

DIVISION 3 – CONCRETE

Section 3A CONCRETE FORM WORK

PART I GENERAL

A-311 SCOPE:

- a. Furnish all labor, materials and equipment to complete all concrete form work as required to conform to details on the drawings and specified herein. (No calcium add mixtures shall be used.)

A-312 RELATED WORK IN OTHER DEVISIONS:

- a. Division 2 – Excavation and Site Work

PART II PRODUCTS

A-321 MATERIALS:

- a. Materials and/or products for work in this section are included in and made a part of PART III EXECUTION.

PART III EXECUTION

A-331 PREPARATION:

- a. Forms shall be approved steel forms or made from dressed lumber not less than 2x10 or 3/4" ply form plywood, rigidly braced and of sufficient strength to carry the weight of the liquid concrete. Forming materials shall be of sufficient quality and strength to assure that liquid concrete is contained within the boundaries and in the configuration of the plans. Form faces shall be smooth and clean and shall comply with ACI 347-78 recommended practice for formwork.
- b. Footings may be formed in the soil, and must be 24" minimum depth.
- c. Slab Edges: The contour of slabs is shown on plans. Faces shall be formed to provide a smooth uniform surface with profile as detailed.
- d. Door Sills: Shall be so formed that vertical exposed surface may be easily removed for proper finishing. If necessary, such surfaces shall be hand rubbed with a carborundum stone.

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- e. Each rural site using propane gas shall be provided with a 2'-6" wide x 6'-0" long x 4" thick concrete slab on grade for propane tank. Reinforce slab with 6"x6", W1.4/W1.4 gauge wire mesh. Slab is to be located per on-site requirements.
- f. Each rural site using a metal or concrete culvert at driveway entry from street or road shall be provided with 6"x18" concrete free standing curb each side of driveway, measuring 4'-0" minimum at 45 degree angle, on street side, to retain soil and/or driveway gravel. Reinforce curb with three #4 horizontal bars, with #3 vertical ties at 12" o.c. (curb to bear 12" into soil, 6" exposed).
- g. Each site shall be provided with sidewalks, apron and parking pad as indicated and described on Floor Plan and Foundation Plan.
- h. Unless otherwise directed by IHA, each in-town site shall be provided with concrete driveway, same width as apron, extending to street, if local covenants and customs so direct. Thickness and reinforcing to be same as parking pad.
- i. Unless otherwise directed by IHA, all other in-town sites and rural sites shall be provided with a gravel driveway, same width as apron, extending from parking pad to street or road. Gravel depth shall be 4" minimum, over compacted soil: gravel diameter to be 1" or less.

**A-332 ALTERNATE FOUNDATION:**

- a. When the soil tests made at the building site as outlined in the Bidders Packet of the Indian Housing Authority determines that the plastic index (P.I.) has an effective range between 15 and 30, Alternate Foundation No. 1 as detailed and described on plans shall be used.
- b. Where the plastic index effective range is from 31 to 45, Alternate Foundation No. 2 shall be used.
- c. Plastic Index in excess of 45 shall require special permission from the Housing Authority and the HUD office.
- d. Concrete for Alternate Foundations No. 1 and 2 shall be placed in a continuous manner so that at no time shall there be construction joints, cold joints or concrete acquires its initial set during pour. Contractor shall

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**insure that sufficient concrete trucks and concrete finishers are on site to perform concrete placing in a continuous manner. Vibration shall be required during placing of concrete.**

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Section 3B CONCRETE REINFORCEMENT

PART I                      GENERAL

B-311 SCOPE:

- a. Provide reinforcing as shown on plans.

PART II                      PRODUCTS

B-321 MATERIALS:

- a. Reinforcing steel shall be fabricated, and placed in accordance with the Standard Practice of the American Concrete Institute, and all reinforcing shall be new billet, ASTM A615, Grade 40, deformed domestic bars.
- b. Wire mesh shall be welded steel reinforcing as per ASTM.

PART III                      EXECUTION

B-331 INSTALLATION:

- a. All reinforcing shall be free from rust, or any coating, which may reduce bond, and of size and location shown.
- b. All detailing, fabrication, and placing and supporting shall be in accordance with ACI 318-71. Steel shall be wired at all intersections and properly supported during the placing of concrete.
- c. Stagger splices in adjacent bars. In places where rolled beams or footings intersect to form an "L" or "T" the reinforcing steel shall extend to the far side of intersection.
- d. In addition, provide an "L" shaped bar 30-bar diameter long of like size for each beam bar. Wire securely to adjacent steel.
- e. All dowels shall be spaced and bent as shown. The minimum splice of all continuous bars shall be 2'-0" minimum. All reinforcing bars shall be supported at least 6'-0" o.c. by top supported hanger wires.

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- f. Welded wire mesh shall lap a minimum of 6" at ends and edges and shall extend to within 2" of outside forms, then turn down to top of footing.
- g. Laps in mesh shall be tied 18"o.c.
- h. All concrete sidewalks, porches, parking pads, drives and outdoor paving shall be 3,500p.s.i. at 28 days. All concrete shall be air-entrained. Driveway paving shall be 5" thick reinforced with 6x6-W2.9/W2.9 W.W.M. All other paving shall be 4" thick reinforced with 6x6-W1.4/W1.4 W.W.M.
- i. Do not heat bars for bending or cutting.
- j. All rebar shall be 5/8" Diam. Bottom bar shall be 2" off ground and 18" overlap where connected and a continuous bend around Corners.

