise indicated.
- B. For cavity walls, provide vertical channel brackets to support shelf/relieving angles from back-up masonry and concrete. Align expansion joints in angles with indicated expansion joints in cavity wall exterior wythe.
- C. Galvanize shelf angles to be installed on exterior concrete framing.
- D. Furnish wedge-type concrete inserts, complete with fasteners, for attachment of shelf angles to cast-in-place concrete.

2.12 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
- B. Finish metal fabrications after assembly.

2.13 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Exteriors (SSPC Zone 1B): SSPC-SP6 "Commercial Blast Cleaning."
 - 2. Interiors (SSPC Zone 1A): SSPC-SP3 "Power Tool Cleaning"
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.
 - 1. Stripe paint all edges, corners, crevices, bolts, welds, and sharp edges.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.
- B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.02 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

3.03 SETTING LOOSE PLATES

- A. Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.
- B. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
 - 1. Use nonmetallic nonshrink grout in exposed locations, unless otherwise indicated.
 - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.04 ADJUSTING AND CLEANING

- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
 - 1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 05500

SECTION 06100 ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Framing with dimension lumber.
 - 2. Framing with engineered wood products.
 - 3. Wood furring, grounds, nailers, and blocking.
 - 4. Sheathing.
 - 5. Subflooring.
 - 6. Underlayment.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Finish Carpentry" for nonstructural carpentry items exposed to view and not specified in another Section.

1.3 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for the following products:
 - 1. Engineered wood products.
 - 2. Underlayment.
 - 3. Insulating sheathing.
 - 4. Air-infiltration barriers.
 - 5. Metal framing anchors.
 - 6. Construction adhesives.
- C. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee's (ALSC) Board of Review.
- D. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
 - 3. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- E. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.
- F. Warranty of chemical treatment manufacturer for each type of treatment.
- G. Research or evaluation reports of the Southern Standard Building Code Congress acceptable to authorities having jurisdiction that evidence the following products' compliance with building code in effect for Project.
 - 1. Engineered wood products.
 - 2. Foam-plastic sheathing.

3. Air-infiltration barriers.
4. Metal framing anchors.
5. Power-driven fasteners.
6. Fire-retardant-treated wood.

1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood product from one source and by a single manufacturer.
- B. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by a single producer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
 1. SPIB - Southern Pine Inspection Bureau.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
- D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 1. Provide dressed lumber, S4S, unless otherwise indicated.
 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPAC2 (lumber) and AWPAC9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
 1. Do not use chemicals containing chromium or arsenic.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. Ft.. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing members less than 18 inches above grade.
4. Wood floor plates installed over concrete slabs directly in contact with earth.
- C. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWP A M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.4 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWP A C20 (lumber) and AWP A C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Research or Evaluation Reports: Provide fire-retardant-treated wood acceptable to authorities having jurisdiction and for which a current model code research or evaluation report exists that evidences compliance of fire-retardant-treated wood for application indicated.
- B. Interior Type A: For interior locations, use chemical formulation that produces treated lumber and plywood with the following properties under conditions present after installation:
 1. Bending strength, stiffness, and fastener-holding capacities are not reduced below values published by manufacturer of chemical formulation under elevated temperature and humidity conditions simulating installed conditions when tested by a qualified independent testing agency.
 2. No form of degradation occurs due to acid hydrolysis or other causes related to treatment.
 3. Contact with treated wood does not promote corrosion of metal fasteners.
- C. Exterior Type: Use for exterior locations and where indicated.
- D. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

2.5 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. Non-Load-Bearing Interior Partitions: Provide framing of the following grade and species:
 1. Grade: Standard, Stud, or No. 3.
 2. Species: Southern pine; SPIB.
- C. Exterior and Load-Bearing Walls: Provide framing of the following grade and species:
 1. Grade: Construction or No. 2.
 2. Species: Southern pine; SPIB.
- D. Ceilings (Non-Load-Bearing): For ceiling framing that does not support a floor, roof, or attic, provide the following grade and species:
 1. Grade: Construction or No. 2.
 2. Species: Southern pine; SPIB.
- E. Other Framing Not Listed Above: Provide the following grades and species:
 1. Grade: Construction or No. 2.
 2. Species: Southern pine; SPIB.

2.6 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.7 WOOD-BASED STRUCTURAL-USE PANELS, GENERAL

- A. Structural-Use Panel Standards: Provide either all-veneer, mat-formed, or composite panels complying with DOC PS 2, "Performance Standard for Wood-Based Structural-Use Panels," unless otherwise indicated. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated.
- B. Trademark: Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements.

2.8 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

- A. General: Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance-rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail (where applicable).
 - 1. Thickness: Provide panels meeting requirements specified but not less than thickness indicated.
 - 2. Span Ratings: Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."
- B. Subflooring: APA-rated sheathing.
 - 1. Exposure Durability Classification: Exterior.
 - 2. Span Rating: As required to suit joist spacing indicated.
- C. Wall Sheathing: APA-rated sheathing.
- D. Roof Sheathing: APA-rated sheathing.
- E. Roof Sheathing: APA-rated Structural I sheathing.

2.9 STRUCTURAL-USE PANELS FOR BACKING

- A. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 15/32 inch thick.

2.10 STRUCTURAL-USE PANELS FOR UNDERLAYMENT

- A. Plywood Underlayment for Resilient Flooring: For underlayment 19/32 inch thick, provide plywood panels with fully sanded face and as follows:
 - 1. Grade: APA A-C Underlayment Exterior.

2.11 GYPSUM SHEATHING

- A. Gypsum Sheathing Board: Water-resistant-core gypsum sheathing board complying with ASTM C 79 with long edges surfaced with water-repellent paper and as follows:
 - 1. Type: X.
 - 2. Edge Configuration: Square, for vertical application.
 - 3. Thickness: 5/8 inch.

2.12 FOAM-PLASTIC SHEATHING

- A. Extruded Cellular Polystyrene Sheathing: ASTM C 578, Type IV, in manufacturer's standard lengths and widths with T & G or shiplap long edges as standard with manufacturer.
 - 1. Thickness: 1 inch.
- B. Polyisocyanurate Foam Sheathing: Rigid, closed-cell foam board; formed by expanding polyisocyanurate resin using hydrochlorofluorocarbons (HCFCs); with aluminum foil facings laminated to both sides; complying with FS HH-I-1972/1, Class 1 or 2; with a thermal resistance (R-value) for 1-inch thickness of 7.2 deg F x h x sq. ft./Btu at 75 deg F; in thicknesses indicated. Foam-plastic core, 4-1/4 inches thick or less, and facings shall have flame spread of 25 or less, when tested individually.

2.13 AIR-INFILTRATION BARRIER

- A. Asphalt-saturated organic felt complying with ASTM D 226, Type I (No. 15 asphalt felt), unperforated.
- B. Air retarder complying with ASTM E 1677; made from polyolefins; either cross-laminated films, woven strands, or spunbonded fibers; coated or uncoated; with or without perforations to transmit water vapor but not liquid water; and as follows:

1. Minimum Thickness: 3 mils.
2. Minimum Water-Vapor Transmission: 10 perms when tested according to ASTM E 96, Procedure A.
3. Maximum Flame Spread: 25 per ASTM E 84.
4. Minimum Allowable Exposure Time: 3 months.

2.14 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.15 METAL FRAMING ANCHORS

- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size as required and as follows:
 1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.
 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated.

2.16 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch; selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.
- C. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other

- construction.
 - D. Apply field treatment complying with AWPAC M4 to cut surfaces of preservative-treated lumber and plywood.
 - E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. "Table 1705.1--Fastening Schedule," of the Standard Building Code.
 - F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.
 - G. Use hot-dip galvanized or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity.
 - H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
- 3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS
- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 - B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- 3.3 WOOD FURRING
- A. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
 - 1. Firestop furred spaces of walls at each floor level and at ceiling with wood blocking or noncombustible materials, accurately fitted to close furred spaces.
 - B. Furring to Receive Plywood Paneling: Install 1-by-3-inch nominal- size furring at 24 inches o.c., horizontally and vertically. Select furring with no knots capable of producing bent-over nails and damage to paneling.
 - C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal- size furring at 16 inches o.c., vertically.
 - D. Furring to Receive Plaster Lath: Install 1-by-2-inch nominal- size furring at 16 inches o.c., vertically.
- 3.4 WOOD FRAMING, GENERAL
- A. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
 - B. Install framing members of size and at spacing indicated.
 - C. Do not splice structural members between supports.
 - D. Firestop concealed spaces of wood-framed walls and partitions at each floor level and at ceiling line of top story. Where firestopping is not inherent in framing system used, provide closely fitted wood blocks of 2-inch nominal- thickness lumber of same width as framing members.
- 3.5 WALL AND PARTITION FRAMING
- A. General: Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow face is parallel. Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail or anchor plates to supporting construction, unless otherwise indicated.
 - 1. For exterior walls, provide 2-by-4-inch nominal- size wood studs spaced 16 inches o.c., except where otherwise indicated or required.
 - 2. For interior partitions and walls, provide 2-by-4-inch nominal- size wood studs spaced 16 inches o.c., except where otherwise indicated or required.
 - B. Construct corners and intersections with 3 or more studs. Provide miscellaneous blocking and framing as shown and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide continuous horizontal blocking at mid-height of single-story partitions over 96 inches high and multistory partitions, using members of 2-inch nominal thickness and of same width as wall or partitions.
 - C. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Set headers on edge and support on jamb studs.
 1. For non-load-bearing partitions, provide double-jamb studs with headers not less than 4-inch nominal depth for openings 36 inches and less in width, and not less than 6-inch nominal depth for wider openings.
 2. For load-bearing walls, provide double-jamb studs for openings 72 inches and less in width, and triple-jamb studs for wider openings. Provide headers of depth shown or, if not shown, as recommended by AFPA's "Manual for Wood Frame Construction."
 - D. Provide bracing in exterior walls, at both walls of each external corner, full-story height, unless otherwise indicated.
- 3.6 INSTALLATION OF STRUCTURAL-USE PANELS
- A. General: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
 1. Comply with "Code Plus" provisions of above-referenced guide.
 - B. Fastening Methods: Fasten panels as indicated below:
 1. Subflooring: Glue and nail to framing throughout (see plans).
 - a. Space panels 1/8 inch at edges and ends.
 2. Sheathing: Nail to framing.
 - a. Space panels 1/8 inch at edges and ends.
 3. Underlayment: Nail to subflooring.
 - a. Space panels 1/32 inch at edges and ends.
 - b. Fill and sand edge joints of underlayment receiving resilient flooring just before installing flooring.
 4. Plywood Backing Panels: Nail or screw to supports.
- 3.7 FOAM-PLASTIC SHEATHING
- A. Comply with manufacturer's written instructions for applying sheathing. Install vapor relief strips or equivalent for permitting escape of moisture vapor that otherwise would be trapped in stud cavity behind sheathing.
- 3.8 FIBERBOARD SHEATHING
- A. Fasten fiberboard sheathing panels to intermediate supports and then at edges and ends. Use galvanized roofing nails or galvanized staples. Nail or staple to comply with manufacturer's recommended spacing and referenced fastening schedule. Drive fasteners flush with surface of sheathing and locate perimeter fasteners at least 3/8 inch from edges and ends.
 - B. Install 48-by-96-inch or longer sheathing vertically with long edges parallel to, and centered over, studs. Install solid wood blocking where end joints do not occur over framing. Allow 1/8-inch open space between edges and ends of adjacent units. Stagger horizontal joints, if any.
 - C. Apply air-infiltration barrier over sheathing as soon as practical after installation to prevent deterioration from wetting.
- 3.9 AIR-INFILTRATION BARRIER
- A. Cover sheathing with air-infiltration barrier as follows:
 1. Apply air-infiltration barrier to cover upstanding flashing with 4-inch overlap.

END OF SECTION 06100

SECTION 06113 ROOF SHEATHING

PART 1-GENERAL

1.01 RELATED DOCUMENTS

- A. The general provisions of the contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this section.

1.02 SCOPE

- A. Wood roof sheathing replacement.

1.03 QUALITY ASSURANCE

- A. Grading rules of the following associations apply to materials furnished under this section, conform to PS-1.
 - 1. American Plywood Association (APA).
- B. Grade Marks: Identify all plywood by official grade mark.
 - 1. Softwood Plywood: Appropriate grade trademark of the American Plywood Association.
 - a. Type, grade, class and identification index.
 - b. Inspection and testing agency mark.

1.04 PRODUCT DELIVERY, STORAGE & HANDLING:

- A. Immediately upon delivery to job site, place materials in area protected from weather.
- B. Store materials a minimum of 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.
- C. Do not store seasoned materials in wet or damp portions of building.
- D. Protect fire-retardant materials against high humidity and moisture during storage and erection.
- E. Protect sheet materials from corners breaking and damaging surfaces, while unloading.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Plywood
 - 1. Exterior graded plywood where edge or surface is permanently exposed to weather and where indicated.
 - 2. Roof sheathing:
 - a. Grade: Standard with exterior glue.
 - b. Identification index: 24/0 or greater.
 - c. ½ inch minimum thickness, or as indicated on the drawings, to match existing.
- B. Building Paper:
 - 1. Asphalt-saturated felt: ASTM D 226 #30 non-perforated.
 - 2. Asphalt-saturated organic felt: ASTM D 250 #30 non-perforated.

PART 3 - EXECUTION

3.01 CONDITIONS OF SURFACES

- A. Verify that surfaces to receive sheathing are level, plumb and prepared to exact grades and dimensions.

3.02 INSTALLATION

A. Roof Sheathing

Plywood Sheathing

- a. Install plywood with face grain perpendicular to supports, using panel with continuous end joints over two or more spans staggered between panels and locate over supports.
- b. Allow minimum space 1/16 inch between end joints and 1/8 inch at edge joints for expansion and contraction of panels.
- c. Support edge joints by use of plyclips or lumber blocking.
- d. Nail 6 inches o.c. along panel edges and 12 inches o.c. at intermediate supports.
- e. Use 6d common, smooth ring-shank, or spiral-thread nails for panels ½ inch thick or less and 8d greater thickness.
- g. Install "H" clips between each truss or rafter.

3.03ADJUST AND CLEAN:

- A. Protect wood decking with protective waterproof covering until roofing has been installed.

END OF SECTION 06113

SECTION 06200 FINISH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.
- B. Types of finish carpentry work in the section include:
 - 1. Interior and exterior running and standing trim.

1.03 SUBMITTALS:

- A. Samples: Submit the following samples for each species and cut or pattern of finish carpentry.
 - 1. Interior and exterior standing and running trim.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.05 JOB CONDITIONS:

- A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
- B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

PART 2 - PRODUCTS

2.01 WOOD PRODUCT QUALITY STANDARDS:

- A. Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.
- B. Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.
- C. Woodworking Standard: Where indicated for a specific product comply with specified

provision of the following:

1. Architectural Woodwork Institute (AWI) "Quality Standards".

2.02 MATERIALS:

A. General:

1. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and patterns as shown, unless otherwise indicated.
2. Moisture Content of Softwood Lumber: Provide seasoned (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.
3. Moisture Content of Hardwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.
4. Lumber for Painted Finish: At Contractor's option, use pieces which are either glued-up lumber or made of solid lumber stock.

B. Interior Finish Carpentry:

1. Standing and Running Trim for Painted Finish: Any Western soft- wood or Southern Yellow Pine species graded and inspected by WWPA complying with following requirements.
 - a. Grade for Standard Sizes and Patterns: "C Select"

C. Miscellaneous Materials:

1. Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the type, size, material and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.
- B. Pre-Installation Meeting: Meet at project site prior to delivery of finish carpentry materials and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor, Architect and Owner Representatives (If any), Installers of finish carpentry, wet work including plastering, other finishes, painting, mechanical work and electrical work, and firms and persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with finish carpentry on interior only when everyone concerned agrees that required ambient conditions can be properly maintained.

3.02 INSTALLATION:

- A. Discard units of material which are unsound, warped, bowed twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacturer

- with respect to surfaces, sizes or patterns.
- B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.
 - C. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
 - D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum lengths of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints.
 - E. Anchor finish carpentry work to anchorage devices or blocking built-in directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

3.03 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

- A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
- B. Refer to Division-9 sections for final finishing of installed finish carpentry work.
- C. Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06200

SECTION 06400 ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Laminate-clad cabinets (plastic-covered casework).
 - 2. Plastic-laminate countertops.
 - 3. Solid-surface material countertops.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Rough Carpentry" for furring, blocking, and other carpentry work concealed in the wall.
 - 2. Division 8 Section "Wood Doors" for doors specified by reference to architectural woodwork standards.
 - 3. Division 9 Section "Painting" for field finishing of installed interior architectural woodwork.
 - 4. Division 6 Section "Finish Carpentry" for hardwood-veneered interior paneling and standing and running trim.

1.03 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction prior to woodwork installation.

1.04 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
- C. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcing specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other items installed in architectural woodwork.
- D. Samples of the following in the form of manufacturer's color charts consisting of actual units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.
 - 1. Shop-applied stain finishes.
 - 2. Plastic laminates.
 - 3. Thermoset decorative overlays.
 - 4. Solid surface material.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
- B. Installer Qualifications: Arrange for interior architectural woodwork installation by a firm that can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this Project.
- C. Single-Source Responsibility for Fabrication and Installation: Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this Section.

- D. Quality Standard: Except as otherwise indicated, comply with the following standard:
 - 1. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes, and other requirements.
 - a. Provide AWI Certification Labels or Certificates of Compliance indicating that woodwork meets requirements of grades specified.
 - b. NOTE: Where the drawings refer to "panels" this shall mean the AWI required substrate (i.e. plywood, particle board, etc) unless specifically indicated otherwise.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings.
 - 2. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.08 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated:
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD..
 - 3. Particleboard: ANSI A208.1, Grade M-2.
 - 4. Softwood Plywood: PS 1.
 - 5. Hardwood Plywood and Face Veneers: HPVA HP-1, made with an adhesive containing no area formaldehyde.
 - a. Wood species and cut: Maple, quarter sawn.
- B. Fiberboard: Medium-density fiberboard made without formaldehyde and complying with ANSI A208.2.
 - 1. Product: Subject to compliance with requirements, provide Medite II by Medite Corp.
- C. Particleboard: ANSI A208.1, Grade M-2 made with phenol-formaldehyde resins.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that the architect may incorporate in the Work include, but are not limited to, the following:
 - a. Formica Corporation (Basis of Design).
 - b. Laminart.
 - c. Nevamar Corp.
 - d. Wilsonart.
 2. All laminate products offered by the above companies, including premium products, hardwood veneers, metal laminates, etc. may be incorporated into the Work by the Architect. No up-charges will be accepted as a result of final laminate selection.
 - E. Adhesive for Bonding Plastic Laminate: As recommended by manufacturer.
 - F. Thermoset Decorative Overlay: Decorative surface of thermally fused polyester or melamine-impregnated web, bonded to specified substrate and complying with ALA 1992.
 1. Substrate: Medium-density particleboard.
 2. Solid Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with the material and performance requirements of ANSI Z124.3, Type 5 or Type 6, without a precoated finish. Refer to Section 10001-Miscellaneous Specialties.
 - G. Composite Solid Surface Panels: through-body material, minimum 90% composition of quartz with polymer and colorants. Selection by architect from standard manufacturer finishes for the noted grade range.
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that the architect may incorporate in the Work include, but are not limited to, the following:
 - a. Ceasarstone (Basis of Design).
 - b. Corian.
 - c. Wilsonart.
 2. Adhesives and joint fillers as recommended by manufacturer.
- 2.02 CABINET HARDWARE AND ACCESSORY MATERIALS
- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
 - B. Cabinet Hardware Schedule: Refer to schedule at end of this Section for cabinet hardware required for architectural cabinets.
 - C. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.
 1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
 - D. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.
- 2.03 INSTALLATION MATERIALS
- A. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.
 - B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
 - C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.
- 2.04 FABRICATION, GENERAL
- A. Interior Woodwork Grade: Provide interior woodwork complying with the referenced quality standard and of the following grade:
 1. Grade: Custom, unless indicate otherwise.
 2. Grade: Premium for Reception Desks.
 - B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to relative humidity conditions existing during time of fabrication and in installation areas.

- C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of cabinets and edges of solid-wood (lumber) members 3/4 inch (19 mm) thick or less: 1/16 inch (1.5 mm).
 - 2. Edges of rails and similar members more than 3/4 inch (19 mm) thick: 1/8 inch (3 mm).
 - 3. Corners of cabinets and edges of solid-wood (lumber) members and rails: 1/16 inch (1.5 mm).
 - D. Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Trial fit assemblies at the fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on approved shop drawings before disassembling for shipment.
 - E. Shop-cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges with a water-resistant coating.
- 2.05 LAMINATE-CLAD CABINETS (PLASTIC-COVERED CASEWORK)
- A. Quality Standard: Comply with AWI Section 400 requirements for laminate-clad cabinets.
 - B. AWI Type of Cabinet Construction: Flush overlay.
 - C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - 1. Horizontal Surfaces Other than Tops: GP-50, 0.050-inch (1.270-mm) nominal thickness.
 - D. Postformed Surfaces: PF-42, 0.042-inch (1.067-mm) nominal thickness.
 - E. Vertical Surfaces: GP-28, 0.028-inch (0.711-mm) nominal thickness.
 - F. Edges: PVC tape, 0.018-inch (0.460-mm) minimum thickness matching laminate in color, pattern, and finish.
 - G. Materials for Semiexposed Surfaces: Provide surface materials indicated below:
 - 1. Surfaces Other than Drawer Bodies: Thermoset decorative overlay.
 - 2. Drawer Sides and Backs: Thermoset decorative overlay.
 - 3. Drawer Bottoms: Hardwood plywood, shop finished.
 - H. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As selected by Architect from manufacturer's full range of available colors, patterns, and finishes.
 - I. Provide dust panels of 1/4-inch (6.4-mm) plywood or tempered hardboard above compartments and drawers except where located directly under tops.
- 2.06 COUNTERTOPS
- A. Quality Standard: Comply with AWI Section 400 requirements for countertops.
 - B. Type of Top: High-pressure decorative laminate complying with the following:
 - 1. Grade: GP-50, 0.050-inch (1.270-mm) nominal thickness.
 - 2. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. As selected by Architect from manufacturer's full range of available colors, patterns, and finishes.
 - 3. Grain Direction: Parallel to cabinet fronts.
 - C. Edge Treatment: Same as laminate cladding on horizontal surfaces.
- 2.07 SOLID-SURFACING-MATERIAL COUNTERTOPS
- A. Quality Standard: Comply with AWI Section 400 requirements for countertops.
 - B. Grade: Premium
 - C. Solid-Surfacing-Material Thickness: 1/2 inch

- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
 - 1. Provide Architect's selections from manufacturer's full range of colors and finishes.
 - E. Fabricate tops in one piece with shop-applied backsplashes and edges, unless otherwise indicated. Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.
 - F. Drill holes in countertops for plumbing fittings and soap dispensers in shop.
 - G. Grommet holes in countertop for cables to be field located by owner and drilled and trimmed on site.
 - H. Edge profile: chamfered or eased as noted in drawings.
- 2.08 SHOP FINISHING OF INTERIOR ARCHITECTURAL WOODWORK
- A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.
 - B. General: The entire finish of interior architectural woodwork is specified in this Section, regardless of whether shop applied or applied after installation.
 - 1. Shop Finishing: To the greatest extent possible, finish architectural woodwork at the fabrication shop. Defer only final touch up, cleaning, and polishing until after installation.
 - C. General: The priming and shop finishing of interior architectural woodwork required to be performed at the fabrication shop are specified in this Section. Refer to Division 9 Section "Painting and Coating" for material and application requirements.
 - D. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer compatible with finish coats to concealed surfaces of woodwork, including backs of trim, cabinets, paneling, and ornamental work and the underside of countertops. Apply 2 coats to back of paneling. Concealed surfaces of plastic laminate-clad woodwork do not require backpriming when surfaced with plastic laminate or thermoset decorative overlay.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).
- C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- E. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Do not use pieces less than 36 inches (900 mm) long, except where necessary. Stagger joints in adjacent and related members. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
 - 1. Install standing and running trim with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) variation from a straight line.

