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# City Of Mesa Housing Services

## Housing Rehabilitation Program



### **Minimum Standards**

- General Conditions
- Workmanship Standards
- Materials Standards

**Fiscal Year 2006-2007**

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## Housing Rehabilitation Program

The purpose of the City of Mesa Housing Rehabilitation Program is to improve the livability of a house in order to make it meet the current Housing Quality Standards set forth by the Department of Housing and Urban Development.

All materials used shall be new, of good quality, and meet all applicable standards. Existing custom made items such as, but not limited to, kitchen cabinets, vanities, fixtures, built-ins, and all other custom items, will be replaced with stock items.

All items might be either replaced or repaired, as determined by the COMHS at the initial inspection. All plumbing fixtures shall be replaced with water saving models.

All workmanship shall meet the minimum standards set forth in this publication.

Priority shall be given to the following:

- Gas lines and gas appliances to eliminate safety hazards
- Electrical system and hazards
- Heating and cooling systems
- Plumbing leaks, faulty fixtures and/or related items
- Roofing
- Lead based paint abatement
- Termite control
- Windows and doors
- Attic insulation
- Other safety and health hazards, as determined by the COMHS

For a full description of the program and eligibility requirements, contact the City of Mesa Housing Services, at (480) 644-3208.

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American Society for Testing and Materials, ASTM E152-81a, *Standard Methods of Fire Tests of Door Assemblies*. Conshohocken PA: 1981.

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## GENERAL CONDITIONS AND WORKMANSHIP

### 1. General

**1.1** The work of the contract shall consist of all construction materials, labor, equipment and services required by the drawings, specifications and other contract documents, or as reasonably inferable from any or all of the construction documents. The work shall be for the whole or part of the project as described in the scope of work and the contract.

**1.2** The work of the project shall comply in all respects with applicable federal, state, county and/or city regulations, laws and codes. All required building and other permits shall be obtained before beginning construction.

**1.3** All materials shall be new, COMHS approved and workmanship shall be equal to the Arizona Registrar Of Contractors Workmanship Standards For Licensed Contractors. They shall also be in accordance with current standards of the American Society of Mechanical Engineers, American Society of Testing Materials, The American Water Works Association, The American Institute of Electrical Engineers, The National Board of Fire Underwriters and The American Society of Heating and Ventilating Engineers, UL Laboratories, and all others that apply. See Part IV References and Additional References section for other standards.

**1.4** Substitution of items and methods will not be permitted unless specifically approved by City of Mesa Housing Services, hereinafter known as and referred to as COMHS.

**1.5** If the contractor fails to complete the work, or part of the work, of the contract in accordance with the construction documents and fails to correct such deficiencies, COMHS may, by written order, stop work on all or part of

be done by wet scraping or wet sanding for a uniform finish as described in the most current version of the H.U.D. Guidelines For The Evaluation And Control Of Lead-Based Paint hazards In Housing. (Chapter 11, pg. 11-14 to 11-24, June 1995 Version)

**47.4** Final cleaning: Wait to begin 1 hour after completion of all lead hazard control activities. HEPA vacuum, using household detergent or lead-specific detergent, wash and vacuum all layers of plastic, flooring, window-sills, window wells (if applicable) and any other exposed horizontal surfaces in work area(s).

**47.5** Final clearance: The abatement contractor is responsible for final clean up and arranging for clearance testing after completion of lead-related work. All re-cleaning will be performed by the abatement contractor at his or her own expense. The interior of the dwelling must meet the dust threshold set forth by the EPA.

## DISCLAIMER

The City of Mesa Housing Services does not endorse products or manufacturers. Trades and manufacturers names appearing in this publication are solely considered essential to the subject of this publication

## LEAD-BASED PAINT

### **47 Lead-Based Paint Specifications**

**47.1** Lead inspection: Provide a lead-based paint inspection in accordance with all EPA and H.U.D. standards. Using the inspection protocol in chapter 7 of the H.U.D. guidelines for evaluation and control of lead-based paint hazards in housing. (1997 revision) If lead is present, do risk assessment and interim control or abatement work write-up. Provide cost estimate to COMHS. Provide complete report and copy of summary to COMHS and homeowner, as per federal law. (24CFR part 35 and 40 CFR part 745)

DO NOT PROCEED WITH ANY REHAB WORK UNTIL LEAD INSPECTION AND ALL RESULTING LEAD WORK HAS BEEN COMPLETELY DONE AND FINAL CLEARANCE REPORT HAS BEEN ISSUED.

**47.2** Lead abatement standards and guidelines: The execution of this work shall comply with all applicable state, federal and local laws, rules regulations and guidelines. Some of these standards include: 29 CFR 1926-Construction Industry Standards, 29 CFR 1926.62 - Construction Industry Lead Standard, 29 CFR 1910.1200 - Hazard Communications, 40 CFR part 261 - EPA Regulations, H.U.D. Guidelines For The Evaluation And Control Of Lead-Based Paint Hazards In Housing (Most recent draft), and Arizona Registrar Of Contractors Minimum Standards.

**47.3** General performance requirements - painting: All surface preparation (stabilization) will

the project until the deficiency (ies) has been corrected, or may terminate the contract as per section 11.1.

**1.6** The owner may occupy the building space, or such portions thereof as may be needed, at any time without in any way invalidating the contract, as long as the owner's occupancy does not interfere in any way with the progress of the project. Additional time for completion of the project may be granted if the owner's occupancy hampers the contractor in any way.

### **2. Contractor**

**2.1** The contractor shall be solely responsible for the work described in the contract. He shall have complete control over construction methods, techniques and procedures and shall supervise such work with his best skill and attention.

