

Between the Owner:

**Contact Primary Full Address  
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And the Contractor:

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For the Project:

**Project Name  
Project Primary Full Address**

## **“Specifications”**

**This is a generalized sample example document only**

**For Homeowners showing what your specifications will contain.**

**All finish items such as Doors, Windows, Flooring, appliances, Kitchen and Bathroom Fixtures and all other finish materials items must be listed in detail with make, model number, color, and all other details as needed to be able to purchase the items for the completion of your home.**

\_\_\_\_\_  
**Date**

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## **DIVISION 00 00 00. PROCUREMENT AND CONTRACTING REQUIREMENTS**

### **00 00 00 - Procurement and Contracting Requirements**

UDA Specifications Residential is designed to define specific materials and installation processes used in residential construction. This outline was created for use by Builders, Architects, Contractors, Remodelers and Owners involved in the construction of projects of all types. The Specifications Guide works as a companion to UDA Contracts in addition to your construction documents and materials lists to fully describe in detail your construction project.

### **00 10 00 - Instructions**

To provide uniformity in the organization of these specifications, UDA has assigned classification codes that correspond, whenever possible, with the section headings and numbering system of the Construction Specifications Institute's MASTERFORMAT.

Throughout UDA Specifications there will be text highlighted in blue, where you will need to add, change or delete specific information pertaining to your project. For instance, under Masonry specifications, if you are specifying a project with a brick veneer, you would need to include additional information about the brick manufacturer, color, style, size and specific details you are using, however if your project features a siding exterior you could choose to erase the masonry information.

Review each section and revise all information applicable to the construction of your specific project. Every minute spent on planning will save hours at the construction site.

### **00 26 00 - Procurement Substitution Procedures**

Contractor to investigate proposed products and determine that they are equal or superior in all respects to products specified. Coordinate installation of accepted substitutions into the Work, making such changes as may be required for the Work to be complete in all respects. Meet with clients and get change order request signed.

## **DIVISION 01 00 00. GENERAL REQUIREMENTS**

### **01 50 00 - Temporary Facilities and Controls**

This work shall consist of the application of temporary measures throughout the life of the project.

### **01 51 00 - Temporary Utilities**

All connections and extensions required to provide temporary utilities shall be made by the Contractor at the Contractor's expense.

### **01 51 13 - Temporary Electricity**

Contractor to provide and install temporary power for construction site. Connect to existing power service without disrupting local service requirements. Power feeder service characteristics shall be compatible with the service from which it is taken. Size, type and loading shall be per requirements as established by the National Electric Code (NEC). The contractor shall provide main service disconnect and over-current protection at a convenient location in accordance with the NEC. The Contractor shall provide power outlets for construction operations, with branch wiring and distribution boxes located as necessary and shall provide flexible power cords as required. Provide and install distribution equipment, wiring and outlets to provide single phase branch circuits for power and lighting.

### **01 51 23 - Temporary Heating, Cooling, and Ventilating**

Contractor to provide and install temporary heating, cooling and ventilation for construction site. Contractor to maintain system during construction, while exercising measures to conserve energy. Ventilate enclosed areas to assist cure of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors or gases. Supplement with temporary fan units as required to maintain clean air for construction operation.

### **01 51 26 - Temporary Lighting**

Contractor to provide and install temporary lighting for construction site. Provide and install temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by OSHA standards. As permanent lighting facilities are completed, they may be used in lieu of temporary facilities. Provide temporary lighting as required to satisfy safety and security requirements. Maintain a minimum illumination level of **30 foot-candles measured 3 ft. above floor** in areas where finish trades are performing work. At exterior areas, provide **1 foot-candle of light** after dark for security purposes.

### **01 51 33 - Temporary Telecommunications**

Contractor to provide and install temporary telephone for construction site.

### **01 51 36 - Temporary Water**

Contractor to provide and install temporary water for construction site. Connect to an existing water source for construction operations.

### **01 52 00 - Construction Facilities**

Field offices and sheds shall be portable or mobile buildings, or buildings constructed with floors raised above the ground, securely fixed to foundations, with steps and landings at entrance doors. Structurally sound, secure, weather tight enclosures for office and storage spaces shall be maintained during progress of work and removed at completion of work. Size of field offices and sheds shall depend on contractors needs. Install appropriate fire extinguisher. HVAC shall be adequate to maintain comfortable conditions. At completion of work, all temporary facilities shall be removed and area restored to new condition.

### **01 52 19 - Sanitary Facilities**

Existing facilities shall not be used. Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as will comply with laws and regulations. Temporary toilet facilities may consist of portable toilets. **The number shall be based on number of workers, 1 toilet per 15 workers.** Toilet facilities shall be kept supplied and clean and in sanitary condition until the completion of the work and then shall be removed from the site. Upon removal the site shall be properly cleaned and graded.

### **01 53 00 - Temporary Construction**

The contractor shall provide and maintain for duration of work all required temporary stairs, ladders, ramps, runways and hoists for use of all trades.

### **01 54 00 - Construction Aides**

The contractor to provide all construction aids needed during construction which shall include but not limited to; elevators, hoists, cranes, etc.

### **01 54 23 - Temporary Scaffolding and Platforms**

The contractor shall provide and maintain for duration of work all required temporary standing scaffolding. 'Independent tied' scaffolds will normally be provided for painting, pointing or other maintenance work. 'Putlog scaffolds', used for the construction of brick walls, have only one row of standards which are usually erected some **900mm** from the face of the wall, with the boards carried on horizontal members known as 'putlogs'. When used in new construction, the flattened ends of the putlogs are built into the bed joints as work proceeds and then withdrawn on completion, the resulting hole being pointed up.

### **01 55 00 - Vehicular Access and Parking**

Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Arrange parking areas to accommodate construction personnel. Do not allow vehicle parking on existing pavement. When site space is not adequate provide additional off-site parking.

### **01 56 00 - Temporary Barriers and Enclosures**

The contractor shall provide barriers to prevent unauthorized entry into construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition. Install

barricades and covered walkways required by governing authorities for public right of ways. When necessary install [chain link](#) fence around job site.

### **01 57 00 - Temporary Controls**

This work shall consist of the application of temporary measures throughout the life of the project to control erosion and siltation. Such measures shall include, but are not limited to, the use of berms, dikes, dams, sediment basins, fiber mats, silt fences, straw bales, washed gravel or crushed stone, mulch, grasses, slope drains, temporary seeding and other methods. Temporary erosion and siltation control measures as described herein, shall be applied to erodible material exposed by any activity associated with the construction and consistent with state and local control standard.

### **01 58 00 - Project Identification**

Within [15 days](#) after the commencement of work, provide [one](#) project identification sign at the locations indicated. Maintain sign throughout the life of the project. On the sign, list two points of contact by name and telephone number.

### **01 60 00 - Product Requirements (Scope of Work)**

All materials shall be installed in strict accordance with the manufacturer's written specifications or Material's Institute Standards. Where the manufacturer's recommended details are used, the manufacturer shall be responsible for the performance of their product. All Items not specifically mentioned that are required to make the work complete and operational shall be included.

**Installation and Storage** - All materials, supplies and equipment shall be installed per manufacturer's recommendations and per applicable codes and requirements. Material stored on site shall be protected from damage by moisture, wind, sun, abuse or any other harmful effects.

### **01 64 00 - Owner-Furnished Products**

Contractor is not responsible for products furnished by the owner that are damaged prior to opening or receiving. Additional work required to install owner furnished products will be charged to the owner and due upon installation.

### **01 70 00 - Execution and Closeout Requirements**

The execution of all work shall be in strict accordance with these specifications and manufacturer's written specifications or Material's Institute Standards. Where the manufacturer's recommended details are used, the manufacturer shall be responsible for the performance of their product. All work not specifically mentioned that is required to make the work complete and operational shall be included.

**Codes** - Construction shall comply with all applicable national, state and local building codes. It is the responsibility of the Contractor [and Owner](#) to insure compliance with said codes and modify the specifications as needed to comply with such codes.

**Measurements** - The Contractor shall check and verify all dimensions and conditions before proceeding with construction. Do not scale drawings. Noted dimensions take precedence.

**Workmanship** - Workmanship shall conform to the best and highest standards of quality in each trade and shall include all items of fabrication, construction and installation. All work shall be completed by skilled tradesmen and mechanics. Installation of all equipment and materials shall be in strict accordance with manufacturers recommendations.

**Insurance** - Builders Risk Insurance shall be maintained by the contractor during the course of construction until final acceptance by the owner. All bonding and insurance requirements shall be coordinated with the Owner prior to beginning construction. All contractors shall provide and be solely responsible for necessary barricades and safety precautions, and strictly adhere to all governing codes on safety, including the OSHA Act.

**Square Footage** - Interior finished square footage figures represent heated and cooled floor area only and do not include additional area for two-story or vaulted spaces, garages, decks, porches or any other unfinished areas. These dimensions are generally measured from the outside face of the stud. Fill in the appropriate square footage numbers for the project you are specifying.

0,000 sf	Finished Interior
000 sf	Parking
000 sf	Unfinished Storage
000 sf	Exterior Patios
00 sf	Exterior Porches
0,000 sf	Total

**01 71 00 - Local Conditions**

Building requirements in your area will vary due to local and regional codes, construction techniques and weather conditions. The UDA Specifications may not be all-inclusive for every area. Review this information with a local architect, engineer, builder or building official to understand specific requirements for your locality. United Design Associates, Inc. accepts no responsibility for the quality and completeness of these specifications, or for any structural failings due to deficiencies or errors in the construction of a project using these specifications.

**01 74 00 - Cleaning and Waste Management**

Construction site to be in a clean and orderly condition throughout the construction process. Clean interior spaces prior to the start of finish painting and the application of other finishes. At the conclusion of construction, the project shall be properly cleaned. This should include but not be limited to; cleaning the interior and exterior glass, surfaces exposed to view, remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surface areas, sweep and mop all tiled surfaces, etc. Replace filters of operating equipment. Clean equipment and fixtures to a sanitary condition. Clean exterior such as debris from roof, gutters, landscape areas, driveways and walks, etc. Remove all waste and surplus materials.

**01 76 00 - Protecting Installed Construction**

Contractor to protect all installed construction. If products or materials come with a protective coating, contractor shall maintain protective coating until construction is complete. Contractor shall replace any items that become defective or damaged.

**DIVISION 02 00 00. EXISTING CONDITIONS**

**02 00 00 - Existing Conditions**

Contractor shall review construction documents and provide necessary site work, excavation and grading as required to construct said project.

**02 41 00 - Demolition**

Provide all labor, materials and equipment to perform the required demolition of existing pavement no longer needed for access or parking, abandoned utilities and structures which interfere with the proposed construction. When required install chain link fencing around the area of demolition work. Protect all adjacent areas not to be demolished. Remove all debris from job site before construction begins.

**02 80 00 - Facility Remediation**

Contractor to abate any hazardous material or substance before beginning construction. Contactor shall contract with a properly licensed and qualified hazardous material contractor.

**02 81 00 - Transportation and Disposal of Hazardous Materials**

Remove and dispose of any hazardous material before beginning construction. Contactor shall contract with a properly licensed and qualified hazardous material contractor.

## **DIVISION 03 00 00. CONCRETE**

### **03 00 00 - Concrete**

Contractor shall review construction documents and provide labor and materials pertaining to concrete and foundations as required in said documents and as specified herein, while complying with all applicable building codes.

### **03 05 00 - Common Work Results for Concrete**

All concrete work shall be designed on the basis of "Strength Design" in accordance with ACI 318 "Building Code Requirements for reinforced Concrete." Concrete work shall be proportioned in accordance with ACI 301 "Specifications for Structural Concrete" and ACI 211.1 "Recommended Practice for Selecting Proportions for Normal Weight Concrete". Concrete slabs, patios, driveways, walls and foundations shall be constructed of a minimum **3000 to 3600** psi concrete, 28 day test, with a 4" minimum to 6" maximum slump maximum, air-entrained to 5 - 8%. No additional water shall be added to concrete after slump test is recorded. **Cylinders shall be taken from every batch truck and tested for compressive strength at 7 and 28 days.** Concrete should be a mix of high grade Portland cement, clean sand or granular fill and washed gravel or crushed stone as coarse aggregate per ACI 530. Maximum aggregate size shall be  $\frac{3}{4}$ ". All aggregates shall conform to ASTM C33. Gravel should be well graded and not exceed 1 1/2" in size. Water shall not exceed 5 1/2 gallons for each bag, unless sand is very dry. Concrete shall be mixed using an approved batch machine or mobile mixer until uniform in color and providing a 4" minimum to 6" maximum slump.

### **03 10 00 - Concrete Forming and Accessories**

Provide all labor, materials and equipment necessary for the completion of the plain and reinforced concrete called for on the plans. Concrete when deposited shall have a temperature ranging between a minimum of **50 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.**

**Construction of Forms** - Construct wood forms of sound material, and of the correct shape and dimensions, constructed tightly and of sufficient strength. Brace and tie the forms together. Make joints and seams mortar tight. Install leakage control materials in accordance with manufacturer's installation instructions.

**Chamfered Corners** - Unless otherwise noted, provide chamfered corners on all exposed corners. Provide **3/4 inch** moldings in forms for all chamfering required.

**Embedded Items** - make provisions for sleeves, anchors, inserts, water-stops and other features.

**Form Ties** - Use form ties of sufficient strength and in sufficient quantities to prevent spreading of the forms. Place ties at least **1 inch** away from the finished surface of the concrete. Do not use ties consisting of twisted wire loops. Leave inner rods in concrete when forms are stripped. Space all form ties equidistant and symmetrical and line up both vertically and horizontally.

**Cleanouts and Access Panels** - Provide removable cleanout sections or access panels at the bottom of all forms to permit inspection and effective cleaning of loose dirt, debris and water material. Clean all forms and surfaces to receive concrete of all chips, sawdust, and other debris and thoroughly blow out with compressed air just before concrete is placed.

### **03 15 13 - Concrete Accessories**

Provide 1/2" thick by 4" wide bituminous expansion joint material at all surfaces where slabs adjoin raised slab, crawlspace or basement stem-wall CMU or poured foundations.

### **03 21 00 - Reinforcing Steel**

Reinforcing steel (rebar) shall be minimum ASTM A615, grade 40. All reinforcement splices shall be as follows: **#5 bars 25" minimum, #7 bars 35" minimum**. All rebar (reinforcing steel) shall be located **3"** clear from bottom and side of footing and **2"** clear from top. Locate vertical rebar (reinforcing steel) **4'-0" on center (OC)**. All reinforcement splices shall be in accordance with ACI 318 for "Strength Design." All reinforcement steel shall be accurately placed, rigidly supported, and firmly tied in place with bar supports and spacers in accordance with ACI 301 and ACI 318.

### **03 22 00 - Welded Wire Fabric Reinforcing**

Welded wire fabric shall conform to ASTM A105 and be located in the center of the depth. Install at slab on grade conditions.

### **03 30 00 - Footings**

Center all footings on walls, piers, or columns above unless otherwise noted. All footings shall rest on undisturbed virgin soil with minimum soil bearing allowable of **2500** psf, tested for 95 percent compaction, or **3/4"** stone compacted in **12"** lifts to 95 percent density if fill is required. Footings at building perimeter shall be a minimum of **12"** below frost line and **20"** wide, (**check with local building officials for frost line level**) constructed of **3000 psi** concrete. Provide **3 - #5** rebar (reinforcing steel) continuous through footers. Provide #5 rebar (reinforcing steel) corner bars at all corners and intersections of footers, beams and walls. Each side should overlap **2'-0"**, with a 90 degree bend. Footers shall bear on undisturbed soil and kept free from ground water. Underneath load-bearing walls and interior or exterior column footings, thicken slabs within a **1'** radius to **12"thick**.

### **03 30 01 - Slab Foundations**

Concrete floor slabs shall be constructed of **3000 psi** concrete, **4" thick** reinforced with **10 gauge 6" x 6"** welded-wire mesh continuous and rebar (reinforcing steel) as per plans. Place slabs over well-compacted granular fill compacted in 12 inch lifts to 95 percent density per AASHTO T-180 Proctor, and a **4 or 6** mil vapor barrier. Construction or control joints shall be provided in slabs on grade so that the maximum area between joints shall be **400** sq. ft. and the length of that area is not more than twice the width. Provide smooth steel trowel finish for all interior slab areas and garage surfaces. Provide broom finish texture for all exterior slabs. Slope exterior patio or porch slabs away from building at **1/4"** of drop in elevation for every **1'-0"** in distance. At garage slab, provide positive drainage and taper lip at garage/overhead door.

### **03 30 02 - Poured Concrete Basement Walls**

Poured walls shall be constructed of **3000 psi** concrete with #5 rebar (reinforcing steel) at **12" x 12"** on center (OC) placed in a vertical grid. Thickness of walls shall be a minimum of **8"thick for 8'-0"high, 10"thick for 9'-0"high, 12"thick for 10'-0"high**. Patch all voids and depressions exceeding **3/8** inch in any direction. Provide appropriate waterproofing system around the exterior perimeter and install drainage as specified by manufacturers recommendations.

### **03 35 00 - Concrete Finishing**

Repair of surface defects shall begin immediately after removal of form or pouring of slab foundation. Provide smooth steel trowel finish for all interior slab areas and garage surfaces. Provide broom finish texture for all exterior slabs. Slope exterior patio or porch slabs away from building at **1/4"** of drop in elevation for every **1'-0"** in distance. At garage slab, provide positive drainage and taper lip at garage/overhead door. Patch all voids and depressions exceeding **3/8 inch** in any direction.

### **03 40 00 - Precast Concrete**

Provide all labor, materials and equipment to provide concrete structures as called for on the plans. Erect pre-cast concrete units and accurately install in place with hoisting equipment more than adequate for the loads. At completion, units shall be plumb, level and square, true to line, with angles and edges parallel with related building lines.

### **03 50 00 - Cast Decks and Underlayment**

Install cementitious backer-board under ceramic tile, marble and stone finishes. Use straight edge as guide to score sheet's face with carbide tipped scoring knife and snap upward along the score line. Large cutouts use a circular saw with carbide tipped blade.

**Floor Installation** - Install over interior wood or concrete sub-floors. Ensure sub-floor is structurally sound. Ensure the sub-floor is not damaged. Replace any loose, warped or damaged boards. Make certain sub-floor is clean and flat. Exterior grade plywood or hardwood sub-floor should be at least **1 1/4" thick (5/8" minimum)** in order to provide for a structurally solid, movement free foundation. In addition, the space between the joists should not exceed **16" on center**. In any case, the maximum allowable concentrated deflection of your sub-floor may not exceed **L/360** of the span. Stagger joints. Do not align with plywood joints. Never allow all four corners of sheets to meet at one point. Apply a dry set mortar or modified thinset to sub-floor per manufacturer's recommendations. Fasten backer-board sheets with proper nails or screws every **8"** over the entire surface. Keep the fasteners between **3/8" and 3/4"** from sheet edges and **2"** in from sheet corners. Provide expansion joints where required.

**Countertop Installation** - Ensure cabinets are level and secure. Use minimum **1/2"** exterior grade plywood positioned across the wood cabinet. Space between plywood supports is not to exceed **16" on center**. Do not align backer-board with plywood joints. Sheet ends and edges must be supported by perimeter framing. Apply a dry set mortar or modified thinset to plywood per manufacturer's recommendations. Fasten backer-board sheets with proper nails or screws every **8"** over the entire surface. Keep the fasteners between **3/8" and 3/4"** from sheet edges and **2"** in from sheet corners. Provide expansion joints where required.

**Wall Installation** - Ensure framing is structurally sound. Nominal **2" x 4" wood or minimum 20 gauge metal studs** must be straight properly aligned and spaced a **maximum of 16" on center**. In tub and shower enclosures, ensure that the framing is adequately reinforced at the corners. Sheets may be installed vertically or horizontally. Score and snap sheets to required sizes and make necessary cut outs. All joint ends and edges must be supported by a structural framing member or added blocking. In wet areas, install a moisture barrier (such as **15 lb. Felt**) between studs and backer-board. Install sheets **1/4"** above floor, tub or shower pan. Fasten backer-board sheets with proper nails or screws every **8"** over the entire surface. Keep the fasteners between **3/8" and 3/4"** from sheet edges and **2"** in from sheet corners. Set fastener heads flush with the surface, without overdriving. Provide expansion joints where required.