- F. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Maintain veneer sequence matching of cabinets with transparent finish.
 - G. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant. Caulk perimeter of cabinet junction with wall.
 - 1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - H. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) o.c.
 - I. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips and by blind nailing on backup strips, splined-connection strips, and similar associated trim and framing. Do not face nail unless otherwise indicated.
 - 1. Install flush paneling with no more than 1/16 inch in 96-inch (1.5 mm in 2400-mm) vertical cup or bow and 1/8 inch in 96-inch (3 mm in 2400-mm) horizontal variation from a true plane.
 - J. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in the shop.
 - K. Refer to Division 9 Sections for final finishing of installed architectural woodwork.
- 3.03 ADJUSTING AND CLEANING
- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
 - B. Clean, lubricate, and adjust hardware.
 - C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
- 3.04 PROTECTION
- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.
- 3.05 CABINET HARDWARE AND ACCESSORY SCHEDULE
- A. Available Manufacturers: Subject to compliance with project requirements, provide products by one of the following:
 - 1. Hafele
 - 2. K & V
 - 3. Accuride
 - 4. Julius Blum & Company
 - 5. Grass American
 - 6. Stanley Works
 - 7. EPCO
 - B. Hinges: Provide number of hinges recommended by hinge manufacturer for size and weight of door.
 - 1. Concealed (European Type) Hinges: for 3/4 inch-thick doors 20 inches or less in width. Grass 3000 Series, No. 3803, 120 deg. Swing, self-closing from 10 deg., Bright nickel finish.
 - 2. Butt Hinges: For 1 inch to 1-1/4-inch-thick doors and 3/4 inch-thick doors more than 20 inches in width: 2-3/4-inch, 5-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:
 - a. Semiconcealed for Flush Doors: BHMA A 156.9, B01361.
 - b. Semiconcealed for Overlay Doors: BHMA A 156.9, B01521.

- C. Door and Drawer Wire Pulls: EPCO; MC-402-3.5, 3-1/2 inch center to center of screws, 1 1/2-inch-projection, 5/16-inch-diameter; stainless steel.
- D. Catches: As follows:
 - 1. Push-in Magnetic Catches: B03131.
- E. Adjustable Shelf Standards:
 - 1. Multiple Holes (5 mm dia. with pins).
- F. Drawer Slides:
 - 1. Material Quality Standard: BHMA A156.9, B05091, Grade (load rating) as indicated.
 - 2. Description: Side or rail mounted, travel as indicated, progressive movement, zinc-plated steel slides with all steel ball bearings.
 - 3. Box Drawers Product Standards:
 - a. 24 Inches Wide and Less: Grade 1HD-100, full extension; Accuride "7434".
 - b. Wider than 24 inches: Grade 1HD-100, full extension; Accuride "7432".
 - 4. File Drawers Product Standard: 42 inches wide and less, Grade 1HD-200, full extension with one inch over travel; Accuride "3640"
 - 5. Pencil Drawers Product Standard: 16 inches wide and less, low profile, 75 pound load rating (at 2/3 travel), full extension; Accuride "2632".
- G. Door and Drawer Locks: K & V No. 986 or 987, nickel plated.
- H. Cable Cover Grommets: Hafele; 429.93; color as selected by Architect.

END OF SECTION

SECTION 06402 INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" by AWI.
- B. WIC Quality Standard: Comply with applicable requirements of "Manual of Millwork" by WIC.
- C. WIC Quality Marking: Mark each unit of the following types of architectural woodwork with WIC Certified Compliance Label indicating quality grade required.
- D. Shop Drawings: Submit shop drawings for each item of architectural woodwork.
Samples: Submit finished samples of each wood species and cut indicated for transparent finish; of each material indicated for opaque finish; of each color, pattern, and finish of plastic laminate; and of each type of cabinet hardware.

1.02 PRODUCTS

- A. Interior Wood: Materials as follows:
 - 1. Lumber Species for Opaque Finish: Any closed-grain hardwood listed in referenced woodworking standard.
- B. Formaldehyde Emission Levels: Comply with formaldehyde emission requirements of each voluntary standard referenced below:
 - 1. Hardwood Plywood: HPMA FE.
- C. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
- D. Wood Cabinets for Opaque Finish: As follows:
 - 1. Grade: Custom.
 - 2. AWI Type of Cabinet Construction: Flush overlay.
- F. Cabinet Hardware: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 section "Finish Hardware."
 - 1. Cabinet Hardware Schedule: Refer to schedule at end of this section for cabinet hardware required for architectural cabinets.
 - 2. Hardware Standard: Comply with ANSI/BHMA A156.9 "American National Standard for Cabinet Hardware" for items indicated by reference to BHMA numbers or referenced to this standard.
 - 3. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA code number indicated.
Satin Chromium Plated,: BHMA 626.
 - 4. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of ANSI/BHMA A156.9.
- H. Architectural Cabinet Tops: As follows:
 - 1. Plastic laminate on $\frac{3}{4}$ " plywood.
 - a. Grade: Custom.
- I. Finishes for Architectural Woodwork: Finish architectural woodwork as follows.
 - 1. Provide factory finish system of type indicated for the following types of architectural woodwork.
 - a. Cabinets.

1.03 EXECUTION

- A. Install woodwork to comply with AWI Section 1700 for same grade specified in Part 2 of this section for type of woodwork involved.
- B. Tops: Anchor securely to base units.

END OF SECTION 06402

SECTION 07115 SHEET WATERPROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 SUMMARY:

- A. Extent of each type of sheet waterproofing work is indicated on drawings.
- B. Types of sheet waterproofing specified in this section include the following:
 - 1. EPDM sheet waterproof membranes.
 - 2. PVC sheet waterproof membranes.

1.03 SYSTEM PERFORMANCE:

- A. Provide sheet waterproofing products which have been produced and installed to establish and maintain watertight continuous seals.

1.04 SUBMITTALS:

- A. Product Data: Submit product data and general recommendations from waterproofing materials manufacturer, for types of waterproofing required. Include data substantiating that materials comply with requirements.

1.05 QUALITY ASSURANCE:

- A. Manufacturer: Obtain primary waterproofing materials of each type required from a single manufacturer, to greatest extent possible. Provide secondary materials only as recommended by manufacturer of primary materials.
- B. Installer: Firm with not less than 3 years of successful experience in installation of waterproofing similar to requirements for this project and which is acceptable to manufacturer of primary waterproofing materials.

1.06 PROJECT CONDITIONS:

- A. Substrate: Proceed with work after substrate construction, openings, and penetrating work have been completed.
- B. Weather: Proceed with waterproofing and associated work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

1.07 SPECIAL PROJECT WARRANTY:

- A. Provide written warranty, agreeing to replace/repair defective materials and workmanship. Warranty includes responsibility for removal and replacement of other work which conceals sheet waterproofing.
 - 1. Warranty period is 5 years after date of substantial completion.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Provide sheet waterproofing materials complying with required performance. Other similar materials certified in writing to be equal-to-or-better than specified may be used if acceptable to Architect.

2.02 EPDM SHEET WATERPROOFING:

- A. Ethylene propylene diene monomers formed into uniform flexible sheets of thickness shown, or if no thickness is shown, not less than 1/16" thick, complying with the following:
 - 1. Hardness: 50 to 70 Shore A; ASTM D 2240.
 - 2. Tensile Strength: 1400 psi; ASTM D 412.
 - 3. Ultimate Elongation: 300 percent; ASTM D 412.
 - 4. Brittleness Temperature: -75 deg F (-59 deg C); ASTM D 746.
 - 5. Tear Resistance: 125 lbs. per lin. inch; ASTM D 624 (Die C).
 - 6. Resistance to Heat Aging: Maximum hardness increase of 15 points, maximum reduction in elongation of 30 percent and maximum loss of tensile strength of 15 percent (168 hrs. at 240 deg F, 116 deg C); ASTM D 573.
 - 7. Resistance to Ozone Aging: No cracks after 168 hours exposure of 50 percent elongated sample at 104 deg F (40 deg C) and 100 pphm ozone; ASTM D 1149.
 - 8. Resistance to Water Absorption: Less than 0.5 percent volume gain for 72 hours immersion at 212 deg F (100 deg C); ASTM D 471.
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Hydro-Seal EPDM; American Hydrotec, Inc.
 - 2. Sure-Seal EPDM; Carlisle Syntec Systems.
 - 3. Plastisheet EPDM; Progress Unlimited, Inc.
 - 4. E-25 EPDM; Gates Engineering Co.

2.03 PVC SHEET WATERPROOFING:

- A. Virgin polyvinyl chloride with plasticizers and other modifiers, formed into uniform flexible sheets of thickness shown or, if no thickness is shown, not less than 56 mils thick, complying with the following:
 - 1. Hardness: 60 to 80 Shore A; ASTM D 2240.
 - 2. Tensile Strength: 2000 psi; ASTM D 412.
 - 3. Ultimate Elongation: 250 percent; ASTM D 412.
 - 4. Brittleness Temperature: -20 deg F (-29 deg C); ASTM D 746.
 - 5. Tear Resistance: 125 lbs. per lin. inch; ASTM D 624 (Die C).
 - 6. Resistance to Heat Aging: Maximum hardness increase of 15 points, maximum reduction in elongation of 25 percent, and maximum loss of tensile strength of 20 percent (168 hrs. at 200 deg F, 93 deg C); ASTM D 573.
 - 7. Resistance to Ozone Aging: No cracks after 5,000 hours exposure of 20 percent elongated sample at 104 deg F (40 deg C) and 50 pphm ozone; ASTM D 1149.
 - 8. Resistance to Water Absorption: Less than 0.5 percent weight gain for 48 hours of immersion at 212 deg F (100 deg C); ASTM D 570.
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. PVC Vi-Seal; AFCO Products Inc.
 - 2. BFG Water Barrier; B. F. Goodrich Co.
 - 3. Plastisheet PVC; Progress Unlimited, Inc.

4. Vinylseal; Sonneborn Building Products.

2.04 AUXILIARY MATERIALS:

- A. Adhesives: Provide types of adhesive compound and tapes recommended by waterproofing sheet manufacturer, for bonding to substrate (if required), for waterproof sealing of seams in membrane, and for waterproof sealing of joints between membrane and flashings, adjoining surfaces and projections through membrane.
- B. Primers: Provide type of concrete primer recommended by manufacturer of sheet waterproofing material for applications required.
- C. Coatings: Provide type of coating recommended by waterproofing sheet manufacturer, for improvement of weathering resistance on exposed areas of membrane, including areas extended as flashing (if any). Provide black coating except as otherwise indicated.
- D. Flashing Materials: Except as otherwise indicated, provide types of flexible sheet material for flashing as recommended by waterproofing sheet manufacturer.
- E. Protection Course: Where shown, provide type recommended by waterproofing sheet manufacturer, unless another type is indicated; include adhesives recommended by manufacturer.
- F. Paper Slip Sheet: 5-lb. rosin-sized building paper.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. General: Comply with manufacturers instructions for surface preparation.
- B. Prior to installation of waterproofing and associated work, meet at project site with Installer of each component of associated work, inspection and testing agency representatives (if any), and installers of work requiring coordination with waterproofing work. Review material selections and procedures to be followed in performing work.
- C. On wood decks, apply course of paper slip sheet, unless omission is recommended by waterproofing materials manufacturer for specific application shown.
- D. On concrete decks, immediately before placement of waterproofing sheet, grind or abrasive blast surface lightly to ensure removal of projections which might penetrate sheet or curing compounds which would interfere with fully bonded systems. Clean deck of loose material by brooming and vacuuming.
- E. On vertical foundation walls chip off projections where necessary for proper placement and adhesion of waterproofing sheet.
- F. Apply primer to concrete and masonry surfaces at rate recommended by manufacturer of primary waterproofing materials. Prime only area which will be covered by WP membrane in same working day; re-prime areas not covered by WP membrane within 24 hours.
- G. Do not advance laying of insulation ahead of waterproofing more than necessary for sequence of operation. Cover insulation exposed at end of day's work (and when rain threatens) with waterproofing materials. Remove and dispose of insulation which has become wet; replace before proceeding with insulating and waterproofing work.

3.02 INSTALLATION:

- A. Comply with manufacturer's instructions for handling and installation of sheet waterproofing materials.

- B. Coordinate installation of waterproofing materials and associated work to provide complete system complying with combined recommendations of manufacturers and installers involved in work. Schedule installation to minimize period of exposure of sheet waterproofing materials.
- C. Extend waterproofing sheet and flashings as shown to provide complete membrane over area indicated to be waterproofed. Seal to projections through membrane and seal seams. Bond to vertical surfaces and also, where shown or recommended by manufacturer, bond to horizontal surfaces.
- D. Top Edge Seal: For vertical and sloped wall membrane, finish in reglet (where provided), otherwise finish under flashing or under masonry in joint. Caulk exposed edges with mastic or sealant.
- E. Expansion Joints: Install joint filler as recommended by manufacturer, with protruding rounded surface. Apply continuous 8" wide strip of membrane on joint followed by membrane application.
- F. Coat exposed areas of sheet and flashing materials. Comply with sheet manufacturer's recommendations for application and cure of coating.
- G. Install protection course of type indicated over completed membrane, complying with manufacturer's recommendations for both waterproofing sheet and protection course materials.

3.03 PERFORMANCE REQUIREMENTS:

- A. It is required that waterproof membranes are watertight and not deteriorate in excess of limitations published by manufacturer.
- B. In-place Testing: Before completed membranes on horizontal surfaces are covered by protection course or other work, test for leaks with 2" depth of water maintained for 24 hours. Repair any leaks revealed by examination of substructure and repeat test until no leakage is observed.

3.04 CLEANING:

- A. After completion, remove any masking materials and stains from exposed surfaces caused by waterproofing installation.

3.05 PROTECTION:

- A. Institute required procedures for protection of completed membrane during installation of work over membrane and throughout remainder of construction period. Do not allow traffic of any type on unprotected membrane.

END OF SECTION 07115

SECTION 07175 WATER REPELLENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of surfaces to receive water repellent is indicated on drawings and by provisions of this section.
- B. Following applications of water repellent are required, but excluding associated areas of floors, stairs and pavings:
 - 1. Exterior unit masonry surfaces.
 - 2. Interior (unglazed) unit masonry surfaces.

1.3 QUALITY ASSURANCE:

- A. Application: A firm with not less than 3 years of successful experience in application of water repellents of types required on substrates similar to those of this project.
- B. Project Mock-Up: Apply water repellent to mock-up, either partial or full coverage as directed, before proceeding with installation. Comply with installation requirements of this section.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's specifications, installation instructions, and general recommendations for water repellents. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.
- B. Samples: Submit 16" square samples of each substrate indicated to receive liquid water repellent, with repellent treatment as specified applied to half of each sample.

1.5 JOB CONDITIONS:

- A. Weather and Substrate Conditions: Do not proceed with application of water repellent (except with written recommendation of manufacturer), when ambient temperature is less than 50 deg.F (10 deg.C); when substrate surfaces have cured for less than a period of 2 months; when rain or temperatures below 40 deg.F (4 deg.C), are predicted for a period of 24 hours, or earlier than 3 days after surfaces became wet; when substrate is frozen; at surface temperature of less than 40 deg.F (4 deg.C).

PART 2 – PRODUCTS

2.1 SOLVENT-BASED SILICONE SEALER:

- A. Provide a 5.0% concentration of polymerized silicone resins in hydrocarbon solvents, complying with FS SS-W-110.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following (or approved equal):
 - 1. Rexnord Chemical Products; Sonneborn Building Products
 - 2. Thoro System Products
 - 3. W.R. Meadows

2.2 SOLVENT-BASED ACRYLIC SEALER:

- A. Provide manufacturer's standard "water-clear" breathing coating of acrylic resins (based on methyl methacrylate) in volatile hydrocarbon solvents, and including other resins and additives as recommended by manufacturer for specific project substrates.
- B. Provide light compound, 4.0 to 7.5% solids content.

- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Applied Polymers of America, Inc.
 - 2. Anti-Hydro Waterproofing Co.
 - 3. Toch/Carboline Co.
 - 4. Chemprobe Corp.
 - 5. L & M Chemical Co.
 - 6. Pecora International Corp.
 - 7. ProSoCo, Inc.
 - 8. Rexnord Chemical Products; Sonneborn Building Products
 - 9. Rexnord Chemical Products; Sonneborn Building Products
 - 10. VIP Enterprises, Inc.
 - 11. W.R. Meadows

2.3 WATER-BASED ACRYLIC SEALER:

- A. Provide manufacturer's standard "water-clear" emulsion-type breathing coating of acrylic resins (based on methyl methacrylate) in water recommended by manufacturer for application to interior and exterior concrete and masonry surfaces as a water-repellent coating; averaging 15% to 22% solids content.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
- C. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. Applied Polymers of America, Inc.
 - 2. OKON, Inc.
 - 3. Seal-Krete, Inc.
 - 4. VIP Enterprises

2.4 CONTRACTOR OPTIONS (PROPRIETARY):

- A. General: At Contractor's option, provide one of the following products in lieu of generic types of liquid water repellent specified in this section, and include manufacturer's certification to effect that product complies with or exceeds required performances as indicated for generic types:
 - 1. Clear Double 7; Hydrozo Coatings Co.
 - 2. Chem-Trete BSM; Dynamit Nobel of America, Inc.
 - 3. Sure-Klean Weather Seal 224; ProSoCo, Inc.
 - 4. Rainstopper Clear; Textured Coatings of America, Inc.
 - 5. Prim-a-pell 200; Chemprobe Corp.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Test Application: Prior to performance of water repellent work, including bulk purchase/delivery of products, prepare a small application in an unobtrusive location and in a manner acceptable to Architect, for purpose of demonstrating final effect (visual and physical/chemical) of planned installation. Proceed with work only after Architect's acceptance of test application, or as otherwise directed.
 - 1. Revision of planned installation, if any and as requested by Architect, will be by change order where it constitutes a departure from requirements of contract documents at time of contracting.
- B. Clean substrate of substances which might interfere with penetration/adhesion of water repellents. Test for moisture content, in accordance with repellent manufacturer's instructions, to ensure that surface is sufficiently dry.
- C. Coordination with Sealants: Where feasible, delay application of water repellents until installation of sealants has been completed in joints adjoining surfaces to be coated with repellent.
- D. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass where there is possibility of water

repellent being deposited on surfaces. Cover live plant materials with drop cloths. Clean water repellent from adjoining surfaces immediately after spillage. Comply with manufacturer's recommendations for cleaning.

3.2 INSTALLATION:

- A. Apply a heavy saturation spray coating of water repellent on surfaces indicated for treatment using low pressure spray equipment. Comply with manufacturer's instructions and recommendations, using airless spraying procedure unless otherwise indicated.
 - 1. Precast Work: At Contractor's option, first application of water repellent on precast concrete units may be completed prior to installation of units. Mask sealant-bond surfaces to prevent migration of water repellent onto joint surfaces.
- B. Apply a second saturation spray coating, repeating first application. Comply with manufacturer's instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if printed recommendations are not applicable to project conditions.

END OF SECTION 07175

SECTION 07200 INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Extent of insulation work is shown on drawings, by generic names or by abbreviations.
- B. Applications of insulation specified in this section include the following:
 - 1. Blanket-type building insulation.
 - 2. Perimeter slab insulation.

1.3 QUALITY ASSURANCE

- A. Thermal Conductivity: Thicknesses shown are for thermal conductivity (k-value at 75 degrees F. or 24 degrees C.) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide appropriate thickness.
- B. Fire and Insurance Ratings: Comply with fire-resistance, flammability and insurance ratings indicated, and comply with governing regulations as interpreted by authorities.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation instructions for each type of insulation required.
- B. Certified Test Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including r-values (aged values for plastic insulations), densities, compression strengths, fire performance characteristics, perm ratings, water absorption ratings and similar properties.

1.5 PRODUCT HANDLING

- A. General Protection: Do not allow insulation materials to become wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturers: Subject to compliance with requirements, provide products of one of the following: (or approved equal):
 - 1. Manufacturers of Extruded Polystyrene Board Insulation:
 - a. Amoco Foam Products Co.
 - b. Dow Chemical U.S.A.
 - c. Minnesota Diversified Products, Inc.
 - d. UC Industries.
 - 2. Manufacturers of Glass Fiber Insulation:
 - a. CertainTeed Corp.
 - b. Knauf Fiber Glass GmbH.
 - c. Manville Corp.
 - d. Owens-Corning Fiberglass Corp.