**2.2** The contractor shall pay for all labor, equipment, materials and services required to complete the work as described in the scope of work and the contract, as well as for building permits and other governmental fees, licenses and inspections necessary for the proper completion of the work.

**2.3** All contractors shall be bondable, licensed contractors and will coordinate their work with that of sub-contractors so that all work will be in harmony.

**2.4** The contractor shall warrant that all materials and equipment used to complete the work on the project will be new and of good quality, unless otherwise specified and approved by the COMHS.

**2.5** The contractor shall protect existing areas from damage. The contractor shall be

responsible for any damage to existing areas and will repair such damage, at his expense.

**2.6** The contractor shall keep the project site and surrounding area free from waste materials and rubbish, which results from his work on the project. Removal, hauling and disposal of rubbish and waste materials shall be the responsibility of the contractor or as otherwise stipulated in the specifications contained in the scope of work.

**2.7** The contractor shall be responsible for all damages resulting from his, or his subcontractors, errors, omissions or negligence in the performance of the work outlined in the Contract.

**2.8** The contractor shall hold harmless the owner and the COMHS from and against all claims, damages, losses, expenses, legal fees or other costs resulting from the contractor's performance of the work of the contract.

**2.9** The contractor shall provide the City of Mesa and others, access to the work and work site, as needed.

### **3. Subcontractors**

**3.1** The contractor shall select the subcontractors, except that he shall not use subcontractors to whom the owner has a reasonable objection. The contractor shall not be required to use a subcontractor to whom he has a reasonable objection. Objections shall be stated before the start of the project.

### **4. Disputes**

**4.1** Any claims or disputes between the contractor and the owner arising from the contract shall be resolved by arbitration in accordance with the COMHS Administrative Plan

- e. Horn level - 85 decibels at 10 feet
- f. Temperature range - 40 to 100 degrees
- g. Automatic reset
- h. Power-on indicator - red LED
- i. Five-year limited warranty
- j. 10% to 85% relative humidity
- k. Approved by National Fire Protection Agency (NFPA)

#### **46.2 Installation:**

Ceiling-mounted smoke detector permanently wired into a receptacle with a battery back-up, in all sleeping rooms, hall, and living room. All smoke detectors must be interconnected.

**46.3** For replacement of existing detectors, or if specified in the scope of work, use the following smoke detectors and installation; Install a UL-approved, battery-operated smoke detector in all sleeping rooms, hall, and living room.

**45.1** Provide interior and exterior lighting as per scope of work, and as needed for a complete and proper installation.

**45.2** Use only new materials of the type and quality specified. Where Underwriters' Laboratories, Inc. have established standards for such materials, use only materials bearing the UL label.

**45.3** Wiring:

A. Nonmetallic sheathed cable, size 14 through 4 AWG: Copper conductor, 600-volt insulation, rated 60 degrees C, type NM.

B. Underground feeder and branch circuit cable: Copper conductor, 600-volt insulation, rated 60 degrees C, type UF.

**45.4** Provide required accessories for mounting and operation of each fixture.

**45.5** Installation:

A. Install fixtures and accessories in accordance with manufacturer's instructions.

**45.6** Adjusting and cleaning:

A. Align fixtures and clean lenses and diffusers.

B. Aim adjustable fixtures as directed by the owner.

C. Clean paint splatters, dirt and debris from installed fixtures.

**45.7** All fixtures are to be installed with bulbs in place.

#### **46 Smoke Detectors**

**46.1** All smoke detectors must be UL approved and meet the following requirements, unless otherwise specified in the Scope of Work:

- a. 120 VAC (60Hz)
- b. UL Standard 217
- c. Dual ionization chambers
- d. 100% solid state

and contract, unless both parties agree otherwise.

#### **5. Work by Other Contractors**

**5.1** All contractors and subcontractors shall work in harmony with others on the project and shall afford the owner and other subcontractors reasonable opportunity for the storage of materials and equipment.

#### **6. Changes**

**6.1** Changes, modifications, additions and/or deletions to the scope of work under the contract will only be made by written change order. No work shall be started before a change order is approved by the Housing Supervisor and/or Housing Director. Any such changes will not invalidate the original contract. The time for project completion and the project cost may be adjusted accordingly, as determined by the COMHS.

#### **7. Time**

**7.1** If at any time the contractor is delayed in performing the work under this agreement by owner-requested changes, labor disputes, or other circumstances over which the contractor has no control, the contract completion deadline may be extended by the same amount of time as was caused by the delay, or as determined by the COMHS.

#### **8. Payments**

**8.1** Payments will be made by the COMHS to the contractor in accordance with the payment schedule stipulated in the contract.

**8.2** Payments may be withheld because of any of the following conditions:

- a. Defective work not corrected.
- b. Failure of the contractor to make payments to subcontractors or to pay in a timely

way for materials, labor, equipment or other services.

- c. Continued failure to perform the work in accordance with the terms and conditions set forth in the contract and the scope of work.
- d. Legal or other claims by third parties relating to the work performed under the contract.

**8.3** Final payment is due when the work is completed in accordance with the contract and the scope of work, and all permits, warranties and related documents are submitted, and accepted by the COMHS.

## **9. Work Safety**

**9.1** The contractor is responsible for establishing, supervising and maintaining all safety precautions in connection with work performed under this contract. The contractor shall establish a drug free workplace policy, as per section 18 of the contract.

**9.2** The contractor shall comply with all federal, state and local laws and regulations applicable to the safety of persons and property and their protection from damage, injury or loss.

## **10. Correction of Deficiencies**

**10.1** The contractor shall promptly correct any deficiencies in the work, any work not in accordance with the contract and/or any work rejected by the City of Mesa.

**10.2** The contractor shall provide guarantees of workmanship for at least one (1) year from the time of completion of their work under the contract.