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Section 3C    **CAST INPLACE CONCRETE**

PART 1                      GENERAL

C-311            **SCOPE:**

- a.    **Furnish and install all cast-in-place concrete work shown on plans and herein described. All concrete work shall be guaranteed as called for under General Requirements.**
  
- b.    **Excavation, grading, slab cushion are called for in Division 2, Section 2A. Do all patching of concrete floors cut by other trades. This section includes concrete for all footings, beams and floor slabs.**

PART II                      PRODUCTS

C-321            **MATERIALS:**

- a.    **Portland Cement shall conform to ASTM Designation C-150 Type 1. Gravel shall be washed, screened, or crushed rock and free from clay or other foreign matter and 100% shall pass a 1.1/2" screen. No pit run or remix shall be allowed. Sand shall be washed, screened, sharp, and well graded in size.**

C-322            **MIXES AND PROPORTIONS:**

- a.    **Design: The Contractor shall submit to the Housing Authority materials for the proposed concrete mixes from the testing laboratory at least 15 days prior to the need of concrete on the job.**
  - 1.    **The laboratory shall design the mixes and make confirmatory cylinders for strength determination to meet the specification requirements from each concrete plant that supplies the Contractor. Tests shall be made from samples of sand, rock and cement being used by the concrete plant.**
  
  - 2.    **Footings and protected slabs shall have design mix for 3000psi compressive strength. All concrete exposed to the weather shall have 3500psi compressive strength and**

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shall have an air-entraining admixture to give air content between 5 to 7% of volume concrete.

- b. Tests: The testing of concrete compression strength shall be made by an independent testing laboratory approved by the Housing Authority. Contractor shall pay all costs of crating, transportation of samples of material and test samples from the job site to the laboratory. All cylinders shall be clearly marked to determine date and location of pour.
  1. For each slab poured by the Contractor three 6" concrete test cylinders shall be made. The testing laboratory shall break one (1) cylinder in seven (7) days for slab and two (2) cylinders in twenty-eight (28) days for slab and footing. All testing shall be in accordance with ASTM C39. Test results shall be mailed directly from testing laboratory to the home office of the Indian Housing Authority and to Housing and Urban Development, 500 W. Main St., Oklahoma City, Oklahoma, Attention: A&E Branch, Indian Program Division.
  2. Any Material found defective or non-conforming to specification shall be replaced or repaired at the expense of the Contractor.

### PART III EXECUTION

#### C-331 PREPARATION FOR POURING:

- a. Before concrete is placed, forms shall be carefully checked to make sure they are properly braced and made rigid. Remove all water and trash. Contractor shall notify Housing Authority at least 24 hours in advance of pour and secure preliminary approval. Give proper notice to Plumber and other trades and make sure all pipe, etc., are properly installed.

#### C-332 MIXING:

- a. Unless otherwise agreed, all concrete shall be transit-mixed, and shall comply with ASTM C94-64. Plant shall be operated by skilled mechanics under adequate supervision.

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**C-333 COLD WEATHER REQUIREMENTS:**

- a. Concrete shall be mixed and placed only when the temperature is at least 40 degrees F. and rising. Suitable means shall be provided for maintaining the concrete at a temperature of at least 50 degrees F. for a period of 72 hours after placing, except where high-early-strength concrete is used this period may be reduced to 24 hours.
- b. Concrete shall not be mixed when aggregates are coated with ice or frost.

**C-334 INSTALLATION:**

- a. **Waterproof Membrane:** Cover the entire area of cushion under slabs, with .006-thickness polyethylene plastic film using wide widths. All joints in polyethylene film shall be lapped and sealed with a double fold.
- b. Extend plastic film under all interior slab, pipes etc., and down 1'-0" beside footings, grade beams, and interior beams as in waffle slabs. Seal with Teflon tape and take every precaution to avoid puncture of film while installing steel and concrete.
- c. Repair any damage to membrane with Teflon tape.
- d. **Concrete Slabs:** Concrete slabs shall be finished monolithic. All slabs shall be poured to approved type screeds. When concrete has reached the proper consistency, the entire surface shall be treated with a wire mesh tamp and screeded to a smooth uniform surface.
- e. Remove vertical forms from doorsills, steps, and other risers and provide a uniform finish.
- f. **Finishing:** Floor slabs, risers, etc., shall be finished with a steel trowel and brought to a hard, slick finish. If necessary, floor shall be rubbed with a carborundum stone, machine sanded, or as otherwise directed to provide proper surface for applied floor finish.
- g. Porches and carports shall have light broom finish after steel trowel.