2.2 INSULATING MATERIALS:

- A. General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.
 - 1. Performed Units: Sizes to fit applications indicated, selected from manufacturer's standard

- thicknesses, widths and lengths.
- B. Extruded Polystyrene Board Insulation: Rigid, cellular thermal insulation with closed-cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type indicated; with 5-year aged R-values of 5.4 and 5 at 75 deg.F (4.4 and 23.9 deg. C), respectively; and as follows:
 - 1. Type IV, 1.6 lb./cu. ft. min. density, unless otherwise indicated.
 - C. Faced Mineral Fiber Blanket/Batt Insulation: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type III, Class A (blankets with reflective vapor-retarder membrane facing with flame spread of 25 or less); foil-scrim-kraft vapor-retarder membrane on one face, respectively; and as follows:

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION:

- A. Require Installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain Installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.
- B. Clean substrates of substances harmful to insulation or vapor retarders, including removal of projections which might puncture vapor retarders.

3.2 INSTALLATION, GENERAL:

- A. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
- B. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.
- C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION:

- A. On vertical surfaces, set units in adhesive applied in accordance with manufacturer's instructions. Use type of adhesive recommended by manufacturer of insulation.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION:

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support units.
- B. Seal joints between closed-cell (non-breathing) insulation units by applying mastic or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with mastic or sealant.
- C. Set vapor retarder faced units with vapor retarder to warm side of construction, except as otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
- D. Set reflective foil-faced units accurately with air space in front of foil as shown. Provide not less than 0.75" air space where possible.
- E. Place loose glass fiber insulation into spaces and onto surfaces as shown, either by pouring or by machine-blowing. Level horizontal applications to uniform thickness as indicated, lightly settled to uniform density, but not excessively compacted.

3.5 PROTECTION

- A. General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by nondelayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION 07200

SECTION 07270 FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 SUMMARY

- A. Section includes materials for complete firestop installation of penetrations consisting of pipe, duct, cable, other electrical devices, or blank openings in fire treated walls, floors, and partitions.

1.3 REFERENCES

- A. Standards of the following referenced:
 - 1. American Society for Testing and Materials (ASTM).
 - 2. Environmental Protection Agency (EPA).
 - 3. Factory Mutual (FM).
 - 4. Underwriters' Laboratories, Inc. (UL).
 - 5. Warnock Hersey (WH).
- B. Industry standards:
 - 1. ASTM E814-83 (1991): Standard Method of Fire Tests of Through-Penetration Firestops.
 - 2. FM: Approval Guide, 1993 edition.
 - 3. UL 1479: Fire Tests of Through-Penetration Firestops, 1993 edition.
 - 4. UL Fire Resistance Directory: Through-Penetration Firestop Devices (XHCR) and Through Penetration Firestop Systems (XHEZ), 1993 edition.
 - 5. WH: Certification Listings, 1993 edition.

1.4 DEFINITIONS

- A. Terms:
 - 1. Alpha - Alpha- Numeric system for penetration identification: UL 1993 system to universally identify and categorize penetrations.
 - a. First alpha grouping: Designates penetration type; "F" for floors, "W" for walls, "C" for either or both floors and walls.
 - b. Second alpha grouping: Further designates significant assembly characteristics; "A" for concrete floors with minimum thickness less than or equal to 5", "J" for concrete or masonry walls with minimum thickness less than or equal to 8".
 - c. Numeric grouping: Designates penetrating item; 1000-1999 for metal pipe, conduit, or tubing, 5000-5999 for insulated pipes.
 - d. Example; assembly F-A-5001 means Floor penetration - Concrete substrate less than or equal to 5" - Insulated pipes.
 - 2. Fire rated: Having ability to withstand effects of fire for specified time period, as determined by qualified testing.
 - 3. Fire rated assembly: Floor, wall, or other partition also to withstand design fire and hose stream test without failure.
 - 4. Fire resistance rating: Time, in hours, for which rated assembly can withstand effects of fire without burn-through or structural failure.
 - 5. Firestop: Means of sealing openings in fire rated assemblies to preserve or restore fire resistance rating.
 - 6. Firestop system: Combination of materials or devices, including penetrating items, required to make up complete firestop.
 - 7. Intumescent: Having the quality to enlarge, swell, or expand with heat.
 - 8. Penetrating item: Pipe duct, conduit, cable tray, cable, or other element passing through opening in fire rated assembly.

9. VOC: Volatile organic compounds.

1.5 SYSTEM DESCRIPTION

- A. Design requirements:
 - 1. Designs selected for installation: Provide fire resistance rating at least equal to hourly resistance rating of floor, wall, or partition into which firestop design is installed.
 - 2. Firestop systems and materials:
 - a. Not require special tools for installation.
 - b. Do not emit hazardous, combustible, or irritating fumes during installation, curing, or use.
 - 3. When more than one firestop design is applicable, evaluate individual product characteristics for secondary benefits in performance, e.g. environmental/water sealing or ease of installation or modification.
- B. Performance requirements:
 - 1. Fire and hose stream on material: Meet requirements of ASTM E814-83 for F (Flame) Rating or T (Temperature) Rating required by local code.
 - 2. Fire tests, ASTM E11983: Pass requirements when used in assembly.
 - 3. Smoke and fuel contributed tests on firestopping materials. ASTM E84-87: Flame Spread 25 or less, Smoke Developed 20.
 - 4. Firestop systems do not re-establish the structural integrity of load bearing partitions. Consult Architect prior to drilling or coring operations in any load bearing assembly.
 - 5. Firestop systems are not intended to support live loads or traffic. Curbs or steel plates may be required to restrict or accommodate potential traffic. Notify Architect, in writing, if these limitations may be violated.

1.6 SUBMITTALS

- A. Product data:
 - 1. Complete list of products for use; indicate compliance with VOC limits.
 - 2. Data for fire or smoke rated insulation; indicate complete installation instructions for maintaining ratings of wall or floor assemblies to meet code requirements.
 - 3. "Manufacturer's Safety Data Sheets", (M.S.D.S.), for materials.
- B. Shop drawings: Complete schedule of rated penetrations, locations, and proposed rated materials to fill penetrations in accord with UL Alpha-Alpha-Numeric system.
- C. Quality control submittals:
 - 1. Certificates:
 - a. Indicate materials supplied or installed are asbestos free.
 - b. Indicate compliance with applicable VOC limits.
 - 2. Test reports: Products supplied: indicate recognized laboratory test results for same type conditions encountered on Project.
 - 3. Manufacturer's instructions:
 - a. Exact procedures for installation of rated firestop material to maintain wall, floor, or combination assemblies ratings: indicate penetration hole/pipe size relationship, if required, for clearances to obtain results same as tested assemblies.
 - b. Disposal requirements for expended material or partially expended containers.
- D. Contract closeout submittals:
 - 1. Project record documents: Completion and inspection reports in FIELD QUALITY CONTROL Article.

1.7 QUALITY ASSURANCE

- A. Qualifications, installer: Use only one installer for all firestopping work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Storage and protection: Dispose expended or partially expended material containers in accord with EPA requirements.

1.9 SEQUENCING AND SCHEDULING

- A. Additional firestopping requirements may be created by construction activities specified in other sections.
 - 1. Identify locations requiring firestopping.
 - 2. Schedule and coordinate firestopping installation after completion of duct, piping, electrical runs, and prior to covering or concealing openings or eliminating access.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Products of manufacturers indicated below may be used singly or in combination to meet ratings of adjacent wall, floor, or perimeter.
 - 2. Using product or products singly or in combination requires recognized testing laboratory test results for indicated application; system selection is optional unless testing requires use of one particular type.
 - 3. Intent is to maintain rated integrity of wall, floor, or ceiling at penetrations.
 - 4. No ampacity de-rating of cable at penetrations.
 - 5. Reviewed schedule indicates insulation type or types and locations used.
 - 6. Penetrations, smoke and fire fall into two categories:
 - a. Not requiring Intumescent qualities.
 - b. Requiring Intumescent qualities, such as PVC pipe or other dissolving materials.
- B. Acceptable manufactures:
 - 1. Putty, mortar, re-entry type, and metal collar/cuff assemblies:
 - a. Dow Corning Company.
 - b. Fipro TM Corp. Of America.
 - c. Flames Stop, Inc.
 - d. General Electric Company.
 - e. Hevi-Duty/Nelson.
 - f. Hilti, Inc.
 - g. Retorseal, Inc.
 - h. Specified Technologies, Inc.
 - i. 3M Company/Electrical Products Division.
 - 2. Safing insulation:
 - a. Acceptable products:
 - 1) Fibrex: FBX Safing Insulation.
 - 2) Partek Insulation; Paroc Safing Insulation.
 - 3) USG Acoustical Products Company; Thermafiber Safing Insulation.
 - b. Characteristics:
 - 1) Composition: ASTM C612-83, Class 3, semi-rigid to rigid mineral fiber boards.
 - 2) Density: Four PCF, nominal.
 - 3) Thickness: Required for penetration rating.
 - 4) Combustibility, ASTM E136-82: Noncombustible.
 - 5) Flame spread, ASTM E84-87: 15, maximum.
 - c. Accessories: USG Acoustical Products Company 12 gauge Snap-on Clip Type A or Prong Clip Type D standard impaling clips or similar clips of other manufacturers code approved for use.
 - 3. Accessories:
 - a. Furnish damming materials and other materials for installation.
 - b. Permanent labels to identify penetration with space for name of installing company, date installed, and UL or WH penetration designation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Verify that penetrating elements and supporting devices have been installed and temporary lines have been removed.

3.2 PREPARATION

- A. Clean surfaces in contact with penetration seal materials of dust, dirt, grease, oil, loose materials, rust and other substances.

3.3 INSTALLATION

- A. General
 - 1. Install firestopping materials in accord with tested configurations; system selection is optional unless testing requires use of one particular type.
 - 2. Locations, general:
 - a. Cavities of floor-to-floor penetrations; include spaces around conduit, cable, piping and duct penetrations.
 - b. Rated wall penetrations: include spaces around conduit, cable, electrical boxes, piping, and duct penetrations.
 - c. Vertical service shaft penetrations.
 - d. Openings where fire rated walls terminate at metal floor or roof deck.
 - e. Other locations indicated.
 - 3. Follow manufacturer's recommendations to obtain a smooth, professional finish.
 - 4. Remove forms or damming materials, if used, after designated cure time unless support materials used are fire resistant or noncombustible nature.
 - 5. Reviewed submittal schedule indicated type or types firestopping used and actual locations.
- B. Install permanent labels at each penetration, in conspicuous location on pipe, duct, or other hard surface, indicating assembly configuration installed, date installed, and installing company.

3.4 FIELD QUALITY CONTROL

- A. Inspection:
 - 1. Examine penetration seals for correct installation, adhesion, and curing appropriate for respective seal materials.
 - 2. Keep areas of firestopping work accessible; notify code authorities or designated inspectors, in writing, of work released for inspection.
 - 3. Document completion and inspection; file completion and inspection reports with Project closeout documents.

3.5 ADJUSTING

- A. Repairs and modifications:
 - 1. Identify damaged or re-entered seals requiring repair or modification.
 - 2. Remove loose or damaged materials.
 - 3. If penetrating elements are to be added, remove enough material to insert new elements being careful not to cause damage to balance of seal.
 - 4. Ensure surfaces to be sealed are clean and dry.
 - 5. Install materials in accord with materials approved by manufacturer as suitable for repair of original seal.

END OF SECTION 07270

SECTION 07311 ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes asphalt shingles for roofs.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Rough Carpentry" for wood sheathing and framing.
 - 2. Division 7 Section "Flashing and Sheet Metal" for metal valley flashing, step flashing, drip edges, and other sheet metal work.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.
- C. Samples for initial selections in the form of manufacturer's sample finishes showing the full range of colors and profiles available for each type of asphalt shingle indicated.
- D. Samples for verification in the form of 2 full-size units of each type of asphalt shingle indicated showing the full range of variations expected in these characteristics.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intact.
- B. Handle and store materials at Project site to prevent water damage, staining, or other physical damage. Store roll goods on end. Comply with manufacturer's recommendations for job-site storage, handling, and protection.

1.5 PROJECT CONDITIONS

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

1.6 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by manufacturer agreeing to repair or replace asphalt shingles that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, deformation or deterioration of asphalt shingles beyond normal weathering.
 - 1. Warranty Period: Manufacturer's standard but not less than 30 years after date of Substantial Completion.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 - 1. Furnish 1 square coverage for each color of asphalt shingles, identical to those to be installed, in unbroken bundles.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide asphalt shingles produced by one of the following (or approved equal):
 - 1. Atlas Roofing Corp.
 - 2. CertainTeed Corporation.
 - 3. GAF Building Materials Corporation.
 - 4. Owens-Corning Fiberglas Corp.
 - 5. Tamko Asphalt Products, Inc.
- B. Available Products: Subject to compliance with requirements, products that to be incorporated in the Work include the following (or approved equal):
 - 1. Nail Over Ridge Vents:
 - a. Ridge Filter Shinglevent; Air Vent, Inc.
 - b. Cobra Ridge Vent; GAF Building Materials Corporation.
 - c. Roll Vent; Obdyke: Benjamin Obdyke, Inc.
 - d. Ventsure rigid roll: Owens-Corning Fiberglas Corp.

2.2 ASPHALT SHINGLES

- A. Colors, Blends, and Patterns: Where manufacturer's standard products are indicated, provide asphalt shingles with the following requirements:
 - 1. Provide Architect's selections from manufacturer's full range of colors, textures, and patterns for asphalt shingles of type indicated. Four colors shall be selected for use.
- B. Dimensional /30 Shake FRS, class A rating. Fiberglass, Laminated Strip Shingles: Mineral-surfaced, self-sealing, laminated, multi-ply overlay construction, fiberglass-based, strip asphalt shingles, complying with both ASTM D 3018, Type I, and ASTM D 3462. FRS.
- C. Ridge Shingles: Manufacturer's standard, factory-precut units to match asphalt shingles.

2.3 METAL TRIM AND FLASHING

- A. Sheet Metal Materials: Furnish the following sheet metal materials:
 - 1. Prefinished aluminum Sheets: ASTM B 209, alloy 3003 H14, minimum 0.024 inch thick, unless otherwise indicated.
- B. Metal Drip Edge: Brake-formed sheet metal with at least a 3-inch roof deck flange and a 1-1/2-inch fascia flange with a 3/8-inch drip at lower edge. Furnish the following material in lengths of 10 feet.
 - 1. Material: Prefinished aluminum sheets. The finish shall be a two-coat acrylic in a two-phase operation that includes corrosion-inhibiting primer and a baked-on, high-performance acrylic topcoat.
- C. Metal Flashing: Job-cut to sizes and configurations required.
 - 1. Material: Prefinished aluminum sheets. The finish shall be a two-coat acrylic in a two-phase operation that includes corrosion-inhibiting primer and a baked-on, high-performance acrylic topcoat.
- D. Vent Pipe Flashing: Lead conforming to ASTM B 749, Type L51121, at least 1/16 inch thick, unless otherwise indicated. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof extending at least 4 inches from pipe onto roof.

2.4 ACCESSORIES

- A. Underlayment: Synthetic, 1-layer, complying with ASTM D 226, Type II or ASTM D 2626. (Tri-Built – Professional Grade (or approved equal)).
- B. Closed Valley Underlayment: Ice and Water Barrier, 1 layer, 36" wide, full length of closed valleys. (GAF Weatherlock (or approved equal)).
- C. Ridge Vent: High-density polypropylene, nonwoven modified polyester, or other UV-stabilized plastic designed to be installed under asphalt shingles at ridge.
- D. Nails: Aluminum or hot-dip galvanized steel, 0.120-inch- diameter barbed shank, sharp-pointed,

conventional roofing nails with a minimum 3/8-inch- diameter head and of sufficient length to penetrate 3/4 inch into solid decking or at least 1/4 inch through sheathing.

1. Where nails are in contact with flashing, prevent galvanic action by providing nails made from the same metal as that of the flashing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of asphalt shingles. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations but not less than those recommended by ARMA's "Residential Asphalt Roofing Manual" or "The NRCA Steep Roofing Manual."
 1. Fasten asphalt shingles to roof sheathing with nails.
- B. Synthetic Underlayment: Apply 1 layer of underlayment horizontally over entire surface to receive asphalt shingles, lapping succeeding courses a minimum of 4 inches, end laps a minimum of 6 inches, and hips and valleys a minimum of 6 inches. Fasten with sufficient number of roofing nails to hold underlayment in place until asphalt shingle installation.
- C. Underlayment at Closed Valleys: Center a 36-inch- wide ice and water barrier in valley and secure with only enough nails to hold in place until asphalt shingles are installed. Lap roof underlayment over entire valley underlayment.
- D. Flashing: Install metal flashing and trim as indicated and according to details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual" and ARMA's "Residential Asphalt Roofing Manual."
- E. Install asphalt shingles, beginning at roof's lower edge, with a starter strip of roll roofing or inverted asphalt shingles with tabs removed. Fasten asphalt shingles in the desired weather exposure pattern; use number of fasteners per shingle as recommended by manufacturer. Use vertical and horizontal chalk lines to ensure straight coursing.
 1. Cut and fit asphalt shingles at valleys, ridges, and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap asphalt shingles at ridges to shed water away from direction of prevailing wind.
 2. Use fasteners at ridges of sufficient length to penetrate sheathing as specified.
- F. Ridge Vents: Install ridge vents according to manufacturer's instructions.

3.4 ADJUSTING

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

END OF SECTION 07311

SECTION 07462 SIDING & TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fiber cement lap siding, panels, shingle, trim, fascia, moulding and accessories; James Hardie HZ10 Engineered for Climate Siding.

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Sheathing.
- B. Section 07210 - Insulation: Exterior wall insulation.

1.3 REFERENCES

- A. AS D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.
- B. AS 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 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. 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 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.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Remodel mock-up area as required to produce acceptable work.

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. HardiPanel HZ10 vertical siding for 30 years.
 - 2. HardieSoffit HZ10 panels for 30 years.
 - 3. HardieTrim HZ10 boards for 15 years.
- B. Finish Warranty: Limited product warranty against manufacturing finish defects.
 - 1. When used for its intended purpose, properly installed and maintained according to Hardie's published installation instructions, James Hardie's ColorPlus finish with ColorPlus Technology, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.
- C. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: James Hardie Building Products, Inc.,
- B. Requests for approval of equal substitutions will be considered in accordance with provisions of Section 01600.

2.2 SIDING AND TRIM

- A. HardiePlank HZ10 lap siding, HardiPanel HZ10 vertical siding, HardieSoffit HZ10 panels and HardieShingle HZ10 siding requirement for materials:
 - 1. Fiber-cement siding - complies with ASTM C 1186 Type A Grade II.
 - 2. Fiber-cement siding - complies with ASTM E 136 as a noncombustible material.
 - 3. Fiber-cement siding - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.
 - 4. ICC-ES evaluation reports ESR-2290, ESR-1844, and ESR-2273 (IBC, IRC, CBC, CRC)
 - 5. US Department of Housing and Urban Development Materials Release - 1263f.
- B. Vertical Siding: HardiePanel HZ10 siding as manufactured by James Hardie Building Products, Inc.
 - 1. Type: Cedarmill Vertical siding panel 4 feet by 8 feet (1219 mm by 2438 mm).
- C. Soffit Panels: HardieSoffit HZ10 soffit panel, factory sealed on 5 sides as manufactured by James Hardie Building Products, Inc.
 - 1. Type: Textured Cedarmill vented, provides 5 square inches (32.3 sq.cm) of net free ventilation per linear foot, 16 inches (406 mm) by 12 feet (3658 mm).
 - 2. Thickness: 1/4 inch (6 mm).
- D. Trim:
 - 1. HardieTrim HZ10 boards as manufactured by James Hardie Building Products, Inc.
 - a. Product: Batten Boards, 2-1/2 inch (63 mm) width.
 - b. Product: 4/4 Boards, 7-1/4 inch (184 mm) width.
 - c. Texture: Rustic.
 - d. Length: 12 feet (3658 mm).
 - e. Thickness: 3/4 inch (19 mm).
 - 2. HardieTrim HZ10 Fascia boards as manufactured by James Hardie Building Products, Inc.
 - 3. Artisan HZ10 Accent trim as manufactured by James Hardie Building Products, Inc.
 - 4. Fiber-cement trim - complies with ASTM C 1186 Type A Grade II.
 - 5. Fiber-cement trim - complies with ASTM E 136 as a noncombustible material.
 - 6. Fiber-cement trim - complies with ASTM E 84 Flame Spread Index = 0,

- Smoke Developed Index = 5.
- 7. Intertek Product Listing.
- 8. Width: 7-1/4 inch (184 mm).
- 9. Texture: Smooth.

2.3 FASTENERS

- A. Wood Framing Fasteners:
 - 1. Wood Framing: Use manufacturer's recommended size and composition fasteners for the specific substrate.

2.4 FINISHES

- A. Factory Primer: Provide factory applied universal primer.
 - 1. Primer: Factory primed by James Hardie.
 - 2. Topcoat: Refer to Section 09900 and Exterior Finish Schedule.

PART 3 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 Architect of unsatisfactory preparation before proceeding.
- C. Nominal 2 inch by 4 inch (51 mm by 102 mm) wood framing selected for minimal shrinkage and complying with local building codes, including the use of water-resistive barriers or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
 - 1. Install water-resistive barriers and claddings to dry surfaces.
 - 2. Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding.
 - 3. Protect siding from other trades.

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. Install a water-resistive barrier is required in accordance with local building code requirements.
- D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.
- E. Install Engineered for Climate HardieWrap weather barrier in accordance with local building code requirements.
- F. Use HardieWrap Seam Tape and joint and laps.
- G. Install and HardieWrap flashing, HardieWrap Flex Flashing.

3.3 INSTALLATION - HARDIEPANEL HZ10 VERTICAL SIDING

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

3.4 INSTALLATION - HARDIETRIM HZ10 BOARDS

- A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.
- B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.
- C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.
- D. Maintain clearance between trim and adjacent finished grade.
- E. Trim inside corner with a single board trim both side of corner.
- F. Outside Corner Board Attach Trim on both sides of corner with 16 gage corrosion resistant finish nail 1/2 inch (13 mm) from edge spaced 16 inches (406 mm) apart, weather cut each end spaced minimum 12 inches (305 mm) apart.
- G. Allow 1/8 inch gap between trim and siding.
- H. Seal gap with high quality, paint-able caulk.
- I. Shim frieze board as required to align with corner trim..
- J. Fasten through overlapping boards. Do not nail between lap joints.
- K. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten HardieTrim boards to HardieTrim boards.
- L. Shim frieze board as required to align with corner trim.
- M. Install HardieTrim Fascia boards to rafter tails or to sub fascia.