## **11. Termination of the Contract**

### **44.3 Wiring:**

- A. Nonmetallic sheathed cable, size 14 through 4 AWG: Copper conductor, 600 volt insulation, rated 60 degrees C, type NM.
- B. Underground feeder and branch circuit cable: Copper conductor, 600-volt insulation, rated 60 degrees C, type UF.
- C. Service entrance cable: Copper conductor, 600 volt insulation, type SE.

### **44.4 Main distribution panel:**

- A. Circuit breaker type, 200 amps service or as specified in the scope of work.
- B. Provide surface cabinet front with screw cover and hinged door. Cabinet to be sized to provide blanks for future expansion.

### **44.5 Wiring Devices And Wall Plates:**

- A. Wall switch: AC general use, quiet operating snap switch rated 20 amperes and 120-277 volts AC, color and handle type as selected by the owner.
- B. Receptacle: Type 5-20 R, plastic face, color selected by owner.
- C. Specific purpose receptacles: Configuration as noted in the scope of work, black face.
- D. Wall dimmer: Linear slide type, color selected by owner. Rated for 600-watts minimum, size to accommodate circuit.
- E. Weatherproof cover plate: Gasketed cast metal with hinged gasketed device covers.

### **44.6 Installation:**

- A. Appliances will be furnished in accordance with the scope of work.
- B. Install electric range level and plumb.
- C. All built-in electric ovens and ranges are to be securely fastened after wiring connections are completed.
- D. Disposal to be wired to operate from a switched receptacle.
- E. Low-voltage furnace wiring to be completed by heating contractor.

## **45 Lighting**

**43.1** Provide high efficiency, heating, ventilating and air conditioning systems as shown on the drawings, and/or as specified in the scope of work, and as needed for a complete and proper installation. Unit shall be sized to adequately cool and/or heat entire structure. (livable areas only) and a/c shall be a minimum of 12.0 S.E.E.R.

**43.2** Metal ducts: (if specified in the scope)  
(1) For exhaust systems and for the heating, ventilation and air conditioning systems, use galvanized sheet metal ducts.

**43.3** Flexible ducts: Where permitted use factory-fabricated insulated low-pressure flexible ducts with the following attributes:

(1) Zinc-coated spring steel helix, with 1-inch thick fiberglass insulation, sheathed in a seamless vapor barrier jacket.

(2) Interior fire-resistive coating to prevent fiber erosion.

(3) Provide flexible duct in fully-extended condition, free from sags and kinks. Use only the minimum length required to make the connection. Do not exceed 8 feet in length. Make joints and connections with 1/2 inch wide positive locking steel straps.

**43.4** Air outlets: Use double deflecting type with opposed blade dampers.

**43.5** Piping: For refrigerant piping use type L copper, refrigerant grade, with wrought copper fittings.

#### **44 Electrical Distribution**

**44.1** Provide electrical work per drawings and/or as described in the scope of work, and as needed for a complete and proper installation.

**44.2** Use only new materials of the type and quality specified. Where Underwriters' Laboratories, Inc. have established standards for such materials, use only materials bearing the UL label.

**11.1** If the contractor fails to carry out the work in accordance with the contract and other construction documents, the COMHS may, upon forty eight hours (48 hrs.) written notice to the contractor, terminate the contract, and finish the work by whatever method the COMHS determines. If the cost of completing the work exceeds the balance due under this contract, the difference is to be paid to the COMHS by the contractor.

#### **11.2** Removal From Active Bid List:

The contractor can be removed from the active bid list for a period of up to three (3) years, for causes stated in section 24 of the contract.

#### **12. Jurisdiction**

**12.1** This agreement shall be governed by the laws of the jurisdiction where the project is located.

#### **13. Cash Allowances**

**13.1** To provide adequate budget to cover items not precisely determined by the scope of work prior to bidding, COMHS shall allow within the proposed contract sum the amounts described in this section.

#### **13.2** Specific Cash Allowances: Appliances:

Stove	\$600.00
Refrigerator	\$800.00
Dishwasher	\$400.00

#### Bath cabinets:

Vanity with top	\$375.00
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Or as determined in the scope of work.

#### **14. Quality Assurance**

**14.1** The contractor shall use adequate numbers of skilled workmen, experienced in the necessary crafts and trades, who are completely familiar with the specified requirements and methods

needed for proper installation and performance of the work as shown on the drawings and/or as specified in the scope of work.

**14.2** The contractor shall comply with all applicable codes and regulations of governmental agencies having jurisdiction over the work of the project.

**14.3** The contractor shall monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce final work of the specified quality.

**14.4** The contractor shall comply fully with manufacturers instructions for storage, installation and operation of products.

**14.5** The contractor shall comply with specified standards as the minimum quality level for the work, except where more stringent tolerances, codes or specified requirements indicate higher standards or more precise workmanship.

## **15. Construction Cleaning**

**15.1** Throughout the construction period, the contractor shall maintain the buildings and site to the standard of cleanliness described in this Section.

### **15.2 Site and Structure:**

- A. Maintain the site in a neat and orderly condition at all times.
- B. At least weekly, inspect the structures and pick up all scrap, debris and waste material and remove them to the place designated for their storage.
- C. At least weekly, sweep interior spaces clean. "Clean", for the purposes of this paragraph, shall be interpreted as meaning free from materials capable of being removed by reasonable effort and a hand-held broom.

## **16. Contract Close-out**

in galvanized steel enclosure, properly vented, unless otherwise specified in the scope of work. Shall meet ANSI/CSA Z21.10.1

B. American Standard or compatible, 40-gallon, electric water heater: Factory assembled and wired, electric, vertical type, with automatic immersion water thermostat, flanged or screw-in nichrome elements, high temperature limit thermostat. Re-install at existing location, unless otherwise specified. unless otherwise specified in the scope of work. Shall meet ANSI/CSAZ21.10.1

### **42.7 Installation:**

Install per manufacturers specifications and all applicable codes.