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C-335

### **SLUMP TEST:**

- a. Contractor shall provide a metal slump cone as required to ASTM Designation C-143-52 and make slump test in accordance with such designation when directed by Housing Authority.
- b. Concrete shall have a slump of not more than 4" for footings or 5" for slabs.
- c. All concrete shall be adequately cured, in compliance with ACI 301. During this curing time, no part of the concrete shall be permitted to become dry. Curing compound may be used only when air temperature is no greater than 75 degrees, and shall be a type that will not adversely affect bonding of flooring. When air temperature exceeds 75 degrees, the entire slab surface shall be covered with clear or white polyethylene film for a minimum of seven (7) days to aid in moisture retention and control surface cracking. Black polyethylene shall not be used.
- d. Patching and Finishing: Remove forms and shoring as called for in Division 3, Section 3A. Immediately after removing forms, all concrete surfaces shall be inspected and any bad joints, honeycomb, or other defects shall be patched before the concrete is thoroughly dry.
- e. The area to be patched and the surface around the same shall be wet to avoid absorption of water from patching mortar. The patch shall be made with the same material and in the same proportions used in the concrete, except that coarse aggregate shall be omitted and a small amount of white cement added.

## DIVISION 4 - MASONRY

### Section 4A UNIT MASONRY

#### PART 1 GENERAL

#### A-411 SCOPE:

- a. This section covers all masonry shown on plans including: mortar, face brick and metal wall ties.
- b. The Mason shall protect the property of the Housing Authority and the work of other trades and be responsible for damage caused by him or due to his neglect. He shall cooperate with other trades in the installation of their work. No masonry shall be laid when the temperature of outside air is below 40 degrees F. He shall protect all aluminum from mortar.

#### A-412 STORAGE OF MATERIALS:

- a. All masonry materials including cement and face brick shall be properly stored and protected from the weather. Brick shall be stacked on wood platforms and protected by tarpaulin from mud, water, snow and ice. Cement shall be stored in the dry.

#### PART II PRODUCTS

#### A-421 MATERIALS:

- a. Cement: Shall be TRINITY MASONRY CEMENT or IDEAL MASONRY CEMENT and shall comply with ASTM Designation C270 and shall be type II.
- b. Sand: Shall be washed, screened, sharp and free from vegetable or foreign matter.
- c. Mortar: Shall be mixed in the proportion of one-part masonry cement to three-parts sand (by volume).
- d. Face Brick: Equal to ASTM C-216, Grade S.W., sound, free of checks warps, and defects. Brick shall be 3" deep, 9" or 10" long, velour or sand faced with matching face header.
- e. Metal Wall Ties: Shall be standard grade 22 gauge, 7/8" wide galvanized and corrugated. Wood frame walls veneered with face brick shall be anchored with wall ties not over 15" vertically, not over 32" horizontally and not over 16" from openings.

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- f. Water: Clean and free from injurious amount of acids, alkalis, organic materials, or other deleterious substances.
- g. Minimum compressive strength, at 28 days, at least 1200psi.
- h. Air content shall no be less than 12% or more than 20% by volume.
- i. Masonry cement shall be packaged in bags having a minimum volume of 1 cu. Ft. with Name of Manufacturer and gross weight.

### **A-422 MASONRY CEMENT MORTAR:**

- a. Time Limits: Use and place mortar in final positions within 2.1/2 hours after mixing when the air temperature is 80 degrees F. or higher, when air temperature is less then 80 degrees F., place in final positions within these time limits.
- b. Retempering: Mortars that have stiffened within the time intervals as determined in (a) above because of evaporation of moisture may be retempered to restore workability by adding enough water as it is necessary to produce proper workability.

### PART III EXECUTION

### **A-431 LAYING:**

- a. Jointing: Joints are approximately 3/8". All joints shall be tooled with a 1" diameter tool to form a smooth dense concave joint.
- b. Expansion Joints: Shall be installed where shown on plans. Expansion joints shall extend completely through brick veneer, and shall have foam rope placed 1/2" from face of brick joints. Fill 1/2" deep joint with silicone sealant as specified in Section 7E.
- c. Brick Sills: Furnish and install brick windowsills where shown on plans. Brick shall be cut to uniform length and shape and neatly spaced with uniform slope.
- d. Weep Holes: Provide weep holes 3/8" x 3/8" to wall cavity. Weep holes shall be 4'-0" o.c. and in the second course of brick below floor line and shall be constructed at the time the masonry is laid.
- e. Lay brick in a full bed of mortar. All head joints shall be buttered both sides. Lay brick to a line keeping vertical and horizontal joints in line.

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Alternate courses shall bond 3" or width of header. Top course shall be a soldier course behind frieze board.

- f. Place 10mil. visqueen flashing under weep holes and windowsills nailed in place by other. Install wall anchors, lintels, wall ties, etc., as shown and required.

A-432

### **CLEANING AND WORKMANSHIP:**

- a. Remove all debris, refuse, and surplus material from the premises. Upon completion, all masonry shall be cleaned down with Masonry Cleaning Compound.
- b. During the process of cleaning, all masonry surfaces shall be carefully checked for loose mortar, holes, cracks, etc. All such defects shall be carefully repointed and filled.
- c. When necessary, joints in face work shall be cut out and repainted using care to match the old mortar in color and texture. Acid will not be used.
- d. When so directed, use such means as necessary to remove mortar, paint, asphalt, etc., and leave the work clean and presentable.