3.5 FINISHING

- A. Finish factory primed siding with a minimum of two coats 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

SECTION 07600 FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Metal counter flashing; and base flashing (if any).
 - 2. Metal wall flashing and expansion joints.
 - 3. Exposed metal trim/fascia units.
 - 4. Miscellaneous sheet metal accessories.
- B. Integral masonry flashings are specified as masonry work in sections of Division 4.

1.3 SUBMITTALS

- A. Product data; Flashing, Sheet Metal, and Accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- B. Samples of the following flashing, sheet metal, and accessory items:
 - 1. 8 inch square samples of specified sheet materials to be exposed as finished surfaces.
 - 2. 12 inch long samples of factory-fabricated products exposed as finished work. Provide complete with specified factory finish.
- C. Shop drawings showing layout, profiles, methods of joining, and anchorages details, including major counter-flashings, trim/fascia units, gutters, downspouts, scuppers and expansion joint systems. Provide layouts at 1/4 inch scale and details at 3 inch scale.

1.4 PROJECT CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM MATERIALS

- A. Aluminum: ASTM B 209, alloy 3003, temper H14, acrylic finish; 0.032 inch thick (20 gage) except as otherwise indicated.
- B. Extruded Aluminum: Manufacturer's standard extrusions of sizes and profiles indicated, 60063-T52, acrylic finish; 0.080 inch minimum thickness for primary legs of extrusions.

2.2 FLEXIBLE SHEET MEMBRANE FLASHING

- A. Elastic Sheet Flashing/Membrane: Non-reinforced flexible, black elastic sheet flashing of 50 to 65 mils thickness and complying with the following:
 - 1. Shore A Hardness (ASTM D 2240): 50 to 70.
 - 2. Tensile Strength (ASTM D 412): 1200 psi.
 - 3. Tear Resistance (ASTM D 624, Die C): 20 lbs. per linear inch.
 - 4. Ultimate elongation (ASTM D 412): 250 percent.
 - 5. Low temperature brittleness (ASTM D 746): minus 30 degrees F (minus 35 degrees C).
 - 6. Resistance to ozone aging (ASTM D 1149): no cracks for 10 percent elongated sample for 100 hours in 50 pphm (50.5 mPa) ozone at 104 degrees F (70 degrees C).
 - 7. Resistance to Heat Aging (ASTM D 573): maximum hardness increase of 15 points, elongation reduction of 40 percent, and tensile strength reduction of 30 percent, for 70 hours

at 212 degrees F (100 degrees C).

B. Acceptable Products:

1. Neoprene synthetic rubber sheet.
2. Butyl synthetic rubber sheet.
3. EPDM synthetic rubber sheet.

2.3 FABRICATED UNITS

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
- F. Aluminum Extrusion Units: Fabricate extruded aluminum running units with formed or extruded aluminum joint covers, for installation behind main members where possible. Fabricate mitered and welded corner units.

PART 3 – EXECUTION

3.1 INSTALLATION REQUIREMENTS

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof.
- B. Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.
- C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- D. Install reglets to receive counterflashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division 4 sections.
 1. Install counter flashing in reglets, either by snap-in seal arrangement, or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
- E. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches o.c. Fabricate seams at joints between units with minimum 3 inch overlap, to form a continuous, waterproof system.

3.2 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.
- B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering at time of substantial completion.

END OF SECTION 07600

SECTION 07900 JOINT SEALERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. The extent of each type of joint sealer is indicated on the drawings or by installation instructions of various elements to be included into the work, sometimes by abbreviations as indicated herein.
- B. The required applications include, but are not necessarily limited to the following:
 - 1. Partition and ceiling joints.
 - 2. Miscellaneous joints at windows and doors.

1.3 SUBMITTALS

- A. Manufacturer's Data, Joint Sealers: Submit manufacturer's specifications, recommendations and installation instructions for each type of material required. Include manufacturer's published data, or letter certification, or certified test laboratory report indicating that each material complies with the specified standards and other requirements and is intended generally for the applications shown.

1.4 JOB CONDITIONS

- A. The Installer must examine the joint surfaces and backing, and their anchorage to the structure, and the conditions under which the joint sealer work is to be performed, and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work and performance of the sealers. Do not proceed with the joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in lower third of manufacturer's recommended installation temperature range.

PART 2 – PRODUCTS

2.1 MATERIALS, GENERAL

- A. Colors: For exposed materials provide color as indicated or, if not indicated, as selected by Architect from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.
- B. Hardness: As recommended by manufacturer for application shown, unless otherwise indicated.
- C. Modules of Elasticity: Provide the lowest available modules of elasticity which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.
- D. Compatibility: Before purchase of each required material, confirm its compatibility with each other material it will be exposed to in the joint system.
- E. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.
- F. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc) as recommended by the manufacturer for the particular condition of installation (location, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal condition of installation.

- G. Foot Traffic Exposures: In sealant locations subject to foot traffic, provide manufacturer's non-tracking variation of specified sealant, capable of withstanding stiletto heel traffic without damaging indentation.
- 2.2 NON-ELASTOMERIC SEALANTS
 - A. Acrylic-Emulsion Sealant (AcEm-S): Acrylic-emulsion or latex-rubber-modified acrylic-emulsion sealant compound permanently flexible, non-staining and non-bleeding: recommended by manufacturer for protected exterior exposure. Extent: all interior joints.
- 2.3 MISCELLANEOUS MATERIALS
 - A. Joint Primer/Sealer: Provide the type of joint primer/sealer recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS
 - A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.
- 3.2 JOINT PREPARATION
 - A. Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coating, moisture and other substances which would interfere with bond of sealant or caulking compound. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer. Roughen vitreous or glazed joint surfaces as recommended by sealant manufacturer.
 - B. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- 3.3 INSTALLATION
 - A. Set joint filler units at proper depth or position in the joint to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.
 - B. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
 - C. Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead;
 - 1. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75% to 125% of joint width.
 - D. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
 - E. Recess exposed edges of gaskets and joint fillers slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from the joint.
- 3.4 CURE AND PROTECTION
 - A. Cure sealants and calking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Advise the Contractor of procedures required for the cure and protection of joint sealers during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of Owner's acceptance.

END OF SECTION 07900

SECTION 08110 STEEL DOORS AND FRAMES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of standard steel doors and frames is indicated and scheduled on drawings.
- B. Finish hardware is specified elsewhere in Division-8.

1.3 QUALITY ASSURANCE

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.
- B. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
- C. Each door shall bear a label or otherwise be suitably identified as to the name of manufacturer and compliance with applicable standard.
- D. Field-verify all dimensions, conditions, and construction for each type of installation.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.
- B. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4" high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide ¼" spaces between stacked doors to promote air circulation.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering steel doors and frames which may be incorporated in the work include; but are not limited to, the following:

1. Steel Doors and Frames, (General):

- a. Anwelld/Div. American Welding & Mfg. Co.
- b. Ceco Corp.
- c. Republic Builders Products Corp./Subs. Republic Steel.
- d. All exterior doors and frames may be provided by the pre-manufactured building manufacturer provided criteria set forth herein are met.

2.2 MATERIALS:

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
- C. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel.
- D. Inserts, Bolts, and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.
- E. Shop Applied Paint:
 1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.3 FABRICATION, GENERAL:

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory- assembled before shipment, to assure proper assembly at project site. Comply with SDI-100 requirements as follows:
 1. Exterior Doors: SDI 100, Grade II, heavy duty, Model 1, minimum 18-gauge faces, minimum 1 lb. density rigid foam core with a minimum R. factor of 4.6.
- B. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot- rolled steel (at fabricator's option).
- C. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.
 1. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.
 2. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.
 3. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.
- D. Shop Painting:
 1. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
 2. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
 3. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

2.4 STEEL DOORS:

- A. Provide metal doors of types and styles indicated on drawings or schedules.

2.5 STANDARD STEEL FRAMES:

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.
 1. Shop fabricate frames with metered, welded corners and grind to provide smooth surface for

- painting.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

PART 3 - INSTALLATION

3.1 INSTALLATION:

- A. General: Install steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.
- B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.
1. Install fire-rated frames in accordance with NFPA Std. No. 80.
 2. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.
- C. Door Installation:
1. Fit hollow metal doors accurately in existing frames, within clearances specified in SDI-100.
 2. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

3.2 ADJUST AND CLEAN:

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION 08110

SECTION 08210 WOOD DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements (if any), apply to the work specified in this Section.

1.02 DESCRIPTION OF WORK

- A. The extent and location of each type of wood door is shown on the drawings and in schedules by the abbreviation WD or other abbreviations as indicated herein.
- B. The types of doors required include the following:
 - 1. Solid core flush wood doors with veneer faces.

1.03 QUALITY ASSURANCE

- A. General: Comply with the requirements of the following standards unless otherwise indicated.
- B. Non-Fire Rated Wood Doors: NWWDA Industry Standard I.S. 1 "Wood Flush Doors" of the National Wood Window and Door Association.
- C. Fire-Rated Wood Doors: Where fire-resistance classifications are shown or scheduled for wood door assemblies, provide doors which comply with the requirements of NFPA No. 80 "Standard for Fire Doors and Windows" and which have been tested and rated with single point hardware by UL.
 - 1. Provide UL label on each door and panel.

1.04 SUBMITTALS

- A. Manufacturer's Data; Wood Doors:
 - 1. Submit door manufacturer's product data specifications and installation instructions for each type of wood door required, including other data as may be required to show compliance with specified requirements. Transmit copy of each instruction to the installer.
 - 2. Include details of core and edge construction, trim for openings and louvers (if any) and similar components.
- B. Shop Drawings; Wood Doors:
 - 1. Submit shop drawings indicating the location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
- C. Warranty; Wood Doors:
 - 1. Submit written agreement in door manufacturer's standard form signed by the Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show photographing of construction below in face veneers, or do not conform to tolerance limitations of NWWDA.
 - 2. Warranty shall be in effect during the following period of time after the date of acceptance. Solid Core Flush Interior Doors: Two years, or manufacturer's standard if longer than two years.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with the "On-Site Care" recommendations of NWWDA pamphlet "Care and Finishing of Wood Doors" and with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

- A. General: Provide wood doors complying with the applicable requirements of NWWDA I.S. 1 for the kinds and types of doors indicated and as further specified.
 - 1. Face Panels: Manufacturer's standard 2- or 3-ply face panels, unless otherwise indicated.
 - 2. Exposed Surfaces: Provide the kind shown or scheduled and as further specified. Provide same exposed surface material on both faces of each door, unless otherwise indicated.
 - 3. Fire-rated Doors: Provide exposed faces and edges to match non-fire-rated doors in the same area of the building, unless otherwise indicated. Provide trim for openings (if any) which have been tested and listed for kind of door and rating indicated.

2.02 GENERAL FABRICATION REQUIREMENTS

- A. Openings: Where openings are indicated, cut and trim openings through doors and panels as shown. Comply with the applicable requirements of the referenced standard for the kind(s) of doors required.
 - 1. Light Openings: Factory cut openings. Trim openings for non-fire-rated doors with solid wood moldings of the profile shown.

2.03 INTERIOR FLUSH WOOD DOORS

- A. Solid Core Wood Doors (SC-WdDor as indicated on drawings as "WD"): Type II water-resistant bond.
- B. Core Construction: Solid wood block or mineral with wood lock blocks, as required by door manufacturer to comply with specified warranty period.
- C. Face Panels: Manufacturer's standard 2- or 3-ply face panels.
- D. Exposed surfaces for Transparent Finish: Where solid core interior wood doors are shown or scheduled to receive a transparent finish, provide manufacturer's standard thickness face veneers of the following quality.
 - 1. Quality: NWWDA I.S. 1 Premium grade face veneers of the species and cut shown or scheduled. Book-match (match for color and grain) at veneer joints, unless otherwise indicated. Provide exposed edges and other exposed solid wood components of the same species as face veneers. Face veneer: match veneer of existing doors in existing building.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Installer must examine door frames and verify that frames are the correct type and have been installed as required for proper hanging of corresponding doors and notify the Contractor in writing of conditions detrimental to the proper and timely installation of wood doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
 - 1. Install fire-rated doors in corresponding fire-rated frames in accordance with the requirements of NFPA No. 80.

3.02 INSTALLATION

- A. Condition doors to average prevailing humidity in installation area prior to hanging.
- B. Hardware: See 85-Series sections of these specifications.
- C. Manufacturer's Instructions: Install wood doors in accordance with manufacturer's instructions and as shown.
- D. Job Fit Doors: Align doors to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.
 - 1. Bevel non-fire rated doors 1/8" in 2" at lock and hinge edges.
 - 2. Bevel fire-rated doors 1/16" in 2" at lock edge.

- E. Clearance: For non-fire doors provide clearances of 1/8" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.
 - 1. For fire-rated doors, provide clearances complying with the limitations of the authority having jurisdiction.
- F. Job Site Finished Doors: See painting sections of these specifications for requirements for finishing wood doors.

3.03 ADJUST & CLEAN

- A. Operation: Rehang or replace doors which do not swing or operate freely, as directed by the Architect.
- B. Protection and Completed Work: Advise Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of the work.

END OF SECTION 08210

SECTION 08531
VINYL WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Vinyl windows.

1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry.

1.3 REFERENCES

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - NAFS - North American Fenestration Standard/Specification for windows, doors and skylights.
- B. CSA A440S1 - Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440 - NAFS.
- C. U.S. Department of Energy - Energy Star Windows Program.
- D. National Resources Canada - Energy Star Windows Program.
- E. National Fenestration Rating Council (NFRC) 100 - Procedure for Determining Fenestration Product U-factors.
- F. National Fenestration Rating Council (NFRC) 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
- G. National Fenestration Rating Council (NFRC) 700 - Product Certification Program.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01330 – Submittal Procedures.
- 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 drawing elevations of each opening with details of rough openings, anchorage and installation.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 year experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2 year experience installing similar products.

- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship is approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.6 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to starting work of this section.

1.7 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. Handling: Handle materials to avoid damage.

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 recommended limits.

1.9 SEQUENCING

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

1.10 WARRANTY

- A. Manufacturer warrants the following for its window products:
 - 1. Unless otherwise specifically noted, skilled labor to repair or replace any affected component shall be provided for two years from the date of delivery.
 - 2. IGU failure (evidenced by moisture within the IGU caused by failure of the hermetic seal), manufacturer shall supply a replacement unit (or complete sash, including IGU, at manufacturer's discretion) for the failed unit free of charge for as long as the ownership of the home by the purchaser.
 - 3. Vinyl Window Extrusions: Peeling, cracking, flaking or blistering under normal use, application and proper care are warranted for twenty years from the date of delivery.
 - 4. Factory Painted Vinyl and Aluminum Extrusions: Peeling, cracking, flaking or blistering under normal use, application and proper care are warranted for ten years from the date of delivery.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Ply Gem Canada (or approved equal)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

- B. Performance Class and Grade: Rated per AAMA/WDMA/CSA 101/I.S.2/A440.
 - 1. In Canada, Performance Grades for windows, doors and skylights shall be selected according to the Canadian Supplement A440S1 so as to be appropriate for the conditions and geographic location in which the window, door or skylight will be installed.
- C. Thermal Transmittance: Tested and certified per NFRC 100 maximum total fenestration product U-factor.
- D. Solar Heat-Gain Coefficient (SHGC): Tested and certified per NFRC 200 maximum total fenestration product SHGC.

2.3 DOUBLE GLAZED VINYL WINDOWS

- A. Product: Vista as manufactured by Ply Gem Canada.
 - 1. Style: Slider.
 - 2. Style: Single hung.
- B. Sizes: Refer to Drawings.
- C. Finish: Frame Color: White. Hardware Color: Grey.
- D. Grille:
 - 1. Design: SDL.
 - 2. Pattern: 5/8 inch (16 mm) flat.

PART 3 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 Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

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

SECTION 08700 FINISH HARDWARE

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. The work in this section shall include the furnishing of all items of finish hardware as hereinafter specified, or obviously necessary to complete the building, except those items which are specifically excluded from this section of the specification.

1.02 RELATED WORK

- A. The following sections of this specification should be examined in order to identify materials or equipment which may be obtained through this section.
 - 1. Section 08100 - Doors and Frames
 - 2. Section 08210 - Wood Doors

1.03 DESCRIPTION OF WORK

- A. **FINISH HARDWARE** - hardware used in building construction but particularly that used on or in connection with doors, frames, cabinets and other movable members. It also has a finished appearance as well as functional purpose and may be considered as a part of the decorative treatment of a room or building.

1.04 QUALITY ASSURANCE

- A. Hardware has been specified herein by manufacturer's name, brand and catalog numbers for the purpose of establishing a basis for quality, finish, design and operational function. No other products will be furnished unless approved by means of 1.04 paragraph "D".
- B. To insure a uniform basis of acceptable materials, it is the intention that only manufacturer's items specified as "acceptable and approved" be furnished for use on this project.
- C. Deviation from or modification of items will be permitted only for special instances caused by reason of construction characteristics and for the purpose of providing proper operational function properly.
- D. Substitutions – requests for substitutions of items of hardware other than those listed as "Acceptable and Approved" shall be made to the architect no later than ten (10) days prior to bid opening. Approval of substitutions will only be by addenda. Requests for substitutions shall be accompanied by showing design, functions, material thickness and any other pertinent information needed to compare your product with that specified. Lack of this information will result in a refusal. Substitution Review Process requires that supplier send one sample of copy of information to: **TDA Architects, LLC, 125 West Columbus Street, Dadeville, AL 36853.**
- E. Supplier - a recognized builders hardware supplier who has been furnishing hardware in the project's vicinity for a period of not less than two (2) years, and who is, or has in full time employment an Architectural Hardware Consultant (AHC) in good standing as certified by the Society of Architectural Council or equivalent, and who is a direct distributor of the products approved for warranty purposes. This paragraph will be strictly enforced. All schedules will be signed by an AHC.

1.05 SUBMITTALS

- A. The finish hardware supplier shall, after award of a formal contract, submit to the architect, six (6) complete computerized or typewritten (handwritten are not acceptable) copies of the proposed finish hardware schedule for approval. The schedule shall be prepared using the "Sequence and Format" for the Door and Hardware Institute (DHI). After approval of the schedule to the contractor for file and distribution purposes. Hardware will not be ordered by the hardware supplier until an approved schedule has been received. Horizontal schedules will not be

acceptable. Provide vertical format.

- B. When submitting schedules for approval, include two manufacturers cut sheets on each hardware item proposed. Index it with the use of number or letters or a combination of both, with the hardware schedule. The index numbers/letters are to be in right hand column on the same line as the respective manufacturer's numbers. All manufacturers' numbers shall be indexed even when appearing more than once.
- C. Templates - the hardware supplier shall provide necessary templates and/or physical hardware to all trades requiring them in order that they may cut, reinforce or otherwise prepare their material or product to receive the hardware supplier shall ship to them such hardware via prepaid freight in sufficient time to prevent any delay in the execution of their work.

1.06 DELIVERY, STORAGE AND HANDLING

- A. All items of hardware to be delivered to the jobsite shall be completely packaged with all necessary screws, bolts, miscellaneous parts, instructions and where necessary installation templates for manufactures' suggested installation. All boxes are to have a typed label with door hand, room location, item number and keying to conveniently identify them and their intended location in the building.
- B. A representative of the general contractor shall receive the hardware when delivered at the jobsite. A dry locked storage space complete with shelving, shall be set aside for the purpose of unpacking, sorting, checking and storage.
- C. Finish hardware shall be delivered to the general contractor by the hardware supplier. Direct factory shipments to the jobsite are not acceptable.
- D. The hardware shall be jointly inventoried by representatives of the general contractor and the hardware supplier.
- E. Items damaged in shipment shall be replaced promptly and with proper material without additional cost to the general contractor.
- F. All hardware shall be handled in a manner to minimize marring, scratching, or damage.

1.07 WARRANTY

All hardware shall have one year warranty except door closers which shall have a twenty-five year warranty as applicable for the closer specified.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware are indicated in the hardware schedule at the end of this section.

2.02 FINISH OF HARDWARE

Finish of items shall be as listed in the hardware schedule and shall conform to ANSI A156.18 UNLESS otherwise specified.

2.03 HINGES AND PIVOTS

- A. Template hinges: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template hinges which conform to ANSI whenever applicable.
- B. Hinge pins, except as otherwise indicated, shall be as follows:
 - 1. Steel Hinges: Steel pins.
 - 2. Non-Ferrous Hinges: Stainless Steel pins
 - 3. Exterior doors: Non-removable pints (NRP) or security stud.
 - 4. Out-swing corridor doors: Non-removable pins (NRP), whether specified in the hardware sets

- or not.
- 5. Interior doors: Non-rising pins.
- 6. Tips: flat button and matching plug, finished to match leaves, except where hospital tip indicated.
- 7. All exterior doors to have stainless steel (630) and interior doors to be satin chrome (652).
- C. Where projection of door trim is such as to prevent desired degree of opening, the proper hinge shall be provided to allow the door to clear the trim.
- D. Acceptable and approved only as follows:
 - 1. Stanley
 - 2. Hager
 - 3. Deltona

2.04 KEYS AND KEYING

- A. Coordinate keying with Owner's master keying system. Construction master key all locks. Furnish (6) cut master keys, control, and construction keys and (3) cut change keys for each locking cylinder. All locks are to be provided with 6-pin interchangeable core, factory keyed. No exception allowed.

2.05 LOCKSETS AND LATCHSETS

- A. Acceptable and approved as follows:
 - 1. Arrow QL Series
 - 2. Best Lock 93K14D
 - 3. Corbin/Ruswin CL3400 Series; ML2200
 - 4. Deltona Clarendon Series
- B. No other substitutions allowed.

2.06 CLOSERS

- A. Accepted and approved only as follows:
 - 1. LCN 4040 Series
 - 2. Arrow 300 Series
 - 3. Corbin/Ruswin DC2200 Series
- B. No other substitutions will be allowed.
- C. All closers shall be mounted on interior side of rooms. All closers to be mounted with wood or machine screws at all doors.
- D. All closers to have full metal covers and delayed action.
- E. All interior closers shall have adjustable spring power from sizes 1-4 and be capable of compliance with 5 lb. Interior barrier-free opening force restrictions. All exterior closers shall have adjustable spring power from sizes 2-6 and be capable of installation to meet 8.5 lb. exterior and 15 lb. fire door opening force restrictions.
- F. All closers to have a twenty-five year written warranty.
- G. All closers must be from the same manufacturer.