### **42.8 Plumbing fixtures and trim:**

- A. Kitchen sink: Moen or compatible, 2 bowls, 6" deep, stainless steel sink.
- B. Kitchen faucet: American Standard 4205.401 Or compatible centerset. Lever handle, swivel spout. Low flow aerator aerator.
- C. Lavatory sink: American Standard 0476.028 or compatible. Oval or round, self rimming, 5 5/8 depth.
- D. Lavatory faucet: American Standard Relient series or compatible. Centerset, lever handle and stationary spout. Low flow aerator.
- E. Toilet: American Standard 2329.01.020 or compatible. Floor mounted, gravity fed, white vitreous china, 1.6 gals. per flush toilet. Shall meet ASME A112.19.2
- F. Bath tub: American Standard 0165 or compatible. Enameled steel, 17 1/2" deep bathtub.
- G. Tub Valve: Moen L3170 or compatible. Pressure balanced valve and trim. Water saving shower head.
- H. Shower pan: Casco 4234-pan or compatible. Fiberglass reinforced plastic. Brass drain, stainless cover.
- G. Shower doors: Alumax 340 series or compatible. Frameless, standard pass doors, obscure glass and all hardware and trim.

## **43 Cooling, Heating and Ventilation**

complete and proper installation including, but not limited to:

- A. Domestic hot and cold water piping systems;
- B. Drain, waste and vent systems;
- C. Gas piping system;
- D. Plumbing fixtures and trim as shown on the drawings and/or scope of work.

**42.2 Sanitary sewer piping:**

- A. ABS pipe: ASTM D2680 or D2751, solvent weld joints.
- B. PVC pipe: Schedule 40, solvent weld joints.

**42.3 Water piping:**

- A. Copper tubing: Type L for underground and Type M for above ground installations, with wrought copper fittings and compression joints.
- B. PVC pipe: Schedule 40, minimum 150 psig pressure rating, solvent weld joints.
- C. PEX tubing: Cross-linked polyethylene tubing with copper compression rings.

**42.4 Natural gas piping:**

- A. Steel pipe: Schedule 40, black with polyethylene jacket and welded joints.
- B. Copper tubing: Type L for underground and Type M for above ground installations, with wrought copper fittings and compression joints.

**42.5 Fuel oil piping:**

- A. Copper tubing: Type M, hard drawn, with cast brass or wrought copper fittings and soldered joints.
- B. Steel pipe: Schedule 40 black, with malleable iron or forged steel fittings, screwed or welded.

**42.6 Water heater with pressure relief valve on overflow:**

- A. American Standard or compatible, 30-gallon gas-fired water heater, vertical storage type, automatic water thermostat and built-in gas pressure regulator; cast iron or sheet metal burner, safety pilot and thermocouple. Gas-fired water heater shall be installed at exterior location,

**16.1** Prior to requesting a final inspection by the COMHS, the contractor shall use adequate means to ensure that the work is completed in accordance with the specified requirements and is ready for the requested inspection.

**16.2** The contractor shall submit final documents, warranties, inspection reports, application for payment or invoice identifying total contract sum, previous payments and balance due.

**16.3** The contractor shall complete final cleaning prior to final inspection, as per section 15

**16.4** The contractor shall provide the owner with the following:

- Operation and maintenance data and manuals for equipment and other items, as needed;
- Warranties;
- Keys, if applicable;
- Spare parts, if applicable;
- Evidence of compliance with requirements of governmental agencies having jurisdiction, including Certificates of Inspection and Certificates of Occupancy, as applicable;
- List of subcontractors including names, addresses, and telephone numbers where they can be reached for emergency service.

**17. Operations and Maintenance Data**

**17.1** The contractor shall furnish and deliver to the owner all operating instructions, maintenance manuals and other equipment documentation, and instruct the owner in proper operation and maintenance of systems, equipment and similar items which were provided as part of the work, prior to project closeout.

**17.2** If manufacturer's instruction/maintenance manuals are not available, supply a list of equipment showing model number, purchase date, name and address of manufacturer and name and address of Installer.

**MATERIALS, SPECIFICATIONS  
AND INSTALLATION**

**18 Excavating, Backfilling and Grading**

**18.1** Work to consist of:

- A. Excavating, backfilling and grading to the lines, grades and elevations as specified in the scope of work.
- B. Scheduling and coordinating inspections as required.
- C. Locating all sanitary sewer and water lines.
- D. Where required, cutting curbs to provide for driveway access as shown on the drawings.
- E. Initiating a work order to locate all existing utilities.
- F. Providing adequate protection for existing streets and curbs. If damage is done, the contractor will be responsible for repair at no additional cost to the COMHS or the owner.
- G. Installing storm sewer, sanitary sewer and water lines.
- H. Building a construction driveway if required.
- I. Hauling excess fill in or out of job site if required.
- J. Providing trenching for utility lines and other conductors as required.
- K. Insuring equipment stays clear of and does not drive over septic tank, drain fields, drain pits and distribution boxes.

**18.2** Excavating:

- A. Excavate topsoil and stockpile in area designated on site.
- B. Excavate subsoil required for construction operations and other work as required.
- C. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

- F. Hood: Use G.E. JV337XAD or compatible, 30" ducted, 160cfm, hood.
- G. Disposal: Use G.E. GFC305Y, 1/2 hp., or compatible disposal.  
Or as included in the scope of work, and/or section 13.2.

**40.2** Installation:

- A. Install equipment in accordance with the manufacturer's instructions.
- B. Set and adjust units level and plumb.
- C. Activate units to confirm proper operation.
- D. Turn refrigerators on and set to moderate temperature.
- E. Touch-up scratches and abrasions.