DIVISION 5 – METALS

Section 5A . STRUCTURAL AND MISCELLANEOUS METALS

PART 1                      GENERAL

A-511            SCOPE:

- a.    Furnish labor, materials and equipment as necessary to complete all structural and miscellaneous metal work shown on drawings and specified herein.

PART II                      PRODUCTS

A-521            MATERIALS:

- a.    Furnish and install steel columns where shown on plans. Columns shall be provided with required base plates and anchor bolts, head plates and lag screws.
- b.    Steel shall be ASTM A36, with prime coat of non-asphaltic oil base paint.
- c.    Where decorative steel columns are shown on plans, they shall be made of 1", 16 gauge, high strength square steel tubes braced with design as selected by IHA. Panels shall be 8" wide, L shaped on corners.
- d.    Eave and gable vents: See sections 6B and 7C.

PART III                      EXECUTION

A-331            INSTALLATION:

- a.    All work to be installed, plumb and true, accurately fitted and with tight joints. Work shall be adequately braced and reinforced. Provide boltholes for anchoring to wood members.

DIVISION 6 - CARPENTRY

Section 6A ROUGH CARPENTRY

PART 1 GENERAL

A-611 SCOPE:

- a. Furnish all labor and materials as shown on plans and described herein relating to rough carpentry, including such items as wood framing, studding and bracing, sheathing, roof trusses and decking.

PART II PRODUCTS

A-621 MATERIALS:

- a. Lumber: Except where otherwise particularly called for, lumber shall be at least No. 2 grade marked big mill, kiln dried Douglas Fir. Studs shall be stud grade Douglas Fir. Use pressure treated wolmanized lumber for sole plates.

Air-dried lumber (marked S-Dry) will be acceptable in the specie called for, or in other species, provided the listed stress ratings are met, subject to regional availability.

- b. Trusses: Roof trusses shall be shop built of profile shown, and comply with the following design data. (Profiles differing from the one detailed on plans will be accepted if sealed and meets the following criteria):

Live load -----20lbs. per square foot  
Dead load -----10lbs. per square foot  
Designed at 33.1/2% increase for short-term load.

- c. Complete shop drawings shall be forwarded by the Manufacturer, complete with Oklahoma registered professional engineer's stamp for approval prior to receiving and installing said trusses.
- d. Top and bottom cords shall be at least No. 2, 1500 "f" Douglas Fir or Southern Pine. Web members shall be at least No. 2, 1350 "f" Douglas Fir or Southern Pine. Joints in truss shall be reinforced with 20 gauge, hot dipped galvanized steel plates fastened to each side of truss with approved type fasteners. The design is shown on plan. The joints shall be designed

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to support the loads imposed. (Species of lumber used for trusses may change, provided the design criteria given here are met.)

- e. **Wood Studs:** Shall be stud grade Douglas Fir. Unless otherwise shown, studs shall be spaced 16"o.c. on all exterior walls and at maximum 24"o.c. for interior partitions, with single plate at bottom and double plate at top, and tripled at all exterior and interior angles. Wall between kitchen and living area to have stud spacing at 16o.c.
- f. **Flashing:** Furnish and install .010mil polyvinyl flashing at all windowsills and at brick ledge as shown on plans. Flashing at windowsill shall extend 2.1/2" under window stool and 2.1/2" under brick windowsill.
- g. **Access Door to Attics:** Provide 21.1/2" x 36" access in the ceilings where shown on plans. Provide frame, casing and removable 3/4" plywood door. Frame to extend to height of ceiling insulation.
- h. **Nailing:** All nailing throughout shall comply with the requirements of HUD Minimum Property Standards. 7/16 OSB
- i. **Truss to plate connectors:** Furnish and install 18 gauge galvanized connectors at each juncture of truss and/or rafter tail with double top plate of exterior walls, as SIMPSON "Strong Tie" H1.
- j. Provide multiple truss hangers as SIMPSON "Strong Tie" MTHJ or THJ at intersections of hip girder truss, hip truss, and jack trusses.

### PART III EXECUTION

#### A-631 INSTALLATION:

- a. All double headers (except garage) above openings in exterior walls shall be solid members from supporting studs up to bottom of plates – garage door lintel sized as shown on plans.
- b. All interior and exterior openings 4' in width or greater shall have two (2) studs supporting header and one (1) stud continuous from plate to plate. All other openings shall be single stud supporting header and single stud plate to plate.