2.07 FLAT GOODS

- A. Accepted and approved only as follows:
 - 1. Quality
 - 2. Trimco
 - 3. Hager Accent Trim
 - 4. Deltona
- B. It is the responsibility of the hardware supplier to provide proper screw attachments per wall or floor conditions for door stops.
- C. Provide stops for each and every interior and exterior opening. It is the hardware supplier's responsibility to furnish proper fasteners for every stop, whether specified or not.

- D. Kickplates and armor plates shall be equal to Quality series #48 and shall be mounted by sheet metal screws where indicated in hardware sets, unless specified otherwise in hardware sets.
- E. Where stainless steel plates are specified, metal shall be .050" thickness' 4 beveled edges; with countersunk screw holes.

2.08 EXIT DEVICES

- A. Accepted and approved for use on wood and hollow metal doors:
 - 1. Monarch 17 & 18 Series
 - 2. Von Duprin 33 & 98 Series
 - 3. American Device 4300/6300
- B. No other substitutions will be allowed.
- C. Where doors have glass molding which projects from face of door, provide exit device shim kits for clearance purposes. These kits shall be the product of the exit device manufacturer. Provide where required whether specified in the hardware sets or not.
- D. All exposed parts of exits, including trim, must be satin stainless steel; no exceptions.

2.09 THRESHOLDS AND WEATHERSTRIPPING

- A. Accepted and approved as follows:
 - 1. Pemko
 - 2. Zero
 - 3. Reese

2.10 KEY CABINET

- A. Provide two tag key cabinet with 150% capacity.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Mount hardware units at heights indicated in "recommended locations for builders hardware" for (standard steel doors and frames), (custom steel doors and frames), (wood doors and frames) by the Door and Hardware Institute (DHI), except if otherwise specifically indicated or to comply with requirements of governing regulations, requirements for the handicapped, or if otherwise directed by the architect.
- B. Degree of opening for doors with overhead holders, closers, etc., shall be included in the hardware schedule for the architects' approval.
- C. All hardware shall be installed by tradesmen skilled in the application of commercial grade hardware.
- D. Install each hardware item in compliance with the instructions and recommendations. Securely fasten all parts to be attached. Fit faces of mortised parts snug and flush. Make sure all operating parts move freely and smoothly without binding, sticking, or excessive clearance. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted and finished in another way, the hardware shall be removed and stored prior to the painting or finishing. Items shall then be reinstalled only when the finishes have been completed on the surface to which the hardware is to be applied.
- E. At exterior doors and elsewhere as indicated, set thresholds in a bed of sealant as specified in Section 07900 to completely fill concealed voids and exclude moisture from every source. Do not plug drain holes or block weeps. Remove excess sealant.
- F. After installation, representative templates, instruction sheets and installation details shall be placed in a file folder to be turned over to the owner when the building is accepted. Included shall be at least five each of any special adjusting and/or installation tools furnished with the hardware by the manufacturers.

3.02 ADJUSTING AND CLEANING

- A. Adjust and check each operating item of hardware to ensure correct operation and function. Units which cannot be adjusted to operate as intended for the application made shall be replaced.
- B. Final adjustment: Wherever hardware installation is made more than one month prior to building acceptance or occupancy of a space or area, the installer shall return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items. Hardware shall be cleaned as necessary to restore correct operation, function, and finish. Door control devices shall be adjusted to compensate for final operation of heating and ventilating equipment.

3.03 PROTECTION

- A. Whenever hardware is located in areas where it may be subject to damage during construction by handling, cleaning, etc., (E.G., painting, cleaning of bricks) it shall be protected and/or removed from its location until the hazardous condition is terminated.

3.04 GENERAL NOTES

- A. Before the installation of any hardware, the contractor's installer shall contact the hardware supplier to discuss any special installation requirements for all hardware items. Their discussion shall include, but not be limited to such items as proper closer mounting, proper fasteners to be used for hardware, lockset and exit device backsets, etc.
- B. Electric power tools should not be used on hardware fasteners so as to prevent damage to screw heads
- C. Hex nut bolts shall not be used for mounting door closers or exit devices on hollow metal doors. Doors shall be drilled and tapped in reinforced areas for installation.
- D. Hardware supplier should verify all quantities indicated in the following schedule.

3.05 SCHEDULES

- A. The following is a general listing of hardware requirements and is not intended for use as a final hardware schedule. Any items of hardware required by established standards of practices, or to meet state and local codes shall be furnished whether or not specifically called out in the following listed groups.
- B. All hardware shall be furnished in accordance with Life-Safety Code requirements and conform to State and Local Building Codes and fire protection requirements. All hardware at labeled openings shall be UL approved. Hardware Contractor shall be responsible for furnishing hardware in accordance with Codes whether specified or not. All hardware shall be furnished in compliance with the Uniform Federal Accessibility Standard (UFAS) requirements.

Hardware Set 1

3	Hinge - F179 4.5 X 4.5 X 652	ST
1	Passage Lever - QL01 SR X 26D X 306 X 2 3/4 ASA	AR
1	Deadlock - D61-IC X 26D X 144 X 345 (2 3/4" BS)	AR
1	Combinated Core - 7100CR X 626 Required Keyway	AR
1	Closer – DC325-1 X AL	AR
1	Stop - 442CP/406 X 630 As Required	RW
1	Door Bottom - 35VA-36" / 32" X 628	NG
1	Threshold - 425-36" / 32" X LES As Required	NG
1	Weatherstrip - 160-36" / 32" X 84" X 628 As Required	NG
3	Silencers 608	RW

Hardware Set 2

3	Hinge - F179 4.5 X 4.5 X 652 X NRP	ST
1	Privacy Lever - QL72SR X 26D X 306 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
2	Kickplates 10 X 34 X 630	RW
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 3

3	Hinge - F179 4.5 X 4.5 X 652	ST
1	Classroom Lever - QL87SR X 26D X 306 X 2 3/4 ASA	AR
1	Electronic Strike – FAS HS125SLD w/ Button (or approved equal) FAS-RNT-230SADK Card Reader Kit for Electric Strikes	
1	Closer – DC325-1 X AL	AR
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Note: Strike release to be located in Reception Office. Consult with Architect for location.

Hardware Set 4

3	Hinge - F179 4.5 X 4.5 X 652	ST
1	Classroom Lever - QL87SR X 26D X 306 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 5

3	Hinge - F179 4.5 X 4.5 X 652	ST
1	Passage Lever - QL01SR X 26D X 306 X 2 3/4 ASA	AR
1	Deadlock - D61-IC X 26D X 144 X 345 (2 3/4" BS)	AR
1	Combinated Core - 7100CR X 626 Required Keyway	AR
1	Closer – DC325-1 X AL	AR
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 6

3	Hinge F179 4.5 X 4.5 X 652	ST
1	Passage Lever QL01SR X 306 X 626 X 2 3/4 ASA	AR
1	Wall Stop 409	IVES
3	Silencer 608 Metal Frame	RW

Hardware Set 7

3	Hinge - F179 4.5 X 4.5 X 652	ST
1	Classroom Lever - QL87SR X 26D X 306 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 8

3	Hinge - F179 4.5 X 4.5 X 652 X NRP	ST
1	Privacy Lever - QL72SR X 26D X 306 X 2 3/4 ASA	AR
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 9

3	Hinge - F179 4.5 X 4.5 X 652 X NRP	ST
1	Passage Lever – QL01SR X 26D X 306 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
2	Kickplates 10 X 34 X 630	RW
1	Wall Stop - 409	RW
3	Silencer - 608 Metal Frame	RW

Hardware Set 10

3	Hinge FBB168 4.5 X 4.5 X 652	ST
1	Privacy Lever L02SR X 306 X 626 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
2	Kickplates 10 X 34 X 630	RW
1	Wall Stop 409	RW
2	Silencer 608 Metal Frame	RW

Hardware Set 11

6	Hinge FBB168 4.5 X 4.5 X 652	ST
1	Privacy Lever L02SR X 306 X 626 X 2 3/4 ASA	AR
1	Closer – DC325-1 X AL	AR
1	Astragal – 84” Style 140 Insulated Double Door Astragal (Acoustical Solutions)	
2	Flush Door Bolts 6” Satin	Baldwin

2	Kickplates 10 X 34 X 630	RW
1	Wall Stop 409	RW
2	Silencer 608 Metal Frame	RW

Hardware Set 12

6	Hinge F179 4.5 X 4.5 X 652	ST
2	Roller Catch 592 X 626	RW
2	Dummy Lever L08SR X 626 X 2 ¾ ASA	AR
2	Wall Stop 409	RW
2	Silencer 608 Metal Frame	RW

END OF SECTION 08700

SECTION 09250 GYPSUM DRYWALL

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS:
 - A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SUMMARY:
 - A. Extent of each type of gypsum drywall construction required is indicated on Drawings.
 - B. This Section includes the following types of gypsum board construction:
 - 1. Gypsum board screw-attached to wood framing and furring members.
 - C. Wood framing and furring are specified in the following Division 6 sections:
 - 1. "Rough Carpentry."
- 1.3 DEFINITIONS:
 - A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.
- 1.4 SUBMITTALS:
 - A. Product data from manufacturers for each type of product specified.
- 1.5 QUALITY ASSURANCE:
 - A. Single Source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.
 - B. Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated, provide materials and installation which are identical with those of applicable assemblies tested per ASTM E 119 by Fire Testing laboratories acceptable to authorities having jurisdiction.
- 1.6 DELIVERY, STORAGE, AND HANDLING:
 - A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
 - B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
 - C. Handle gypsum boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.
- 1.7 PROJECT CONDITIONS:
 - A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
 - B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C).
 - C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

PART 2 - PRODUCTS

- 2.1 MANUFACTURERS:
 - A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Gypsum Boards and Related Products:
 - a. Celotex Corp.
 - b. Domtar Gypsum Co.
 - c. Georgia-Pacific Corp.
 - d. Gold Bond Building Products Div., National Gypsum Co.
 - e. United States Gypsum Co.
- 2.2 GYPSUM BOARD:
 - A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints.
 1. Thickness: Provide gypsum board in thicknesses indicated, or if not otherwise indicated, 5/8 inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.
 - B. Gypsum Wallboard: ASTM C 36, and as follows:
 1. Type: MR, in wet areas.
 2. Type: Type 'X' (all other locations), unless otherwise indicated.
 3. Edges: Tapered.
 4. Thickness: 5/8 inch, unless otherwise indicated.
- 2.3 TRIM ACCESSORIES:
 - A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047 and requirements indicated below:
 1. Material: Formed metal, plastic or metal combined with paper, with metal complying with the following requirement:
 - a. Sheet steel zinc-coated by hot-dip process.
 2. Edge trim shapes indicated below by reference to designations of Fig. 1 in ASTM C 1047:
 - a. "LC" Bead, unless otherwise indicated.
 - b. "U" Bead where indicated.
 - c. "J" Mold where indicated.
 3. One-Piece Control Joint: Formed with vee-shaped slot per Fig. 1 in ASTM C 1047, with slot opening covered with removable strip.
- 2.4 GYPSUM BOARD JOINT TREATMENT MATERIALS:
 - A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.
 - B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.
 - C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
 1. Where setting-type joint compounds are indicated for use as taping and topping compounds, use formulation for each which develops greatest bond strength and crack resistance and is compatible with other joint compounds applied over it.
 - D. Drying-Type Joint Compounds: Factory-prepackaged vinyl-based products complying with the following requirements for formulation and intended use.
 1. Ready-Mix Formulation: Factory-premixed product.
 2. Taping compound formulated for embedding tape and for first coat over fasteners and flanges of corner beads and edge trim.
 3. Topping compound formulated for fill (second) and finish (third) coats.
- 2.5 MISCELLANEOUS MATERIALS:
 - A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.
 - B. Gypsum Board Screws: ASTM C 1002.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL:

- A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.
- B. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- C. Install wall/partition boards in manner which minimizes the number of end-butt joints or avoids them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- D. Locate either edge or end joints over supports, except in horizontal applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- E. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- F. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.
- G. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board over wood framing, with "floating" internal corner construction.
- H. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.3 METHODS OF GYPSUM BOARD APPLICATION:

- A. Single-Layer Application: Install gypsum wallboard as follows:
 - 1. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
- B. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
 - 1. Fasten to wood supports with screws.

3.4 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- B. Install corner beads at external corners.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
 - 1. Install "LC" bead where drywall construction is tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
 - 3. Install J-type trim where indicated on drawings. Trim to be Gold Bond 500 or approved equal.
- D. Install plastic edge trim where indicated on wall panels at juncture with ceilings.
- E. Install control joints at locations indicated, or if not indicated, at spacings and locations

required by referenced gypsum board application and finish standard, and approved by the Architect for visual effect.

3.5 FINISHING OF DRYWALL:

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Pre-fill open joints and rounded or beveled edges, if any, using setting-type joint compound.
- C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of openings in base), and sand between coats and after last coat:
 - 1. Embedding and First Coat: Ready-mix drying-type all-purpose or taping compound.
 - 2. Fill (Second) Coat: Ready-mix drying-type all-purpose or topping compound.
 - 3. Finish (Third) Coat: Ready-mix drying-type all-purpose or topping compound.

3.6 PROTECTION:

- A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION 09250

SECTION 09310 CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Ceramic mosaic tile.
 - 2. Glazed wall tile.
 - 3. Stone thresholds installed as part of tile installations.
 - 4. Crack-suppression membrane for thin-set tile installations.
 - 5. Metal edge strips installed as part of tile installations.
 - 6. Cementitious backer units installed as part of tile installations.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete" for monolithic slab finishes specified for tile substrates.

1.3 DEFINITIONS

- A. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.
- B. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:
 - 1. Level Surfaces: Minimum 0.6.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required.
 - 2. Full-size units of each type of trim and accessory for each color and finish required.
 - 3. Stone thresholds in 6-inch (150-mm) lengths.
 - 4. Metal edge strips in 6-inch (150-mm) lengths.
- C. Product Certificates: For each type of product, signed by product manufacturer.
- D. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain all tile from one source or producer.
 - 1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Waterproofing.
 - 3. Metal edge strips.
 - 4. Cementitious backer units

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
 - 1. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements, unless otherwise indicated.
 - 2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.
- C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:
 - 1. As indicated by manufacturer's designations
- D. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.
 - 1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 TILE PRODUCTS

- A. Available Manufacturers:
 - 1. American Olean; Div. of Dal-Tile International Corp.
 - 2. Crossville Ceramics Company, L.P.
 - 3. Daltile; Div. of Dal-Tile International Inc.
 - 4. United States Ceramic Tile Company.
- B. Unglazed Ceramic Mosaic Tile CT-1: Factory-mounted flat tile as follows:
 - 1. Composition: impervious porcelain.
 - 2. Surface: Slip-resistant, with abrasive admixture.
 - 3. Module Size: 1 by 1 inch
 - 4. Nominal Thickness: 1/4 inch

5. Face: with cushion edges.
 6. Basis-of-Design Product: American Olean, unglazed ceramic mosaic tile – Sterling Silver A32
 - C. Glazed Wall Tile CT-2: Flat tile as follows:
 1. Module Size: 4-1/4 by 4-1/4 inches
 2. Thickness: 5/16 inch (8 mm).
 3. Face: Pattern of design indicated, with manufacturer's standard edges.
 4. Basis-of-Design Product: American Olean, glazed porcelain tile – Ice White 25
 - D. Glazed Wall Tile Trim Units: Matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
 1. Base for Thin-Set Mortar Installations: Straight, module size 4-1/4 by 4-1/4 inches
 2. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size 4-1/4 by 4-1/4 inches
 3. Wainscot Cap for Flush Conditions: Regular flat tile for conditions where tile wainscot is shown flush with wall surface above.
 4. External Corners for Thin-Set Mortar Installations: Surface bullnose.
 5. Internal Corners: Field-buttet square corners except with coved base and cap angle pieces designed to fit with stretcher shapes.
 - E. Accessories for Glazed Wall Tile: Provide vitreous china accessories of type and size indicated, in color and finish to match adjoining wall tile, and intended for installing by same method as adjoining wall tile.
 1. One soap holder with grab handle for each shower and tub indicated.
- 2.4 THRESHOLDS
- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch (12.7 mm) or less, and finish bevel to match face of threshold.
 - B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.
 1. Description: Match Architect's sample.
- 2.5 WATERPROOFING AND CRACK-SUPPRESSION MEMBRANES FOR THIN-SET TILE INSTALLATIONS
- A. General: Manufacturer's standard product that complies with ANSI A118.10.
 - B. Fabric-Reinforced, Modified-Bituminous-Sheet Product: Self-adhering SBS-modified-bituminous sheet with woven reinforcement facing for adhering to latex-portland cement mortar; 36 inches (914 mm) wide by 0.040-inch (1.01-mm) nominal thickness.
- 2.6 SETTING AND GROUTING MATERIALS
- A. Manufacturers:
 1. Bonsal, W. R., Company.
 2. Custom Building Products.
 3. C-Cure
 4. DAP, Inc.
 5. LATICRETE International Inc.
 6. MAPEI Corporation.
 - B. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.
 1. For wall applications, provide nonsagging mortar that complies with Paragraph C-4.6.1 in addition to the other requirements in ANSI A118.1.
 - C. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, consisting of the following:
 1. Prepackaged dry-mortar mix containing dry, redispersible, ethylene vinyl acetate additive to which only water must be added at Project site.
 - a. For wall applications, provide nonsagging mortar that complies with Paragraph F-4.6.1 in addition to the other requirements in ANSI A118.4.

- D. Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy: ANSI A118.3.
 - 1. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 deg F (60 deg C) and 212 deg F (100 deg C), respectively, and certified by manufacturer for intended use.
 - E. Water-Cleanable, Tile-Setting Epoxy Adhesive: ANSI A118.3.
 - F. Chemical-Resistant Furan Mortar: ANSI A118.5, with carbon filler, unless otherwise indicated.
 - G. Standard Unsanded Cement Grout: ANSI A118.6, color as indicated.
 - a. Unsanded grout mixture for joints 1/8 inch (3.2 mm) and narrower.
 - b. Sanded grout mixture for joints 1/8 inch (3.2 mm) and wider.
 - H. Chemical-Resistant Furan Grout: ANSI A118.5.
- 2.7 ELASTOMERIC SEALANTS
- A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."
 - B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.
 - 1. Available Products:
 - a. Dow Corning Corporation; Dow Corning 786.
 - b. GE Silicones; Sanitary 1700.
 - c. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
- 2.8 CEMENTITIOUS BACKER UNITS
- A. Provide cementitious backer units complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.
 - 1. Thickness: 1/2 inch
 - 2. Width: Manufacturer's standard width, but not less than 32 inches
 - B. Available Products:
 - 1. C-Cure; C-Cure Board 990.
 - 2. Custom Building Products; Wonderboard.
 - 3. USG Corporation; DUROCK Cement Board.
- 2.9 MISCELLANEOUS MATERIALS
- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
 - B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.
 - C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
 - D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.
 - 1. Available Manufacturers:
 - a. C-Cure
 - b. Custom Building Products
 - c. MAPEI Corporation
- 2.10 MIXING MORTARS AND GROUT
- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
 - B. Add materials, water, and additives in accurate proportions.
 - C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
 - 2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
 - 3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Provide concrete substrates for tile floors installed with [adhesives] [or] [thin-set mortar] that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.
 - 1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
 - 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
- F. Lay out tile wainscots to next full tile beyond dimensions indicated.
- G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.
 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."
 - H. Grout tile to comply with requirements of the following tile installation standards:
 - I. At showers, tubs, and where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.
- 3.4 WATERPROOFING AND CRACK-SUPPRESSION MEMBRANE INSTALLATION
- A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.
 - B. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.
 - C. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.
- 3.5 FLOOR TILE INSTALLATION
- A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.
 - B. Joint Widths: Install tile on floors with the following joint widths:
 1. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).
 - C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.
 - D. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
 - E. Grout Sealer: Apply grout sealer to cementitious grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.
- 3.6 WALL TILE INSTALLATION
- A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.
 - B. Joint Widths: Install tile on walls with the following joint widths:
 1. Glazed Wall Tile: 1/16 inch (1.6 mm).
- 3.7 CLEANING AND PROTECTING
- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 1. Remove grout residue from tile as soon as possible.
 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
 - C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
 - D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09310

SECTION 09651
RESILIENT TILE FLOORING LVT / LVP

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.
- B. Related Documents
 - 1. Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 sections) apply to the work of this section.
- C. Related Sections:
 - 1. Other Division 9 sections for floor finishes related to this section but not the work of this section
 - 2. Division 3 Concrete; not the work of this section
 - 3. Division 6 Wood and Plastics; not the work of this section
 - 4. Division 7 Thermal and Moisture Protection; not the work of this section

1.02 REFERENCES

- A. Manufacturer's Flooring Technical Manuals
 - 1. Flooring Guaranteed Installation Systems manual
- B. ASTM International:
 - 1. ASTM E 648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
 - 2. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
 - 3. ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - 4. ASTM F 1482, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring
 - 5. ASTM F 1700 Standard Specification for Solid Vinyl Tile
 - 6. ASTM F 1861 Standard Specification for Resilient Wall Base
 - 7. ASTM F 1869 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
 - 8. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
 - 2. NFPA 258 Standard Test Method for Measuring the Smoke Generated by Solid Materials
- D. Standards Council of Canada
 - 1. CAN/ULC-S102.2 Standard Test Method for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure.
- B. Administrative Requirements
 - 1. Pre-installation Meeting: Conduct an on-site pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.
 - 2. Pre-installation Testing: Conduct pre-installation testing as follows: (moisture tests, bond test, pH test, etc).
- C. Sequencing and Scheduling
 - 1. Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring.
 - 2. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond, moisture tests and pH test.