**41 Built-in Cabinets and Fixtures**

**41.1** Provide built-in cabinets and fixtures as shown on the drawings, and/or as specified in the scope of work.

**41.2** Installation

- A. Contractor shall verify all on-site dimensions.
- B. Install cabinets and fixtures as indicated on the drawings and/or in the scope of work. Install plumb and level with all joints tight.
- C. Shim cabinets as required and trim with moulding to match cabinets.
- D. Clean cabinets and leave in proper working order with all doors, shelves and drawers aligned and plumb.

**41.3** Tops: Plastic laminate shall be of general-purpose type, 0.048 inches thick, over 3/4" particleboard, as shown in Section 60 of these specifications, unless otherwise specified in the scope of work. Colors and patterns per owner's choice.

**42 Plumbing**

**42.1** Provide plumbing as shown on the drawings and/or as per scope of work, and as needed for a

- (4) Do not use latex primer on bare wood.
- (5) Do not use alkyd primer on gypsum board.
- B. Primer/sealer: Apply to knots and pitch pockets where a painted finish is to be provided.

**38.4** Color schedules: The owner will select one color for the interior, and one trim color and one body color for exterior.

**38.5** Installation:

- A. Caulk all joints and fill all nail holes.
- B. Interior trim: Sand thoroughly and putty smooth nail holes.
- C. Caulk all joints if woodwork is to be painted.
- D. Prime raw wood before second coat.

**39 Residential Toilet Accessories**

**39.1** Provide toilet accessories as per scope of work, and as needed for a complete and proper installation. All accessories shall meet FHA standards.

**39.2** Installation:

- A. Install fixtures, accessories and items in accordance with manufacturer's instructions.
- B. Install plumb and level, securely and rigidly anchored to substrate.

**40 Appliances**

**40.1** Provide appliances as per scope of work, using the following guidelines:

- A. Stove: Use Whirlpool RF302BXK, or compatible, electric stove.
- B. Built-in oven: Use Whirlpool RBS245P, 24", single wall, electric oven. or compatible unit.
- C. Cook top: Use Whirlpool RCS3614 or compatible, electric, 4 burner, 36" cook top.
- D. Refrigerator: Use Hotpoint CTX18CIBRW or compatible model. Freestanding, frost free, top mount freezer.
- E. Dishwasher: Use Whirlpool DU10SW, or compatible, under counter, front loading, 2 wash levels, dishwasher.

- D. Protect active utility lines. If damaged, repair or replace at no additional cost to the COMHS or the owner. If existing utilities are found to interfere with the permanent facilities being constructed, contractor shall immediately notify the COMHS and secure the site.

**18.3** Backfilling:

Backfill excavations as promptly as progress of the work permits, but not until completion of the following:

- A. Acceptance of construction below finish grade.
- B. Removing concrete formwork.
- C. Inspecting, testing and approving underground utilities.
- D. Removing trash and debris.

**18.4** Grading:

- A. Uniformly grade the areas to the lines and elevations.
- B. Grade the area to provide drainage away from the structures and to prevent ponding.

**19 Termite Control**

**19.1** Use applicator company specializing in performing the work of this section licensed by the State.

**19.2** Conform to applicable codes, EPA regulations, state and local regulations.

**19.3** Examine the areas and conditions under which work of this specification will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

**19.4** Verify that soil surfaces are sufficiently dry to absorb toxicant, and ready to receive treatment.

**19.5** Verify that the area is well-ventilated.

**19.6** Verify that anticipated weather conditions comply with label recommendations prior to application.

**19.7** Remove all non-essential wood and material containing cellulose from around foundation walls, crawl spaces and porches.

**19.8** Apply in accordance with manufacturer's instructions.

**19.9** Remove and handle all containers as per label instructions after application.

**19.10** Re-treat area if movement of soil is required.

**19.11** Keep all personnel off of the treated area until completely dry.

## **20 Portland Cement Concrete**

### **20.1 Forms**

A. Provide wood or metal formwork profiled to suit conditions, including adequate bracing to the lines and grades shown on the drawings and/or scope of work.

B. Earth forms will not be permitted for paving.

**20.2** Sub base: Aggregate with maximum size 3/4", 4" thick, compacted to 95%.

**20.3** Provide concrete with the following characteristics:

A. Compressive strength at 28 days: 3,500 psi.

B. Thickness: 4" or as required by local code.

C. Slump: 1 - 3 inches maximum.

D. Saw cut or score every 100 s.f.

E. Apply spray-on curing compound to reduce possibility of spalding.

**20.4** Finishing:

### **37.4 Installation:**

A. Install metal edging at all locations where carpet abuts other types of finished flooring.

B. All carpet seams to be cut with straight edge and hot seamed. All padding seams to be taped

**37.5 Adhesives:** Use waterproof and stabilized type adhesive as recommended by the manufacturer of the material being installed.

**37.6 Underlayment:** Solid, smooth base. Use floor leveler if required.

**37.7 Concrete slab primer:** Use non-staining type as recommended by the manufacturer of the material being installed.

## **38 Painting**

**38.1** Use Dunn Edwards W704 exterior and W3954 interior or compatible paint and materials. Paint and finish exposed surfaces using the combination of materials as specified in the scope of work and as needed for a complete and proper installation.

### **38.2 Environmental conditions:**

A. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees F, unless permitted by the materials manufacturer.

B. Do not apply paint in rain or when relative humidity exceeds 85 percent, or to damp or wet surfaces.

### **38.3 Paint materials:**

A. Undercoats and thinners:

(1) Use undercoat paint produced by the same manufacturer as the finish coat.

(2) Use only thinners recommended by the paint manufacturer, and use only to the recommended limits.