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- c. Provide 2x4 double-header over all openings in non-load bearing walls up to 3'-0" wide, double 2x6 in openings over 3'-0" and up to 6'-0". All splices in double plate shall be staggered in each splice (top and bottom of head plate shall occur over stud).
- d. Where stud walls rest on concrete the bottom plate shall be anchored with RAMSET fasteners or ½"x8" bolts not over 48"o.c. at exterior walls. Provide anchors 12" maximum from each side of plate splice, end or corner. The Contractor may use concrete nails or approved power driven nails to anchor plates on interior partitions. Double nail each side of interior doorposts. Exterior plates to be placed on a 3" wide x ¼" thick compressible fiberglass strip for air seal. Sole plates shall be pressure treated lumber.
- e. All exterior corners of stud wall shall have 1/2" CD APA rated plywood or 7/16" OSB for corner bracing. Plywood shall extend from bottom plate to top plate and shall be nailed at 6"o.c. at edges and in the field; or provide let-in 1x4, #2 Yellow Pine or better. (Install one at 45-degree angle at each corner of wall, each way).
- f. Framing for Ducts and Pipes: The carpenter will do all cutting and framing for the installation of ducts, etc. Provide beams and special framing required. Provide raised floor where shown on Finish Schedule with opening for return air where shown. Provide fresh air intake for combustion in furnace and/or water heater closet as shown and required.
- g. Special care shall be taken to provide adequate support for furnace and water heater. Provide 2x4 braces to support floor under hot water tank.
- h. Roof Sheathing: Shall be 19/32" C-D INT-APA rated sheathing 40/20 exposure I, exterior glue, laid perpendicular to supports and nailed 6"o.c. on edges and 12"o.c. on other supports. All end joints shall bear on framing.
- i. Provide "Ply Clip" between each truss at each unsupported edge. Roof sheathing shall be covered with 1 layer of felt as specified under Roofing as soon as possible after sheathing is laid.
- j. Insulated Sheathing: See Division 7, Section 7F.



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- k. Framing for Cabinet Furring: Before furring is installed, both ceiling and walls shall be closed with gypsum board forming a complete fire stop between furring and wall and furring and ceiling. Wall framing supporting kitchen cabinets shall be 16"o.c.
- l. Flashing at brick ledge shall extend at least 6" up stud behind sheathing and 2.1/2" into brick work in joint two courses below floor line.
- m. See Division 7, Section 7C for roofing felt on all roof decks.

A-632 WORK FOR OTHER TRADES:

- a. The Carpenter will aid other trades by laying out partitions, doors, and openings so that their work will properly conform. Do all cutting required by other trades. Provide all wall anchors and header for wall anchored devices and equipment as required and detailed.
- b. The Carpenter shall aid the plumber in properly locating partitions for plumbing etc., and provide bucks and headers for support of fixtures.

DIVISION 6 – CARPENTRY

Section 6B FINISH CARPENTRY & MILLWORK

PART 1 GENERAL

B-611 SCOPE:

- a. Furnish labor, materials and equipment as necessary to complete all work in this section as shown on drawings and specified herein.

B-612 RELATED WORK IN OTHER DIVISIONS:

- a. Division 5 – Structural & Miscellaneous Metals
- b. Division 7 – Roofing
- c. Division 7 – Insulation
- d. Division 7 – Vinyl Siding & Soffit System
- e. Division 7 – Coated Insulation Systems
- f. Division 8 – Wood Doors
- g. Division 8 – Hardware
- h. Division 9 – Gypsum Drywall
- i. Division 15 – Mechanical
- j. Division 15 – Plumbing

PART II PRODUCTS

B-621 MATERIALS:

- a. Exterior Soffits: As shown on details, to be 3/8" A/C exterior Ruff-Sawn plywood of cedar or fir, with tight butt joints anchored with solid blocking. Vinyl covered soffit is optional, see Exterior Elevations & Section 7H of specifications.

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- b. Eave Fascia, Brick Frieze, and Gable Trim: To be 1"x6" clear redwood. Trim soffit @ fascia with ¼ round or angled redwood. Finger jointed clear redwood may be used or Hardi Board. See Division 7C for drip edge. Vinyl covered trim is optional, see Exterior Elevations and Section 7H of specifications.
- c. Exterior Trim: Including cornice, casings, and wood jambs, stops, etc., unless otherwise shown shall be clear redwood as detailed and required, stain finish. Vinyl covered trims are optional along with vinyl siding, see Exterior Elevations & Section 7H of specifications.
- d. Eave Vents: Furnish and install as detailed on drawings, and as specified in Section 7C, Roofing and Sheet Metal.
- e. Exterior Siding: 5/8" T-1-11 exterior plywood siding, redwood or fir., Include Hardi board siding (Install only if shown on plans for particular building type.) See Section 7H of specifications for vinyl siding.
- f. Interior Wall Finish: Where walls are finished in sheetrock, see Gypsum Drywall Division 9A.
- g. Interior Trim: All interior trim to be finished as specified in Section 9B of these specifications.
  - 1. Wall base to be "A" Grade W.P., 3.1/4" high, sanitary or "K" pattern, and match door casing pattern.
  - 2. Door casings shall be "A" Grade W.P., 2.1/4", sanitary or "K" pattern and match wall base pattern.
  - 3. All doorjamb shall have solid blocking on backside of jamb to stud. Jamb blocking or wedging shall be at three (3) points each side of door including at butts and latch. Provide stop.
  - 4. Windows are to be cased with gypsum board, with metal outside corners and J-mold adjacent to window, at jamb and head.
  - 5. Provide ¾" lumber core a/c plywood window stools with solid wood edge and 2.1/4" apron to match door trim.

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Ends of window stool shall be cut smooth and aprons shall be cut back at 45-degree angle. Note, aprons shall not have "Back Plow" but shall have flush back.