1.04 SUBMITTALS

- A. Submit shop drawings, seaming plan, coving details, and manufacturer's technical data, installation and maintenance instructions (latest edition of Flooring Guaranteed Installation Systems manual, for flooring and accessories.
- B. Submit the manufacturer's standard samples showing the required colors for flooring and applicable accessories.
- C. Submit Safety Data Sheets (SDS) available for adhesives, moisture mitigation systems, primers, patching/leveling compounds, floor finishes (polishes) and cleaning agents and Material Information Sheets for flooring products.
- D. If required, submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests.
- E. Closeout Submittals: Submit the following:
 - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty: Warranty documents specified herein

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility: provide types of flooring and accessories supplied by one manufacturer, including moisture mitigation systems, primers, leveling and patching compounds, and adhesives.
- B. Select an installer who is experienced and competent in the installation of resilient solid vinyl tile and plank flooring and the use of subfloor preparation products.
 - 1. Engage installers certified by the manufacturer as Certified Installers
 - 2. Confirm installer's certification by requesting their credentials
- C. Fire Performance Characteristics: Provide resilient tile flooring with the following fire performance characteristics as determined by testing material in accordance with ASTM test methods indicated below by a certified testing laboratory or other testing agency acceptable to authorities having jurisdiction:

1. ASTM E 648 (NFPA 253) Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I
2. ASTM E 662 (NFPA 258) (Smoke Generation) Maximum Specific Optical Density of 450 or less
3. CAN/ULC-S102.2 – Flame Spread Rating and Smoke Developed – Results as tested

1.06 DELIVERY, STORAGE AND HANDLING

- A. Comply with Division 1 Product Requirements Sections
- B. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Deliver materials in good condition to the jobsite in the manufacturer's original unopened containers that bear the name and brand of the manufacturer, project identification, and shipping and handling instructions.
- D. Store materials in a clean, dry, enclosed space off the ground, protected from harmful weather conditions and at temperature and humidity conditions recommended by the manufacturer. Protect adhesives from freezing. Store flooring, adhesives and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

1.07 PROJECT CONDITIONS

- A. Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65°F (18°C) and a maximum temperature of [100°F (38°C)] [85°F (29°C)] for at least 48 hours before, during, and for not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 55°F (13°C) in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances. Refer to the Manufacturer's Flooring Guaranteed Installations Systems manual, for a complete guide on project conditions.

1.08 LIMITED WARRANTY

- A. Resilient Flooring: Submit a written warranty executed by the manufacturer, agreeing to repair or replace resilient flooring that fails within the warranty period.
- B. Limited Warranty Period: 20 years.
- C. The Limited Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.
- D. For the Limited Warranty to be valid, this product is required to be installed using the appropriate Manufacturer's Flooring Guaranteed Installation System. Product installed not using the specific instructions from the Guaranteed Installation System will void the warranty.

1.09 EXTENDED SYSTEM LIMITED WARRANTY

- A. Resilient Flooring System: Submit a written warranty executed by the manufacturer, agreeing to repair or replace system (subfloor preparation products, adhesive, and floor covering) that fails within the warranty period.
- B. Limited Warranty Period: 10 years on top of the Resilient Flooring Limited Warranty

- C. Cement based self-leveling compound, flexible patching and smoothing compound, acrylic primer for porous substrates, Prime Strong™ acrylic primer for non-porous substrates, two part moisture mitigation system.
- D. The installation of an Armstrong Flooring product along with the recommended Armstrong Flooring adhesive, as well as any one of the Strong System subfloor preparation products listed above, provides 10 additional years of limited warranty coverage. The Strong System limited warranty covers the installation integrity for the length of the flooring product warranty plus 10 years. In order to qualify for the Strong System Warranty, any subfloor preparation product needed for an installation must be an Armstrong Flooring product.
- E. For the System Limited Warranty to be valid, this product is required to be installed using the appropriate Armstrong Flooring Guaranteed Installation System. Product installed not using the specific instructions from the Guaranteed Installation System will void the warranty.
- F. When Armstrong Flooring Strong System subfloor preparation products are used with other manufacturers' floor coverings, adhesives, or other subfloor preparation products, Armstrong Flooring warrants our products to be free from manufacturing defects from the date of purchase through the limited warranty period of 15 years.

1.10 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials from same production run as products installed. Packaged with protective covering for storage and identified with appropriate labels.
 - 1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra material.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Resilient tile flooring, wall base, adhesives and subfloor preparation products and accessories:
 - 1. Armstrong Flooring Inc.
 - 2. Shaw Industries, Inc. (meeting the quality and endurance of Armstrong products)

2.02 RESILIENT TILE FLOORING MATERIALS

- A. Provide Natural Creations with Diamond 10 Technology: Luxury Solid Vinyl Tile/Plank Flooring manufactured by Armstrong Flooring Inc. or the equivalent Shaw Industries, Inc. product.
 - 1. Description: A layered construction consisting of a tough, clear, rigid vinyl wear layer protecting a high-fidelity print layer on a solid vinyl backing. Protected by a diamond-infused UV-cured polyurethane finish, the wear surface is embossed with different textures to enhance each of the printed visuals. Colors are insoluble in water and resistant to cleaning agents and light.
 - 2. Reference specification - ASTM F 1700, "Standard Specification for Solid Vinyl Tile", Class III, Type B – Embossed Surface. Meets requirements for size, squareness, thickness, thickness of wear layer, residual indentation, resistance to chemicals, resistance to light and resistance to heat.

3. Pattern and Color: Color and pattern selected from the range currently available from Armstrong Flooring Inc. or Shaw Industries, Inc.
4. Size: As exists for the selected tile/plank.
5. Wear layer thickness: 0.020 (0.5 mm)
6. Thickness: 1/8"/0.125 in. (3.2mm)

2.03 PRODUCT SUBSTITUTION

- A. Substitutions: No substitutions permitted because of the specific attributes listed in Section 2.02.

2.04 WALL BASE MATERIALS

- A. For top set wall base: Provide 4 in. (10.16 cm) high Armstrong Flooring Color-Integrated Wall Base with a matte finish, conforming to ASTM F 1861, Type TP - Rubber, Thermoplastic, Group 1 - Solid, Style B – Cove.

2.05 ADHESIVES

- A. Provide Flooring Adhesive under the flooring and Wall Base Adhesive at the wall base as recommended by the flooring manufacturer.

2.06 ACCESSORIES

- A. For patching, smoothing, and leveling monolithic subfloors (concrete, terrazzo, quarry tile, ceramic tile, and certain metals), provide manufacturer's recommended materials.
- B. For creating a moisture barrier, provide S-452 Seal Strong™ two-part moisture mitigation system or Shaw's equivalent.
- C. For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.
- D. Provide transition/reducing strips tapered to meet abutting materials.
- E. Provide threshold of thickness and width as shown on the drawings.
- F. Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the Architect from standard colors available.
- G. Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including technical bulletins, product catalog, installation instructions, and product carton instructions for installation and maintenance procedures as needed.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions (i.e. moisture tests, bond test, pH test, etc.).
- B. Visually inspect flooring materials, adhesives and accessories prior to installation. Flooring material with visual defects shall not be installed and shall not be considered as a legitimate claim.
- C. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.
- D. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.
- E. Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- F. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates regarding conditions existing at the time of installation.

3.03 PREPARATION

- A. Subfloor Preparation: Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with products as recommended by the flooring manufacturer. Refer to manufacturer's manual, and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- B. Subfloor Preparation Moisture Mitigation: Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, mitigate moisture and other defects with materials as recommended by the flooring manufacturer. Refer to manufacturer's manual, and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- C. Subfloor Cleaning: The surface shall be free of dust, solvents, varnish, paint, wax, oil, grease, sealers, release agents, curing compounds, residual adhesive, adhesive removers and other foreign materials that might affect the adhesion of resilient flooring to the concrete or cause a discoloration of the flooring from below. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents. Spray paints, permanent markers and other indelible ink markers must not be used to write on the back of the flooring material or used to mark the concrete slab as they could bleed through, telegraphing up to the surface and permanently staining the flooring material. If these contaminants are present on the substrate, they must be mechanically removed prior to the installation of the flooring material. Refer to the manufacturer's manual, and ASTM F 710 Standard Practice for Preparing

Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.

- D. When using S-288 Adhesive, perform subfloor moisture testing in accordance with ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes" or ASTM F 1869, "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" and Bond Tests as described in manufacturer's Flooring Guaranteed Installation System Manual," to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. Internal relative humidity of the concrete shall not exceed 95% or MVER shall not exceed 8 lbs./1000 sq. ft./24 hrs. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.
- E. Use Manufacturer's recommended adhesives based on moisture test results. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.
- F. Concrete pH Testing: Perform pH tests on concrete floors regardless of their age or grade level. All test results shall be documented and retained.
- G. Wood subfloors: Armstrong resilient floors are recommended on suspended wood subfloors with a 1/4" underlayment (see product installation systems for exceptions) and a minimum of 18" of well-ventilated air space below. Armstrong Flooring does not recommend installing resilient flooring on wood subfloors applied directly over concrete or on sleeper-construction subfloors. Loading requirements for subfloors are normally set by various building codes on both local and national levels. Trade associations such as APA—The Engineered Wood Association provide structural guidelines for meeting various code requirements. Subfloor panels are commonly marked with span ratings showing the maximum center-to-center spacing in inches of supports over which the panels should be placed.
 - 1. Refer to the Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 1482, Standard Guide to Wood Underlayment Products Available for Use under Resilient Flooring for additional information.
- H. Wood subfloors - Surface Cleaning: Make subfloor free from dust, dirt, grease, and all foreign materials.
 - 1. Check panels for sources of discoloration such as contamination from paint, varnish, stain overspray or spills, plumbing sealers, asphalt, heater fuel, markers or potential staining agents such as wood or bark not visible on the surface, edge sealers, logo markings, printed nail patterns and synthetic patches.
 - 2. Remove old adhesive.
 - 3. Cover adhesive, oil or wax residue with an appropriate underlayment. If the residue is tacky, place a layer of felt or polyethylene sheeting over it to prevent a cracking sound when walking on the floor.
 - 4. Remove all paint, varnish, oil and wax from all subfloors. Many buildings constructed before 1978 contain lead-based paint, which can pose a health hazard if not handled properly. State and federal regulations govern activities that disturb lead-based painted surfaces and may also require notice to building occupants. **Do not remove or sand lead-based paint without consulting a qualified lead professional for guidance on lead-based paint testing and safety precautions.** Armstrong Flooring does not recommend the use of solvents to remove paint, varnish, oil, wax or old adhesive residues because the solvents can remain in the subfloor and negatively affect the new installation. Whenever sanding, be certain the work site is well ventilated and avoid breathing dust. If high dust levels are anticipated, use

appropriate National Institute for Occupational Safety and Health (NIOSH) designated dust respirator. All power sanding tools must be equipped with dust collectors. Avoid contact with skin or eyes. Wear gloves, eye protection and long-sleeve, loose fitting clothes

5. For additional information on the installation and preparation of wood and board-type underlayments see the current edition of ASTM F1482, "Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring."
6. Vacuum or broom-clean surfaces to be covered immediately before the application of flooring.

3.04 INSTALLATION OF FLOORING

- A. Install flooring in strict accordance with the latest edition of Manufacturer's Flooring Guaranteed Installation Systems manual. Failure to comply may result in voiding the manufacturer's warranty listed in Section 1.08.
- B. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.
- C. If required, install flooring on pan-type floor access covers. Maintain continuity of color and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.
- D. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.
- E. Roll with a 100-pound (45.36 kilogram) roller in the field areas. Refer to specific rolling instructions of the flooring manufacturer
- F. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

3.05 INSTALLATION OF ACCESSORIES

- A. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths if practical, with inside corners fabricated from base materials that are mitered or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.
- B. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.
- C. Place resilient edge strips tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.
- D. Apply butt-type metal edge strips where shown on the drawings, before flooring installation. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

3.06 CLEANING

- A. Perform initial and on-going maintenance according to the latest edition of Manufacturer's Flooring Maintenance Recommendations and Procedures manual.

3.07 PROTECTION

- A. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.

END OF SECTION

SECTION 09900 PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following:
 - 1. Exposed exterior items and surfaces.
 - 2. Exposed interior items and surfaces.
 - 3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork and casework.
 - b. Kitchen cabinets
 - c. Metal toilet enclosures.
 - d. Metal lockers.
 - e. Finished mechanical and electrical equipment.
 - f. Light fixtures.
 - g. Distribution cabinets.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas.
 - b. Ceiling plenums.
 - c. Pipe spaces.
 - d. Duct shafts.
 - 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Bronze and brass.
 - 4. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- D. Related Sections include the following:
 - 1. Division 2 Section "Hot-Mix Asphalt Paving" for traffic-marking paint.
 - 2. Division 2 Section "Portland Cement Concrete Paving" for traffic-marking paint.
 - 3. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.
 - 4. Division 8 Section "Steel Doors and Frames" for shop priming steel doors and frames.
 - 5. Division 9 Section "Gypsum Board" for surface preparation for gypsum board.
 - 6. Divisions 15 and 16: Painting of mechanical and electrical work is specified in Divisions

15 and 16, respectively.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
 - 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
 - 4. Semi-gloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
 - 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 - 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 - 3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
 - 1. After color selection, the Architect will furnish color chips for surfaces to be coated.
- C. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Manufacturer's stock number and date of manufacture.
 - 4. Contents by volume, for pigment and vehicle constituents.
 - 5. Thinning instructions.
 - 6. Application instructions.
 - 7. Color name and number.
 - 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected

from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F.
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
 - 1. Quantity: At the completion of work, provide 20 gallons of the color and type used in each coating material used. Cans shall be clearly identified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products in the paint schedules (or approved equal).
- B. Manufacturers Names: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
 - 1. Devoe & Raynolds Co. (Devoe).
 - 2. Glidden Co. (The) (Glidden).
 - 3. Sherwin-Williams Co. (S-W).

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat 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.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: Color selections will be made by the Architect from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified. Seal all penetrations in wall, ceiling or floor prior to painting.
 1. Provide barrier coats over incompatible primers or remove and re-prime.
 2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
 - c. When transparent finish is required, backprime with spar varnish.
 - d. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written

instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 7. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 8. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
 1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer on metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
 1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Electrical items to be painted include, but are not limited to, the following:

1. Conduit and fittings.
 2. Switchgear.
 3. Panelboards.
- F. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- H. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- I. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
1. Provide satin finish for final coats.
- J. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
1. The Owner will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
 2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
 - a. Quantitative material analysis.
 - b. Abrasion resistance.
 - c. Apparent reflectivity.
 - d. Flexibility.
 - e. Washability.
 - f. Absorption.
 - g. Accelerated weathering.
 - h. Dry opacity.
 - i. Accelerated yellowness.
 - j. Recoating.
 - k. Skinning.
 - l. Color retention.
 - m. Alkali and mildew resistance.
 3. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished

surfaces.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 EXTERIOR PAINT SCHEDULE

- A. Concrete Masonry Units: Provide the following finish systems over exterior concrete masonry units:
 - 1. Low-Luster Acrylic Finish: 2 finish coats over a block filler.
 - a. Block Filler: High-performance, latex block filler applied at spreading rate recommended by the manufacturer to achieve a total dry mill thickness of not less than 4.0 mils.
 - 1) Devoe: 52902 Bloxfil 200 Interior/Exterior Latex Block Filler.
 - 2) Glidden: 5317 Ultra-Hide Block Filler Latex Interior-Exterior.
 - b. First and Second Coats: Low-luster (eggshell or satin), exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils.
 - 1) Devoe: 16XX Wonder-Shield Exterior Acrylic Latex Satin House and Trim Paint.
 - 2) Glidden: 6700 Series Spred Ultra Exterior Satin Latex House and Trim Paint.
- B. Exterior Gypsum Soffit Board: Provide the following finish systems over exterior gypsum soffit board:
 - 1. Flat Acrylic Finish: 2 finish coats over an exterior, alkyd- or alkali-resistant primer, as recommended by the manufacturer.
 - a. Primer: Exterior, alkyd- or alkali-resistant, acrylic-latex primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
 - 1) Devoe: 1102 All-Weather Exterior Alkyd House Paint Primer.
 - 2) Glidden: Primer not required over this substrate.
 - b. First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
 - 1) Devoe: 15XX Wonder-Shield Exterior Acrylic Latex Flat House Paint.
 - 2) Glidden: 3525 Series Spred House Masonry & Stucco Finish.
- C. Wood Trim: Provide the following finish systems over exterior wood trim:
 - 1. Medium-Shade, Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils.
 - 1) Devoe: 1102 All-Weather Exterior Alkyd House Paint Primer.
 - 2) Glidden: UH 790 Ultra-Hide Exterior Latex Prime Coat.
 - b. First and Second Coats: Semigloss, waterborne, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.4 mils.
 - 1) Devoe: 17XX Wonder-Shield Semi-Gloss Exterior Acrylic Latex House and Trim Paint.
 - 2) Glidden: 6600 Series Spred Ultra Exterior Gloss Latex House & Trim Paint.
- D. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils.
 - 1) Devoe: 13101 Mirrolac Rust Penetrating Metal Primer.
 - 2) Glidden: 5205 Glid-Guard Tank & Structural Primer, Red.
 - 3) S-W: Kem Kromik Metal Primer B50N2/B50W1.
 - b. First and Second Coats: Full-gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils.
 - 1) Devoe: 70XX Mirrolac Interior/Exterior Alkyd-Urethane Gloss Enamel.
 - 2) Glidden: 4500 Series Glid-Guard Alkyd Industrial Enamel.
 - 3) S-W: Industrial Enamel B-54 Series.
- E. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:
 1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a galvanized metal primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 8502/8520 Mirrolac-WB Interior/Exterior Waterborne Flat DTM Primer and Finish.
 - 2) Glidden: 5205 Glid-Guard Tank & Structural Primer, Red.
 - 3) S-W: Galvite Paint B50W3.
 - b. First and Second Coats: Full-gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
 - 1) Devoe: 70XX Mirrolac Interior/Exterior Alkyd-Urethane Gloss Enamel.
 - 2) Glidden: 4500 Series Glid-Guard Alkyd Industrial Enamel.
 - 3) S-W: Industrial Enamel B-54 Series.

3.8 INTERIOR PAINT SCHEDULE

- A. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry block units:
 1. Semigloss, Alkyd-Enamel Finish: 2 finish coats over an undercoat and a filled surface.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 5.0 mils.
 - 1) Devoe: 52902 Bloxfil 200 Interior/Exterior Latex Block Filler.
 - 2) Glidden: 5317 Ultra-Hide Block Filler, Latex Interior-Exterior.
 - 3) S-W: Heavy-Duty Block Filler B42W46.
 - b. Undercoat: Interior, alkyd- or latex-based, enamel undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
 - 2) Glidden: UH 400 Ultra-Hide Alkyd Interior Enamel Undercoater.
 - 3) S-W: Classic 99 Interior/Exterior Semi-Gloss Alkyd Enamel A-40 Series.
 - c. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
 - 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
 - 2) Glidden: UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.
 - 3) S-W: Classic 99 Interior/Exterior Semi-Gloss Alkyd Enamel A-40 Series.
- B. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:
 1. Ceilings - Flat Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.

- 1) Devoe: 50801 Wonder-Tones Interior Vinyl Latex Primer-Sealer.
 - 2) Glidden: 5111 Spred Ultra Latex Primer-Sealer.
 - b. First and Second Coats: Flat, acrylic-latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils.
 - 1) Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
 - 2) Glidden: 4000 Series Spred Ultra Flat Latex Wall and Trim Paint.
 2. Walls - Low-Luster, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 50801 Wonder-Tones Interior Vinyl Latex Primer-Sealer.
 - 2) Glidden: 5111 Spred Ultra Latex Primer-Sealer.
 - b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
 - 1) Devoe: 34XX Wonder-Tones Interior Latex Eggshell Enamel.
 - 2) Glidden: 4100 Series Spred Ultra Eggshell Latex Wall & Trim Paint.
 3. Frames - Semigloss, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 50801 Wonder-Tones Interior Vinyl Latex Primer-Sealer.
 - 2) Glidden: 5111 Spred Ultra Latex Primer-Sealer.
 - b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
 - 1) Devoe: 39XX Wonder-Tones Semi-Gloss Interior Latex Enamel.
 - 2) Glidden: 8200 Series Spred Ultra Latex Semi-Gloss Enamel.
- C. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces:
1. Semigloss, Acrylic-Enamel Finish: 2 finish coats over a wood undercoater.
 - a. Undercoat: Alkyd- or acrylic-latex-based, interior wood undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 51701 Wonder-Prime All-Purpose Latex Primer Sealer & Vapor Barrier.
 - 2) Glidden: UH 400 Ultra-Hide Alkyd Interior Enamel Undercoater.
 - b. First and Second Coats: Semigloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
 - 1) Devoe: 39XX Wonder-Tones Semi-Gloss Interior Latex Enamel.
 - 2) Glidden: 8200 Series Spred Ultra Latex Semi-Gloss Enamel.
- D. Stained Woodwork: Provide the following stained finishes over new, interior woodwork:
1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sealer coat and an alkyd-based, interior wood stain. Wipe wood filler before applying stain.
 - a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: None required.
 - 2) Glidden: Glidden Paste Wood Filler.
 - 3) S-W: Sher-Wood Fast-Dry Filler.
 - b. Stain Coat: Alkyd-based, interior wood stain applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: 96XX WoodWorks Alkyd Interior Stain.

- 2) Glidden: 1600 Series Woodmaster Oil Wood Stain.
 - 3) S-W: Oil Stain A-48 Series.
 - c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: 4900 WoodWorks Quick-Dry Clear Sealer.
 - 2) Glidden: 5035 Ultra-Hide Quick-Dry Sanding Sealer, Clear.
 - 3) S-W: ProMar Varnish Sanding Sealer B26V3.
 - d. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: 4600 WoodWorks Alkyd Satin Varnish.
 - 2) Glidden: 82 Satin Sheen Woodmaster Polyurethane Clear Finishes Varnish.
 - 3) S-W: Oil Base Varnish, Gloss A66V91.
- E. Natural-Finish Woodwork: Provide the following natural finishes over new, interior woodwork:
 - 1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sanding sealer. Provide wood filler on open-grain wood before applying first varnish coat.
 - a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: None required.
 - 2) Glidden: Glidden Paste Wood Filler.
 - 3) S-W: Sher-Wood Fast-Dry Filler.
 - b. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: 4900 WoodWorks Quick-Dry Clear Sealer.
 - 2) Glidden: 5035 Ultra-Hide Quick-Dry Sanding Sealer, Clear.
 - 3) S-W: ProMar Varnish Sanding Sealer B26V3.
 - c. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.
 - 1) Devoe: 4600 WoodWorks Alkyd Satin Varnish.
 - 2) Glidden: 82 Satin Sheen Woodmaster Polyurethane Clear Finishes Varnish.
 - 3) S-W: Oil Base Varnish, Gloss A66V91.
- F. Ferrous Metal: Provide the following finish systems over ferrous metal:
 - 1. Semigloss, Alkyd-Enamel Finish: One finish coat over an enamel undercoater and a primer.
 - a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils.
 - 1) Devoe: 13101 Mirrolac Rust Penetrating Metal Primer.
 - 2) Glidden: 5207 Glid-Guard Tank & Structural Primer, White.
 - 3) S-W: Kem Kromik Metal Primer B50N2/B50W1.
 - b. Undercoat: Alkyd, interior enamel undercoat or semigloss, interior, alkyd-enamel finish coat, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
 - 2) Glidden: UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.
 - 3) S-W: ProMar 200 Interior Alkyd Semi-Gloss Enamel B34W200.
 - c. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less

- than 1.4 mils.
- 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
- 2) Glidden: UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.
- 3) S-W: Classic 99 Interior/Exterior Semi-Gloss Alkyd Enamel A-40 Series.
- G. Zinc-Coated Metal: Provide the following finish systems over zinc-coated metal:
 - 1. Semigloss, Alkyd-Enamel Finish: One finish coat over an undercoat and a primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 13201 Mirrolac Galvanized Metal Primer.
 - 2) Glidden: 5207 Glid-Guard Tank & Structural Primer, White.
 - 3) S-W: Galvite Paint B50W3.
 - b. Undercoat: Alkyd, interior enamel undercoat or semigloss, interior, alkyd-enamel finish coat, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
 - 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
 - 2) Glidden: UH 8400 Series Spred Ultra Traditional Alkyd Semi-Gloss Enamel.
 - 3) S-W: ProMar 200 Interior Alkyd Semi-Gloss Enamel B34W200.
 - c. Finish Coat: Odorless, semigloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils.
 - 1) Devoe: 26XX Velour Interior Alkyd Semi-Gloss Enamel.
 - 2) Glidden: UH 8400 Ultra Traditional Alkyd Semi-Gloss Enamel.
 - 3) S-W: Classic 99 Interior Alkyd Semi-Gloss Enamel A-40 Series.