### **03 54 00 - Cast Underlayment**

Sub-floor shall be structurally sound. Clean sub-floor to remove mud, oil, grease, and other contaminating factors before the installation of the underlayment. Fill cracks and voids with a quick setting patching or caulking material. Allow joints to continue at the same width. Application shall not begin until the building is enclosed, including roof, windows, doors and other fenestrations.

**Gypsum Underlayment** - Place gypsum cement a minimum **1 inch (25 mm)** thick over sound deadening pad. Spread and screed gypsum cement to a smooth surface. Contractor shall provide continuous ventilation and adequate heat to rapidly remove moisture from the area until the gypsum cement is dry. Contractor shall provide mechanical ventilation if necessary. Under the above conditions, for **1 inch** thick gypsum cement **7-10 days** is usually adequate drying time. To test for dryness, tape a 24 inch by 24 inch (609 mm by 609 mm) section of plastic or high density rubber mat to the surface of the underlayment. After 48-72 hours, if no condensation occurs, the underlayment shall be considered dry. Perform dryness test **5-7 days** after pour.

**Portland Cement Underlayment** - Fill large cracks, holes and voids **36-48** hours prior to underlayment placement. Contraction and control joints must be maintained through the underlayment. Mark their location for later saw cutting. Mix primer and install per manufacturers recommendations. Apply an even coat removing any puddles. Very porous surfaces may require a second coat of primer once the first coat has dried to fully seal the floor. Allow primer to dry to touch completely. Keep primed surface clean and protected from abrasion. Mix cementitious underlayment per manufacturers

recommendations. Spread out using gauged spreader tool set to the desired depth. Use spiked roller to disperse air bubbles. Repeat mixing and pouring until installation is complete. Use smoother for touchups. To avoid low spots between pours, pour into leading edge of previous pour before initial set and spread.

### **03 60 00 - Grouting**

Concrete surfaces to receive grout shall be prepared by removing defective concrete, dirt, oil, grease and other foreign matter to achieve sound, clean concrete surfaces.

**Grouting-** Mix up grout per manufacturers recommendations. Use a padded grout float to spread the grout over a workable section of tile. Push the grout diagonally across the joints to force it down into the gaps. Grout all the joints except those needed to allow for expansion joints specifically along fixtures, between the floor and walls, or joints in corners in between walls. Expansion joints will be sealed with caulk after the grouting process. Once the appropriate joints are packed with grout, scrap the excess grout off the surface of the tile with the grout float. Hold the float at a sharp angle and again use diagonal strokes to keep from digging grout out of the joints. Clean up the excess grout with a damp sponge and a couple buckets of clean water. Wipe excess grout off the surface of the tiles using a clean sponge in circular strokes. Once the tile surface is clean, make another pass parallel to the grout lines to shape the grout lines in the joints. Smooth the joints down a little below the surface of the tile. Clean the remaining haze off the surface of the tile with a sponge or a soft rag. In **24 to 48** hours after the grout has hardened, caulk using a clear tub/shower caulk or one in a color that matches the grout in the areas that you allowed for your expansion joints and over joints that may crack because of movement. Specifically areas between floor tile and cabinet toekick; between floor or wall tile and bathtub or shower; between floor and wall tile; and at the inside corner where two walls meet. Fill the joints completely then smooth them out with a damp rag or appropriate tool. Caulk around plumbing valves, sinks and faucets to seal them from water penetration. Glazed ceramic tile surfaces only require grout joints to be sealed which will provide an enhanced water and mildew resistant surface. Apply a silicone or water-based grout sealer to all joints per manufacturer's recommendations a **minimum of 14 days** after grout has been installed.

**Nonshrink Grout** - Lightly roughen concrete surface for maximum bonding per manufacturer's recommendations. Cover concrete areas with protective waterproof covering until ready to place grout. Align and level components to be grouted and maintain in final position until grout placement is complete and accepted. Install forms for grout around bases and other spaces to be grouted. The tops of such forms shall be one inch above the surfaces to be grouted. Place grout in accordance with the manufacturer's recommendations. Pour grout from one side only until grout rises at least one inch above the plate on opposite side or said plate. Neatly trowel edges of grout base, tapered at an angle of **60 degrees**.

## **DIVISION 04 00 00. MASONRY**

### **04 00 00 - Masonry**

Contractor shall review construction documents and provide labor and materials pertaining to masonry work as required in said documents and as specified herein, while complying with all applicable building codes.

#### **04 01 20.52 - Unit Masonry Cleaning**

Dry brush masonry surface at the end of each day's work and after final pointing using wire brushes to remove mortar but exercise care not to scratch or damage work. For final cleaning, schedule at least **seven days** after the brick masonry is completed. Remove larger mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels. Protect metal, glass, wood, limestone and cast stone surfaces. Mask or otherwise protect windows, doors, and ornamental trim from cleaning solutions. Presoak or saturate the area to be cleaned. Flush with water from the top down. Starting at top apply the cleaning solution based on the type of brick installed. Use a long handled stiff fiber brush or other type as recommended by the cleaning

solution manufacturer. Allow the solution to remain on the brick for **5 to 10 minutes**. Rise thoroughly. Flush walls with large amounts of clean water from the top to bottom before they can dry.

#### **04 05 13 - Masonry Mortaring**

Mortar shall be Type "M" or "S" in accordance with ASTM C270, 2500 psi. Grout shall be in accordance with ASTM C270, Type M, 2500 psi concrete using pea gravel for coarse aggregate with a maximum aggregate size of 3/8" and an 8" minimum to 11" maximum slump. Mortar joints shall be 3/8" thick, finished to produce a **concave, flush, beaded, raked** form. Mortar or grout not used within **2 1/2 hours** after mixing shall not be used in masonry work. In hot weather add water as needed to supplement evaporation losses. In cold weather, when air temperatures range between **32 degrees and 40 degrees Fahrenheit**, heat mixing water or aggregate to between **70 degrees and 160 degrees Fahrenheit** maximum. When air temperature is below **32 degrees Fahrenheit** heat both the missing water and aggregate to between **70 degrees and 160 degrees Fahrenheit** maximum.

**Brick Mortar:** **specify manufacturer and color**

**Concrete Mortar:** **specify manufacturer and color**

#### **04 05 19 - Masonry Anchorage and Reinforcing**

**Brick Ties** - Install corrugated metal, metal wire brick ties. The brick veneer must be securely attached to the existing construction. Provide **one tie for each 2 2/3 sq ft of wall area**. The maximum spacing of ties, either horizontally or vertically, should not exceed **24 inches**. This tie spacing applies above and below grade. The above grade spacing may be reduced to **one tie for each 3 1/4 sq ft of wall area** for one and two family dwellings not exceeding one story in height.

**Tie Fasteners - Wood Frame** - Install corrosion resistant nails to attach the corrugated metal ties to wood frame construction. The nails should penetrate at least **1 1/4" into the wood studs**.

**Metal** - Corrosion resistant, self tapping metal screws should be used to attach metal wire ties to metal construction. Screws should penetrate at least **1/2 inch** into the metal structure.

**Concrete or Masonry** - Install ties with lag bolts and expansion shield or masonry nails. The fasteners and anchors should be corrosion resistant. When installing a continuous steel angle it should conform to ASTM A36 and be treated to resist corrosion. Steel angles for lintels should be a minimum **1/4" thick with at least 3 inch legs**.

#### **04 05 23 - Masonry Accessories**

**Flashing** - Flashing materials may be bituminous membranes, plastics, sheet metals or a combination of these. Continuous flashing shall be installed at the bottom of the air space. Flashing must be at or above grade. Flashing should be installed at the heads and sills of all openings and wherever the air space is interrupted. Flashing should extend through the face of the brick veneer to form a drip edge. Where the flashing is not continuous, such as at heads and sills, the ends should be turned up **approximately 1 inch**.

**Weepholes** - Masonry weepholes, each having an area of at least **70 mm (0.1 sq.in.)**, are required above flashing in masonry cavity wall construction. Weepholes should be located in the head joints immediately above the flashing, and spaced at **16" on center**. If open head joints are used, a **24" on center** spacing is permitted; however, open joints are not recommended because the small openings are easily obstructed by mortar droppings. Open joints also permit insects to enter the building envelope.

#### **04 20 00 - Crawlspace/Basement Foundations**

Stem-walls (Foundation Walls) shall be constructed with **8" x 8" x 16" or 8" x 12" x 16" (depending on height and load requirements)** CMU unless otherwise noted. Completely bed CMU with type "M" mortar. Fill all cells containing vertical rebar (reinforcing steel) with 3000 psi Concrete. Reinforce masonry walls with **9 gauge** steel "H" wire truss-design masonry horizontal wall reinforcement a minimum of every third course, and rebar (reinforcing steel). Install reinforcing members as recommended by manufacturer. Provide ventilation through

stem-wall to crawlspace every 8'-0" of stem-wall perimeter. Provide a 24" x 48" minimum access door to crawlspace. Bond beams shall be continuous across all joints and grouted solid over a metal lath grout barrier with maximum grout lifts of 4.0 feet without clean-outs. Rod all filled cells in bond beams for proper density. See Waterproofing and Dampproofing in Division 7 for waterproofing information.

#### **04 21 13 - Brick Masonry**

Exterior finish shall be standard size brick veneer. Brick shall be placed in a running bond with joints finished to produce a [concave, flush, beaded, raked](#) form. All joints shall be uniform and [3/8 inch](#) thick unless otherwise noted. Detailing, such as soldier courses, rowlocks, quoins, etc., and location of brick veneer shall be shown in the construction documents. Brick budget shall be determined by an allowance as stated in the Contract Documents.

**Brick Veneer:** [specify brick manufacturer, color and type.](#)

#### **04 21 13.13 - Brick Veneer Masonry**

Brick shall be placed in a running bond with joints finished to produce a [concave, flush, beaded, raked](#) form. All joints shall be uniform and [3/8 inch](#) thick unless otherwise noted. Detailing, such as soldier courses, rowlocks, quoins, etc., and location of brick veneer shall be shown in the construction documents. Wall ties shall be corrosion resistant #9 gauge wire with a hook on the extended leg to engage or enclose a #9 gauge horizontal joint reinforcement wire. Joint reinforcement shall be continuous with butt splices between ties permitted. Wall ties shall be located to support no more than 2 square feet of wall area and spaced a maximum 24" on center horizontally. Provide rope wick weep-holes, spaced approximately [32 inches](#) on center in vertical joints of first course over all counter flashing and through wall flashing on all exterior walls.

#### **04 22 00 - Concrete Unit Masonry**

Shall be in accordance with ASTM C90 or C145, 1500 psi compressive strength, grade N, Type 1, hollow core load bearing CMU and shall have a minimum net compression strength of 1900 psi. Use Grade N, type 1, specialty shapes load bearing concrete masonry units as specified. Standard width of mortar joints for both horizontal and vertical joints shall be [3/8 inch](#). Joints shall have a full mortar coverage. Lay CMU plumb with all courses level using appropriate corner blocks at corners, window and door jambs. Reinforcing mesh shall be installed in the three courses above all openings and shall extend [3 feet 9 inches](#) beyond each side of opening. Mesh shall be installed in every third course of all masonry unit walls. Cut block with a carborundum saw. Use solid load-bearing block when required for structural purpose.

#### **04 23 00 - Glass Block**

Install glass block as noted in construction documents. Install with silicon sealant and spacer strips. Consult window and glazing schedule below.

##### **Glass Block One**

**Size of blocks:** [6" x 6", 8" x 8", 12" x 12", 4" x 8", 6" x 8"](#) nominal size

**Shape:** [Square, rectangular, hexagonal, 45 degree block](#)

**Glazing:** [Flutes, Clear, translucent, wavy, grid, etc](#)

**Specify:** [Size, Description, Specification \(manufacturer and model number\) Pre-assembled, vinyl or aluminum frame windows with glass block inserts.](#)

##### **Glass Block Two**

**Size of blocks:** [6" x 6", 8" x 8", 12" x 12", 4" x 8", 6" x 8"](#) nominal size

**Shape:** [Square, rectangular, hexagonal, 45 degree block](#)

**Glazing:** [Flutes, Clear, translucent, wavy, grid, etc.](#)

**Specify:** [Size, Description, Specification \(manufacturer and model number\)](#)

#### **04 40 00 - Stone Assemblies**

See construction documents for detailing locations.

**Keystones** - Over doors and windows, install stone keystones [on front, side, rear elevations only](#).

**Quoins** - At corners, install stone quoins [on front, side, rear elevations only](#).

**Sills** - Install a [stone, brick](#) exterior rowlock under all windows

#### **04 43 00 - Stone Masonry**

Install exterior stone veneer per manufacturer's recommendations. See construction documents for location and detailing of stone veneer. Stone budget shall be determined by an allowance as stated in the Contract Documents.

Stone veneer: [specify manufacturer, color and type](#).

#### **04 51 00 - Flue Liner Masonry**

Flue lining shall be [10", 12" wide x 2'-0" long](#) square ceramic flue tile with smooth joints. To help repel water, install chimney cap on top of chimney. Brick shall be placed in a running bond with joint finished to produce a [concave, flush, beaded, raked](#) form. Detailing, such as a soldier courses, rowlocks, quoins etc. shall be shown in the construction documents. Consult construction documents for complete fireplace details

**Chimney and Flue** - Top of Chimney shall be located [2'-0"](#) taller in elevation than any point within 10'-0". Flues shall be U.L. approved and installed as per manufacturers instructions. If multiple flues are used in the same chimney chase, an unequal projection or height of flue above the stack shall be used to safeguard against smoke exiting one flue and entering another.

#### **04 57 00 - Masonry Fireplaces**

Install masonry fireplace on poured slab or concrete block base, with all cells filled with [3000 psi](#) concrete. At firebox area install fire brick on all sides, and imbed with mortar. Allow for water trap in flue and cast iron damper. Install ash dump if fireplace is on outside wall or as otherwise specified. Brick shall be placed in a running bond with joint finished to produce a [concave, flush, beaded, raked](#) form. Detailing, such as soldier courses, rowlocks, quoins etc. shall be shown in the construction documents. See construction documents for complete fireplace details.

### **DIVISION 05 00 00. METALS**

#### **05 00 00 - Metals**

Contractor shall review construction documents and provide labor and materials pertaining to metal work as required in said documents and as specified herein, while complying with all applicable building codes.

#### **05 05 23 - Metal Fastenings**

Provide [1/2" diameter x 10" long](#) anchor bolts in filled cells and poured concrete walls at [48" on center \(OC\)](#) maximum at all window locations and on each side of exterior doors. For slabs, install appropriate tie downs or straps as required by applicable building codes.

#### **05 10 10 - Structural Metal Framing**

All structural metal for beams and plates shall be in accordance with ASTM A-36. All structural steel for steel columns shall comply with ASTM specification A-53 Grade B or A-501. Structural steel columns shall be [3" minimum](#) inside diameter, unless noted otherwise. All steel details and connections shall be in accordance with the requirements of the latest AISC specifications and latest revisions. Provide all required anchor bolts, bearing plates and metal ties required by standard practice and as noted below.

[Tubular Steel shall be in conformance with ASTM A500 Grade B](#)

[Steel pipe shall be in conformance with ASTM A-53, Type E or S, Grade A or B.](#)

[Cast Iron shall be in conformance with ASTM A-48, Class 30, unless otherwise noted.](#)

[Welding Electrodes shall be as permitted by AWS Code D1.0.](#)

### **05 50 00 - Metal Fabrications**

Install metal detailing as specified on construction documents. Install metal gates, grilles, iron work, etc. to meet all applicable building codes, with appropriate detailing and patterns as shown in construction documents. Metal shall be shop built, welded together, cleaned thoroughly and painted with two coats of an anti-rust primer. After installation, apply an additional coat and anti-rust primer in preparation for finish coats.

### **05 52 00 - Metal Railings**

Install metal hand railings and gates to meet all applicable building codes, with appropriate detailing and patterns as shown in construction documents. Metal shall be shop built, welded together, cleaned thoroughly and painted with two coats of an anti-rust primer. After installation, apply an additional coat and anti-rust primer in preparation for finish coats.

**Location:** [Front Porch](#)

**Surface Finish/Texture:** [Smooth, Twisted, Matte, etc.](#)

**Material:** [Steel, Aluminum, Galvanized Steel, Wrought Iron, etc.](#)

**Specify:** [Size, Manufacturer, Model, Type](#)

**Location:** [Interior Iron Gate to Wine Cellar](#)

**Surface Finish/Texture:** [Smooth, Twisted, Matte, etc.](#)

**Material:** [Steel, Aluminum, Galvanized Steel, Wrought Iron, etc.](#)

**Specify:** [Size, Manufacturer, Model, Type](#)

**Location:** [Rear Balcony](#)

**Surface Finish/Texture:** [Smooth, Twisted, Matte, etc.](#)

**Material:** [Steel, Aluminum, Galvanized Steel, Wrought Iron, etc.](#)

**Specify:** [Size, Manufacturer, Model, Type](#)

### **05 52 13 - Pipe and Tube Railings**

Pipe handrails shall be galvanized steel pipe. The rails shall be standard weight and the post shall be extra strength steel pipe. Standard or special fittings shall be used or the joints may be welded. Post spacing shall not exceed [7'-0' on center](#). Unless otherwise noted on the plans, the top rail shall be located at a height of [3'-6"](#) ([4'-6"](#) for bike trails), except stair runs shall have top rail at a height of [3'-6"](#) and enclosed stair landings shall have top rail at a height of [3'-0"](#).

### **05 70 00 - Decorative Metal**

Install ornamental metal and related components in strict accordance with manufacturer's printed installation instructions and project shop drawings. Preassemble metal systems, in easy to lift sections whenever possible. Separate aluminum which might contact concrete, masonry, or other metals, by means of asphaltic paint or other approved method to prevent electrolytic action. Adjust, level, and securely install railing system components. Immediately upon completion of installation, clean all railing system surfaces using clean water and mild soap or detergent. Do not use abrasive agent or harsh chemicals. Provide adequate protection for all surfaces of completed installations to prevent damage during remainder of construction activities. After installation, apply an additional coat and anti-rust primer in preparation for finish coats.

[Bar Grilles.](#)

[Perforated Sheet Metal Grilles.](#)

[Progressive Louvers](#)

[Radiator Covers](#)

[Equipment Plates](#)

### **05 71 13 - Fabricated Metal Spiral Stairs**

Install stair assembly in accordance with manufacturer's instructions and approved shop drawings and in accordance with specified performance requirements. Anchor components rigidly and securely to building structure, plumb and level, accurately fitted, and free from distortion or defects. Fit exposed connections to form tight hairline joints. Weld connections that cannot be shop welded because of size limitations. Perform field welding of steel in accordance with AWS D 1.1. Field bolt and weld to match shop bolting and welding. Grind exposed joints smooth. Clean field welds, bolted connections and abraded areas.

**Location:** Interior Iron Gate to Wine Cellar

**Surface Finish/Texture:** Smooth, Twisted, Matte, etc.

**Material:** Steel, Aluminum, Galvanized Steel, Wrought Iron, etc.

**Specify:** Size, Manufacturer, Model, Type

## **DIVISION 06 00 00. WOOD, PLASTICS, AND COMPOSITES**

### **06 00 00 - Wood, Plastics, and Composites**

Contractor shall review construction documents and provide labor and materials pertaining to carpentry work as required in said documents and as specified herein, while complying with all applicable building codes.

### **06 10 00 - Rough Carpentry**

Lumber shall be of live, sound stock and properly dried. Pressure treated lumber shall be used where any lumber shall come into contact with concrete, masonry block or soil and when using as support members for decks, porches or balconies. Lumber for use at exterior shall have a **maximum 12 percent moisture content, for dry climates 9 percent is recommended.** Provide adequate bracing and shoring during the construction process. Studs and joists cut to install plumbing and/or wiring shall be reinforced by adding metal or wood structural reinforcing to strengthen member back to original capacity and maintain structural integrity. Holes bored shall not be larger than 1/3 the depth and not closer than 2" to the top or bottom of the joist.