- h. **Wood Cabinets:** Cabinets to be manufactured pre-finished by BORO, TRIANGLE or GRANDVIEW, sample to be submitted to IHA for final approval and material finish selection, finish to match interior wood trim. Cabinet manufacturer must be certified by NKCA and meet or exceed the following minimum specifications.
1. All doors and drawer faces shall be "over-lay" type made from 3/4" hardwood veneer plywood. Edges shall be 3/8" solid wood. All drawers shall have nylon side guides and center rear glide of nylon.
  2. Stiles and rails 3/4" thick solid hardwood.
  3. Cabinet manufacturer shall furnish hinges, catches, pulls, etc. Hinges shall be spring type, hinges and pulls shall be antique brass finish. Cabinets shall have toe space and backs as shown and shall be sealed tight from insects.
  4. Where sinks and lavatories are recessed in worktop, the Plumber will furnish stainless steel rim for their installation. Wood shelves shall be minimum 5/8" plywood, A-B grade, with solid wood or vinyl-exposed edges. Base shelf shall be 5/8" thick plywood.
  5. Unless otherwise shown, cabinets shall have one full shelf in lower cabinet and shelves approximately 12" o.c. in upper cabinets, or as shown.
- i. **Plastic Laminate Countertops:** Shall be Standard Post Form Grade, mounted with waterproof adhesive as recommended by manufacturer and of color selected. WILSONART, FORMICA, NEVAMAR, or PIONITE.
- j. Countertops shall be furnished and completely assembled by cabinet manufacturer. Countertops shall be "Fully-Formed" with rolled edges and covered back splash at wall intersections.

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- k. A 24" removable kitchen cabinet shall be installed adjacent to the kitchen sink.
- l. Closets: Provide shelving as indicated on plans. All shelving except as otherwise called for shall be minimum 5/8" A-B plywood of width shown, with solid wood or vinyl exposed edges, and supported on 3/4" x 2 cleats in all places where it intersects walls.
- m. Provide center supports for shelves over 4'-0" long, or at corners, using hanger rod bracket. Where so indicated, provide hanger rods on metal brackets, see Section 8F, Finish Hardware.
- n. Plumbing Access Panel: In back of each tub or shower provide a 16"x18" "Cover Up" access panel, as manufactured by DIVER MANUFACTURING, INC. Install, plumb, and level and locate to furnish clear access to plumbing connections, see Section 15A, Plumbing, for access to hose bibs.
- o. Range Back Panel: Over each kitchen range furnish and install plastic laminate to match countertop the full width of the range space, extending up to vent-hood and down to 2" below countertop.
- p. Projected Window Seat: To be 3/4" lumber core a/c plywood, with solid wood edge. Install 2.1/4" sanitary or "K" pattern apron below 3/4" seat. Match configuration of other window stools.
- q. Projected Window Brackets (Outdoor): To be constructed of 6"x4" redwood configured as shown on plans, and thru-bolted as noted on plans into solid wall blocking. Framing and base for projected window to be 2x4's at 16"o.c. with 2x4 solid wood headers.
- r. Decorative Wood Screen (at entry of 1356 unit): To be installed on upper half of wing wall on top of 3/4"x5.1/2" wood shelf, fully trimmed out, stained and finished to match interior millwork. 3.1/2"x3.1/2" wood turn-post on open end, split post at wall, with six 2.1/2"x2.1/2" turn-posts spaced approximately 6" apart.

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PART III                      EXECUTION

**B-631            WORKMANSHIP:**

- a.    All millwork to be properly milled, cut true to detail, true angles, fine joints, scraped and smooth sanded.
- b.    Interior cabinet or related work as detailed on the drawings to be blocked and glued mitered joints and corner pinned. All face frames mortised and tennoned. Work assembled at the mill, insofar as practical, and delivered ready for erection. When necessary to cut and fit on job, make material with ample allowance for scribing.
- c.    All work made in accordance with measurements taken on job.
- d.    Mill assemblies joined with concealed nails and screws, and where practical, with mortise and tennons or with dowels, with glued blocks. All exposed nails counter-sunk. Use waterproofed glue of the quality suitable for the use intended.
- e.    All work to conform to Architectural Woodwork Institute (AWI) standards.

**B-632            CLEANING:**

- a.    Remove stain or soil that would show through finish or interfere with painting.
- b.    Repair or replace work damaged after installation.
- c.    Immediately remove excess materials and debris from site.

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Section 7C ROOFING AND SHEET METAL

PART I GENERAL

C-711 SCOPE:

- a. This section shall include roofing and sheet metal work, including edging, flashing and counter flashing and metal louver vents.
- b. The Roofer shall confer with other trades before starting roof and make sure all work is in place that affects the roof in any way.

C-712 RELATED WORK:

- a. Division 5 – Metals
- b. Division 6 – Finish Carpentry

PART II PRODUCTS

C-721 MATERIALS:

- a. Fasteners: Nails for fastening shingles shall be large head galvanized roofing nails. Nails shall be no less than 12 gauge with 3/8" head and of sufficient length to penetrate underside of roof deck. Power driven nails are permitted ( nails only), and shingles are to be staggered on five inches.
- b. Metal drip edge 1.1/2" x 3" with 1" projection from fascia edge. Twenty-four gauges galvanized to match-to-match roof pitches.
- c. Asphalt saturated felt should conform to Federal Specification HH-F-191a, Type II for 30lb. Felt. One complete layer.
- d. Rectangular asphalt strip shingles shall be three tab 12"x36", self sealing, minimum weight 225#; and shall be TAMKO "Seal-Down", organic felt backed, class "C" asphalt shingles, ASTM D225-80, Type 1, 20 year limited warranty; or approved equal meeting this minimum specification.
- e. Roll roofing conform to Federal Specification SS-R521 Type 1.