END OF SECTION 09900

SECTION 10800 TOILET ACCESSORIES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. Extent of each type of toilet accessory is indicated below.
- B. Types of toilet accessories required include the following:
 - 1. Toilet tissue dispenser. B-685 (1 ea. per water closet)
 - 2. Soap dispenser. B-111 (two per toilet)
 - 3. Paper towel dispenser. B-262 (two per toilet)
 - 4. Mirror unit. B-165-2436 (1 ea. per lavatory)
 - 5. Grab Bar B-68137 (1 ea. per H. C. water closet)
 - 6. Grab Bar B-6868 (one per shower stall)
 - 7. Folding Shower Seat B-5171 (one per shower stall)
 - 8. Towel pin B-6777 (one per shower stall and one per H.C. toilet stall)

1.03 QUALITY ASSURANCE:

- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.
- B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.
- C. Products: Provide products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to Architect.

1.04 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.
- B. Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Manufacturers: Provide toilet accessories as scheduled on the drawings. Substitutions will be considered subject to compliance with requirements.
 - 1. Bobrick Washroom Equipment, Inc.

2.02 MATERIALS, GENERAL:

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage (.034") minimum, unless otherwise indicated.
- B. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.
- C. Mirror Glass: FS DD-G-451, Type I, Class 1, Quality q2, ¼" thick, with silver coating, copper protective coating, and non-metallic paint coating complying with FS DD-M-411.
- D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- E. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

2.03 FABRICATION:

- A. General: Only an unobtrusive stamped logo of manufacturer, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Provide concealed anchorage wherever possible.
- C. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without metered corners. Provide anchorage which is fully concealed when unit is closed.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

3.02 ADJUSTING AND CLEANING:

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing temporary labels and protective coatings.

END OF SECTION 10800

SECTION 12390 KITCHEN CABINETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. Extent of kitchen cabinets is indicated on drawings.
- B. Coordinate installation of range hoods as specified in Section 15100.

1.03 QUALITY ASSURANCE:

- A. Kitchen Cabinet Standard: ANSI A161.1.
 - 1. NKCA Certification: Where indicated, provide kitchen cabinets with National Kitchen Cabinet Association (NKCA) "Certified Cabinet" seal affixed in a semi-concealed location of each unit, evidencing compliance with above standard.
- B. Countertop Standard: ANSI A161.2.
 - 1. Field Measurements: Verify sizes and shapes of base cabinets, wall cabinets and countertops prior to fabrication by field measurements.

1.04 SUBMITTALS:

- A. Shop Drawings: Submit shop drawings showing location and size of each type of cabinet and countertops, accessories, materials, finishes, hardware types and locations, fillers, etc. Include fully dimensioned plans and elevations and indicate details of anchorage to countertop and to walls.
- B. Samples: Submit fully finished samples of kitchen Base cabinet unit and Wall hung cabinet unit for approval before fabrication.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect wood cabinets and countertops during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver wood cabinets and countertops until painting, wet work, grinding and similar operations, which could be performed before installation of kitchen cabinets, have been completed in installation areas. Store kitchen cabinets and countertops in installation areas or, if that is impracticable, in areas with ambient conditions meeting same requirements.

1.06 JOB CONDITIONS:

- A. Conditioning: Manufacturer shall advise Contractor of temperature and humidity requirements for cabinet installation areas. Do not install cabinets and countertops until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
- B. Maintain temperature and humidity in installation areas as required to maintain moisture content of installed cabinet work within a tolerance range of the optimum moisture content acceptable to cabinet manufacturer, from date of installation through remainder of construction period.

PART 2 - PRODUCTS

2.01 DEFINITIONS:

- A. Exposed portions of cabinets include all surfaces including edges visible when doors and drawers are closed. Also included are visible surfaces and visible edges of shelves in open cabinets.
- B. Semi-exposed portions of cabinet include surfaces behind opaque doors and drawer fronts including shelves, dividers, interior faces of cabinet ends, backs, tops and bottoms, drawer sides, backs and bottoms, and back face of doors.
- C. Concealed portions of cabinets include sleepers, web frame, dust panels and other surfaces not normally visible after installation.

2.02 BASIC MATERIALS:

- A. Plastic Laminate: NEMA LD-3, of thickness, type and grade designation indicated; in colors of patterns and finishes indicated, or, if not indicated, as selected by Architect from manufacturer's standard selections.
- B. Hardwood Plywood: PS 51 (proposed ANSI A99.1), Good Grade (1) or better, of thickness, species, cut and core construction indicated.
- C. Hardwood Lumber: Clear, dry, sound, and free of defects selected from First Grade lumber (NHLA), of species indicated.
- D. Hardboard: ANSI A135.4, Class 1, tempered.

2.03 WOOD CABINETS, TRANSPARENT FINISH:

- A. Exposed Materials: Do not juxtapose materials noticeable dissimilar in color, grain, figure and natural color markings.
 - 1. Solid lumber: Selected for compatible grain and color of the following species:
 - 2. Natural Birch
 - 3. Northern Hard Maple.
 - 4. Red or White Oak.
 - 5. Plywood Face Veneer: Same species as exposed lumber, unless otherwise indicated, selected for grain and color compatible with exposed solid lumber, no defects. Edgeband exposed edges with solid wood of same species as face veneer.
- B. Semi-Exposed Materials:
 - 1. Solid Lumber: Dry, sound, selected to eliminate appearance defects, of any species of hardwood or softwood with color and grain characteristics similar to exposed portions.
 - 2. Plywood: Species to match color and grain of exposed members with veneer core.
 - 3. Concealed Members: Solid lumber or plywood, as indicated.
- C. Style of Face Construction:
 - 1. Face Frame Style: Provide base, wall and full height units (if any) with face frames of cabinets exposed around drawer fronts and doors.
 - a. Drawer Fronts and Doors: Surface applied to face frame.
 - 1) Flush Style Door Construction: Ladder core plywood, 3 ply with hardwood face veneers and crossbanding.
 - 2) Flush Style Drawer Fronts: Same construction as door.
- D. Cabinet Construction, General:
 - 1. Face Frames: Not less than 1" x 1-5/8" solid lumber rails and stiles with glued

- mortise and tenon joints.
- 2. Exposed Ends: Not less than 1/2" thick, 5 ply veneer core plywood. Connect to stile with pressure-glued tongue and plow joint, and supplemented by concealed mechanical fasteners.
- 3. Unexposed Ends: Not less than 1/2" thick, 5 ply veneer core plywood. Attach to front frame in same manner as exposed ends.
- 4. Back, Top and Bottom Rails: Not less than 3/4" x 3" solid lumber machined to interlock with end panels, and rabbeted to receive top and bottom panels; with back rails secured under pressure with glue and mechanical fastening devices.
- 5. Shelving: Not less than 1/2" thick plywood.
- E. Wall Cabinet Construction:
 - 1. Tops and Bottoms: Not less than 1/2" thick 3 ply plywood with tops and bottoms, fully supported by, and secured in, rabbets in end panels, front frame and back rail.
 - 2. Backs: Not less than 1/8" hardboard fastened to machined rear edge of ends and to top and bottom hanger rails.
- F. Base Cabinet Construction:
 - 1. Front Frame Drawer Rails: Not less than 1" x 1-1/4" lumber mortised and fastened into face frame.
 - 2. Bottoms: Not less than 3/8" thick, 5-ply veneer core plywood secured in and fully supported rabbets in end panels, front frame and back bottom rail.
 - 3. Back Panels: Not less than 3/8" thick, 5 ply veneer core plywood, glued and fastened to machined rear edge of end panels and to top and bottom rails.
 - 4. Toe Boards: Not less than 3/4" treated wood attached between end panels and extended from bottom panel to floor.
 - 5. Corner Blocks: Glued and fastened in each of 4 top corners to maintain cabinet squareness and rigidity.
- G. Drawer Construction:
 - 1. Drawer Body: Not less than 7/16" thick hardwood subfront, back and sides fully dovetailed and glued at all 4 corners. Exposed fronts fastened to subfront with mounting screws from interior of body. Drawer bottom of not less than 1/4" thick hardboard, set into rabbets in back, sides and front.
- H. Full-Height Cabinets:
 - 1. Back Panels: Hardwood plywood of manufacturer's standard thickness for size and type of storage unit provided, but not less than 3/16" thick, unless otherwise indicated.
 - 2. Top and Bottom Panels: Minimum 3/8" thick hardwood plywood unless otherwise indicated.
 - 3. Corner Posts: Not less than 3/4" x 7/8" attached to all 4 vertical corners, fabricated with notches to provide adjustability and retainment of interior storage devices.

2.04 COUNTERTOPS:

- A. Exposed Surfacing Material: High pressure plastic laminate, 0.050" thick, General Purpose Type (GP50); except 0.042" thick, Postforming Type (PF42), where postformed countertop configuration is indicated.
- B. Substrate (Core) for Exposed Surfacing Material: Exterior grade plywood, with solid wood drip and splash. (No particleboard).
- C. Countertop Configuration: Provide countertops with the following front styles (nose), cove and backsplash style, unless otherwise indicated:
 - 1. Post-formed with rolled front, coved back and bullnose splash.

- D. Countertop Thickness: Not less than 1-1/2", unless otherwise indicated, with substrate (core) not less than 3/4" thick.
- E. Contractor shall provide a full range of plastic laminate samples to choose from.

2.05 TRANSPARENT FINISH FOR KITCHEN CABINETS:

- A. Shop Finishing: Finish cabinets at shop or factory to the greatest extent possible. Defer any final touch-up, cleaning and polishing until after delivery and installation. Apply finish in a properly equipped, temperature controlled spray room free from circulating dust, dirt, sawdust, and other foreign material.
- B. Preparation for Finishing: Carefully and smoothly machine sand parallel with grain, exposed and semi-exposed surfaces of cabinets. Handscape or sand exposed surfaces to remove machine marks and scratches. Remove sanding residue and other foreign material.
- C. Finishing Materials: Manufacturer's standard products selected to comply with performance requirements in referenced kitchen cabinet standard.
- D. Exposed Surfaces: Apply finish as follows:
 - 1. Sealer Coat, if required.
 - a. Stain: To match color selected. Apply stain by hand wiping to produce maximum grain clarity, and color retention and uniformity. Allow to dry.
 - b. Sealer Coat: Catalytic curing resin-based coating to serve as initial moisture and chemical barrier and to produce bond for top coat. Allow to dry and scuff sand before applying top coat.
- F. Top Coat: Catalytic curing resin-based coating, heat-cured to a hard, smooth furniture finish, free of imperfections.

2.06 CABINET HARDWARE:

- A. General: Provide manufacturer's standard hardware units of type, size and finish indicated, complying with ANSI A 156.9, of type, material, size and finish indicated, or, if not indicated, as selected by Architect from manufacturer's standard choices.

2.07 FABRICATION:

- A. Fabricate wood kitchen cabinets to dimensions and profiles and details indicated.
- B. Assemble units in shop in as large components as practicable to minimize field cutting and jointing.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install cabinets plumb, level, true and straight with no distortions. Shim as required using concealed shims. Where wood kitchen cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips and mouldings as indicated or required, and in finish to match cabinet face.
- B. Anchor cabinets securely in place with concealed (when doors and drawers are closed) fasteners, anchored into structural support members of wall construction. Comply with manufacturer's instructions for support of units.
- C. Attach countertops securely to base units. Spline and glue joints in countertops; provide concealed mechanical clamping of joint. Provide cutouts for fixtures and

appliances as indicated; drill pilot holes at corners before making cutouts. Smooth cut edges and coat with waterproof coating or adhesive.

- D. Complete hardware installation and adjust doors and drawers for proper operation.
- E. Coordinate installation of kitchen sinks in countertops as shown on the drawings and specified in Section 15400. Sinks shall be flush with countertop and sealed with plumber's putty. No clear silicone will be accepted for installation.
- F. Coordinate installation of range hood as shown on drawings and as specified in Section 15100. Contractor shall be responsible for coordination of range vent duct and transitions to roof vents, or wall vents as shown on plans.

3.02 CLEANING AND PROTECTION:

- A. Repair or remove and replace defective work as directed upon completion of installation.
- B. Clean exposed and semi-exposed surfaces, touch-up finish as required. Remove and refinish damaged or soiled areas.
- C. Protection: Advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 12390

**SECTION 15000
GENERAL MECHANICAL**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections apply to work specified in this section.

1.02 CODES

- A. Comply with applicable NFPA, OSHA and SSBC requirements, with local Plumbing, Mechanical and Gas Codes, and with other local ordinances and codes. Where conflicts occur between a code and contract drawings or specifications, most stringent requirement shall apply.

1.03 PERMITS

- A. Obtain and pay for all permits, deposits, and fees; and arrange for inspections as required by local and state authorities.

1.04 DRAWINGS

- A. Work shall be laid out per the design intent indicated on drawings. Any proposed changes to layout shall be approved in writing by the Architect or Engineer prior to commencing work.
- B. In the interest of clearness, the work is not always shown to scale or exact location. Check all measurements, location of pipe, ducts, and equipment with the architectural, structural and electrical drawings, and lay out work so as to fit in with ceiling grids, lighting and other systems.
- C. The drawings and these specifications are complementary, each to the other. What is called for by one shall be as binding as if called for by both. Omissions from the drawings and specifications or the mis-description of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omissions and details of work, but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

1.05 WARRANTY

- A. Guarantee in writing, to make good without cost, any defects in materials and workmanship within one year from the date of acceptance of project. Provide free maintenance and service on equipment and materials installed under this contract during the guarantee period. Provide the Owner with two bound copies of all manufacturers' warranties.

1.06 SUBMITTAL DATA

- A. Follow procedures outlined in Division-1. Within 20 days after award of contract, submit for approval a complete schedule of material and equipment proposed. The Contractor shall review and approve, or make appropriate notations on, each item prior to submittal to the Architect. Submittals without contractor's approval will be rejected.

1.07 EXISTING CONDITIONS

- A. Bidders shall visit site and become acquainted with all job conditions. No consideration will be given after bid opening for alleged misunderstanding regarding utility connections, permits, fees, integration of work with existing systems, or other existing conditions.

PART 2 - WORK RELATED TO OTHER TRADES

2.01 FOUNDATIONS

- A. Applicable mechanical contractor shall provide foundations, supports, etc., which are not specified under other Divisions.

2.05 CUTTING AND PATCHING

- A. Openings are to be laid out and built-in; furnish detailed layout drawings to other trades in

advance of their work.

2.07 ELECTRICAL

- A. Responsibilities for provision and installation of electrical equipment and the making of electrical connections are outlined in each section. Coordinate work with electrical contractor.

PART 3 - MISCELLANEOUS REQUIREMENTS

3.01 MATERIALS AND EQUIPMENT

- A. New and of best quality in every respect. Pipe and fittings shall conform to the ASTM Standard designated for pipe of each material.

3.02 WORKMANSHIP

- A. First class and in accordance with best practice. Pipe shall be cut clean, properly reamed, joined, and erected plumb and secure. Make changes in pipe size with reducing fittings without the use of bushings. Work shall be executed by experienced mechanics and shall present a neat appearance. Install equipment in accordance with manufacturer's recommendations.

3.03 EXPANSION

- A. Provide for expansion and contraction of all piping and make proper provisions so that excessive strain will not occur on piping or equipment.

3.04 SAFETY PROVISIONS

- A. Provide covers or guards on all hot, moving and projecting items which would be a hazard to occupants of the building or to service personnel.

3.05 CLEANING AND ADJUSTING

- A. Upon completion of work, clear all drains, traps, fixtures, ducts and pipe.

3.06 ESCUTCHEONS

- A. Where pipes pass through floors, walls and ceilings of finished rooms, provide pressed chrome-plated brass or steel plates securely fastened in place. Escutcheons shall be of proper size and configuration to fit snugly against pipe and wall surfaces.

END OF SECTION 15000

SECTION 15100 HVAC

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Conventional Heat Pump system
 - 1. Furnish and install new equipment as scheduled and as specified to ensure a complete and properly functioning HVAC system in all apartments.
 - 2. Replace all existing plenums (if any exist) and ensure that the new plenums are properly sealed as required to provide an air tight return air plenum.
 - 3. Install new heat/cool thermostats as specified.
 - 4. Remove all existing and install new insulated ductwork (if any exist).
 - 5. Install new return air filter grills as specified.
 - 6. Install new supply air registers as specified.
 - 7. Install new condensate pumps and lines where designated.
 - 8. Install new, "poured in place" concrete pads where indicated in the drawings for new condensing units and pre-finished aluminum shrouds as indicated on the drawings to house all electrical, refrigerant and drain lines.
 - 9. Install other accessories as indicated on the drawings and as required for complete system installations.

1.03 QUALITY ASSURANCE

- A. Subcontractor shall have at least three years of successful installation experience on heating, ventilating, and air conditioning work similar to this project. Subcontractor shall be licensed by the State Board of Heating, Air conditioning, Roofing, and Sheet Metal Contractors in which the work is located.
- B. Contractor shall have an established service department capable of providing service inspection or full maintenance contract if requested by the Owner.
- C. **Mechanical subcontractor is required to have manufacturer's certification for the type of equipment to be used prior to installation.**
- D. In acceptance or rejection of installed work, the Architect will make no allowance for lack of skill on the part of the workman. Inferior work will not be accepted.

1.04 SUBMITTALS

- A. Within thirty (30) days after award of contract, submit for approval a complete schedule of material and equipment proposed. Partial lists will not be accepted. Include catalog data, capacities, etc. where substitutions are proposed. Follow procedures set forth in Section 01330.

1.05 CODES, PERMITS, AND INSPECTIONS

- A. Codes: Shall comply with the Southern Standard Building Code, National Mechanical code, and all codes of the City of Bridgeport, Alabama. Where conflicts occur between codes and contract drawings, the most stringent shall apply.
- B. Permits: The contractor shall obtain and pay for all permits and pay all deposits and fees necessary for the complete installation of the system.
- C. Inspections: The contractor shall obtain and pay for all inspections required by all laws, ordinances, rules, regulations or public authorities having jurisdiction. The contractor shall obtain and pay for all certificates of such inspections, and file such certificates with the Owner.
- D. The contractor shall comply with all pertinent recommendations contained in "Duct Manual and Sheet Metal Construction for Ventilating and Air conditioning Systems", latest edition as

published by the Sheet Metal and Air conditioning Contractors' National Association, and with NFPA 90A.

1.06 CHANGES

- A. If during construction desirable or necessary changes become apparent, advise the Architect and secure his decision in writing; otherwise make no deviation from the system as detailed.

1.07 VISITING JOB SITE

- A. Visit the job site of the proposed work and become familiar with locations and various local conditions affecting proposed work, including space for new heating units and ductwork. No additional allowances will be made for a lack of knowledge of such conditions.

1.08 WORKMANSHIP

- A. This work shall be executed in a neat and first-class manner. If so directed by the Architect, remove and replace any item of work not done so as to present an orderly, neat, workmanship appearance. Protect all work during construction.

1.09 AS-BUILT DRAWINGS

- A. Maintain an accurate record of all changes made in the system from the layout and materials shown on the approved submittals. Furnish Architect with copy at final inspection.

PART 2 - PRODUCTS

2.01 SINGLE SOURCE

- A. For ease of maintenance and part replacement, to the maximum extent possible use equipment of a single manufacturer. The Architect reserves the right to reject any materials list which contains equipment from various manufacturers if suitable equipment can be obtained from fewer manufacturers, and to require source of materials to be unified to the maximum extent possible.

2.02 HVAC Units

- A. HVAC Equipment scheduled on the drawings to be provided by the contractor is manufactured by Trane. Units to be complete in every respect, installed in accordance with local and national codes. Contractors desiring to use other products shall request approval for equals, in writing, 10 days prior to bid.
- B. Schedule By Unit Type: All equipment is scheduled on the drawings.

2.03 DUCTWORK

- A. Connect new units to new ducts, plenums, etc. Connect in accordance with SMACNA and ASHRAE guide recommendations for reinforcing, joints, connections, etc., the weights of materials, type of joints and seams, bracing and other construction details shall be as recommended in Chapter 1, Duct Construction, ASHRAE Equipment Handbook, latest edition. Duct is low pressure classification. All ductwork shall conform to NFPA 90A or 90B of UL 181, Class 1 requirements.

2.04 MAKE-UP & COMBUSTION AIR DUCTS

- A. Make-up and Combustion shall be provided as required by the equipment manufacturer and by all applicable codes.

2.05 SUPPLY AIR GRILLS

- A. Ceiling grills to be White Finish, Double Deflection, Roll formed aluminum, 3/4" blade spacing, with individually adjustable blades, optional opposed blade damper. Equal to Titus Model No. 300FS.