**Wood Species:** #2 Southern Yellow Pine, Douglas Fir, etc.

### **06 11 00 - Wood Framing**

**Floor Framing** - Information below pertains to conventional stick framing, if pre-engineered trusses are used follow manufacturer's guidelines for installation. Pressure treated lumber shall be used where any lumber shall come into contact with concrete, masonry block, roof curbing or roof blocking.

**Girders:** Install girders in pockets formed in the foundation or on top of the sill plate. The pocket should allow a minimum of 1/2" on both sides for circulation.

**Girders:** solid wood, two or more 2" planks, laminated veneer lumber, glue-lam beams, steel beams

**Sills:** Install single 2"x 6", 4"x 6" or double 2"x 6" solid pressure treated lumber horizontally on foundation. Bore holes in sills for anchor bolts.

**Floor Joists:** Space floor joists 12" to 16" on center (OC) depending on type of construction, load bearing and spanning capabilities of wood species. Joists shall rest on a minimum 1 1/2" of bearing wood or 3" of masonry. Cut joists flush with the outside edge of sill. If joists are lapped over girder, the minimum amount of lap is 4" and maximum overhang is 12". Do not lap at wood I-beams. Joists shall be installed so that the end of the sub-floor sheets fall directly on the center of the floor joists. Nail joists at each bearing point using one 8d or 10d nail on each side. Nails shall be at least 1 1/2" from ends. Wood cross bridging shall be at least nominal 1" x 3" lumber with two 6d nails at each end. Install one row of bridging for 12'-0" spans and less, over 12'-0" spans install two rows of bridging.

**Floor Joists:** 2"x 10"s, 2"x 12"s, wood I-beams, wood or steel trusses, at 16" on center (OC).

**Exterior Walls** - All exterior walls shall be constructed with 2"x 4", 2"x 6" wood studs at 16" on center (OC), with single bottom plates and double top plates throughout. Provide solid blocking at mid-height of all walls. For exterior corner joints, install (3) 2"x 4"s, 2"x 6"s nailed together. Where interior partitions meet exterior walls, install 2 studs fastened together with 2"x 4", 2"x 6" blocks approximately one foot long. One block is placed at the bottom, one at the top and one about center of the studs.

2"x 4" studs placed 16" on center (OC) - typical

2"x 6" studs placed 16" on center (OC) - for higher ceilings and higher insulation values

Where exterior openings occur on 2"x 4" exterior walls, provide structural headers designed with (2) 2" x 10"s with a 1/2" continuous plywood flitch plate glued and nailed between the 2"x10"s. (For 2"x 6" exterior walls provide (3) pieces of 2"x 10" lumber fastened securely together.) At window sills, provide a single piece of 2"x 4", 2"x 6" lumber. Provide double jacks or liners for openings 6'-0" wide or greater, unless otherwise noted. Provide 1/2" plywood sheathing and 1"x 4" diagonal bracing at exterior wall corners for shear wall strength and stiffness.

**Fascia and Soffit** - Provide and install wood, aluminum or vinyl fascia and soffit. See construction documents for complete architectural details. Wood fascia board shall be a 1"x 6" finger-joint cedar or fir set on 2"x 4" sub-fascia structure. For wood soffit install 3/8" thick A-C finish plywood, 2 5/8" crown moulding, 1"x 6" frieze board and louvered or continuous screen soffit vents as required by applicable building codes and roofing manufacturers guidelines for ventilation.

For aluminum and vinyl soffit and fascia, wrap all exposed edges to fully enclose sub-fascia structure. See manufacturers recommendations for complete installation guidelines.

**Location:** exterior perimeter

**Finish, Pattern and Color:** satin finish, continuous molded soffit, white

**Specify:** manufacturer, style and item number

## Interior Walls

All interior walls shall be wood studs, with single bottom plates and double top plates throughout. Provide solid blocking at mid-height of all walls which exceed 9'-0" in height.

2"x 4" studs placed 16" on center (OC) - typical

**Ceiling Joists:** The size of ceiling joists are determined by span, load and the kind and grade of lumber. Check appropriate spanning charts with local building officials. At openings in ceilings, double joists for structural rigidity.

2"x 6" spaced at 24" on center (OC)

2"x 8" spaced at 24" on center (OC)

2"x 10" spaced at 18"-24" on center (OC), attic areas used for storage

**Roof Framing:** Construction components vary according to geographical location and the size of the overall structure. The size of joists are determined by span, load and the kind and grade of lumber. Check appropriate spanning charts with local building officials. At openings in roof, double joists for structural rigidity. For ridges, hips and valleys, install 2"x 8"s, 2"x 10"s. Use laminated veneer lumber when ridge, hip or valley spans are greater than 28'-0". Provide Simpson H2.5 anchors at all rafters or trusses to plates and at alternate studs.

2"x 6", 2"x 8" members at 24" on center (OC)

2"x 6", 2"x 8" members at 16" on center (OC)

**Roof Decking** - Provide and install exterior sheathing of APA rated and code certified [CDX plywood panels or OSB](#). Sheathing shall be installed with the face grain running across the rafters, vertical joints staggered. Nails shall be [6d or 8d common smooth, ring-shank or spiral thread](#) nails spaced 6" apart on the ends and 12" apart inside. Install with plywood "H" clips between each piece of decking, every 48". Install one layer of moisture barrier [15# or 30# felt](#), overlapped a minimum of 6".  
[Specify ceiling designs and locations.](#)

**Vaulted Ceiling:** [room names](#)

**Tray Ceiling:** [room names](#)

**Pan Ceiling:** [room names](#)

**Decks, Porches, Balconies** - Exterior grade lumber shall be used for exterior decks, porches or balconies. Provide and install galvanized joist hangers to connect [2"x 10"](#) floor joists to the main structure every [12"-16"](#) on center (OC). All handrails shall be constructed so as to prevent passage of a 4" sphere. Provide handrail and detailing as shown in construction documents. Stain and seal wood a minimum of 6 months after installation to allow for proper curing. Wood type shall be: [redwood, cedar, treated pine, etc.](#)

### **06 13 23 - Heavy Timber Construction**

Install pre-engineered wood frame, exterior wall and roof packages per construction documents. Structural timber and lumber shall be structural grade or better. Lumber shall be of live, sound stock and properly dried. Pressure treated lumber shall be used where any lumber shall come into contact with concrete, masonry block or soil and when using as support members for decks, porches or balconies. Lumber for use at exterior shall have a maximum [12 percent](#) moisture content, for dry climates [9 percent](#) is recommended. Provide adequate bracing and shoring during the construction process. Holes bored shall not be larger than [1/3 the depth and not closer than 2"](#) to the top or bottom of the joist. Install pre-engineered per manufacturer's recommendations

**Surfacing:** [Circle-Sawn, Band-Sawn, Smooth Faced or Planed](#)

**Wood Species:** [Pine, Red Oak, Douglas Fir, Cherry, White Oak, Recycled timbers, Glue laminated](#)

**Stained:** [Color of Stain](#)

**Sealed:** [Specification of Seal to be applied](#)

### **06 16 00 - Sheathing**

[Between studs and sheathing, install one layer of approved moisture barrier overlapped a minimum of 6"](#). Provide and install exterior sheathing of [1/2" rated plywood panels, fiberboard, gypsum board or rigid foam board](#). For plywood panels, use 6d nails spaced 6" apart on the edges and 12" apart on the studs. For fiberboard sheathing, fasten with roofing nails or button caps spaced 3" apart at edges and 6" apart in the center, a minimum of 3/8" from edges. For Gypsum sheathing use roofing nails or button caps, spaced 4" apart around the edges and 8" apart on the studs. inside. For rigid foam board consult EIFS system for specific manufacturers recommendations.

### **06 16 23 - Subflooring**

[3/4"](#) tongue and groove [plywood](#) sub-floor shall be installed with both nails and approved sub-floor adhesive. Stagger joints a minimum 2 stud spaces. For attic access, install necessary plywood walkways to meet applicable building codes.

### **06 18 13 - Glued-Laminated Beams**

For large spans, structural laminated beams will be required as set forth in the construction documents or by applicable building codes. Laminated timber is hereby defined to include engineered stress-rated products of wood members fabricated from 1" to 2" nominal thickness lumber glued face to face to a depth of four laminations or more.

**Glue-lam Beams** shall have a minimum bending design values (Fb) of 2400 psi and a modulus of elasticity of 1,800,000. Install with crown up.

**Micro-Lam Lumber** shall have a minimum bending design values (Fb) of 2,800 psi and a modulus of elasticity of 2,000,000 psi.

**Parallam Beams** shall have a minimum bending design values (Fb) 2900 psi and a modulus of elasticity of 2,000,000 psi

### **06 20 00 - Finish Carpentry**

All architectural trim and woodwork shall be No. 1 grade material suitable for appropriate finishes. Wood that will be stained shall be clear of knots with concealed joints.

### **06 22 00 - Millwork**

Moisture content for interior woodwork shall be 8-10 percent to reduce excess shrinking. Provide and install interior wood trim as shown in construction documents. Install **quarter round** molding between hardwood floor, ceramic tile or other hard surface material and baseboard trim.

**Base Molding:** [specify](#)

**Crown Molding:** [specify](#)

**Chair Rail:** [specify](#)

**Window Casing:** [specify](#)

### **06 40 00 - Architectural Woodwork**

Provide and install custom woodwork as described on construction documents. Pre-fabricated woodwork should be specified below.

**Fireplace Mantel:** [manufacturer, style and item number](#)

**Paneling:** [manufacturer, style and item number](#)

**Bookshelves:** [manufacturer, style and item number](#)

**Columns:** [manufacturer, style and item number](#)

### **06 41 00 - Architectural Wood Casework**

Provide [concealed or decorative hinges](#) and cabinet hardware as specified below. Finish to be [bronze, chrome, black, white, etc.](#) Knob to be [round, square, pull handle, etc.](#)

**Specify Kitchen:** [Manufacturer, item number, finish](#)

**Specify Powder:** [Manufacturer, item number, color](#)

**Specify Master Bath:** [Manufacturer, item number, color](#)

**Specify Bath Two:** [Manufacturer, item number, color\](#)

**Specify Bath Three:** [Manufacturer, item number, color](#)

**Specify Bath Four:** [Manufacturer, item number, color](#)

**Specify Bath Five:** [Manufacturer, item number, color](#)

**Specify Laundry:** [Manufacturer, item number, color](#)

### **06 42 00 - Wood Paneling**

Provide and install wood or composite paneling in areas as indicated on construction documents and Finish Schedule. Panel seams shall be butt-jointed without overlapping. Wood species and grain shall match up and be free of defects. All paneling shall be applied over gypsum wallboard.

**Panel Style:** Tongue and groove, pre-fabricated panel, slat finish, board and batten, sheet paneling

**Type:** Raised Panel, Flush, etc.

**Material:** Redwood, Fir, Oak, Birch, Cedar, etc.

**Specify:** [Size, Description, Specification \(manufacturer and model number\)](#)

### **06 43 00 - Wood Stairs and Railings**

Heights of treads, lengths of risers and overall width of stairs shall comply with applicable building codes.

[Generally the vertical dimension of one riser and the horizontal dimension of one tread will total 17" or 17.5". Headroom, by most codes, requires a minimum of 6'-8" measured from the front edge of the tread to a line parallel to the stair run.](#) Stair treads shall be constructed of 5/4" thick lumber, risers shall be constructed of 3/4" finish grade lumber, structural stair stringers shall be constructed of 2"x12"s. Glue and nail stair assembly together. Provide and install detailing as shown in construction documents.

**Specify Stair Railing:** [manufacturer, style, type](#)

### **06 60 00 - Plastic Fabrications**

Provide and install plastic fabrications as specified on construction documents. Install to meet all applicable building codes, with appropriate detailing and patterns as shown in construction documents. Plastic fabrications shall be shop built, attached together, cleaned thoroughly and painted with two coats of a primer. After installation, apply an additional coat and primer in preparation for finish coats.

## **DIVISION 07 00 00. THERMAL AND MOISTURE PROTECTION**

### **07 00 00 - Thermal and Moisture Protection**

Contractor shall review construction documents and provide labor and materials pertaining to thermal and moisture protection work as required in said documents and as specified herein, while complying with all applicable building codes.

### **07 10 00 - Dampproofing and Waterproofing**

All joints and penetrations in walls, floors, and roofs shall be made watertight using approved methods and materials. Waterproofing and dampproofing recommendations contained herein are minimum, check with local code officials for additional requirements.

**Slab Foundations** - Install a minimum [\(6 mil\)](#) polyethylene vapor barrier in all slabs, directly underneath concrete. Lap joints not less than 12 inches and tape and seal in accordance with manufacturers guidelines.

**Crawlspace Foundations** - Install a minimum [\(4 mil\)](#) polyethylene vapor barrier in all crawlspace areas. Lap joints not less than 12 inches and seal in accordance with manufacturers guidelines.

**Basement Walls** - Install necessary waterproofing material system to exterior basement walls and foundation surfaces, from a point [12" below](#) the lowest slab to [not less than 6" above](#) finish grade. Install as recommended by manufacturers guidelines. Install a minimum [5"](#) slotted drain pipe with a positive outflow around exterior basement wall footings, imbedded in a loose fill gravel, minimum [12"](#) deep. Slotted drain pipe should be wrapped with an appropriate geo-technical fabric to prevent silt buildup. Install other drains necessary for positive site drainage.

### **07 13 13 - Felt**

On all roof surfaces install a minimum [15, 30 #](#) asphalt impregnated roofing felt. For roofs that are steeper than a 6:12 pitch use a single layer of felt. For roofs with less than a 6:12 pitch install a double layer of felt and overlap a minimum of [18"](#). Overlap felt a minimum of [4" vertically and 12" horizontally](#). Continue felt [6"](#) up all

vertical surfaces and 4" over gutter and valley metal. Fasten all edges with large headed galvanized nails on 6" centers. Lay courses parallel with eaves. Do not stretch courses.

### 07 20 00 - Thermal Protection

Effective R values shall be in accordance with local and state energy codes. Floor, walls and ceilings insulation shall be constructed with: **batt, blanket, loose fill, blown, reflective foil**, insulation.

All plumbing chases in interior and exterior walls shall be insulated with batt insulation for sound attenuation.

**Exterior Walls** - Wall insulation shall be **3 1/2" batt** with an R value of **11 (5 1/2"= R-19)**. Foiled backed poly-styrene exterior sheathing has an R value of 3. The R Value of the total wall system shall be approximately **20, 28**.

**Interior Walls** - Install **3 1/2", R-11 (5 1/2"= R-19)** batt insulation around baths, laundry rooms and otherwise specified for sound attenuation.

**Floors** - Between crawlspace and first floor, install **3 1/2"** batt insulation with an R value of **11 (5 1/2"= R-19)**. Install **3 1/2"** batt insulation in floor system between first and second floor to provide an R value of **11 (5 1/2"= R-19)** for sound attenuation.

**Ceilings** - Attic insulation shall be **loose fill, blown, batt** with an R value of **30 (38)** if blown **9" - 12", (12"-15"=R-38)** thick with loose fill blown fiberglass insulation.

**Foundation** - For concrete slab foundation, provide **2"thick x 24"high and 24"wide x 2"thick** L-shaped R-7 Styrofoam frost barrier around perimeter of structure **if required**. Slope away from building at 1" per foot. Install frost wall 48" below finished grade, along garage/overhead door opening.

### 07 24 00 - Exterior Insulation and Finish Systems

Install exterior **1/2"thick** blackboard or **1/2"thick** gypsum wallboard with roofing nails 4" around the edges and 8" in the center. At corners and where required for shear walls install **1/2" thick** CDX plywood. Next apply a **1"-2"** insulated expanded polystyrene or polyisocyanurate board. Next apply a woven fiberglass reinforcing mesh specifically designed for the EIFS System. Attach with approved plastic fasteners with corrosion-resistant screws or pins as recommended by manufacturer. Install the base coat, then finish coats as specified by manufacturer. See construction documents for details such as keystones, quoins, horizontal bands, etc.

**Stucco:** **specify manufacturer, texture and color**

**Trim:** **specify manufacturer, texture and color**

### 07 30 00 - Steep Slope Roofing

Provide and install roof system in accordance with all applicable building codes and manufacturers guidelines. Do not set tiles in mortar when the ambient temperature is less than 4 ° C (40 ° F). Do not start installation until other trades requiring traffic on roof have completed their work. Do not start installation until vent pipes and other projections through roofs and flashing materials are in place. Main roof slope shall be: **12:12**.

**Installation** - Snap chalk lines parallel to eave line. Set out as shown in applicable manufacturer Installation Guide detailing roof layout and coursing. If installing battens, fix battens to conform to chalk lines securing to deck at not more than **24 inches (600mm)** on center using **8 penny** corrosion resistant nails. Size and configuration shall suit tile system. Battens shall be installed in such a manner as to provide drainage past or beneath them at a maximum of **4'-0" intervals** by using packers beneath battens. Lay up field tile in straight bond with side lap of successive courses aligned. Align each tile so that horizontal lines are parallel to eave line and vertical lines are at right angles and batten lugs are firmly engaged on sheathing or battens. Remove foreign matter from interlocking ribs to ensure correct fit and interlock. Cracked or broken tile shall not be installed nor allowed to remain on the roof. Align each tile so as to allow at least **1/16 inch (1.5mm)** between tiles while ensuring the tiles do interlock completely. Do not abut tiles tightly. Cut tiles at roof penetrations, to match angle of hips, valleys and elsewhere as required in a manner not to damage or weaken tiles. Discard

cracked, broken, chipped or otherwise damaged tile. Where pieces of cut tiles, especially in hip and valley areas, are too small to nail, they should be secured with an approved adhesive substance and/or wired. Nail perimeters to include three tile courses and not less than **36 inches (915mm)** from either side of hips or ridge and edges of eaves and gable rakes. Nails shall be driven snug to tile surfaces. Lay hip and ridge tile snug to abutting shoulder. Nail to supporting member using one corrosion resistant nail of sufficient length to **penetrate 3/4 inches** into supporting member. Install rake tile to overlap field tile and barge board fitting over barrel of tile. Secure with two corrosion resistant nails of sufficient length to **penetrate 3/4 inches** into supporting member. Paint flashings, roof projections associated with roof with Tile Manufacturer's color coordinated paint to match tiles.

### **07 31 13 - Asphalt Shingles**

Provide **15, 20, 25, 30, 35** year Composite/Asphalt **three tab, dimensional, shadow line** shingles over **one, two** layer(s) of **15, 30#** felt. Minimum recommended pitch is a 4:12 slope. Support roof system with **joist/rafter system or pre-engineered truss** system to meet dead and live load requirements as specified by manufacturer.

**Asphalt shingles shall be:** **specify manufacturer, style, color, thickness and weight.**

### **07 31 16 - Metal Shingles**

Install **50** year warranty metal shingle roof system with concealed fasteners as shown on construction documents. Install a layer of fire-retardant paper between roof structure and metal. Minimum recommended pitch is a 3:12 slope. Support roof system with **joist/rafter system or pre-engineered truss** system to meet dead and live load requirements as specified by manufacturer.

**Metal roof material:** **aluminum, galvanized steel, stainless steel or copper**

**Metal roof:** **specify manufacturer, style, color and type**

### **07 31 19 - Metal Roof Tiles**

Install **50** year warranty metal roof tile system with concealed fasteners as shown on construction documents. Install a layer of fire-retardant paper between roof structure and metal. Minimum recommended pitch is a 3:12 slope. Support roof system with **joist/rafter system or pre-engineered truss** system to meet dead and live load requirements as specified by manufacturer.

**Metal roof material:** **aluminum, galvanized steel, stainless steel or copper**

**Metal Finish:** **Granular coated, painted or natural metal finish**

**Metal roof:** **specify manufacturer, style, color and type**

### **07 31 26 - Slate Shingles**

All slate shall be hard, dense, sound rock, machine punched for two nails each. All exposed corners shall be practically full. No broken corners on covered ends which sacrifice nailing strength or the laying of watertight roof will be allowed. No broken or cracked slate will be used. Minimum recommended pitch is a 5:12 slope. Support roof system with **joist/rafter system or pre-engineered truss** system to meet dead and live load requirements as specified by manufacturer.