PART III EXECUTION

C-731 INSTALLATION:

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- a. Roofing shall not be laid until all sheet metal work, which extends into or under roofing is installed. Coordinate roofing work with metal flashing, gravel guards, etc. Roofing and flashings shall be weather tight; free from leaks and other defects.
- b. Installation conforming to the requirements contained in latest edition of the publication issued by the Asphalt Roofing Industry Bureau entitles "Manufacture, Selection and Application of Asphalt Roofing and Siding Products" which are applied to roofs. Install 26 gauge, 20" wide, galvanized metal valley flashing in all valleys, then cover decks with one layer of 30 pound asphalt saturated felt, laid with 3" horizontal joints. Nail felt to sheathing at 12" centers.
- c. Shingles shall be laid with true horizontal lines and staggered vertical joints, with not more than 5" exposure and not less than 2" head lap. Shingles shall be doubled at eaves and gables. Valleys shall have "closed valley flashing". Extend shingle a minimum of 12" up on side of valley and nail the cut to valley roof from other side and stick with mastic. Ridges shall be formed by banding rectangular shingles so as to have equal exposure, not less than 5" on each side and laid with not less than 2" head lap or prefabricated shingle ridges.
- d. Roofing shingles are to be installed with the starter row or shingles overlapping the felt underlayment strip by approximately 1/2".
- e. Each top of strip shingles shall be securely sealed to the under-course of adhesive factory applied to shingles.
- f. Sheet Metal Work: Furnish and install all metal edging, flashing, counter-flashing, metal louver vents and other sheet metal work shown on plans. Galvanized iron except where otherwise called for shall be 26 gauge, of size and shape detailed.
- g. Roof Vents: As shown on plans shall be furnished and installed by Sheathing Contractor. The Roofer shall cooperate with Heating Contractor in the installation of these and other equipment on roof.
- h. Ridge Vents: Shall be CERTAINTEED AIR VENT INC., "Ridge Filter Vent", furnished in 10'-0" long strips and installed in a continuous fashion, per manufacturer's details, along entire length of ridge. Cover



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with ridge cap shingles. Furnish complete with closures at joints and ends as required. LEIGH PRODUCTS, "Ridge Vent" will be acceptable equal.

- i. Eave Vents: Shall be CERTAINTEED AIR VENT, INC., "Strip Vent", model #SV201, aluminum louvered style (color as selected), furnished in 8'-0" long x 2" wide strips and installed in a continuous fashion, per plans, along entire length of all eaves, two sides at gables, four sides at hips. LEIGH PRODUCTS "Trim Vent" will be acceptable equal.

C-732 GUARANTEE:

- a. Upon completion of roof, the General Contractor shall furnish a letter to the Housing Authority, guaranteeing the roof and flashing against leaks for a period of two years.
- b. When so directed, the Contractor shall during the period of guarantee, make repairs without cost to the Housing Authority.

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Section 7E CAULKING AND SEALANTS

PART I                      GENERAL

E-711 SCOPE:

- a. Furnish all labor and material to seal and caulk as shown and called for on plans and as specified herein.
- b. The work in this Section includes caulking of joints and cracks as shown and described, backing material where called for and sealing the building to stop infiltration of air.
- c. Caulking and sealing as related to roofing and its flashing shall be done by roofer.

E-712 RELATED WORK:

- a. Division 7 – Coated Insulation System

PART II                      PRODUCTS

E-721 MATERIALS:

- a. Materials shall be delivered to the site in sealed containers with the manufacturer's name and trademark clearly indicated thereon.
- b. All materials shall be applied according to manufacturer's directions using qualified personnel, materials and methods.
- c. Colors: Shall be as selected by IHA for their particular application and location.
- d. Joint Back-Up Material; Shall be PECORA foam joint filler, No. 88, open cell polyurethane foam rope, for use in brick expansion joints and/or other locations as required.
- e. Joint Primer: Shall be PECORA silicone primer, No. P-64 for expansion joints, and as required and recommended by manufacturer for other applications.

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- f. Exterior Sealant: Shall be PECORA #895 silicone for all exterior use, including brick and concrete expansion joints and sealing of joints in doors, windows and miscellaneous trim.
- g. Interior Sealant: Shall be PECORA #AC-20 one-part siliconized acrylic latex, compatible for use with painted surfaces.
- h. Plumbing Fixtures: Shall be PECORA white gun-grade silicone, compatible for use in wet areas.

PART III EXECUTION

E-731 INSTALLATION:

- a. Workmanship: All caulking and sealing shall be done by skilled mechanics. All joints and spaces to be caulked shall be dry, clean and free of oil, grease, dirt, asphalt and loose aggregates.
- b. Clean with brush, lint free cloths, or compressed air if necessary. Joints more than ¼" deep shall be filled with backing to within ½" of the surface.
- c. Apply caulking with gun using proper size nozzle and according to manufacturer's directions. Fill joints solid and leave surface neat, smooth, clean and watertight.
- d. Where necessary to keep caulk from face of material, mask the adjoining face surfaces.