(3) Use undercoat, finish coat and thinner as parts of a unified system of paint finish.

(1) Concrete sub floor: Well cured; no cracks; clean with no waxy or oily films. For thin-set application, concrete sub floor must have steel trowel or fine broom finish.

(2) Wood sub floor:

a. For cement mortar method: Roofing felt over minimum 5/8" plywood.

b. For organic adhesive: Double wood floor with 3/8" plywood (1/8" expansion gaps) over minimum 5/8" plywood sub floor.

C. Maximum surface variation:

(1) Dry-set: Walls: 1/8" in 8'; floors: 1/8" in 10'

(2) Organic: Walls: 1/8" in 8'; floors: 1/16" in 3'

### 36.6 Installation:

A. All tubs and showers to be protected during installation, cleaned immediately after completion and then re-covered with cardboard or other protective material.

B. Maintain temperature at minimum of 55 degrees F during installation and for 7 days.

C. Leave extra tile for owner.

## 37 Flooring

**37.1 Vinyl Tile:** Use Congeleum PZ-41 or compatible, glue down vinyl tile. 12" x 12" x 0.080 gauge. Use only manufacturers recommended adhesive. Owner to select color and pattern.

**37.2 Sheet vinyl:** Use Armstrong 66125 series or compatible sheet vinyl (.060 gauge). Owner to select color and pattern. Shall meet ASTM F1303, type 1, grade 3 class A backing.

**37.3 Carpet and pad:** Standard stock carpet, shall be 28 oz. Minimum. Pad shall be 7/16 inch, 6 lb. density rebond minimum. Owner to select. Include new tack strip.

If glue-down installation is specified, use waterproof, strippable type recommended by carpet manufacturer.

A. Float to produce a surface level within 1/4 inch in 2 feet.

B. With a bristle broom produce a textured finish, light, medium or coarse as directed by the COMHS.

**20.5** Beginning immediately after placement, protect concrete from premature drying, excessively hot or cool temperatures and mechanical injury.

## 21 Cast-in-Place Concrete

**21.1 Concrete:** Unless otherwise directed use Portland cement to achieve a weight of not more than 110 pcf and an ultimate compressive strength of 3000 psi at 28 days. Calcium, if required, shall not exceed 2%.

**21.2 Slump:** Footings/slabs on grade: 3 inches  
All other concrete: 4 inches

**21.3 Expansion joint filler:** Use preformed strips, non-extruding and resilient bituminous type, of thickness indicated.

**21.4 Vapor barrier membrane:** Use polyethylene sheet of the thickness shown on the drawings and/or scope of work. If thickness is not indicated, use 6-mil thickness. Overlap seams a minimum of 2".

**21.5 Placement:**

A. Do not allow concrete to drop more than 5' from chute.

B. Do not rake or push concrete more than 20' once it is poured.

**21.6 Curing:**

A. Prevent premature drying.

B. Protect against excessive hot or cold temperatures.

C. Apply spray-on curing compound on all flatwork to reduce possibility of spalling.

**21.7 Flatwork Finish:**

A. Floors: Wood float finish.

- B. Driveway: Broomed finish.
- C. Edge all flatwork.
- D. Walkways: Jointed at 5' o.c.

**21.8 Footings:**

- A. Columns and stanchions: 24" x 24" x 12" or as shown on drawings.
- C. Footings to be level within 1/2".
- D. Footings to be square within 2" on diagonal.
- E. Footings to agree with plan/spec dimensions within 1".

**22 Water Distribution System**

**22.1** Depth of pipe to be in accordance with local regulations.

**22.2** Pipe and fittings:

- A. Galvanized steel pipe, standard weight, with malleable iron fittings, or
- B. Copper pipe: Type M for above ground and Type L for underground installation, with solder type copper fittings.
- C. PVC Pipe: Schedule 40, minimum 160 psi pressure rating with solvent weld joints. Use fittings and specials suitable for Schedule 40 rating unless otherwise specified. For threaded PVC fittings, use Schedule 80.

**22.3** Valves: Use valves designed for a working pressure of not less than 150 psi.

**23 Gas Distribution System**

**23.1** Gas distribution main:

- A. Use black steel pipe, or other materials as permitted by the utility company and other agencies having jurisdiction and as selected by the contractor and/or COMHS.
- B. Depth to be in accordance with local regulations.

**23.2** Pipe And Fittings:

- A. Black steel pipe systems:

- C. Factory edge to be placed at rim of bathtub and shower stall receptors.
- D. All openings for electrical boxes, medicine cabinets, access panels and plumbing lines to be cut neat and close.
- E. All fire walls to be tight with no voids.
- F. Protect all material from texture over spray.

**35.3** Contractor to use care to prevent spilling of drywall mud or stipple on floors. Floors to be left clean and ready for installation of finish flooring.

**36 Ceramic Tile**

**36.1** Provide ceramic tile as per scope of work, and as needed for a complete and proper installation.

**36.2** Ceramic Tile:

- A. Use Florida Tile P4489E8400 series, or compatible grade glazed ceramic tile and accessories, in colors and patterns selected by the owner.
- B. For floor tiles use only tiles designed for that application.

**36.3** Setting Materials:

- A. Dry-set mortar: ANSI A118.1
- B. Latex modified thin-set mortar: ANSI A118.4
- C. Organic adhesives: ANSI A136.1 Type II for walls, Type I for floors and ceilings.