**Slate shingles:** **specify manufacturer, color, weight, size and type**

### **07 31 29.13 - Wood Shingles**

Class "C" labeled red cedar shakes may be applied over opened spaced or solid sheathing. Hand-split shakes should be used on roofs where the slope or pitch is sufficient to insure good drainage. Minimum recommended pitch is a 4:12 slope. Support roof system with **joist/rafter system or pre-engineered truss** system to meet dead and live load requirements as specified by manufacturer.

**Cedar Shake shingles:** specify manufacturer, color, weight, size and type

### **07 32 00 - Tile Roofing**

All tile shingle assemblies shall be complete with all required cover, pan, ridge, hip tile, closure tile and accessories. Install as specified by tile manufacturer. No broken or cracked tile shall be used. Support roof system with [joist/rafter system](#) or [pre-engineered truss](#) system to meet dead and live load requirements as specified by manufacturer.

**Tile roof material:** [clay, concrete or concrete composite](#)

**Tile roof styles:** [mission \(semi-circular\), Greek \(flat\) or Spanish \(S-shaped\)](#)

**Tile shingles:** [specify manufacturer, style and color](#)

### **07 32 13 - Clay Roof Tiles**

Install [50](#) year warranty clay roof tile system with concealed fasteners as shown on construction documents. Install a layer of fire-retardant paper between roof structure and metal. Minimum recommended pitch is a 3:12 slope. Support roof system with [joist/rafter system](#) or [pre-engineered truss](#) system to meet dead and live load requirements as specified by manufacturer. Use copper or stainless steel wire fastening where nails are not used. Recess eave closure of pan and cover tile at least 1-1/2 inches from lower end of tile. Fill laps of ends bands, of cover tile on ridges, and of gable rakes to end bands and field tiles with roof cement. Use sealant for pointing around eave closures ridge cover joints, and top fixtures. Upon completion remove any cement splatter from tile and adjacent surfaces. Replace broken, cracked, or stained tile with discolored surface.

**Tile roof styles:** [specify style English French, Greek, Mission, Roman or Spanish](#)

**Clay Roof Tiles:** [specify manufacturer, color, weight, size and type](#)

### **07 32 16 - Concrete Roof Tiles**

Install [50](#) year warranty concrete roof tile system with concealed fasteners as shown on construction documents. Install a layer of fire-retardant paper between roof structure and metal. Minimum recommended pitch is a 3:12 slope. Support roof system with [joist/rafter system](#) or [pre-engineered truss](#) system to meet dead and live load requirements as specified by manufacturer. Install in accordance with manufacturer's instructions and NRCA Steep Roofing Manual.

**Concrete tile style:** [specify style English French, Greek, Mission, Roman or Spanish](#)

**Concrete tile Roof:** [specify manufacturer, color, weight, size and type](#)

### **07 40 00 - Roofing and Siding Panels**

Install [50](#) year warranty [raised rib or standing seam](#) metal roof system with concealed fasteners as shown on construction documents. Install a layer of fire-retardant paper between roof structure and metal. Minimum recommended pitch is a 3:12 slope. Support roof system with [joist/rafter system](#) or [pre-engineered truss](#) system to meet dead and live load requirements as specified by manufacturer.

**Metal roof material:** [aluminum, galvanized steel, stainless steel or copper](#)

**Metal roof:** [specify manufacturer, style, color and type](#)

### **07 46 00 - Siding**

Provide and install siding exterior in accordance with applicable building codes and manufacturers guidelines.

**Wood Siding** - Install [30,50](#) year warranty [horizontal or vertical](#) wood siding as specified in construction documents. Siding shall be kiln-dried, straight grain and sealed at all ends. [If required, install a polyethylene vapor barrier between the sheathing and siding at exterior walls.](#) When installing siding horizontally, joints should be blocked and butt joints caulked or concealed with batten strips.

**Width:** 4", 6", 8", 9", 10", 12"

**Siding:** machine-sawn shingles, smooth, hand-split shakes and boards

**Detailing:** Beveled, tongue and groove or double lap

**Wood species:** Cedar, Redwood, Cypress, Pine, Fir, Hemlock, Spruce, etc.

**Finishes:** Pre-primed, paint color or stain

**Wood Siding:** specify manufacturer, style, size and weight.

**Wood Composite Siding** - Install 30,50 year warranty horizontal or vertical wood composite siding as specified in construction documents. Siding shall be straight and flat against building. If required, install a polyethylene vapor barrier between the sheathing and siding at exterior walls. When installing siding horizontally, joints should be blocked and butt joints caulked or concealed with batten strips. Provide all necessary starter strips, wedges, corner detailing, etc. required by manufacturer and as stated in construction documents.

**Width:** 4", 6", 8", 9", 10", 12"

**Siding:** Lap or panel siding

**Texture:** rough sawn cedar texture, smooth

**Detailing:** Beveled, tongue and groove, beaded, square, shiplap

**Finishes:** Pre-primed, paint color

**Composite Siding:** specify manufacturer, style, size and weight

**Vinyl Siding** - Install 30,50 year warranty horizontal or vertical vinyl siding as specified in construction documents. If required, install a polyethylene vapor barrier between the sheathing and siding at exterior walls. Provide all necessary starter strips, drip cap, corner detailing, etc. required by manufacturer and as stated in construction documents.

**Width:** 3", 4", 6", 8", 9", 10", 12"

**Height:** single, double or triple

**Siding:** Lap or panel siding

**Texture:** rough sawn cedar texture, smooth

**Detailing:** Beveled, tongue and groove, beaded, square, shiplap, Dutch Lap

**Finishes:** Color

**Vinyl Siding:** specify manufacturer, style, size and weight

**Metal Siding** - Install 30,50 year warranty horizontal or vertical metal siding as specified in the construction documents. If required, install a polyethylene vapor barrier between the sheathing and siding at exterior walls. Provide all necessary starter strips, drip cap, corner detailing, etc. required by manufacturer and as stated in construction documents.

**Width:** 3", 4", 6", 8", 9", 10", 12"

**Height:** single, double or triple

**Siding:** Lap or panel siding

**Texture:** rough sawn cedar texture, smooth

**Detailing:** Beveled, tongue and groove, beaded, square, shiplap, Dutch Lap

**Finishes:** Color

**Metal:** Aluminum or steel

**Metal Siding:** specify manufacturer, style, size and weight

### **07 60 00 - Flashing and Sheet Metal**

Install appropriate flashing at all joints of chimneys, dormers, walls, vent pipes and other connection points to prevent the infiltration of water. Flashing shall be assembled of 26 gauge minimum galvanized, corrosion resistant sheet metal. Valleys shall be wrapped with 20" wide galvanized flashing and extend 10" in each direction from center-line of valley. Use 4"wide x 4"high x 10'long galvanized flashing between wall siding and

roof surfaces and step flashing between masonry and roof surfaces. Keep flashing concealed except where exposed on vertical surfaces or counter flashing.

If copper is used, install 16 ounce hard copper.

### **07 71 23 - Manufactured Gutters and Downspouts**

Install 5", 6" wide metal or vinyl gutters and 4", 5" downspouts. Attach every 2'-6" on center (OC) with straps and/or fasteners. Metal should be 25 gauge aluminum.

### **07 72 00 - Roof Accessories**

**Vents** - Proper roof ventilation requires a minimum 1 sq inch of vent area for every 2.08 square feet of attic floor area. Provide a minimum of 144 square inches of free air ventilation for every 300 square feet of attic floor area. 50% of the roof ventilation should be located adjacent the roof peak with the other 50% located in the soffit area under the eaves to provide natural convection throughout the attic area. Check ventilation requirements with roof system manufacturer.

**Turbine Vents** - Install aluminum or galvanized turbine ventilators. Locate as specified on construction documents.

**Soffit Vents** - Install perforated aluminum or galvanized continuous or louvered metal soffit vents every 8'-0" on center (OC).

**Gable End Vents** - Install wood, metal, fiberglass gable end vents as noted on drawings.

**Ridge Vents** - Install aluminum ridge vents at top of ridge for the removal of heated attic air. See construction documents for location.

### **07 92 00 - Joint Sealants**

Use a 50 year warranty silicon based caulk at high expansion/compression areas, such as around chimneys, tile, ceramic, and around enamel and pre-fabricated tubs and showers. For exterior windows, door frames, interior trim, woodwork and other paintable surfaces use a clear, colored Latex based caulk. Color shall match wood stain or paint.

## **DIVISION 08 00 00. OPENINGS**

### **08 00 00 - Openings**

Contractor shall review construction documents and provide labor and materials pertaining to the doors and windows as required in said documents and as specified herein, while complying with all applicable building codes. In all sleeping areas provide an operable egress standard window or door directly to exterior.

### **08 11 00 - Metal Doors and Frames**

Describe each exterior door used and specify in chart below. Allowances for all doors are stated in the Contract Documents.

### **08 11 01 - Exterior Doors**

All exterior doors shall be solid core, insulated and swing inside with weather-tight thresholds. Install brown, black, white weather-stripping around all doors.

**Front Door** - Metal or wood door with insulated glass, grills, add additional information. Provide necessary hardware per door schedule below.

**Style:** Solid, glass inset, French, Raised Panel, Flush

**Options:** Transom, Sidelights (style of transom, 1/2 round, segment, elliptical, etc.)

**Glazing options:** Clear Glazing, Stained Glass, Leaded Glass

**Material:** Metal, Cherry, Oak, Mahogany, Walnut, Birch,

**Specify:** Size, Description, (wood species, stain/paint finish) Specification (manufacturer, model number)

**French Doors - Double or Single, Metal or wood** French doors and insulated glass with weather-tight thresholds. Provide necessary hardware per door schedule below.

**Style:** Full Lite, 2/3 Lite, 1/2 Lite,

**Options:** Transom, Sidelights, grilles (style of transom, 1/2 round, elliptical, etc.)

**Glazing options:** Clear Glazing, Stained Glass, Leaded Glass

**Material:** Metal, Cherry, Oak, Mahogany, Walnut, Birch, etc

**Specify:** Size, Description, Specification (manufacturer and model number)

**Standard Exterior Door - Steel, Fiberglass, Wood** insulated six-panel metal, 1 3/4" thick, with full weather-stripping and metal, wood threshold. Provide necessary hardware per door schedule below.

**Location:** Garage Entry, Exterior Storage, Rear Entry, etc

**Style:** Raised Panel, Flush

**Options:** Transom, Sidelights (style of transom, 1/2 round, segment, elliptical, etc.)

**Material:** Metal, Cherry, Oak, Mahogany, Walnut, Birch,

**Specify:** Size, Description, (wood species, stain/paint finish) Specification (manufacturer, model number)

#### **08 11 63 - Metal Screen and Storm Doors and Frames**

Metal frame with stainless steel, fiberglass wire mesh. Install removable tempered glass in an aluminum frame. Provide necessary hardware per door schedule below.

**Material:** Aluminum, Steel

**Specify:** Size, Description, Specification (manufacturer and model number)

#### **08 14 00 - Interior Doors**

Interior doors shall be pre-hung split-jamb units, including casing on both sides of the door. Casing shall be WM 445, 11/16" x 3 1/4" finger joint for paint finish or clear/concealed joint for stain finish

**Standard Interior Door - Metal or wood door, add additional information.** Provide necessary hardware per door schedule below.

**Type:** Hollow core, Solid Core

**Style:** Standard, pocket, French, sliding, glass shower door

**Type:** Raised Panel, Flush, Louvered

**Material:** Metal, Masonite, Cherry, Oak, Mahogany, Walnut, Birch, Fir, Oak, etc.

**Specify:** Size, Description, Specification (manufacturer and model number)

**Pocket Doors - Metal or wood door, add additional information.** Install into wall as per manufacturer instructions. Provide necessary hardware as per manufacturer recommendations.

**Type:** Hollow core, Solid Core

**Style:** Standard, pocket, French, sliding, glass shower door

**Type:** Raised Panel, Flush, Louvered

**Material:** Metal, Masonite, Cherry, Oak, Mahogany, Walnut, Birch, Fir, Oak, etc.

**Specify:** Size, Description, Specification (manufacturer and model number)

**Sliding Doors - Metal or wood door, add additional information.** Install sliding mechanism as per manufacturer instructions. Provide necessary hardware as per manufacturer recommendations.

**Type:** Hollow core, Solid Core

**Style:** Standard, pocket, French, sliding, glass shower door  
**Type:** Raised Panel, Flush, Louvered  
**Material:** Metal, Masonite, Cherry, Oak, Mahogany, Walnut, Birch, Fir, Oak, etc.  
**Specify:** Size, Description, Specification (manufacturer and model number)

**Bi-fold Door** - Metal or wood door, add additional information. Provide necessary hardware per door schedule below.

**Type:** Hollow core, Solid Core  
**Style:** Standard, pocket, French, sliding, glass shower door  
**Type:** Raised Panel, Flush, Louvered  
**Material:** Metal, Masonite, Cherry, Oak, Mahogany, Walnut, Birch, Fir, Oak, etc. \  
**Specify:** Size, Description, Specification (manufacturer and model number)

**Interior French Door** - Metal or wood door with glass, grills, add additional information. Provide necessary hardware per door schedule below.

**Style:** Solid, glass inset, French, Raised Panel, Flush  
**Options:** Transom, Sidelights (style of transom, 1/2 round, segment, elliptical, etc.)  
**Glazing options:** Clear Glazing, Stained Glass, Leaded Glass  
**Material:** Metal, Masonite, Cherry, Oak, Mahogany, Walnut, Birch, Fir, Oak, etc.  
**Specify:** Size, Description, (wood species, stain/paint finish) Specification (manufacturer, model number)

**Interior Door Frames** - Install pre-hung split-jamb units with interior casing, WM 445, 11/16" x 3 1/4" finger joint for paint finish or clear/concealed joint for stain finish

#### **08 31 00 - Attic Access Door**

Install a 24"w x 24"d wood or metal access door as shown on construction documents. Trim opening with appropriate window casing to match interior trim. Confirm size of opening meets local building codes for attic access.

#### **08 32 00 - Sliding Glass Doors**

Metal, wood frame, insulated glass door. Install stainless steel, aluminum track and rollers with weather-tight thresholds. Provide necessary hardware per door schedule below.

**Style:** Double, triple, quadruple sliding units  
**Options:** Transom, Sidelights, grilles (style of transom, 1/2 round, elliptical, etc.)  
**Glazing options:** Clear Glazing, Stained Glass, Leaded Glass  
**Material:** Aluminum, Steel  
**Specify:** Size, Description, Specification (manufacturer and model number)

**Exterior Door Frames** - Install pre-hung door units.

**Exterior casing:** brick mold WM180, 1 1/4" x 2", finger joint for paint finish or clear/concealed joint for stain finish  
**Interior casing:** WM 445, 11/16" x 3 1/4" finger joint for paint finish or clear/concealed joint for stain finish

#### **08 36 00 - Panel Doors**

Install Overhead 8'-0", 9'-0", 16'-0", 18'-0" wide x 7'-0", 8'-0" high uninsulated, insulated fiberglass, metal or steel garage/overhead door(s) with electric opener(s) and dual remote control units. Install weather-stripping around each door opening.

**Location:** Front Garage 18'-0" Opening

**Garage/Overhead doors:** specify manufacturer, style, material, size and model number

**Automatic Garage Door Opener:** specify manufacturer, style, and model number

**Location:** Front Garage 9'-0" Opening

**Garage/Overhead doors:** specify manufacturer, style, material, size and model number\

**Automatic Garage Door Opener:** specify manufacturer, style, and model number

**Location:** Basement 9'-0" Opening

**Garage/Overhead doors:** specify manufacturer, style, material, size and model number

**Automatic Garage Door Opener:** specify manufacturer, style, and model number

### 08 50 00 - Windows

Confirm that openings are compliant with all applicable building codes concerning egress, lighting and ventilation requirements. Temper all glass located within 2'-0" from exterior doors, all glass in doors and above tub enclosures. Provide and install necessary windows and appropriate hardware to operate and lock windows. Bedroom windows shall comply with Code requirements for emergency escape with appropriate egress hardware. Minimum net clear opening shall be 5.7 sq.ft., minimum net clear width shall be 20", minimum net clear height shall be 24" and sill height shall not exceed 24" above floor. Hardware Finish shall be: white, bronze. Consult window and glazing schedule below.

#### Specify windows:

**Frame:** Wood, steel, vinyl or aluminum

**Style:** Double hung, casement, awning, fixed, slider, circular or oval, quarter, half or segment

**Glazing options:** Clear Glazing, Stained Glass,

**Insulation options:** Single, Double, Triple Pane

**Options:** True divided light muntins, snap in grilles, grilles between the glass, screens

**Low-E coating:** Provides additional insulation and shielding

**Gas-Fills:** Airspace between panes of glass filled with gas to reduce the transfer of heat

**Ratings:** U value Rating (rate at which heat flows through glass), R-value, air infiltration and shading coefficients

**Specify:** Size, Description, Specification (manufacturer and model number)

### 08 51 66 - Metal Window Screens

Exterior frames shall be a white, bronze anodized, silver metal finish with joints welded and sanded smooth. Wire mesh shall be stainless steel, fiberglass. Screens will be installed for easy removal as recommended by manufacturer's guidelines.

### 08 60 00 - Roof Windows and Skylights

Install metal or vinyl, single or double pane fixed or operable skylights. Provide and install necessary hardware to operate skylights. Consult window and glazing schedule below. Specify: manufacturer, style, sizes.

**Frame:** Wood, steel, vinyl or aluminum

**Style:** Operable or fixed

**Glazing options:** Clear Glazing, Stained Glass, Leaded Glass

**Insulation options:** Single or Double Pane

**Options:** True divided light muntins, snap in grilles, grilles between the glass, screens

**Low- E coating:** Provides additional insulation and shielding

**Gas-Fills:** Airspace between panes of glass filled with gas to reduce the transfer of heat

**Ratings:** U value Rating (rate at which heat flows through glass), R-value, air infiltration and shading coefficients

**Specify:** Size, Description, Specification (manufacturer and model number)

**08 71 00 - Door Hardware**

Finish hardware shall include keyed **deadbolt** locksets at all exterior doors. Interior doors shall be a combination of privacy and passage locks. Hardware shall be as per allowance. Specify in chart below the type of hardware for each door. All exterior locksets shall be keyed the same.

**Type:** Knob or lever door hardware.

**Finish:** Brushed or polish brass, chrome, etc.

**Door Hardware:** Passage Set, Privacy Lockset, Dead Bolt, Dummy Knobs with Ball Catches

**Specify:** Manufacture, type and style

**Interior and Exterior Door Schedule**

No	Qty	Size	Description	Specification/Door Hardware
0	4	ex: 2'-0" w x 6'-8"h	Masonite, six panel, hollow core	Peachtree Doors 20S68, Passage
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

**08 71 01 - Door Hardware - Thresholds**

Provide and install **bronze anodized, brushed aluminum, wood** thresholds and appropriate door sweeps at exterior doors.

**08 75 00 - Window Hardware**

Finish hardware shall include locksets at all exterior windows. Install as specified by manufacturer.

**Type:** Lock, twist out casement

**Finish:** Brushed or polish brass, chrome, etc.

**Specify:** Manufacture, type and style

**08 80 00 - Glazing**

Install glazing as specified on construction documents per manufacturers recommendations.

**Glazing One****Glazing:** Clear, Mirrored, Wired, Plastic, Tempered, Insulated, etc.**Shape:** Square, rectangular, hexagonal, 45 degree block**Specify:** Size, Description, Specification (manufacturer and model number) Pre-assembled, vinyl or aluminum frame windows.**Glazing Two****Glazing:** Clear, Mirrored, Wired, Plastic, Tempered, Insulated, etc.**Shape:** Square, rectangular, hexagonal, 45 degree block**Specify:** Size, Description, Specification (manufacturer and model number) Pre-assembled, vinyl or aluminum frame windows.**Window and Glazing Schedule**

No	Qty	Size	Description	Specification
0	3	ex: 2'-0"w x 6'-2"h	Wood, double hung, clear insulated glass, window unit with casing, grills, screens	Pella, Model No. 24S45 - Low E glass
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

**08 83 00 - Mirrors**

Install mirrors as noted in construction documents. Install with silicon sealant and spacer strips per manufacturers recommendations.