E-732 LOCATION:

- a. The following concealed areas shall be caulked forming a complete seal:
  - 1. Windows: Set window fins in continuous bead of caulk applied to sheathing.
  - 2. Doors: Set threshold of exterior doors in full bed of caulk.
  - 3. Storm Sheathing: Seal all small holes in wall sheathing with caulk, including nail holes and holes for pipe and wire, and all joints.

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- b. The following exposed areas shall be caulked to form a complete seal, (Bead shall be smooth and neat and shall not get on the face material):
1. Plumbing Fixtures: Sealant shall be silicone. Seal top edge of tub. Set sink and lavatory rim in sealant, (concealed and/or exposed).
  2. Windows, Door Casings, Metal Louvers, Etc.: Caulk perimeter of all exterior openings in walls.
  3. Brick and Siding: Caulk horizontal joints and vertical siding and horizontal changes in materials or ledges where noted or required.
  4. Base Boards: Caulk under baseboards on all exterior walls and interior partitions to form air seal.
  5. Trim: Seal all joints in finished trim and all nail holes.
  6. Interior Casings of Windows and Exterior Doors: Shall be sealed with liquid polyurethane foam before casings are applied.
  7. Caulk all penetrations in top plates (except gas lines).

E-733

### **GUARANTEE:**

- a. All work performed under this Section of the specification shall be guaranteed against defects in material and workmanship for a period of one year from the date of final payment on the contract.

When so directed by the Inspector, repair any such defect without cost to the Housing Authority.

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Section 7F    INSULATION

PART I            GENERAL

F-711        SCOPE:

- a.    Furnish and install all insulation shown on plans and herein called for. Provide a complete enclosure of insulation in walls and ceiling between interior of conditioned building and exterior or unconditioned space. No cellulose insulation shall be used.
- b.    This Section includes ceiling insulation, wall insulation and perimeter slab insulation.
- c.    General Contractor shall paint line 14" from bottom of truss for ceiling insulation height, blown-in insulation; or the equivalent for batt insulation, for R-Value specified.

F-712        RELATED WORK:

- a.    Division 7 - Coated Insulation Work

PART II        PRODUCTS

F-721        MATERIALS:

- a.    Wall Insulation: Shall be fiberglass paper backed friction fit batts (stapled in place) with an "R" rating of 13. Total exterior wall R-Value shall be R-19, or better. Unfaced, full thickness friction fit batts may be used, without staples, but must fit firmly in spaces where odd width cuts are made.
- b.    Ceiling Insulation: Shall be fiberglass with an "R" rating of 38. Batts shall be factory cut to the correct joist spacing, and shall be of the friction fit non-vapor barrier type. R-38 may be achieved with batt, blown-in, or combination batt/blown-in insulation. Provide batt insulation for attic access fastened to access door. (No vapor barrier required in ceiling.)
- c.    Wall Vapor Barrier: Shall be 4 mil thick polyvinyl tacked on the inside of all exterior wall studs under finish wall with all laps double folded at studs. This shall also be done where bathtub is on exterior walls.

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- d. **Perimeter Slab Insulation:** Shall be 1" thick x 24" deep, semi-rigid, polyisocyanurate foam insulation board, R-7.2 minimum, (bead board not permitted).
- e. **Insulated Sheathing:** Minimum quality shall be 1" x 4" x 8' polyisocyanurate, R-7.2 minimum per inch, exclusive of use of air space and/or radiant surfaces, as manufactured by CELOTEX "Thermax" or approved equal. Expanded polystyrene ("Bead Board") will not be accepted, regardless of stated R-Value. Insulation board shall be applied with tin cap nails designed for use with insulation board, and shall extend down to top of brick ledge as detailed.
- f. **Insulated Sheathing at exposed Polymer Stucco:** Shall be R-5 minimum, 1" thick, extruded polystyrene, applied as recommended by coating system installer/manufacturer.

### PART III EXECUTION

#### F-731 INSTALLATION:

- a. **Workmanship:** Insulation shall be installed by skilled mechanics who shall provide 100% cooperation with various other trades.
- b. **Wall and ceiling insulation** must be applied after electrical plumbing, and ductwork is in place. Insulating material shall be applied according to the recommendations of the manufacturer with the vapor barrier between insulation and the interior of building. Care shall be taken not to fill combustion air ducts or eave vents.
- c. **Rigid wall sheathing and batt insulation** shall be applied to all exterior stud walls and shall form seal from floor to ceiling.
- d. **3" x ¾" thick compressible fiberglass material** shall be installed continuous under all exterior sole plates.
- e. **Location of Insulation:** All ceilings, including garage, except porch shall be insulated. All exterior walls of living unit shall be insulated, (including party wall of garage). Exterior face of all footings shall receive perimeter insulation.

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- f. **Repair Damage:** The Contractor shall repair any damage to insulation caused by the last minute work of the Electrician, Plumber or other mechanics.