2.06 FILTER RETURN GRILLS

- A. (RAFG) Filter Return Grills to be White Finish, 35° fixed position 1/2" spacing, 1/4 turn fasteners, Roll formed aluminum frames, surface mount, 16 x 20 x 1 or sized as required, Equal to Titus Model 355FF1. Install new filter when all construction is complete. Provide 2 additional filters for each unit upon completion. All extra stock shall be turned over to the Housing Authority.

2.07 THERMOSTATS

- A. Provide heat/cool thermostats as recommended and supplied by the Equipment manufacturer for the unit systems to be installed.

PART 3 - EXECUTION

3.01 FIELD CONDITIONS

- A. Before this subcontractor submits to General Contractor any item of equipment for approval, he shall coordinate with the General Contractor to determine if it will fit in the space provided. If after installation of equipment it is determined that ample maintenance or passage space has not been provided, the Contractor and Subcontractor shall rearrange his work and/or furnish other equipment, irrespective of previous shop drawing approvals.
- B. Due to differences between various manufacturers, it is not practical to show exact dimensions of units, nor to show or specify all minor details of equipment. Contractor shall provide all valves, fittings, and accessories necessary for a complete installation.
- C. Avoid interference with structure, and with work of other trades, preserving adequate headroom and clearing of all doors and attic access openings to the approval of the Architect.

3.02 INSTALLATION

- A. Install all equipment in accordance with manufacturer's instructions.
- B. No conduit, switches, controls, tubing, or other apparatus is to be fastened or supported from or on the unit casing.
- C. Install all necessary control wiring to locations indicated.
- D. Install all proper escutcheons/collars at all attic penetrations and wall penetrations. **Foil tape/duct tape shall not be used to seal penetrations at walls and attics.**

3.3 CONNECTIONS

- A. Install and make all necessary connections required for a complete system, including all grille collars (Solidly supported and blocked), connections, fasteners, hangers, and other items.
- B. Seal all duct joints and connections with foil tape and mastic to provide an air-tight system. **Foil tape/duct tape shall not be used to seal penetrations at walls and attics.**

3.4 CLEANING

- A. All equipment furnished shall be free from grease, plaster, paint, etc. Equipment shall be touched up with equipment manufacturer's touch up paint.
- B. Construction debris, paint overspray, etc., shall be cleaned from the furnace unit prior to final acceptance of the unit.

3.5 CLOSING IN OF UNINSPECTED WORK

- A. Do not allow any of the work in this Section to be covered up or enclosed before it has been inspected, tested, and approved by the Architect and all other authorities having jurisdiction. Uncovering for inspection will be at no cost to the Owner.

3.6 NOISE AND VIBRATION

- A. This contractor shall be responsible for the elimination of noise and vibration transmitted to occupied areas from equipment. Furnish anti-vibration bases, flexible canvas connector from unit to plenum, fiberglass lining in return air plenum, and other items necessary. Ensure that flexible canvas connector is properly sealed to prevent air loss.

3.7 COOPERATION WITH OTHER TRADES

- A. Do all things necessary to cooperate with other trades in order that all systems may be installed in the best arrangement. Coordinate with all other trades to share space in common areas and to provide the maximum access to each system.

3.8 TESTING AND BALANCING

- A. After installation and start up, adjust all opposed blade dampers at all supply registers to ensure adequate air flow to all areas.

END OF SECTION 15100

**SECTION 15400
PLUMBING**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-I Specification sections, apply to work of this section.

1.02 SCOPE

- A. The Contractor will be responsible for providing all work necessary for the installation and testing of all fixtures which include the following:
 - 1. Tub/Shower and Valves
 - 2. Lavatory, piping shield and faucets
 - 3. Water closet
 - 4. Kitchen sink
 - 5. Washer connections
 - 6. Water Heater and connections (including gas connection if required for unit specified).
 - 7. Provide bathroom supply and sanitary lines as well as vent and waste stacks.
- B. The Contractor shall coordinate delivery and be responsible for all plumbing fixtures and equipment either herein specified or shown on drawings.

1.03 QUALITY ASSURANCE

- A. Sub-contractor shall be an established licensed plumber with satisfactory experience in at least 3 equivalent projects.
- B. Guarantee: Furnish a written warranty, countersigned and guaranteed by General Contractor, stating:
 - 1. "That all work executed under this section will be free from defects of workmanship and materials for a period of one year from date of final acceptance of this work. Above parties further agree that they will at their own expense repair and replace all such defective work, and all other work damaged thereby, which became defective during the term of the guaranty/warranty."
- C. Insurance: This contractor shall carry Workmen's Compensation Insurance, and Public Liability Insurance, and shall save Owner free from all damage from suits arising out of the performance of this Contract.
- D. Perform all tests required by the City Inspectors and the Architect.
- E. Work shall comply with all applicable NFPA, State, County and City laws ordinances, regulations and administrative requirements affecting the installation. But in no case be less stringent than the Southern Standard Building, Plumbing and Gas Codes and these specifications. Obtain and pay for all required permits, tapping fees, meter installations, impact fees, service fees, inspections, and certificates of inspections. Deliver such certificates to the Architect for approval.
- F. Warranty: Guarantee work as set forth in Section 15000.
- G. Modifications: the cost of any modifications of the electrical power wiring and/or ventilation systems required by plumbing equipment having requirements differing from that shown on the drawings and/or as specified, shall be the responsibility of the Plumbing Contractor.
- H. Submittals: Submit shop drawings as set forth in Section 15000 for the following:
 - a. Drainage Specialties
 - b. Water Piping Specialties
 - c. Plumbing Fixtures
- I. Record Drawings: Provide one set of as built drawings with changes indicated in red pen.

1.04 WATER PIPING

- A. Cut accurately to measurements established at site and work into place without forcing. Ream all pipe to remove burrs. Make any changes required in direction or size with proper fittings. Cap or plug open pipe ends during installation to keep out foreign materials. Make connections carefully

to ensure unrestricted flow, eliminate air pockets, and to permit complete drainage of the systems.

PART 2 – PRODUCTS

2.01 PLUMBING FIXTURES

- A. Unless otherwise specified, all fixtures complete as catalogued, white color, exposed metal trim chromium plated.
- B. Clean all fixtures to a clean and sanitary condition.
- C. Fixtures and brass shall be securely anchored. Do not conceal piping and anchors until Architect has observed.
- D. Seal wall hung fixtures at wall with clear silicone sealant. Seal countertop fixtures with clear silicone sealant.
- E. All fixtures noted to be ADA approved must be set with great care to assure proper mounting height.
- F. All items complete as catalogued and as follows:

See Drawings

2.02 GENERAL MATERIALS

- A. General: New perfect stock of quality and weight specified.
- B. Pipe, General: Conforming to ASTM Standard Specifications (latest revisions) for pipe of each material; each length or fitting stamped or indelibly marked with weight or quality thereof, and makers name or mark; best quality, free from cracks, holes, blisters, and other defects.
- C. Cast Iron Soil Pipe: Cast iron soil pipe, tar coated inside and out, with cast iron fittings of corresponding weight, tar coated, service weight. ASTM 74-75 or ANSI A12.5.1, and CISPI HS-72, except Hubless pipe and fittings to conform to CISPI Standard 301.72.
- D. Steel Pipe: Standard weight, with standard weight screwed malleable iron fitting unless otherwise specified. Heavily galvanized for all other specified uses. ASTM A120-55. Drainage pattern where used in DWV systems.
- E. Copper Tube for Water Piping: ASTM Specification B88, Type "L" copper water tube, hard temper, with cast brass or wrought copper or bronze water tube fittings where installed above grade. Use soft annealed tubing for coiling or bending and where installed underground. Joints to be solder type.
- F. Cast iron Water Pipe: AWWA Specifications, Class 150, cast iron pipe, with AWWA standard push-on type joint fittings or ASTM A377-66.
- G. Copper Tube for Drainage Piping: ASTM B88, Type DWV, hard temper, with cast brass or wrought copper drainage fittings.
- H. No plastic or PVC piping.
- I. Pipe Covering: Sectional glass fiber insulation with fire retardant vapor barrier jacket. Cover fittings except unions and flanges equivalent cover and same thickness as pipe covering. All joints sealed and lapped with fire retardant adhesive, insulated elbows and fittings may be covered with Zeston fitting or equal. FRJ jacket securely stapled in place. All materials shall be UL listed not to exceed flame spread rating of 25 and smoke development rating of 50. Comply with ASHRAE 90A - 1980 thickness guide standards.
- J. Escutcheons to be spun spring clamp type, chrome plated in finished areas. Escutcheons at connections to piping roughed-in in the construction shall be deep type.

2.03 PIPE HANGERS

- A. Pipe hangers for lines 3" and smaller shall be adjustable wrought iron hangers, Grinnell Fig. #97, plastic coated or copper plated for copper tubing.
- B. Pipe Hangers for lines 4" and larger shall be adjustable wrought clevis hangers, Grinnell Fig. #260.
- C. Inserts for hangers shall be Underwriter's listed cast iron inserts, Grinnell #282.
- D. Rods for pipe hangers shall be sizes as required by pipe supported.
- E. Pipe hangers shall be spaced at 5 foot intervals for horizontal cast iron pipe (near hub), 8 foot intervals for horizontal screwed, welded and soldered joint pipe.
- F. Pipe hangers on insulated water lines shall be installed over pipe covering. Install 18 gauge

- galvanized steel protectors of length equal to 4 times OD of pipe covering.
- G. Hangers and inserts to be Grinnell, Elcen, Fee & Mason, or equal.
- H. Riser clamps shall be provided at each alternate floor for all pipe risers.
- I. Provide escutcheons at penetrations of floors, walls, ceilings, partitions, etc., set escutcheon tight to the pipe and building surface. Escutcheons should completely cover the sleeve or opening. Escutcheons in exposed spaces shall be chrome plated.

2.04 FIXTURES AND EQUIPMENT

- A. Unless otherwise specified, all fixtures complete as catalogued, and in white color; all exposed metal trim chromium-plated; all acid-resisting. Caulk around fixtures to fill voids to give a neat appearance.
- B. In locations as shown in drawings.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Plumber shall install new fixtures as shown on the drawings.

3.02 EXCAVATION, BACKFILLING, CUTTING REPAIRING

- A. As required for all work included in this Section, employ competent mechanics for patching masonry, concrete, carpentry, plastering and the like, the finish work in neat and workmanlike manner.
- B. Cutting of structural elements shall not be permitted without written approval.
- C. Cut piping accurately to dimensions established in the field and fit into place without forcing. Remove burrs by reaming and rattling and clean before installation. Cap or plug pipes and equipment during construction.

3.03 PIPE INSTALLATION, GENERAL

- A. The drawings are diagrammatic in general, and subject to the requirements of the architectural drawings. Drawings indicate generally the locations of component parts of the system, but are not intended to show all fittings or details of the work. Follow the drawings as closely as possible, checking all dimensions against conditions at the building.
- B. Cooperate with all other crafts on the building and assist all other crafts whose work is in connection with work being done under this Section. Perform work in a manner and at such times as may not delay the execution of the work being done under other sections.
- C. Do all work in a neat and first-class manner. If so directed by Architect, remove and replace any item of work not done so as to present an orderly, neat, and workmanlike appearance, provided that such item can be correctly installed by usual methods of the trades.
- D. Run piping parallel to the lines of building without interference to openings and obstructions. Run all piping concealed, except where specifically shown or specified exposed. Strongly suspend other piping from building construction.
- F. Wherever pipes pass through exposed finished floors, walls or ceilings, provide chromium-plated brass flanges.
- G. Wherever ferrous pipe or tanks and copper tubing connect, provide dielectric insulating unions or couplings. Provide factory fabricated adapters for connecting dissimilar pipe, or pipe with dissimilar joint system.
- H. Anchor above ground piping to control pipe movement and prevent excessive strain on connections to equipment, hangers, supports, etc. To absorb expansion and contraction provide changes in direction, expansion loops, or expansion joints, if approved.

3.04 PIPE IDENTIFICATION

- A. All piping exposed to view and/or accessible through removable ceilings or access panels shall be identified with pipe line markers. Markers to be color-coded in accordance with ASTM Standard A-13, bear name of pipe contents and show direction of flow. Marker to be installed at each valve, at each change in pipe direction, and along run of pipe as required for proper identification but not further apart than 30 feet. Tag all valves and furnish a schedule.

3.05 DISINFECTION OF WATER PIPING

- A. After completion of all tests, repairs and installation of equipment, all hot and cold water piping shall be thoroughly flushed with water to remove sediment and scale and then disinfected. Piping shall be disinfected with hypochlorite solution of chlorine or compressed chlorine gas applied through an approved chlorinator. All valves and faucets shall be operated several times to insure the chlorine reaches all parts of the system. Water and chlorination agent shall be fed into the system at rates that will provide a residual chlorine content of not less than 10 ppm after a retention period of 24 hours (an initial application of 25 ppm or more will be required generally).
- B. Upon completion of treatment, all treated water shall be flushed from each system through its extremities until the water delivered is comparable with the quality of the public water supply and satisfactory to the public health authority having jurisdiction. Flush shall be repeated if samples taken daily over a period of three (3) days show that the water quality is not being maintained. Samples shall be taken only from taps located in such a manner that they will not contribute any contamination and shall not be taken through un-sterilized hose.

3.06 PIPE JOINTS

- A. In Screwed Piping: Make joints with white lead and boiled linseed oil, or Teflon tape, applied to male threads only.
- D. In Copper Tube: Make joints according to directions of fitting manufacturer using lead free solder for piping.
- E. All **watertight** and finished in best manner.

3.07 SANITARY SYSTEM

- A. Piping shall be cast iron or steel.
- B. Test piping by stopping lower outlets and filling with water to ten (10) feet of hydrostatic head. Stop all leaks thereby shown up and repeat test until perfectly watertight.

3.08 WATER SERVICE SYSTEM

- A. All water piping within building shall be copper tube.
- B. On completion of roughing-in, cap all outlets, make connections with house supply lines, and put under full water pressure. test by applying additional pressure (by temporary pump or compressed air connection) to total hydrostatic pressure of 150 lb. per sq. in. for not less than 4 hours. Immediately and completely, stop all leaks. After testing, leave general pressure on until ready to install fixtures (except when necessary to drain to avoid freezing during construction).
- C. Using pipe covering hereinbefore specified, insulate all water piping except piping installed underground. Installed thickness to be: hot water - 1"; cold water - 1/2".

3.11 SCHEDULE OF WORK

- A. Schedule work with the Architect and the Owner.

END OF SECTION 15400

**SECTION 16000
ELECTRICAL**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 GENERAL

- A. Comply with provisions of following codes, specifications and standards except as otherwise shown or specified.
 - 1. National Electrical Code
 - 2. Local rules and regulations

1.03 DESCRIPTION OF WORK

- A. Furnish all labor and materials required to complete electrical work for scope of work and any HVAC units shown on Drawings and as specified herein.
 - 1. Make all necessary electrical connections as required for a complete installation of new outlets and electrical fixtures where indicated or scheduled.

1.04 DRAWINGS

- A. Drawings indicate diagrammatically the extent, general character and approximate location of work. Where work is indicated, but with minor details omitted, furnish and install it complete so as to perform its intended functions. For building details and mechanical equipment, follow architectural and mechanical drawings.
- B. Take finish dimensions at job in preference to scale dimensions.
- C. Except as above noted, make no changes in or deviations from work as shown or specified except on written order from Architect.
- D. Operations and Maintenance Instructions: Electrical contractor shall turn over to Owner one set of marked "as built" drawings, one set of all equipment catalog and maintenance data, and one set of shop drawings on all equipment requiring same. Contractor shall explain and demonstrate all systems to Owner's representative.

1.05 QUALITY ASSURANCE

- A. Guarantee:
Furnish a written warranty, countersigned and guaranteed by General Contractor, Stating:
 - 1. That all work executed under this section will be free from defects of workmanship and materials for a period of one year from date of final acceptance of this work.
 - 2. Above parties further agree that they will at their own expense repair and replace all such defective work, and all other work damaged thereby, which became defective during the term of the guaranty/warranty.
- B. Insurance: This contractor shall carry Workmen's Compensation Insurance, and Public Liability Insurance, and shall save Owner free from all damage from suits arising out of the performance of this Contract.

1.06 SUBMITTALS

- A. Promptly after award of Contract, and prior to purchasing, submit to Architect for approval 6 copies of manufacturers' shop drawings for all required and special or auxiliary equipment. All shop drawings of specific item or system shall be made in one submittal.
- B. Submit to Architect for approval 6 typewritten copies of manufacturers' name and catalog numbers of all electrical items not covered by shop drawings. List shall reach Architect within 20 days after award of Contract. Shop drawings will not be processed until this list is received.

- C. Approval of shop drawings shall not be construed as a complete check, but will indicate only that general design is satisfactory. Approval of such drawings does not relieve Contractor of responsibility of coordination of components, auxiliary equipment, accessories or special conditions required for satisfactory operation of complete system.
- D. Check all suppliers' submittals regarding clearances, measurements, capacity, performance, and details to verify that they conform to intent of Contract Drawings and Specifications. Allow at least 10 working days for checking of submittals.
- E. Clearly identify item on all submittals. Mark standard catalog sheets in ink, so as to identify which item is to be considered. All drawings submitted must be by factory - field drawings will not be considered.

PART 2 - PRODUCTS

2.01 MATERIAL:

- A. All materials shall be new and listed by Underwriter's Laboratories as conforming to its standards. All materials installed under this contract shall be in accordance with applicable codes. All like items shall be by one manufacturer. Execute all work in a workmanlike manner to present a neat and mechanical appearance when completed.
- B. Material substitutions will be considered only when evidence of equality and suitability, satisfactory to Architect, has been presented in writing with samples.
- C. Architect retains the authority to reject any material or equipment not specified or approved, or showing defects of manufacture or workmanship, before or after installation.
- D. Conduits as manufactured by Republic Steel Co. or equal.
- E. Couplings and Connectors (EMT) shall be sock type or screw pressure type manufactured by Tomic Mfg. Co., or T&B. Pressure indented type will not be approved.
- F. Bushings EMT and Rigid shall be manufactured by OZ Mfg. Co. or T&B Co. All bushings shall be OZ Mfg. Co. Type b cast insulated metallic type.
- G. Building Wire: Conductors shall be copper, current carrying capacities as per N.E.C. and with 600 volt insulation #12 minimum power #14 minimum controls. Conductors shall be N.E.C. types as follows:
 - 1. THW, and THWN Conductors shall be either Phelps-Dodge, Anaconda, Rome Triangle, Paranite, Walker, Hatfield, or Simplex.
 - 2. Fixture Wire: For fixtures of 300 watts #14 type AF shall be used. Conductors shall be either Phelps-Dodge, Anaconda, Rome, Triangle, Paranite, Walker, Hatfield, or Simplex.
 - 3. Cable and Wire Splices: The splices shall insulate and protect the conducts not less than the insulation and protective jackets of the respective cables and wires. The material shall be compatible with the conductors, insulations, and protective jackets of the respective cables and wires.
 - 4. For conductor Sizes No. 8 AWG and Smaller: Indenture compression or screw-on spring compression type connectors may be installed as permitted by the NEC.
 - Shall be rated 600 volt, 75 degree C.
 - Sizes shall be as recommended by the manufacturer of the connectors for the quantities and sizes of wires being connected.
 - Insulations shall be heavy duty, non-rigid plastic which will not break or crack when installed with pliers.
 - Insulations shall have skirts with adequate lengths to prevent flashovers and to protect excessively stripped wires.
 - 5. For Conductor Sizes No.6 AWG and Larger: Splices in conductors shall be made with intended, crimp connectors and compression tools or with bolted clamp type connectors to insure a satisfactory mechanical and electrical joint.
- H. Outlet Boxes:
 - 1. Outlet boxes shall be manufactured by G.E. Co., Steel City, Raco, Efcor, or J.R. Richards.
 - 2. Outlet and switch boxes shall be standard type with knockouts.
 - 3. Ceiling outlet boxes shall be 4" octagon 1 1/2" deep or larger if required due to number of wires.

4. Boxes shall be provided with 3/8" fixture studs when required.
- I. Junction Boxes of galvanized steel size as required by NEC unless specifically indicated on drawings. Junctions 12"x12" or larger shall have hinged doors.
- J. Switch & Receptacle Cover Plates shall be semi jumbo nylon. Color as directed by Architect.
- K. Switches and Receptacles as made by Hubbell, P&S, Bryant, Leviton, or Arrow Hart as described below and shall be of a standard color to match existing finishes.
 1. Switches single pole - 125/277 volt, 15 amp, Leviton 1101, or equal.
 2. Switches three way - 125/277 volt, 15 amp, Leviton 1103, or equal.
 3. Duplex outlet - 125 volt, 15 amp, Leviton 5242, or equal.
Duplex outlet - 125 volt, 20 amp, Leviton 5351 (for single device circuits), or equal.
 4. Ground Fault Interrupter Duplex Outlet - (in bathrooms and kitchens) Leviton 6599, or equal.
- L. Safety switches: Use 240 volt heavy duty type with quick-make, quick-break mechanism, fusible as shown. Use NEMA I enclosure inside building; Use NEMA 3R enclosure where exposed to moisture use horsepower rated switches for motors. Standard product of General Electric, Square "D", Gould, or Westinghouse. Use Bussman "Fusetron" fuses, size as shown.

PART 3 - EXECUTION

3.01 PROTECTION

- A. Take all precautions to provide safety and protection to persons, and protection of materials and property as necessary, including protection from injury from rotating or moving equipment, tools, hot surfaces, holes, shafts, falling objects, electrical energy and all other potential hazards. Erect signs, barricades, warning lights; instruct workmen and others who may be subject to construction hazards.
- B. Protect items of equipment from stains, corrosion, scratches, and any other damage or dirt, whether in storage at job site or installed. No damaged or dirty equipment, lenses or reflectors will be accepted.

3.02 CHANGES AND ADDITIONAL WORK

- A. No change shall be made from work as called for by these specifications and drawings except on written order of Architect. No charge for extra work will be allowed unless such extra work has been duly authorized by written order of Architect stating the change to be made.
- B. The electrical contractor is responsible for being informed as to equipment furnished by other trades, but shall not be liable for added cost incurred by equipment substitutions made by others above wiring requirements shown on the drawings.

3.03 TESTING

- A. Upon completion of work, test entire system in presence of Architect or his representative. Show work to be in perfect working condition. Test lines for equipment before any connections to equipment are made.

3.04 CLEANING UP

- A. During progress of work, keep Owner's premises in neat and orderly condition, free from accumulation of debris resulting from electrical work, and at completion of work remove all material, scrap, etc., not part of this Contract.

END OF SECTION 16000