**Mirror One****Size of mirror:** 2'-0" x 4'-0", 2'-6" x 5'-0"**Shape:** Square, rectangular, hexagonal**Edge:** Polished, Beveled, Standard**Specify:** Size, Description, Specification (manufacturer and model number) Frameless, Pre-assembled, wood or aluminum frame.**Mirror Two****Size of mirror:** 2'-0" x 4'-0", 2'-6" x 5'-0"**Shape:** Square, rectangular, hexagonal**Edge:** Polished, Beveled, Standard**Specify:** Size, Description, Specification (manufacturer and model number) Frameless, Pre-assembled, wood or aluminum frame.

## **DIVISION 09 00 00. FINISHES**

### **09 00 00 - Finishes**

Contractor shall review construction documents and provide labor and materials pertaining to the finishes as required in said documents and as specified herein, while complying with all applicable building codes.

### **09 29 00 - Gypsum Board**

Gypsum board must be held firmly against the framing while fastening to avoid later movement of gypsum board on the shank of the nails or screws.

**Nails or Screws:** Nails and screws shall be a minimum 3/8" and a maximum of 1/2" from edges and ends of wallboard and the heads shall be seated slightly below the surface without breaking the paper. Nails shall be spaced not to exceed 7" on ceilings or 8" on sidewalls. Head diameter shall be a nominal 1/4" with the length 1 1/2" to penetrate a minimum of 7/8" into nailing member. Nails shall meet the minimum requirements of ASTM C514 and may include coated, etched treated or annular ring shanks to improve withdrawal resistance. Drywall screws shall meet the minimum requirements of ASTM C1002. Bugle-shaped heads shall be 0.315" in nominal diameter and contain a No. 2 Phillips driving recess. Type "W" screws are designed for easier fastening in wood.

**Joints:** At gypsum wallboard joints install a 2" strong, cross threaded tape with a cross tensile strength of 45 lbs per lineal inch. Press a strong, good quality tape firmly onto sheathing joints and around openings, imbedded in joint cement. At corners and angles, install metal corner beads as specified by manufacturer. If corners are rounded, install corner reinforcement as required. Spread gypsum wallboard mud at all tape joints, corner beads, nails and screw penetrations and where a smooth surface is needed. Apply second coat of wallboard mud after a minimum 24 hours. After drying (minimum 48 hours), sand all joints and other areas to a smooth consistent surface.

**Interior Walls:** Sheath walls and ceilings with 1/2" gypsum wallboard, either vertically with long edges parallel to framing, or horizontally with long edges at right angles to framing members. Apply one layer of 1/2" x 4' x , 8', 9', 10' or 12' foot lengths to all wall surfaces. Offset joints between layers at least 10".

**Ceilings:** Apply a single layer of 1/2" gypsum wallboard across the supports and fasten with nails or screws. Offset joints between layers at least 10". Nails are spaced 6" on center (OC) with 1 1/4" heads. Screws are spaced 12" on center (OC). Ceiling finish shall be smooth, stippled, blown, etc.

**Fire-Rated Gypsum Wallboard:** In garages, around gas water heaters and as required by applicable building codes, install 5/8" Type "X" fire-rated gypsum wallboard. Nails shall be 1 3/4" long, spaced a maximum of 4" on center (OC) around perimeter and 8" on center (OC) in the field of the board.

**Water Resistant Gypsum Wallboard:** Around showers, tubs, whirlpools, or as required by applicable building codes, install 1/2" water resistant drywall.

### **09 30 00 - Tiling**

Tile, Marble, Slate shall be appropriate grade and finish in accordance with applicable building codes and owner requirements. Contractor shall properly clean all surfaces to be covered and install appropriate underlayment per manufacturers recommendations. Installation should be carried out with a slow setting cement adhesive, well mixed per manufacturer recommendations. Grouting of control joints can be executed either with cement based grout or with resin based organic materials.

**Floors:** Contractor shall properly clean all surfaces to be covered and install appropriate underlayment per manufacturers recommendations.

**Floor One:** Floors shall be installed with a 00"wide x 00"long ceramic tile as shown on construction documents.

Underlayment: Cementitious, Self-leveling, etc

Specify Tile: Manufacturer, series, color and size

Specify Grout: Manufacturer, color and joint size

**Floor Two:** Floors shall be installed with a 00"wide x 00"long ceramic tile as shown on construction documents.

Underlayment: Cementitious, Self-leveling, etc

Specify Tile: Manufacturer, series, color and size

Specify Grout: Manufacturer, color and joint size

**Floor Three:** Floors shall be installed with a 00"wide x 00"long ceramic tile as shown on construction documents.

Underlayment: Cementitious, Self-leveling, etc

Specify Tile: Manufacturer, series, color and size

Specify Grout: Manufacturer, color and joint size

**Walls:** Contractor shall properly clean all surfaces to be covered and install appropriate underlayment per manufacturers recommendations.

**Walls One:** Walls shall be installed with a 00"wide x 00"long ceramic tile, to the height of 00"high above floor/countertop as shown on construction documents.

Specify Tile: Manufacturer, series, color and size

Specify Grout: Manufacturer, color and joint size

**Walls Two:** Walls shall be installed with a 00"wide x 00"long ceramic tile, to the height of 00"high as shown on construction documents.

Specify Tile: Manufacturer, series, color and size

Specify Grout: Manufacturer, color and joint size

**Hearth/Mantel:** Install fire-resistant marble, ceramic tile, slate, etc hearth, a minimum of 18" from fireplace and 6" each side of opening. Stone can be installed flush with the ground or built up on platform. Check local building codes for specific requirements.

Fireplace One: Manufacturer, type, series, color and size

Fireplace Two: Manufacturer, type, series, color and size

Fireplace Three: Manufacturer, type, series, color and size

**Thresholds:** Install marble, slate, etc thresholds between room/room at door openings.

Specify Tile: Manufacturer, type, series, color and size

**Window Stool:** Install marble, slate, etc window stools at the following locations: room names or numbers

Specify Tile: Manufacturer, type, series, color and size

## 09 50 00 - Ceilings

Ceilings shall have a smooth, stippled, blown, etc. finish. See Construction Documents for information on the construction of the Ceiling details.

**Tray Ceiling** - Name rooms to be installed

**Pan Ceiling** - Name rooms to be installed

**Vaulted Ceiling** - Name rooms to be installed

**Coffered Ceiling** - Name rooms to be installed

**Wood Paneling** - Stain or paint as required. - Name rooms to be installed

### 09 60 00 - Flooring

Contractor shall properly clean all surfaces to be covered and install appropriate underlayment or preparation per manufacturers recommendations. See above for tile and stone floor specifications.

### 09 64 00 - Wood Flooring

Install a single layer of 15 lb felt vapor barrier between sub-floor decking and hardwood floors. When installing hardwoods over a concrete slab install a layer of 3/4" plywood as underlayment over 6 mil polyethylene. Along walls and permanent objects, install a 1" quarter round molding to conceal expansion area.

**Pre-finished** : Wood flooring shall be tongue and groove construction and true square edged for a flat smooth surface. Wood flooring can be fastened with appropriate nails, staples or glue. Check specific manufacturer's recommendations.

**Flooring:** strip, plank, custom wood tile or parquet

**Wood species:** Oak, Beech, Maple, Pine, Cherry, etc.

**Surface color/finish:** Natural, mahogany, cherry, etc.

**Specify:** Manufacturer, description, color and item number

**Unfinished:** Wood flooring shall be tongue and groove construction, 3/8"thick x 2 1/4"wide, random lengths with true square edge for a flat smooth surface. Adhesive shall be used for pre-finished 3/8" plank, strip and parquet (5/16" and 3/4"). Adhesive for end fastening 3/4" random planks shall be as recommend by manufacturer. Use 2" barbed fasteners of approved staples for installing plank or strip flooring. After a minimum of 48 hours, sand and finish, using a stain coat and a minimum three coats of polyurethane.

**Flooring:** strip, plank, custom wood tile or parquet

**Wood species:** Oak, Beech, Maple, Pine, Cherry, etc.

**Surface color/finish:** Natural, mahogany, cherry, etc.

**Finish:** glossy, semi-gloss, matte, etc.

**Specify:** Size, wood, stain and finish

### 09 65 00 - Resilient Flooring

Install appropriate underlayment for all surfaces as described below or required by manufacturer. Properly clean and fill all surfaces leaving installation area smooth and free of foreign material. Cracks and expansion joints should be smooth and level. Wood sub-floors must be solid, free from movement and have a minimum of 18" of well ventilated air space below the structure. Follow pattern arrows on back of vinyl flooring for the direction of installation.

**Sheet Vinyl:** Install 6'-0"wide, 9'-0"wide or 12'-0"wide sheet vinyl as indicated per construction documents. Use appropriate adhesive material or installation method guidelines per manufacturers recommendations.

**Specify:** Manufacturer, description, color and item number

**Square Vinyl:** Install 12"wide x 12"long vinyl tiles as indicated per construction documents. Use appropriate adhesive material or installation method guidelines per manufacturers recommendations.

**Specify:** Manufacturer, description, color and item number

## 09 68 00 - Carpeting

Inspect all sub-flooring to insure a clean, dry and secure surface before installation. If filling compound is needed for floor leveling, a latex based sub-floor filler will be used.

**Padding:** Cushion padding shall be 1/2" thick, residential grade installed in the longest possible lengths. Cushion seams shall not be located directly under carpet seams, and when possible shall be oriented at right angles to carpet seams. All padding shall be smooth, flat and secure with seams tightly butted and taped.

**Installation:** Carpet shall be installed to produce a tight, smooth, secure and uniform surface as indicated per construction documents and finish schedules. In areas where more than one width of carpet is required, precut the carpet to the proper length allowing for flash up at walls and through doorways. Position first two pieces of carpet, and cut seams by row cutting and trace cutting for the second piece in a manner that will produce a tight, uniform seam requiring a minimum amount of adjusting with a knee kicker.

**Seams:** Carpet seams shall be secured by a non-releasable backed low profile hot melt seaming tape per carpet manufacturers recommendations.

**Specify Carpet:** [Manufacturer, description, color and item number](#)

**Specify Pad:** [Manufacturer, type, density](#)

## 09 70 00 - Wall Finishes

Walls shall be clean and free of defects such as cracks or unfinished joints prior to installation of wall finishes. If mildew is evident, mildew must be removed and surface properly treated to inhibit further mildew growth.

## 09 72 23 - Wallpapering

Install wallcoverings in areas as indicated on Finish Schedule. Install appropriate primer on all surfaces before installation. Butt-joint all seams without overlapping. Wrap wallcoverings 6" around inside and outside corners to avoid bridging or spanning. Use appropriate vinyl adhesive or paste as suggested by manufacturer. After installation, remove all excess paste from wallcovering surface with a damp sponge. If applying a textured sub-paper that will be painted, seam gaps should be filled with a caulking compound prior to finishing.

**Specify Wallcovering 1:** [Manufacturer, description, color, finish and item number](#)

**Specify Wallcovering 2:** [Manufacturer, description, color, finish and item number](#)

**Specify Wallcovering 3:** [Manufacturer, description, color, finish and item number](#)

**Specify Wallcovering 4:** [Manufacturer, description, color, finish and item number](#)

**Specify Wallcovering 5:** [Manufacturer, description, color, finish and item number](#)

## 09 74 00 - Interior Paneling

Install [wood or vinyl](#) paneling in areas as indicated on Finish Schedule. Butt-joint all seams without overlapping. Wood species and grain shall match and be free of defects. Apply paneling over gypsum wallboard.

**Style:** [Tongue and groove, pre-fabricated panel, slat finish, board and batten, sheet paneling](#)

**Type:** [Raised Panel, Flush, etc.](#)

**Material:** [Redwood, Fir, Oak, Birch, Cedar, etc.](#)

**Specify:** [Size, Description, Specification \(manufacturer and model number\)](#)

## 09 90 00 - Painting and Coating

Prepare each surface to receive scheduled work as set forth below.

## Finish Schedule

Room	Walls	Floors	Ceiling	Additional info
<i>Ex: Kitchen</i>	<i>Paint One</i>	<i>Slate - Floor One</i>	<i>Coffered Ceiling, stained finish</i>	
Foyer				
Dining Room				
Living Room				
Family Room				
Powder				
Kitchen				
Breakfast Room				
Laundry				
Study				
Bedroom One				
Bedroom Two				
Bedroom Three				
Bath One				
Bath Two				
Master Bedroom				
Master Bath				

### 09 91 13 - Exterior Painting

All nail heads shall be set below the surface and finished smooth. If mildew is evident, the mildew must be removed and surface treated to inhibit further mildew growth. Exterior walls shall receive a primer coat and two coats of flat or semi-gloss paint. Pre-prime the [backside, edges and ends of lumber and siding](#) prior to construction. When staining, pre-prime with the same product as specified for the final coat. Sand and putty wood surface smooth before finish is applied. Surfaces shall be sanded before each finish layer is applied.

**Paint/Stain** - Prime wood surfaces including faces, edges and ends before installation. After installation, apply at least one coat of wood primer and two coats of finish paint.

**Specify Trim Paint:** [Manufacturer, description, color, finish and item number](#)

**Stain:** [Install one, two coats of stain on wood and seal with a polyurethane sealer.](#)

**Specify Trim Stain:** [Manufacturer, description, color, finish and item number](#)

### 09 91 23 - Interior Painting

All nail heads shall be set below the surface and finished smooth. Joints should be taped and covered with a suitable drywall joint compound. Sand the spackled nail heads and joint compound smooth and dust well before priming. Interior walls shall receive a primer coat and two coats of flat or semi-gloss paint. Surfaces shall be sanded before each finish layer is applied.

**Specify Wall Paint 1:** [Manufacturer, description, color, finish and item number](#)

**Specify Wall Paint 2:** [Manufacturer, description, color, finish and item number](#)

**Specify Wall Paint 3:** [Manufacturer, description, color, finish and item number](#)

### **09 93 00 - Interior Wood**

Wood surfaces shall be sanded smooth before finish is applied. Putty areas with a wood based filler where nails or other defects appear in the surface.

**Paint/Stain** - Prime wood surfaces including faces, edges and ends before installation. After installation, apply at least one coat of wood primer and two coats of finish paint. Surfaces shall be sanded before each finish layer is applied.

**Specify Trim Paint:** [Manufacturer, description, color, finish and item number](#)

**Stain and Varnish:** [Install one, two coats of stain on wood and seal with a polyurethane sealer.](#)

**Specify Trim Stain:** [Manufacturer, description, color, finish and item number](#)

### **09 97 13 - Galvanized Metal**

Before applying a finish, remove dirt, oil, grease and other loose particles. Wash with solvent. If rusted, wire brush or sand clean.

**Paint:** [Apply at least one coat of alkyd-type enamel primer and two finish coats.](#)

**Specify Paint:** [Manufacturer, description, color, finish and item number](#)

### **09 97 14 - Steel and Iron**

Remove all weld splatter. Grind all edges, projection, sharp corners and welds to a smooth, round contour. Abrasive/sand blast steel and iron surfaces. In areas where blasting is not feasible use power cleaning tool. Remove dust and sand from the surfaces after sand blasting by brushing and vacuum cleaning. Apply the prime coat as soon as possible after the preparation is complete and before the dew point is reached. All surfaces blasted and power-tooled in one day shall be coated on the same day.

**Paint:** [Apply at least one coat of alkyd-type enamel primer and two finish coats.](#)

**Specify Paint:** [Manufacturer, description, color, finish and item number](#)

### **09 97 23 - Concrete and Masonry Coatings**

Allow masonry, concrete and stucco to age at least one month before cleaning or applying a finish. Remove dirt, grease, loose particles, etc. Where efflorescence has occurred, wash with a 10% muriatic solution, rinse thoroughly with clean water and allow to thoroughly dry at least one week before painting or sealing.

**Paint:** [Apply at least one coat of primer and two finish coats.](#)

**Specify Trim Paint:** [Manufacturer, description, color, finish and item number](#)

## **DIVISION 10 00 00. SPECIALITIES**

### **10 00 00 - Specialties**

Contractor shall review construction documents and provide labor and materials pertaining to the specialties as required in said documents and as specified herein, while complying with all applicable building codes.

### **10 14 53 - Traffic Signage**

Install State and Federal D.O.T. specifications approved traffic signs. Reflective aluminum or steel traffic signs meet most State and Federal D.O.T. specifications and provide maximum safety and MUTCD

compliance. Signs to have radius corners and come with mounting holes centered top and bottom for easy installations. Exact location will be staked by the appropriate government authority. Locations will be in the proximity of the locations shown on the construction documents.

Excavate holes for the sign posts, set the steel sign posts in concrete, as shown on the construction documents. Concrete shall be finished at or slightly below ground line and care shall be taken not to splash concrete on posts. Wood posts may be set in holes with concrete provided the holes are the same size as the posts. Excavation and backfill shall be accomplished as required to complete the installation. Masonry shall be accomplished as shown on the construction documents. Mortar joints shall be finished with a round tool to close joints of cracks. Sign mounting shall be mounted as shown on the construction documents. Electrical materials shall be installed according to appropriate electrical sections.

#### **10 28 16 - Bath Accessories**

Contractor shall install [toilet paper rolls](#), [18" towel bars](#) and [soap dispensers](#) in all 1/2 baths. In full baths, add an additional [24" towel bar](#). Install toilet paper rolls [15"](#) Above Finished Floor (AFF).

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

#### **10 28 19 - Tub and Shower Doors**

Shower doors shall be constructed of tempered safety glass with all exposed edges polished and rounded. Swinging doors shall have vinyl seal at both the latch jamb and hinge jamb side of door.

**Location(s):** [Master Bath, Bath Two, Bath Three, etc.](#)

**Glass:** [Clear, etched, obscure, etc.](#)

**Frame:** [Aluminum, chrome, gold finish](#)

**Door:** [Hinged, folding, sliding](#)

**Specify:** [Manufacturer, description, finish, opening size, item number and number of each](#)

**Location(s):** [Bath Four, etc.](#)

**Glass:** [Clear, etched, obscure, etc.](#)

**Frame:** [Aluminum, chrome, gold finish](#)

**Door:** [Hinged, folding, sliding](#)

**Specify:** [Manufacturer, description, finish, opening size, item number and number of each](#)

**Location(s):** [Guest Bath, etc.](#)

**Glass:** [Clear, etched, obscure, etc.](#)

**Frame:** [Aluminum, chrome, gold finish](#)

**Door:** [Hinged, folding, sliding](#)

**Specify:** [Manufacturer, description, finish, opening size, item number and number of each](#)

#### **10 28 23 - Laundry Accessories**

Contractor shall install [Built in Ironing Board](#), [Shelving](#), [Clothes Drying Rack](#) in Laundry Room. The design drawings shall locate the equipment and identify any wall support requirements associated with installation.

**Specify:** [Manufacturer, description, finish, item number and number of each](#)

#### **10 30 00 - Fireplaces and Stoves**

Pre-fabricated fireplaces shall be U.L. approved and installed per manufacturer's specifications. Install pre-fabricated fireplace unit, as specified below:

- Manufacturer:** name of manufacturer
- Model Number:** 000
- Dimension of fireplace:** 00"wide x 00"deep x 00"high
- Dimension of opening:** 00"wide x 00"deep x 00"high
- Height of opening:** 00" high

**10 31 13 - Manufactured Fireplace Chimneys**

Chimneys for prefabricated fireplace units shall be lined with 10" diameter insulated metal flue as specified by manufacturer. Number of flue sections: 00 Exterior finish and chimney details shall be as noted in construction documents.

**Chimney and Flue** - Top of Chimney shall be located 2'-0" taller in elevation than any point within 10'-0". Flues shall be U.L. approved and installed as per manufacturers instructions. If multiple flues are used in the same chimney chase, an unequal projection or height of flue above the stack shall be used to safeguard against smoke exiting one flue and entering another.