**36.4** Grout: ANSI A118.6. Do not use silicone or latex grouts for countertops.

**36.5** Substrate:

- A. Walls and ceilings:
  - (1) Normal applications: Moisture-resistant type gypsum board.
  - (2) For continuous high-moisture areas: Use paperless tile backer specifically designed for that purpose.
- B. Floors:

B. Exterior flashing shall be of non-corrosive materials.

### **34 Windows**

**34.1 Screens:** Shall be stock, aluminum framed window screens.

**34.2 Windows:** Shall be Milgard HV series or compatible, insulated glass, and aluminum or vinyl windows. Shall meet AAMA/NWWDA-101/I.S.2-97 and NFCR-100. Other materials may be used upon approval by the COMHS, and/or as per scope of work.

**34.3 Installation:** Include all necessary wall repairs inside and out, screens, and all related items. NOTE: Each bedroom shall have egress per UBC 310.4.

### **35 Wallboard**

**35.1 Materials:**

A. Gypsum board:

- (1) Thickness as per scope of work. If no thickness is shown use 1/2 inch; maximum permissible length.
- (2) Standard type: 1/2" paper faced.
- (3) Fire rated type: Type X, fire rated.
- (4) Tile backing: Moisture resistant type (ASTM C630).
- (5) Water resistant board to be used in tub and shower areas.

B. Joint materials: Paper reinforcing tape, joint compound, adhesive and water; minimum of three coats, feathered for smooth surface.

C. Corner beads: Metal.

D. Fasteners: For fastening gypsum wallboard in place on wood, use 1-1/4 inch type W bugle-head screws or annular ring nails recommended by the wallboard manufacturer.

**35.2 Installation:**

A. Wallboard adhesive or approved fasteners to be used on ceilings and interior walls.

B. Board to be held a 1/2 inch above floor.

(1) Black steel pipe: Schedule 40; threaded ends.

(2) Fittings: Black malleable iron.

(3) Unions: Black malleable iron.

(4) Flanges: Black steel slip-on welding.

(5) Gaskets: Neoprene, 1/16-inch thickness, 50 to 60 shore "A" hardness.

B. Other materials as approved, installed as required by the local jurisdiction.

**23.3 Valves:**

A. Buried shut-off valves: Provide ball valves designed for close-off pressure in either direction.

B. Aboveground valves: Provide bronze body ball valve or bronze body plug valve.

**23.4 Tracer Wire:** Provide No. 14 TW insulated copper tracer wire on non-metallic pipes.

**23.5 Connection:** Make connection to utility company or agency service line or meter in accordance with the requirements of the utility having jurisdiction.

### **24 Sanitary Sewer System**

**24.1 Pipe And Fittings**

A. Cast iron soil pipe and fittings (CIP): Class SV; rubber gaskets (ASTM C564) for compression joints.

B. PVC pipe and fittings: Use extra strength, minimum of SDR 35.

C. ABS pipe and fittings: ASTM D2680.

**24.2 Location:** Locate the sewer line in strict accordance with the local regulations.

**24.3 Pipe laying:**

A. Protect pipe during handling against shocks and free fall. Remove extraneous material from the pipe interior.

B. Lay pipe by proceeding upgrade with the spigot ends of the bell and spigot pipe pointing in the direction of flow.

C. Place, fit, join and adjust the joints to obtain the degree of water tightness required.

**24.4** All materials to be in accordance with local regulations.

**24.5** Septic system:

A. Excavate to depth indicated on the approved septic design plans.

B. Tank size and type: As per design plans.

C. Distribution box size and type: As per design plans.

D. Elevation and slope of lines to be in accordance with the approved septic design plans.

**24.6** Leach pit:

A. Pit size and type: As per design plans.

B. Size of aggregate: As per design plans.

C. Elevation and slope of lines to be in accordance with the approved septic design plans.

**24.7** Leach field:

A. Location and size to be in accordance with the approved septic design plans.

B. Type and size of aggregate: As per design plans.

C. Elevation and slope of lines to be in accordance with the approved septic design plans.

Note: Contractor shall submit septic design plans and quote to the COMHS for approval. Use only a qualified sub-contractor.

## **25 Landscaping**

**25.1** Owner responsible for any re-seeding and landscaping needed due to the installation of any utility and/or sewer lines.

## **26 Rough Carpentry**

**26.1** Lumber Materials: Use lumber, S4S, S-Dry unless otherwise indicated.

a. Studs (2-4 inches thick, 2-4 inches wide, 10 feet or shorter): "Stud" or No. 3 structural light framing grade.

**32.2** Accessories: Use only those accessories that are approved by the product manufacturer.

**32.3** Installation:

A. All eaves to have vented soffits.

B. Rakes, soffits, frieze boards and roof returns to be aluminum.

C. Outside corners to be minimum 4" width.

D. Frieze boards to be .027 aluminum coil stock.

E. All siding to be nailed at 16" o.c.

F. Head flashing to be installed over all framed openings and properly caulked.

G. Backers to be installed behind all joints and panel ends of 8' siding.

H. Trim to have no exposed rough edges.

I. Use "J" blocks for sill cocks, HVAC vents, electric outlets and light fixtures.

## **33 Doors And Hardware**

**33.1** Provide doors complete in place with finish hardware installed per types, designs and dimensions, or as per scope of work, for a complete and proper installation.

**33.2** Interior doors:

A. Use Jeld-wen 2484 or compatible, interior pre-hung, hollow core door.

B. Lockset: Use Kwikset 200c-3, or compatible, passage lock. Shall meet ANSI/BHMA 156.2 standards.

**33.3** Exterior doors:

A. Use metal clad, pre-hung, insulated door International Products, AU20112, or compatible.

B. Lockset: Use Kwikset 400c-5 series or compatible, entry lock. Shall meet ANSI/BHMA 156.2 standards.

B. Exterior flashing shall be of non-corrosive materials.

**33.4** Sliding Glass Door:

A. Use Jeld-Wen PDUI series or compatible, insulated glass, full view, single sliding panel, pre-hung, lockable, aluminum door.