**10 55 00 - Postal Specialties**

Contractor shall install standard postal mailbox. Metal/Vinyl/Wood Mailbox to install as per postal requirements with street number and road visible and easy to read. Install mailbox on wood/metal post.

- Mailbox:** Manufacturer, Color, Finish, Size
- Mailbox Post:** Manufacturer, Color, Finish

**10 57 00 - Wardrobe and Closet Specialties**

Install shelving as indicated on construction documents for all closets, storage areas and pantries. Metal shelving shall be fabricated of heavy-gauge vinyl coated welded steel rod with deck rod spacing having a maximum distance of 1". Provide supports every 3'-6" maximum on center (OC)

- Specify:** Manufacturer, description, finish, opening size and item number
- Specify:** Manufacturer, description, finish, opening size and item number
- Specify:** Manufacturer, description, finish, opening size and item number
- Specify:** Manufacturer, description, finish, opening size and item number
- Specify:** Manufacturer, description, finish, opening size and item number
- Specify:** Manufacturer, description, finish, opening size and item number

**DIVISION 11 00 00. EQUIPMENT**

**11 00 00 - Equipment**

Contractor shall review construction documents and provide labor and materials pertaining to the equipment as required in said documents and as specified herein, while complying with all applicable building codes.

**11 31 00 - Residential Appliances**

Install electrical or gas appliances as shown on construction documents, including all venting and supply requirements per manufacturers recommendations. See electrical specifications for wiring information.

**Appliance Schedule**

No	Appliance	Manufacturer	Item Number	Color
0	Range	GE	WS-2014583W	Black with stainless top
1	Range			

2	Oven			
3	Cooktop			
4	Vent Hood			
5	Microwave			
6	Dishwasher			
7	Disposal			
8	Refrigerator			
9	Washer			
10	Dryer			
11	Ice Maker			
12	Trash Compactor			
13	Outdoor Range			
14	Convection Oven			
15				
16				
17				
18				

**11 33 00 - Retractable Stairs**

Install a [wood or metal 30"wide x 54"long x 9'-0"high](#) pull-down stair system as shown on construction documents. Trim opening with appropriate window casing to match interior trim. Confirm size of opening meets local building codes for attic access. Provide appropriate pull string or chain for access.

**DIVISION 12 00 00. FURNISHINGS**

**12 00 00 - Furnishings**

All furnishings provided by the Contractor shall be incorporated in the Designer's Contract Documents or Construction Documents. Unless specifically directed otherwise by the Project Manager, the Designer shall incorporate the following furnishings in the Contract Documents, to be provided by Contractor

**12 20 00 - Window Treatments**

Provide and install window treatments as indicated per construction documents. Install all window treatments after the work of other trades, including painting is done.

**12 21 00 - Window Blinds**

Install blinds level and in accordance with manufacturer's recommended installation instructions as approved. Install blinds to the inside of the window frames. Include all hardware brackets, anchors, fasteners and accessories for a complete finished installation.

- Venetian Blinds** - [Specify manufacturer, color, finish](#)
- Horizontal Blinds**- [Specify manufacturer, color, finish](#)
- Vertical Blinds** - [Specify manufacturer, color, finish](#)

**12 22 00 - Curtain and Drapes**

Provide complete assemblies produced by one manufacturer for each type required including hardware, accessory items, mounting brackets and fastenings. Examine support work for tracks in presence of Installer. Correct conditions that would result in improper operation of curtain units. Comply with manufacturer's recommended installation procedures for indicated installation conditions and as indicated per construction documents.

**Fabric** - Specify manufacturer, color, detailing  
**Backing** - vinyl, fabric, lightproof  
**Mounting Brackets or Rods** - Specify manufacturer, color, detailing  
**Fastenings** - Rings, drapery hooks, (specify finish)

### 12 23 00 - Interior Shutters

Install shutters level and in accordance with manufacturer's recommended installation instructions as approved. Install shutters to the inside of the window frames. Include all hardware brackets, anchors, fasteners and accessories for a complete finished installation.

**Wood**- Specify manufacturer, color, finish, panels  
**Vinyl**- Specify manufacturer, color, finish, panels

### 12 24 00 - Window Shades

Install shades level and in accordance with manufacturer's recommended installation instructions as approved. Install shades to the inside of the window frames. Include all hardware brackets, anchors, fasteners and accessories for a complete finished installation.

**Roman Shades**- Specify manufacturer, color, finish  
**Cellular Shades** - Specify manufacturer, color, finish  
**Roller Shades**- Specify manufacturer, color, finish  
**Pleated Shades**- Specify manufacturer, color, finish

### 12 30 00 - Casework

Install **pre-fabricated** or **custom** cabinetry as specified in construction documents. Dimensions of base cabinets shall be: **24"deep x 36"high**. Dimensions of overhead cabinets shall be: **12"deep x 42"high**. Provide concealed or decorative hinges and cabinet hardware as specified in finish schedules.

**Pre-fabricated:** Specify door and drawer locations, rotating storage, flip out drawer fronts, wine racks, etc.

**Doors:** Flush, raised panel, European, etc.  
**Finish:** Natural, Pickled, Cherry, Mahogany, etc.  
**Wood:** Birch, Oak, Pine, Cherry, Alder, etc.  
**Specify Kitchen:** Manufacturer, item number, color  
**Specify Powder:** Manufacturer, item number, color  
**Specify Master Bath:** Manufacturer, item number, color  
**Specify Bath Two:** Manufacturer, item number, color  
**Specify Bath Three:** Manufacturer, item number, color  
**Specify Bath Four:** Manufacturer, item number, color  
**Specify Bath Five:** Manufacturer, item number, color  
**Specify Laundry:** Manufacturer, item number, color

**Custom:** See construction documents for custom cabinetry details and specifications.

**Doors:** Flush, raised panel, European, etc.  
**Finish:** Natural, Pickled, Cherry, Mahogany, etc.  
**Wood:** Birch, Oak, Pine, Cherry, Alder, etc.  
**Specify Kitchen:** Wood and finish  
**Specify Powder:** Wood and finish  
**Specify Master Bath:** Wood and finish

**Specify Bath Two:** Wood and finish  
**Specify Bath Three:** Wood and finish  
**Specify Bath Four:** Wood and finish  
**Specify Bath Five:** Wood and finish  
**Specify Laundry:** Wood and finish

### **12 36 00 - Countertops**

Plastic laminate, Corian, Solid Surface, Stainless Steel, Stone, Ceramic Tile counter tops shall be provided and installed per construction documents and finish schedules. Counter surfaces shall be glued onto 3/4" plywood or appropriate substrate as recommended by manufacturer. Edges shall be installed per construction documents and finish schedules. Provide minimum 4" backsplash between counter and wall. See tile section for further specifications pertaining to ceramic or stone counter-tops.

**Counter-Top Options:** Plastic laminate, Corian, Solid Surface, Stainless Steel, Stone, Ceramic Tile

**Counter Top 1:** Location, Manufacturer, item number, color

**Edge:** Material, Shape, Finish

**Counter Top 2:** Location, Manufacturer, item number, color

**Edge:** Material, Shape, Finish

**Counter Top 3:** Location, Manufacturer, item number, color

**Edge:** Material, Shape, Finish

**Counter Top 4:** Location, Manufacturer, item number, color

**Edge:** Material, Shape, Finish

**Counter Top 5:** Location, Manufacturer, item number, color

**Edge:** Material, Shape, Finish

### **12 93 00 - Site Furnishings**

Provide and install ornamental details as specified in construction documents. Weather vanes, benches, sundials, clocks, garden ornaments, etc.

## **DIVISION 13 00 00. SPECIAL CONSTRUCTION**

### **13 00 00 - Special Construction**

Contractor shall review construction documents and provide labor and materials pertaining to the specialty systems as required in said documents and as specified herein, while complying with all applicable building codes.

### **13 11 00 - Swimming Pools**

Install a fully operational in-ground pool system consisting of plumbing, gunite concrete shell, valves, filter and heating systems, electric controls, timers and decking. Installation shall comply with all local, regional, state and national code requirements, including but not limited to permits, inspections, engineering design, pumps, filters, water supply, waste water, pressure tests, water heating equipment, electrical systems, pool fittings, structural foundations and pool safety equipment and signage.

**Excavation** - Excavate pool area and provide appropriate bearing surface on undisturbed soil or properly compacted base. Soil to have minimum bearing capacity of 2000 psf. Remove excess dirt and fill to provide for proper elevation and drainage of pool decking and surrounding area away from pool.

**Piping Installation** - Piping and plumbing shall be provided for proper filtering, recirculation and heating systems. Cutting and gluing of PVC pipe shall be done only with appropriate equipment and methods recommended by manufacturers of PVC solvent cement and PVC pipe.

**Steel Reinforcement** - Provide and install appropriate # 3 rebar steel reinforcing configured in a 12" x 12" grid covering all pool surfaces.

**Concrete Shell** - Monolithic concrete shell shall be constructed with a 5" thick pneumatically applied Guniting System using 3500 psi concrete. Provide a thickened edge at the top of the pool wall for transition to the decking surface.

**Tile & Coping** - Install [ceramic tile](#) trim at water line and [brick or stone](#) coping at the top edge of the pool wall.

**Decking** - Concrete decking shall consist of 4" thick 3000 psi concrete with a "cool-crete" or similar temperature sensitive surface material. Concrete decking shall include steel reinforcing and be placed on a compacted sand base with a minimum soil bearing of 2000 psf. Concrete decking shall be sloped away from pool a minimum ¼" per foot. Provide appropriate expansion joint between pool and decking surfaces.

**Plastering** - After the pool deck has been poured, the pool shell shall be thoroughly cleaned and an appropriate plaster pool finish surface shall be applied to produce a smooth finish.

**Equipment** - Provide appropriate pump, filter and heater and control systems to process the pool water a minimum of [twice](#) every 24 hours.

**Testing & Operation** - Users shall exercise extreme caution when diving into pool. All areas of pool less than 8' deep shall be considered "Not for Diving".

### **13 12 00 - Fountains**

Install pre-engineered fountains or pools as specified by manufacturer. Provide necessary plumbing, electrical, and drainage for fountains.

### **13 34 00 - Fabricated Engineered Structures**

Furnish all structural design data, fabrication and erection of a pre-engineered metal building, including all primary and secondary structural framing members, connection bolts, covering, skylights, access hatches, windows, doors, flashing, fasteners, closures, sealer, insulation and other miscellaneous items.

All structural steel members shall be designed for those sections of the following listed codes as considered to be applicable by the building manufacturer and as related to design requirements and allowable stress. AAMA, Architectural Aluminum Manufacturers Association, AISC, Specification for the Design, Fabrication and Erection of Structural Steel for Building.

**Structural Framing:** Shop fabricate all framing members for bolted field assembly. Indicated on shop drawings all field cutting or drilling when required. Primary structural framing includes the transverse rigid frame, wing unit rafter beams and columns, canopy beams, intermediate columns, end bearings frames, endwall columns and wind bracing. Secondary structural framing includes the purlins, eave struts, flange bracing, sill support, clips and other miscellaneous structural parts. Make all field connections per manufacturer's recommendations.

**Wind Bracing:** Use diagonal rod bracing in both roof and sidewall wind columns or manufacturer's standard method. Use double roof purlins interconnected by diaphragms between the rigid frames at all points of attachment of diagonal roof bracing. Fixed base corner columns or other suitable designed bracing may be used in lieu of sidewall rod bracing.

**Flange Bracing:** Brace laterally the inside flange of all rigid frames so that the allowable compressive stress is adequate for any combination of loading.

**Sill Support:** Provide continuous member to which the base of the wall covering may be attached.

**Framed Openings;** Design the structural framing members for all openings for the specified design loads.

Do no erection work on the building prior to review of shop drawings. Provide temporary bracing for erection and wind loads to maintain structural plumb and in alignment until completion or erection. Set column base plates per manufacturer's specifications.

Install roof panel continuous from ridge to eave for buildings 60 feet wide or less. Where endlaps are required, lap a minimum of 3 inches at a roof purlin. Install wall panels continuous from 1 3/4 inches below the column base to the roof line. Where the required length would exceed 32 feet; splice at a girt. Square cut all panels at the roof line. Before securing, seal all laps of roof panels with a continuous ribbon of tape sealer. Secure roof and wall panels to intermediate framing members with sheet metal screws at a maximum spacing of 12 inches, 24 inches at endlaps roof panels. On standing seam roof panels attach with manufacturer's standard method. Stitch sidelaps of roof panel through the high rib with sheet metal screws at a maximum 20 inch spacing. Install insulated wall unit continuous from 1 3/4 inches below the column base to roof line. Where panel length exceeds 24 feet splice at a girt. Flash the splice for complete weather tightness. Prior to beginning panel installation, align structural framing true, plumb and square. Accurately locate all accessory openings. Pre-drill panels and fasten to the sill support and to the eave or rake framing with sheet metal screws. Attach at intermediate framing with structural blind rivets or acceptable alternate. Exercise care to ensure that panels are erected true and square and that the module is accurately maintained. Adjust for squareness of module when indented side joint in the interior face does not deviate more that 1/8 inch from parallel. Following complete erection of wall panels, place a 1 inch wide adhesive-backed accent tape at each interior joint.

Install door frames, doors, overhead doors, windows and glass and other accessories per manufacturer's instructions. Seal wall and roof accessories watertight and weather tight with sealant.

Rigidly support and secure components. Joint lengths with formed seal sealed watertight. Flash and seal gutters to downspouts. Apply bituminous paint on surfaces in contact with cementitious materials. Slope gutters minimum 1/8 inch per foot.

## **DIVISION 15 00 00. MECHANICAL**

### **15 00 00 - Mechanical**

Contractor shall review construction documents and provide labor and materials pertaining to the mechanical systems as required in said documents and as specified herein, while complying with all applicable building codes.

## **DIVISION 21 00 00. FIRE SUPPRESSION**

### **21 00 00 - Fire Suppression**

The work of this section consists of a fire protection system which may include one or all of the following:

[A complete automatic sprinkler system as by National Fire Protection Association \(NFPA\) Standard 13.](#)

[A complete Type I standpipe system as defined by NFPA 14.](#)

[A complete fire pump installation with pressure maintenance pump as defined by NFPA 20.](#)

Provide all piping, valves, backflow preventer, sprinklers, alarm devices, fire department connections, fire pump and controller, pressure maintenance pump and controller, and other material necessary to provide a complete fire protection system to protect the specified building areas in accordance with design requirements.

Each item of equipment shall be capable of performing its function over an extended period of time with a minimum of attention and maintenance. All equipment shall be constructed using new materials designed and built in accordance with the best practices of the industry. Each item of equipment shall be listed on the Underwriters Laboratories (UL) Fire Protection Equipment List or Factory Mutual (FM) Approval Guide. Each major item of equipment shall bear the manufacturer's name or trademark; serial number; and UL or FM label.

Sprinkler system shall be furnished with a spare sprinkler cabinet, wrench, and 12 spare sprinklers of each type and rating as are in the building.

A complete care and maintenance catalog is to be furnished at the valve location, enclosed in a watertight container, and attached to the riser. Verbal instructions for operation, care and maintenance of the sprinkler installation are to be given to the Owner's maintenance representative by the Contractor's representative upon completion and/or activation of the system.

Protection: All exposed piping devices (non-brass and chrome) are to be painted with two coats of **bright red paint**. Painting to conform to the protective coating section of the specifications.

In addition to any tests which might be required by approving authorities, the entire sprinkler system (both wet and dry) shall be hydrostatically tested in accordance with NFPA 13. All dry system piping shall also be air tested in accordance with NFPA 13. All underground piping shall be hydrostatically tested in accordance with NFPA 24. Flow tests shall be performed at each test connection to test all alarm devices. If leaks develop, they shall be repaired at the Contractor's expense.

System design and installation shall be supervised by an experienced sprinkler system technician or fire protection engineer with not less than **five (5)** years experience with sprinkler systems alarm systems. Shop drawings shall be prepared and signed by a NICET Level III or IV certified engineering technician or a registered fire protection engineer. The signature of the technician or engineer constitutes an affidavit that the statements, representations, and information presented in the submittal constitute a complete operational system conforming with applicable state codes and recognized engineering practices. All field installation work shall be continuously supervised by a NICET Level II or III sprinkler system technician.

**Five (5)** copies of the manufacturers' operating manuals and maintenance manuals shall be supplied to the within **fifteen (15)** days of substantial completion.

**Piping** - Provide and install all piping, approved shop drawings and hydraulic calculations in accordance with all the applicable standards. Piping shall run concealed in areas with **drop ceilings/finished ceiling**.

Installation of all piping shall be in coordination with duct, light fixture, and any other work that may obstruct sprinklers. All piping exposed installed outside, or otherwise exposed to weather, shall be externally galvanized.

Connection shall be made to the on-site water system. The connection between system piping and underground piping shall be made with a cast iron flanged piece, properly fastened. The backflow preventer shall be listed by UL for fire protection use.

**Valves** - All valves controlling water supply for sprinklers shall be readily accessible for use by emergency and maintenance personnel. All valves on connections to water supply to sprinklers shall be UL listed **butterfly type** indicating valves except for the following which shall be O.S.& Y type:

All indicating valves on the supply side of the backflow preventer.

The indicating valve immediately adjacent to the backflow preventer on the system side.

All indicating valves on the suction side of the fire pump.

Check valves 2-1/2 inches and larger shall be UL listed iron body swing check with cast brass hinge, rod, and brass faced discs. Valves shall be suitable for 175 psi working pressure.

Check valves 2 inches and smaller shall be UL listed brass body and all brass fitted. Valves shall be suitable for 175 psi working pressure.

Install appropriate globe valves, ball valves, test/drain valves, post indicator valves, etc. as required by the specified fire suppression system.

**Accessories** - All hanger assemblies shall be listed by UL. No sprinkler piping is to be supported from any mechanical or electrical devices and/or equipment (ducts, lights, etc.). No chains, wire or perforated band iron will be permitted for hangers. Hanger assemblies installed outside, or otherwise exposed to weather, shall be externally galvanized.

Install iron pipe sleeves of ample diameter at all points where pipes cut beams or floors or walls, so sized and installed that sprinkler pipes will not bend.

Install all other accessories and product for a complete and useable fire suppression system

**Sprinklers** - Sprinklers shall be listed by UL, only new sprinklers shall be used. Any sprinkler that incurs damage, is painted, or is sprayed with any fire retardant or obstructive material shall be replaced. Sprinklers shall be properly coordinated with other work including duct and electric fixture installation. The correct type of sprinkler head shall be used in every location.

Sprinklers that may be subject to mechanical damage due to their location (under stairwells, low hanging sprinklers in corridors, storage rooms, under ducts, etc.) shall be provided with guards listed by UL for the model and type of sprinkler used.

Sprinklers under open grating shall be provided with approved shields.

**Fire Department Connections** - Each fire department connection shall be the flush type. Freestanding type fire department connections shall only be installed when approved by UMCP/DAEC and shall be located a minimum of 40 feet from the building. Each fire department connection shall have two (2) 2-1/2 inch inlets with threads conforming to the American National Fire Hose Connection Screw Thread as defined in NFPA 1963, equipped with UL listed screw caps with pin lugs and chains. The fire department connection shall be labeled "AUTOMATIC SPRINKLER" with raised letters at least one inch in size cast on plate. The fire department connections shall be not less than two feet and not more than 3 feet 6 inches in elevation, measured from the ground level to the center line of the inlets. Two fire department connections are required when two or more risers are provided.

**Alarm Check Valve** - An approved alarm check valve (Reliable Model E or equivalent) with all the required trim shall be installed as indicated on the contract drawings. All equipment shall be located and installed so that it is accessible for inspection, removal, and repair and shall be substantially supported.

A retarding device shall be installed with valves provided to permit repair or removal without shutting off the water supply to sprinklers. Valves shall be arranged so that they are sealed in the open position. A valve and bypass line shall be installed in order to test the alarm devices at the alarm check valve. All valves shall be identified with appropriate signs. All drainage shall be arranged to the main drain.

An approved outside water motor gong with guard shall be provided (Reliable Model C or equivalent). The water motor gong shall be located at the fire department connection. The water motor gong shall be provided with sufficient sized piping to cause a strong signal with one test valve open and flowing. The water motor gong drain shall be piped to a suitable drain or outside to grade level. The water motor gong shall be provided with a standard sign stating "SPRINKLER FIRE ALARM - CALL THE FIRE

DEPARTMENT". The line to the water motor gong shall be provided with a sign stating, "ALARM LINE" or "WATER MOTOR GONG LINE" affixed to the pipe near the alarm check valve.

The top of the retard device or alarm line shall be fitted with an approved pressure switch. Conductors shall be provided under the electric division to provide fire alarm and annunciation. Activation of the sprinkler system by one sprinkler or equivalent shall cause an alarm signal on the fire alarm system to activate as "MAIN WATER FLOW".

## **DIVISION 22 00 00. PLUMBING**

### **22 00 00 - Plumbing**

Plumbing shall be a fully operational system of hot and cold water. Provide and install all piping, soil, vents, drains, sewage removal and water supply systems to connect with appropriate water and sewage systems. Provide and install appropriate insulation around piping. All permits and inspections are to be obtained by contractor as required by local building codes and the Uniform Plumbing Code.

**Sewer and Waste Piping** - Drainage system shall be [Schedule 40 PVC pipe, or cast iron](#). All connections shall have [PVC cement or appropriate joint compound](#) and assembled tight for no leakage. Condensate drains shall be constructed of Schedule 40 PVC. Valves shall be Milwaukee Brand or equal. Building sewer shall be [vitrified clay pipe or approved Schedule 40 PVC pipe](#). Connection to public sewer system shall comply with all local requirements. Caulk joints or provide neoprene gaskets for all sewer lines. Pitch shall be a minimum 1/8" per foot for soil lines larger than 3" diameter and a minimum of 1/4" per foot for soil lines 3" diameter or less. Insulate all interior drain/waste piping with batt insulation for sound attenuation.

Clay pipes may be used for decorative drainage in yards.

**Water Pipes** - From public water line, install [Type "L" or "K" 1.5" \(minimum\) copper pipes](#), located below frost line. From the meter to the building, install 1.5" supply water lines. Use 1/2", 3/4" minimum lines from supply lines to each plumbing fixture as required. At water heaters and hose bibs install a minimum 3/4" pipe. From water heater install 3/4"-1" pipe to each room with branches to fixtures as described above. Fittings shall be wrought copper, soldered with 95-5 solder and suitable flux. Use polished chrome adjustable brass P-traps with wall escutcheons at all exposed locations.

Provide shut-off valves at sinks, toilets, water heater and other fixtures as required. Test all pipes under [100 lbs](#) pressure per building code requirements.

**Waste Drainage** - Install sewage clean-out at the end of each horizontal drainage run and every [100](#) feet per building code requirements. Vents shall be installed throughout plumbing connections and connected with the vertical stacks and vented through the roof. Check with local building code officials for specific venting requirements.

**Water Heater** - Install [one, two 80 gallon electric, gas](#) water heater(s) per construction documents. Water heater(s) shall have appropriate safety valves, back flow preventers, pressure relief valves and drain assemblies. [Install Type "X" fire-rated gypsum wallboard surrounding gas water heaters](#). Follow manufacturer recommendations and building code requirements for installation and use

**Specify:** [gas, electrical, oil burning](#)

**Specify Powder:** [Manufacturer, item number](#)

**Optional Plumbing** - If required install necessary plumbing requirements for [Septic tank and disposal system, solar water system, well and pump, etc.](#)

### **22 40 00 - Plumbing Fixtures**



level shall have a separate system. Central units for air conditioning or ventilation shall be arranged so that airflow is as direct as possible. Coordinate location of return air unit with contractor.

### **23 70 02 - Electric Heat Pump Systems**

HVAC unit(s) shall total a high efficiency 0.0 ton heat pump with electric heat and 11.0 SEER efficiency ratings. The system will contain a concrete pad for the condenser, power disconnects, condensate drains, air distribution ducts, diffusers and thermostats. Each floor level shall have a separate system.

### **23 83 00 - Radiant Heating Units**

Installer to verify field measurements are as shown on Drawings. Verify that required utilities are available, in proper location, and ready for use. Beginning of installation means installer accepts conditions.

Complete installation shall conform to appropriate local codes and shall also be in accordance with manufacturer's specification. MI copper or stainless steel sheath heating cable shall not leave heated area. Pull stranded wire (cold leads) through conduit from condulets to junction boxes. Completely bury conduit thru boxes (or pull boxes) in and fill with Delta Dry water repellent powder in accordance with manufacturer's installation instruction. Cable Spacing in Concrete: at least 30 inches apart but not to exceed 5 feet apart. Do not pinch or make sharp bends in cable.

Selection of Installation mode shall be made by the engineers from the following selections:

Directly embed heating cable in 6-inch sand bed located under floor insulation

Directly embed heating cable in 3-inch concrete slab located under floor insulation.

Place heating cables in 1" conduit directly embedded in 6-inch sand bed under floor insulation.

Place heating cables in 1" conduit directly embedded in 3-8 inch concrete slab under floor insulation.

## **DIVISION 26 00 00. ELECTRICAL**

### **26 00 00 - Electrical**

Contractor shall review construction documents and provide labor and materials pertaining to the electrical system as required in construction documents and as specified herein, while complying with all applicable building codes, local utility requirements and building restrictions.

### **26 05 00 - Common Work Results for Electrical**

From electrical meter box, install above or below ground wiring to building. Raceways to be buried shall be PVC #2 Plastic Electrical conduit. Where permitted by code, non-metallic sheathed cable may be used. Type THW or THWN 600 volt insulation conductors shall be used, minimum wire size shall be #12. Aluminum wire shall not be permitted. Wiring shall connect into metal recessed electrical panel, as shown on construction documents. Electrical service shall be rated at 200 amps. Wiring from the outside meter box shall be SE cable.

### **26 05 19 - Conductors and Cables**

Provide and install necessary circuits and breakers for appliances as stated in manufacturer's recommendations per applicable building code requirements. For general illumination, provide a minimum 15 amp circuit for each 500 sf of living area (load 3 watts per sq.ft.)

Branch circuits shall be wired with No. 12 gauge wire.

Install GFI circuits with No. 12 gauge wire in all wet areas, baths and exterior outlets.

Appliance circuits shall be installed as follows per applicable building code requirements.

Range: No. 6 gauge wire

Dryer: No. 10 gauge wire

Disposal: No. 6 gauge wire

Dishwasher: No. 12 gauge wire

For furnace, heat pump, water pump and air conditioning units, install 10 gauge wire per applicable building code requirements.

### **26 05 33 - Raceway and Boxes for Electrical Systems**

Flexible or rigid conduits, couplings, supports and nonmetallic ducts. Install conduit concealed in all areas, excluding mechanical and electrical rooms/areas, connections to motors and connections to surface cabinets. Coordinate installation of conduit in masonry work. Unless indicated otherwise, do not install conduit larger than 2 1/2 inches in concrete slabs. Provide a minimum concrete cover around conduits of 2 inches. Install conduit free from dents and bruises. Plug ends to prevent entry of dirt and moisture. Minimize crossovers. Provide flashing and pitchpockets, making watertight joints where conduits pass through roof or waterproofing membranes. Route all exposed conduits parallel or perpendicular to building lines. All fittings shall be UL approved.

Fasten raceways securely in place. Firmly fasten within 3 feet of each outlet, junction box, cabinet or fitting. Support every 10 feet.

### **26 24 00 - Switchboards and Panelboards**

Panelboards shall be [Square "D", G.E. or ITE](#). Provide typewritten directory of circuits mounted in box. Use dead front panelboards with one-piece cabinets constructed from code gauge steel, finished with rust inhibiting primer and baked enamel finish and manufacturer's standard color.. Use factory assembled panelboards with amp rating units indicated. Provide spare units and blank spaces as indicated.

[Voltage: 277/480, volts, 3 phase, 4 wire, S/N , equipped with automatic circuit breakers](#)

[Circuit Breakers: Minimum interrupting capacity of 14,000 amps at 277 volts, Use breakers that are UL rated for use as switches](#)

[Voltage: 120/208, volts, 3 phase, 4 wire, S/N , equipped with automatic circuit breakers](#)

[Circuit Breakers: Minimum interrupting capacity of 10,000 amps at 120 volts.](#)

### **26 27 26 - Wiring Devices**

Install [beige, white, brass, etc.](#) receptacles, switches and cover plates as per construction documents and finish schedules. For exterior receptacles install [gray](#) cover plates. When two or more switches or receptacles are located together, gang with one common faceplate. If they cannot be ganged, install with a minimum distance between units. Install all receptacles at 18"on center (OC) above finished floor (AFF), unless otherwise noted. At counters, locate receptacles at 44"on center (OC), above finished floor (AFF). Install switches at 48"on center (OC) above finished floor (AFF). Locate light switch cover plates 6" from frame of door or corner of wall. Switches shall be: [Toggle, slide, wide slider, motion sensor, dimmer, etc.](#)

### **26 50 00 - Lighting**

Provide necessary circuits and wiring for light fixtures as listed below. All lighting shall be switched as noted on construction documents. For exact locations of fixtures, see construction documents and finish schedules. Fixture allowances are listed in Contract Documents.

**Special Items** - Provide necessary receptacle requirements and wiring for additional items as listed below. Locate as shown on construction documents.

**Bath Vent Fans** - install in all bathrooms, [specify manufacturer and model number](#)

**Thermostat** - install for each HVAC unit, [specify manufacturer and model number](#)

**Smoke Detectors** - install per code at bedrooms and kitchen, [specify manufacturer and model number](#)

**Doorbells** - located in [adjacent front and garage entry doors](#)

**Telephone outlets** - located in [great room, kitchen, study, all bedrooms, etc](#)

**Cable outlets** - located in [great room, kitchen, study, all bedrooms, etc](#)

**Specialty Appliances** - [appropriate wiring](#)

**Computer equipment** - [isolated circuits or internet and network wiring access](#)

**Garage Door/ Overhead Door opener** - locate ceiling hook-up and push button at door, [specify manufacturer and model number](#)

**Security System** - [pre-wire for security system, specify manufacturer and model number](#)

**Intercom System** - [pre-wire for intercom system, specify manufacturer and model number](#)



*Alarm Code®*. Mount the smoke alarms on ceilings or high on walls. Ceiling-mounted alarms should be installed at least four inches away from the nearest wall; wall-mounted alarms should be installed at least four inches, but not more than 12 inches away from the ceiling. On vaulted ceilings, be sure to mount the alarm at the highest point of the ceiling. Don't install smoke alarms near windows, outside doors, or ducts where drafts might interfere with their operation. Do not paint, apply finish or obstruct smoke alarms.

## **DIVISION 31 00 00. EARTHWORK**

### **31 10 00 - Site Clearing**

The area of clearing shall be maintained within the limits shown on the appropriate site plans. Remove stumps and matted roots to a depth of 24 inches below existing ground surface. Dispose of trees and shrubs in accordance with applicable garbage, refuse or weeds ordinance. Do not burn materials on site. The Country Fire Marshal may consider granting a waiver from open burning restrictions. Remove material from the site as it accumulates. Do not allow water material to accumulate for more than 48 hours.

**Soil Bearing** - Foundation designs are based on a soil bearing value of 2500 psf. Foundations and slabs are designed to uniformly bear on well-compacted, well-drained non-expansive soils. A certified soils engineer shall review foundation designs and building loads and compare with subsurface soil investigation. Should on-site observations show that foundation designs are not satisfactory, a structural engineer should be contacted immediately to redesign foundations to accommodate conditions.

### **31 11 00 - Clearing and Grubbing**

Clear and grub the construction site. Grade building site with appropriate soils. Existing trees to remain shall be marked prior to clearing and protected to prevent damage. If any damage is done to walkways, driveways, etc, needed repairs shall be provided by the contractor. Repair or replace any damaged vegetation or terrain that is indicated to be protected or is more than eight feet from the edge of any construction.

### **31 20 00 - Earth Moving**

Excavate bottom of all foundation walls and footings at building perimeter a minimum of 12" below frost line and 20" wide, (check with local building officials for frost line level requirements). Base of footings shall extend down to undisturbed virgin soil which has been compacted to 95 percent proctor density. All excavation shall be to a level below existing demolition debris. Board form all footing as required by soil conditions.

**For basement walls**, excavate area indicated on construction documents, allowing an additional 18" minimum clearance around the perimeter of foundation walls for proper drainage and waterproofing assembly.

**At slab foundations**, compact sub-grade under slabs to a minimum 95% density. Compact backfill areas not under slabs or foundation to a minimum 90% ASTM D-689. Sub-base directly under concrete slabs on grade shall be a minimum of four inches of compacted granular fill.

### **31 22 00 - Grading**

Carefully remove loam and topsoil to be incorporated in the finished work and store separate from the other excavated material. Failure to isolate loam and topsoil from the other excavations shall require that said soils not be used as topsoil.

When excavations are to be made in paved surfaces, remove pavement so as to provide a clean, uniform edge with a minimum disturbance of remaining pavement. Do not mix pavement with other excavated material unless it is broken into pieces measuring 3 inches or less. Dispose large pieces of pavement away from the site of the work immediately.

### **31 22 13 - Rough Grading**

Prior to commencement of earthwork, perform such soil and rock removal and filling as may be required to facilitate the progress of the work and bring all elevations to the rough grade lines indicated on the Contract Documents. Fill or backfill as required.

### **31 22 19 - Finish Grading**

Keep exterior finished grade a minimum of 6 1/2" below finished floor elevation (see construction documents for exact locations) by backfilling with appropriate soils. Provide swales with positive outfall and slope grade away from building to allow water to drain away from the building foundation. Do not backfill against foundation until project is completely framed and roof structure is in place. Soil type of fill shall be specified by Geotechnical Engineer.

### **31 23 00 - Excavation and Fill**

Backfill material to be used from the excavations shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill. It shall not contain vegetation, masses of roots, stones over 3-inches in diameter, or porous matter and shall not be saturated. Organic matter shall not exceed minor quantities and shall be well distributed.

### **31 23 16 - Excavation**

Carry out the excavation, dewatering, sheeting and bracing in such manner as to eliminate any possibility of undermining or disturbing the foundations or any existing structure or any work previously completed.

Excavate pipe trenches to the necessary depth as shown on plans. Trenches over 5 feet in depth shall be properly sloped, shored, braced or otherwise supported in conformance with the OSHA Construction Safety and Health Standards.

Excavate trenches to provide a uniform and continuous bearing and support for the pipe and appurtenant structures on solid and undisturbed ground and at the specified grade at every point.

Excavation for structures and pipelines shall include the disposal of materials unsuitable for reuse for backfill. Excavation activities shall include the stockpiling of suitable materials which shall be incorporated into the project at a later date of different location.

### **31 23 19 - Dewatering**

At all times during construction - provide, place and maintain ample means and devices with which to remove promptly all water entering trenches and other excavations. Keep excavations dry until the structures, pipes and appurtenances to be built therein have been completed and backfilled. Dispose of all water pumped or drained from the work without interference with other work, traffic or injury to public or private property. Prevent siltation of storm water facilities or receiving waterways.

### **31 23 23 - Select Borrow**

Material needed in addition to that available from construction operations shall be defined as select borrow. Select borrow shall consist of durable natural granular material or granular aggregates mixed or blended with sand, stone dust, soil or other filler materials to provide a well graded mixture meeting the requirements herein specified.

These materials shall be free from vegetable or organic matter, lumps or an excessive quantity of clay or other objectionable or foreign substances, but may contain a maximum of ten percent of shale by weight.

The size and gradation of the material shall range from stone no larger than 3 inches across its maximum dimension to soil passing a No 200 sieve. The gradation shall be well dispersed through the borrow.

### **31 23 23.13 - Backfill**

Correct any part of the trench bottom excavated below the specified grade with approved materials and thoroughly compact.

Complete all backfilling to the dimensions and levels shown on the construction documents. Where excavated material or any portion thereof is deemed unsuitable for backfilling material, procure and place approved select borrow materials.

Backfill as promptly as is consistent with non-damage to the installed structures. Do not place frozen material in the backfill.

No material shall be placed or compacted when it is too wet or frozen or when the sub-grade or previously placed material is too wet or frozen.

### **31 25 00 - Erosion and Sedimentation Controls**

Clear the top layer of soil and place in a designated area for use at the end of the project. Provide swales with positive outfall, and slope grade away from building to allow water to drain away from the foundation. Backfill around building with subsoil graded free of lumps larger than 6", rocks larger than 3" and debris. Keep finished grade elevations a minimum of 6 1/2" below finished floor elevation (see construction documents for exact locations). Do not backfill against foundation, until home is completely framed and roof structure is in place.

### **31 31 16 - Termite Control**

If required, Foundations shall be pre-treated under all slabs and crawlspace areas between vapor barrier and granular sub-base to conform with HUD minimum standards and applicable building codes. Treatments shall not be made when soil is excessively wet or after heavy rains. Contractor shall provide a one-year renewable warranty.

### **31 31 16.19 - Termite Control Barriers**

At pier and perimeter foundations, install continuous flashing on all sides and top surface to prevent sub-terrain termites from penetrating the wood structure.

### **31 40 00 - Shoring and Underpinning**

Existing footings, foundations, pile caps, grade beams, retaining walls or pavement which may be affected by excavation operations shall be shored or underpinned adequately or otherwise protected against settlement and shall be protected against lateral movement. Provide necessary materials to hold back earth at excavations and as required to prevent cave-ins and earth sloughs.

### **31 50 00 - Excavation Support and Protection**

Install excavation support systems for safety preservation of existing improvements. Design criteria of support systems shall consider all loads in a manner which will allow the safe and expeditious construction of permanent structures without movement or settlement of the ground.

## **DIVISION 32 00 00. EXTERIOR IMPROVEMENTS**

### **32 01 90 - Operation and Maintenance of Planting**

All plants shall be kept in healthy, growing condition by replacement of dead or dying plants where necessary, by watering, weeding, cultivating, pruning, spraying, trimming, protection from wind, and by performing any other necessary operations or maintenance for a period of 30 days or until acceptance of the planting at the time of the final inspection. A final weeding of all plant areas shall be made immediately prior to final inspection. Newly planted trees shall be pruned as necessary. All dead branches shall be removed. Rootstock shoots from grafted material shall be removed.

### **32 01 90.13 - Fertilizing**

Commercial fertilizer to mix with backfill soil shall be ammonium phosphate 16-20-0 applied at twenty (20) pounds actual nitrogen per 1000 square feet (12.5 pounds of ammonium phosphate applied to each 1000 square foot area). Use Agriform tablets at twice label recommendations for tree and shrub materials. Fertilizer will be applied for seeding areas disturbed by clearing operations. Spread soil conditioners and fertilizers and thoroughly incorporate by rototilling work into topsoil to a depth of 4". Rake topsoil until the surface is finely pulverized and smooth.