- B. Do not compact or compress insulation in stud cavities.
- C. Insulation to be cut neatly and installed around and behind outlet boxes.
- D. Insure there are no gaps between framing and insulation.
- E. Caulk any and all penetrations through firewall.
- F. Baffles to be installed at all eaves to insure adequate airflow.

### **31 Roofing**

**31.1** Asphalt shingles: Corning or compatible, 20 year 220# shingles over 15# felt.

**31.2** Mineral surface type: ASTM approved low-slope type roofing or base and torch down mineral surface type roofing per manufacturer's specifications.

**31.3** Coat Roofing: Coat roofing surface with ASTM approved, weatherproof foam type materials per manufacturer's specifications.

**31.4** Installation:

- A. Contractor is responsible for insuring that roofing is installed according to manufacturer's specifications and in compliance with all local codes.
- B. Do not install shingles when ambient temperatures are below that required by the product manufacturer.
- C. Include metal edging at entire roof perimeter, replace any missing or damaged roof jacks or flashings. Install 1x2 S1S2E, shingle mold and metal edging at all fascia boards and barge rafters.

### **32 Vinyl Trim**

**32.1** Vinyl trim shall comply with ASTM standard specification for Rigid Polyvinyl Chloride (PVC) Siding #D3679 Class 2.

- b. Non-structural light framing: Standard grade or better. No utility grade.
- c. Concealed boards: Standard grade.
- d. Sill boards: Pressure treated.
- e. Structural light framing: No. 2 or better.
- f. Lumber for misc. uses: Unless otherwise indicated, use standard grade lumber for support of other work, including bucks, nailer, blocking, furring, grounds, stripping and similar members.
- g. Pressure-treated lumber: pressure treatment: AWPA Treatment C, using waterborne preservative with 0.25 percent retainage, rated for specific use as noted on the drawings and/or scope of work.

**26.2** Other wood materials:

- A. Sheathing Materials
  - (1) Plywood sheathing: Use APA rated, PS-1 or APA PRP-108.
  - (2) Particleboard: Exterior Type 2-M.
  - (3) Oriented Strand Board (OSB).
- B. Sub flooring: APA rated plywood sheathing, exterior grade.
- C. Roof sheathing: APA rated plywood, exterior grade.
- D. Underlayment:
  - (1) APA rated underlayment, exterior; or
  - (2) Particleboard, oriented strand board, waferboard or structural particleboard, with waterproof resin binder.

**26.3** Fasteners and anchors:

- A. Screws and nails: Galvanized steel for exterior, high humidity, and treated wood locations. Plain finish elsewhere.
- B. Joist hangers: Galvanized steel, sized to suit framing.
- C. Anchors:
  - (1) Hollow masonry: Toggle bolt.
  - (2) Solid masonry or concrete: Expansion shield and lag bolt.
  - (3) Steel: Bolt or ballistic fastener.

### **27. Finish Carpentry**

**27.1** Finish carpentry to include:

- A. Installation of interior doors and associated hardware.
- B. Installation of shelving as noted on the drawings.
- C. Installation of stair handrails, balusters, treads, risers, skirtboards and trim.
- D. Installation of balcony handrails, balusters, and trim.
- E. Installation of base moulding, crown moulding and chair rail.
- F. Installation of window and door casings.
- G. Installation of medicine cabinets, towel bars, paper holders and other bath accessories.
- H. Fabrication and installation of exterior porch and deck posts and railings.
- I. Fabrication and installation of attic and plumbing access panels.
- J. Fabrication and installation of bookcases, shelves and other built-ins included in the scope of work.
- K. Installation and trim of pull-down stairs.

**27.2 Installation:**

- A. Use only new materials unless otherwise specified in the scope of work.
- B. Install all trim securely. All trim items to be square, plumb and/or flush.
- C. All trim nails to be counter set.
- D. All doors and windows to be properly adjusted and aligned prior to trimming.
- E. Base moulding to be installed 1/2" off of floor in areas to be carpeted.

**28 Plastic Laminate**

- 28.1** Use general-purpose type, 0.048 inches thick over 3/4" particleboard, or as specified in the scope of work. Also see section 61.4.
- 28.2** Colors and patterns per owner's choice.
- 28.3** Adhesives: Use only rigid set (urea-resin) or semi-rigid set (PVC acetate) adhesives.

**29 Cabinets**

**29.1** Kitchen cabinets shall meet the following standards; HUD 32809.203 and 32809.209, ANSI/KCMA A161.1. Will be installed per existing lay-out only. Owner to select.

**29.2** Bath cabinets shall meet the following standards; HUD 32809.203 and 32809.209, ANSI/KCMA A161.1. Owner to select. Allowance of \$375.00 for cabinet and top.

**29.3 Installation:**

- A. Contractor shall verify all on-site dimensions and notify supplier of any variances or changes.
- B. Install kitchen cabinets as per existing layout. Install plumb and level, with all joints tight.
- C. Shim cabinets as required and trim with moulding to match cabinets.
- D. Clean cabinets and leave in proper working order with all doors, shelves and drawers aligned.
- E. Install all cabinet hardware.

**29.4 Countertops:**

Plastic laminate, general-purpose type, 0.048 inches thick, over 3/4" particleboard, or as specified in the scope of work. Colors and patterns as per owner's choice. Also see section 60.

**30 Building Insulation**

**30.1** Walls: Insulate exterior walls with Owens Corning, #086397693315 or compatible, fiberglass batt insulation, minimum R-13.

**30.2** Attic: Use Johns Manville, blown in fiberglass insulation, or compatible. Provide a minimum of R-40 value over all habitable areas. Shall meet ASTM C 764

**30.3 Installation:**

- A. All vapor barriers to be installed toward conditioned space.