Place fertilizer tablets in the following quantities around the perimeter of plant hole:

1 gallon plant	1 tablet
5 gallon plant	3 tablets
15 gallon plant	5 tablets
24 inch box plant	7 tablets
36 inch box plant	9 tablets



**For color, texture, and imprinting:** While the concrete is still in a plastic state, apply the desired pattern to the surface. Tools shall be properly stamped into the surface to achieve desired texture. Seal as required. See site plan for additional information.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Texture:** specify texture

**Pattern:** specify pattern

### **32 14 00 - Unit Pavers**

Install 00" wide x 00" length x 0" depth clay pavers, over well compacted ground and backfill with dense graded aggregate suitable for sub-base material (ex: sand), typically 4-6" for light pedestrian traffic and 8-12" for heavy vehicular use. Sand shall be screened to proper pitch and height so that final installation will result in proper surface drainage. Set with tight joints, unless otherwise noted. Maintain proper joint alignment, keeping lines straight and true. Cut paving units with masonry saw to fit adjacent structures. After installation, vibrate lightly with rubber roller type vibrator to bring units to an even plane. Sweep clean mason sand into joints.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** Sandblasted, smooth, rough

### **32 14 13.13 - Interlocking Precast Concrete Unit Paving**

Install 00" wide x 00" length x 0" depth concrete pavers, over well compacted ground and backfill with dense graded aggregate suitable for sub-base material (ex: sand), typically 4-6" for light pedestrian traffic and 8-12" for heavy vehicular use. Interlocking concrete pavers shall be manufactured for compliance of paving unit requirements to ASTM C936. Minimum average compressive strength of 8000 psi. Maximum absorption of 5% when tested in accordance with ASTM C140. Resistance of 50 freeze-thaw cycles, when tested in accordance with ASTM C67. Base requirements shall be a minimum of 6" of compacted aggregate for sidewalks when concrete pavers are used and 6" concrete slab for residential driveways and 9" for commercial driveway conditions. Sand shall be screened to proper pitch and height so that final installation will result in proper surface drainage. Set with tight joints, unless otherwise noted. Maintain proper joint alignment, keeping lines straight and true. Cut paving units with masonry saw to fit adjacent structures. After installation, vibrate lightly with rubber roller type vibrator to bring units to an even plane. Sweep clean mason sand into joints. The final surface elevations shall not deviate more than 3/8" under a 10 foot long straight edge.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** specify brick faced, stipple accent, diamond, quarry, etc.

### **32 14 16 - Brick Unit Paving**

Install 00" wide x 00" length x 0" depth brick pavers, over well compacted ground and backfill with dense graded aggregate suitable for sub-base material (ex: sand). Mortar for brick pavers and setting base shall be Type M. Base requirements shall be a minimum of 4" of compacted aggregate for sidewalks and 6" concrete slab for residential driveways and 9" for commercial driveway conditions. Brick pavers shall be laid into a mortar setting bed and leveled. All joints shall be filled completely with mortar. Set with tight joints, unless otherwise noted. Maintain proper joint alignment, keeping lines straight and true. Cut paving units with masonry saw to fit adjacent structures. After installation, vibrate lightly with rubber roller type vibrator to bring units to an even plane. Sweep clean mason sand into joints. The final surface elevations shall not deviate more than 3/8" under a 10 foot long straight edge.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** Sandblasted, smooth, rough

### 32 14 23 - Asphalt Unit Paving

Install 00" wide x 00" length x 0" depth clay pavers, over well compacted ground and backfill with dense graded aggregate suitable for sub-base material (ex: sand), typically 4-6" for light pedestrian traffic and 8-12" for heavy vehicular use. Sand shall be screened to proper pitch and height so that final installation will result in proper surface drainage.

To install the setting bed over the base surface prepared by others, place control bars directly over the base. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade. Thickness of the finished setting bed shall be no more than 1" or less than 1/2". The setting bed shall be rolled with a power roller to a nominal depth of 3/4". The thickness shall be adjusted so that when the asphalt blocks are placed, the top surface of the pavers will be at the required grade. However, under no circumstances shall the setting bed exceed one (1") inch. Apply modified asphalt adhesive to setting bed surface by spreading with a squeegee to a uniform thickness of approximately 1/16". After the modified asphalt adhesive is applied, carefully place the pavers by hand in straight courses with hand tight joints and uniform top surface. Good alignment must be kept, and the pattern shall be that shown on the plans. Sweep clean sharp sand into the joints until they are full. For vehicular applications use a vibrating plate compactor over the entire surface making several passes. Refill the joints and sweep off excess sand.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** Sandblasted, smooth, rough

### 32 14 40 - Stone Paving

Install 00" wide x 00" length x 0" depth stone pavers, over well compacted ground and backfill with dense graded aggregate suitable for sub-base material (ex: sand), typically 4-6" for light pedestrian traffic and 8-12" for heavy vehicular use. Sand shall be screened to proper pitch and height so that final installation will result in proper surface drainage. Set with tight joints, unless otherwise noted. Maintain proper joint alignment, keeping lines straight and true. Cut paving units with masonry saw to fit adjacent structures. After installation, vibrate lightly with rubber roller type vibrator to bring units to an even plane. Sweep clean mason sand into joints.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** Sandblasted, smooth, rough

### 32 16 00 - Curbs and Gutters

Install curb and gutters with Portland cement class A3. Joint filler shall be 1/2" preformed asphalt expansion joint material conforming to ASTM D994 or ASTM D1751. Construct the sub-grade to the required elevation below the finished surface of the gutter in accordance with dimensions and design as shown in Construction Documents. Remove all soft and unsuitable material and replace with sub-base material, which shall be compacted to 95% density and finished to a smooth surface. Moisten the sub-base prior to placing the concrete. Construct forms of wood or metal. Prior to placing the concrete, check the line and grade for accuracy and fasten the face forms of the curb to the gutter forms. Space the concrete and tamp sufficiently to bring the mortar to the surface. The face and top surface of the gutter shall be smooth with rounded edges. Provide a final fine brush finish to both top and face of curb with brush strokes parallel to the line of the curb so that both top and from face present the same uniform appearance. Construct 3/8 inch to 1/2 inch thick expansion joints at the following locations:

- In curb and combination curb and gutter at the locations of expansion joints in the concrete roadway.
- In curb or combination curb and gutter at points where curved and tangent sections join.
- Between curb or combination curb and gutter, and any drain inlet or similar structure.
- Form expansion joints at intervals of 100 feet or less.

·At corners in sidewalks, following the projections of the building lines from the corner of the building to the curb.

·Between sidewalks and curb.

·No section shall be less than **6 feet** in length.

·**Cast-in-place Curbs** - Provide cast-in-place concrete construction, plain or reinforced as indicated. Curbs and gutters shall be formed accurately to building section profile of shop drawing or plans. Construction shall be in sections of uniform lengths, providing transverse joints at approximately **10 feet** intervals

·**Extruded Curbs** - Extruded curbs and gutter, placed by an extrusion machine, may be provided where site conditions are suitable and the extrusion process is appropriated for the purpose.

### **32 18 00 - Athletic and Recreational Surfacing**

Install synthetic surface over recommended ground cover (ex: asphalt, concrete, crushed rock, etc), and shock absorbent pad. Attach material with appropriate adhesives and tape. Follow all manufacturers recommendations.

### **32 30 00 - Site Improvements**

Provide and install landscaping accessories as specified in construction documents. **Edging materials, tree grates, etc.**

### **32 31 00 - Fences and Gates**

Provide and install fence and gates at locations shown in construction documents. Support as required by manufacturer. Installation of fencing shall not be started until final grading has been completed. Posts shall be plumb and rigid after installation. Rails shall be straight and tight. Drill holes for post footings in firm, undisturbed or compacted soil. Footing holes shall be not less than **9 inches** in diameter and **38 inches** in depth. Post embedment in concrete shall be **36 inches**. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads.

**Gates** - Gates shall be installed plumb, level and secure for full opening without interference. Install ground-set items in concrete for anchorage as recommended by the fence manufacturer. Adjust hardware for smooth operation and lubricate. Sliding gates shall operate smoothly and easily under minimum pressure.

**Concrete** - Place concrete around posts in a continuous pour. Check each post for plumb and vertical and top alignment and hold in position during placement and finishing operations. Trowel finish tops of footings and slope or dome to direct water away from posts. Set keepers, stops, sleeves, tracks, eye bolts and other accessories into concrete as required. Wheel rolling area for sliding gates shall be steel towel smooth finish concrete.

### **32 31 13 - Chain Link Fences and Gates**

Install **galvanized, vinyl** chain link fence and gates. Size of fence shall be **00" high**. Mesh size shall be **00" x 00"**, with vertical supports **00" thick** every **6'-0"** on center (OC). Provide fence and gate locations as shown in construction documents. Support as required by manufacturer. Chain link fabric shall be smooth and uniformly stretched tight and straight. Tension wires and barbed wires shall be pulled taut.

**Manufacturer:** **specify manufacturer**

**Color:** **specify color**

**Finish:** **specify finish**

### **32 31 19 - Decorative Metal Fences and Gates**

Install **galvanized/rod iron, clear-coated** metal fence and gates. Size of fence shall be **00" high** with balusters **00" thick, 6"** on center (OC). Provide fence and gate locations as shown in construction documents. Support as required by manufacturer.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** specify finish

### **32 31 23 - Plastic Fences and Gates**

Install pre-fabricated fence and gates. Size of fence shall be 00" high with balusters 00" thick, 6" on center (OC). Provide fence and gate locations as shown in construction documents. Support as required by manufacturer.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** specify finish

### **32 31 26 - Wire Fences and Gates**

Install galvanized, clear-coated metal fence and gates. Size of fence shall be 00" high with balusters 00" thick, 6" on center (OC). Provide fence and gate locations as shown in construction documents. Support as required by manufacturer.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** specify finish

### **32 31 29 - Wood Fences and Gates**

Install wood species wood fence and gates. Size of fence shall be 00" high with balusters 00" thick, 6" on center (OC). Provide fence and gate locations as shown in construction documents. Support as required by manufacturer.

**Manufacturer:** specify manufacturer

**Color:** specify color

**Finish:** specify finish

### **32 32 00 - Retaining Walls**

Provide concrete block, masonry, railroad ties, landscaping timber retaining walls where required. Excavate as required for footing dimensions shown on construction documents or as directed by Engineer. Install a minimum 6" thick footing on undisturbed soils. Install retaining wall units as recommended by manufacturer. Reinforce masonry walls with 9 gauge steel "H" wire truss-design masonry wall reinforcement a minimum of every third course, tie backs and rebar (reinforcing steel). Install reinforcing members as recommended by manufacturer. Install perforated drain at back of wall and backfill area with 8" loose fill gravel, for drainage. The reinforced backfill material shall be placed in maximum lifts of 8 inches and shall be compacted to a minimum of 95 percent Standard Proctor Dry Density in accordance with ASTM D698. The backfill shall be smooth and level so that the geogrid lays flat. At surface install a minimum 6" of topsoil with a maximum slope of 3:12.

### **32 34 00 - Fabricated Bridges**

Provide and install metal or wood framed pre-engineered bridges as specified in construction documents. Install as specified by manufacturer.

### **32 84 13 - Drip Irrigation**

Low pressure water system with buried or sub-surfaced vinyl, pvc pipes. Install as recommended by manufacturer.

### **32 84 23 - Underground Sprinklers**

Install irrigation system consisting of valves, water lines, sprinkler heads and control panels to adequately cover sod and plant beds. Install as recommended by manufacturer. Manual valve or electronic valves.

**Trenching and Backfill** - All main lines shall be buried a minimum of twenty (20") inches, and shall be covered with sand to six (6") inches above main. Laterals shall be buried a minimum of twelve (12") inches for spray heads and a minimum of eighteen (18") inches for rotors.

**Backfill** - Backfill shall be done in six (6") inch lifts with compaction between each lift. All large rocks and debris shall be removed from backfill. No backfilling or covering of water mains or irrigation lines shall be done before inspection by Project Superintendent.

**Piping Installation** - Piping shall be laid parallel in trenches and shall not cross over or wrap around each other, and shall be buried at least one (1") inch apart. Cutting and gluing of PVC pipe shall be done only with appropriate equipment and methods recommended by manufacturers of PVC solvent cement and PVC pipe.

**Connections** - Connections to existing water mains, other than at valve outlets, shall be made with compression tees and gate valves. All pipe under concrete, asphalt, or other masonry shall be cased loosely in larger size pipe with at least six (6") inches protruding from the sleeve before fittings are attached. Earth shall be compacted under the pipe where it extends from sleeve. All fittings shall have at least a two (2") inch clearance from other pipes or fittings.

**Joints** - All solvent cement joints shall be made with medium-body cement or heavy-body only with a pre-coat of primer. Excess cement shall be wiped off all joints. Swing joints shall be sealed with Teflon tape on threads. All other threaded joints shall be sealed with a non-drying thread joint compound. A copper tracing wire shall be imbedded in the trench and over the pipe to facilitate locating with a cable detector; end of wire shall terminate in valve box or above grade.

**Valve Installation** - Before installation of remote control valves, quick coupling valves, or sprinkler heads, all lines shall be flushed with water. All remote control valves shall be installed in large rectangular plastic boxes flush to grade unless there is a special need for sub-surface installation, in which case valve markers shall be used with access to the flow control handle.

**Valves** - All quick-coupler valves shall be installed in round plastic boxes flush to grade. Anti-drain valves shall be installed on all low sprinkler heads. All electric remote control valves shall be installed with a gate valve on the pressurized side and a PVC union on the non-pressurized side. All remote control valve boxes shall be marked with a code system and sequenced in the controller in a logical manner to facilitate maintenance, i.e. A-1, A-2 (clock A, valve 1 and 2).

**Sprinkler Head Installation** - All sprinkler heads shall be attached to double swing joints. Shrub heads on risers shall be staked with 1/2 inch rebar and two hose clamps. The rebar shall be driven into the earth two (2') feet and be of sufficient length to terminate twenty (20") inches below the head.

**Sprinkler Heads** - All sprinkler heads two (2') feet or less from lateral connection shall be connected by threaded fittings only to the lateral. All sprinkler heads shall be installed with head flange at least 1 inch from header. In the case of shrub heads on risers, the riser shall have a minimum two (2") inch clearance to the header. Sprinkler heads of differing precipitation rates shall not be valved together. Shrub heads located along pathways or traffic areas shall be the type that retract to ground level when watering is completed; Toro, or approved equal. All shrub, ground cover and lawn heads shall be spaced so as to spray from head to head as minimum, preferred coverage is 1.25 to 1.5 times spacing.

**Wiring and Splicing** - Wire shall be run in the pipe trench and to one side of main. Each wire shall have an excess of **two (2') feet** coiled in the valve box. One spare wire shall be laid so that it enters and leaves every valve box. Spare shall be labeled. No splices shall be directly buried. All splices shall be made in splice box or valve box. All splices shall be waterproofed by one of the following methods: Rain-Bird Pen-Tite connectors; Scotch-Lok epoxy sealer bags with ends taped and sealed with Scotch-Kote; and end-to-end crimp connector taped and sealed with Scotch-Kote.

### **32 90 00 - Planting**

Provide and install all plants, materials, and labor required to execute the landscaping as described in the Contract Documents. Landscape site per construction documents with appropriate sod, plants, trees, and shrubs suitable for local climate and site requirements as listed below. Landscaping budget shall be determined by an allowance as stated in the Contract Documents.

### **32 91 13 - Soil Preparation**

Do not plant until finish grades are established and planting areas are properly prepared and graded. When preliminary grading, including weeding and fertilizing, has been completed and the soil may be readily worked, grade all planting areas to a smooth, even and uniform plane with no abrupt change in surface. Slope soil areas adjacent to buildings away from the buildings, and direct surface drainage as indicated on the drawings. Grading shall provide for natural runoff of water without low spot or pockets. Finish grade of earth in landscaped areas shall be **3 1/2 inches** below the top of adjacent pavement, curbs or headers.

### **32 91 13.16 - Mulching**

Apply mulch immediately after seeding. Loosen baled straw and thoroughly break up before placing. Begin placement of mulch on the windward side and from the toe to slopes. On slopes 2 to 1 and greater provide jute matting stapled **18 inches to 3 feet** apart using closer spacing around curves and areas of concentrated storm water runoff. Soil amendment and mulch shall consist of Cedar-soil or equal, composted, nitrogen-stabilized, water-holding materials with long residual life.

### **32 91 19.13 - Topsoil Placement and Grading**

A **three (3") inch** cover of topsoil or appropriate soil amendment shall be spread uniformly over the soil (**9 yards per 1000 sq. ft.**) and tilled into the top **six (6") inches** of soil. Topsoil shall be a natural, fertile, friable soil, typical of productive soil in the vicinity, obtained from naturally well drained areas. Rototill all areas indicated on plans and on areas damaged by construction, to depth of **4"**, removing stumps, all foreign objects and stones larger than one inch diameter. Place topsoil on all areas and incorporate by rototilling into subsoil.

### **32 92 19 - Seeding**

Seed only when weather conditions are suitable. All newly seeded turf areas shall be free of broadleaf weeds. Sow seed with mechanical spreaders at the specified rate on a calm day. Sow one half the seed in one direction and the other half at right angles. Seed shall be raked lightly into the soil to a depth of **1/4 inch** and rolled with a roller weighing not more than **100 pounds per linear foot** of tread. Keep the surface moist by a fine spray until the grass shows uniform germination over the entire area. Wherever poor germination occurs in areas larger than **three (3) square feet**, reseed, roll and water as necessary to obtain proper germination. Infested areas shall be treated with a selective broadleaf insecticide; Trimec or approved equal.

### **32 92 23 - Sodding**

Plant only certified sod only when the soil is moist and favorable for growth. Shape the area to be sodded and finish to the lines and grades indicated on the plans. Loosen the surface prior to placing sod. Keep the grade moist by sprinkling, if necessary, sod on the prepared surface with the edges in close contact. Each piece of sod laid shall be fitted and tamped into place with hand tampers not less than **one hundred square inches** in area. Apply a sufficient quantity of water to all sod after laying and to prevent the sod from drying out for a period at least two weeks to ensure growth.

### **32 93 00 - Plants**

Shrubs and trees shall be of a variety, size and quantity shown in the Construction Documents. Cut burlap, twin and wire baskets from top **12 inches** of root-ball and remove from site. Backfill with **1/2** clean existing soil,

1/4 sand and 1/4 peat moss. Plants shall bear some relation to soil level when planted as they did when in container. Place each plant in center of plant pit. Firmly tap backfill material into plant pits around and under the root ball to force out all air pockets. Backfill as specified on the plans. Thoroughly water to saturate the root ball and backfill. Stake all trees with hardwood stakes driven 2' into firm ground and secure tree to stake.

### **32 93 23 - Plants and Bulbs**

Hand dig holes without undermining existing facilities. Do not loosen soil at the bottom of hole, compact soil under root ball if loose. Dimensions of the hole will vary with the size of the root ball. Tree wells located adjacent sidewalks, shall have the top of root ball four inches (4") below the sidewalk surface. Place each plant in an upright and plumb position.

**Berms** - A berm of earth approximately four (4") inches high shall be built around the perimeter of the backfilled plant holes to form a shallow basin for the retention of irrigation water. Each basin shall be mulched with two (2") inches of mulch.

**Drainage** - Plant holes shall be randomly tested for drainage, by filling with water and confirming that all areas have drained within two (2) hours after filling. The random testing shall be performed on ten percent (10%) of the total large (15 gallon) size holes for the project. If more than twenty percent (20%) of these holes fail, then an additional ten (10) holes shall be tested. Areas that do not pass this test shall be corrected prior to planting.

**Backfill** - Backfill shall consist of the excavated material with all stones larger than one inch (1") removed, and with soil amendment added in the proportion of one (1) part amendment to three (3) parts soil thoroughly mixed. If additional soil is required, site topsoil shall be used. The backfill mixture shall be finely divided, loose, and free of clods.

## **DIVISION 33 00 00. UTILITIES**

### **33 00 00 - Utilities**

Install necessary utility services, such as electricity, water, gas and oil, sanitary sewerage and support structures for power and communications. Coordinate requirements with local utility providers. All utilities shall be located underground from street to building, unless otherwise stated.

### **33 36 60 - Utility Septic Tanks**

Excavate area for septic tank as shown on Septic Tank Diagram as required by the local Health Department. Install pre-cast concrete cylindrical tank with adjoining siphon tank or drain field a minimum of 2'-0" below ground surface. See manufacturer's recommendations for drain field requirements and additional installation guidelines.

### **33 46 13.13 - Foundation Drainage Piping**

Install a minimum 5" slotted drain pipe with a positive outflow around exterior basement wall footings, imbedded in a loose fill gravel, minimum 12" deep. Slotted drain pipe should be wrapped with an appropriate geo-technical fabric to prevent silt buildup. Install other drains necessary for positive site drainage.

### **33 46 33 - Retaining Wall Drainage**

Install a minimum 5" slotted drain pipe with a positive outflow around retaining wall footings, imbedded in a loose fill gravel, minimum 12" deep. Slotted drain pipe should be wrapped with an appropriate geo-technical fabric to prevent silt buildup. Install other drains necessary for positive site drainage.