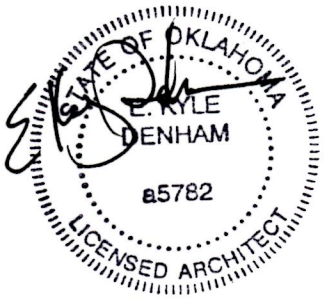
QUAPAW TRIBAL ELDERS HOUSING
FOR QUAPAW TRIBE
OKLAHOMA



MARCH 12, 2013

MARCH 2013

Prepared By:

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INVITATION TO BID

PROJECT
QUAPAW TRIBAL ELDERS HOUSING
FOR QUAPAW TRIBE
OKLAHOMA

PROJECT SCOPE
One and two bedroom duplex units including excavation, concrete footings & slab, wood framing, brick veneer, finishes, mechanical, electrical & plumbing. Site work by others.

BIDDING DOCUMENTS

Drawings and Specifications are available from the office of Patterson Latimer Jones Brannon Denham, Inc., 303 S. Main Street, P. O. Box 1743, Joplin, Missouri 64802 (417) 624-4004, as follows:

Plan deposit for General Contractors only is required in advance as follows:
Deposit $ 25.00 per set, complete refund.

Above deposits are returned provided General Contractor submits a legitimate bid and returns all documents in good condition within seven days after bids are received.

SALES TAX

No sales tax is required. Sales tax exempt project.

Allowances:

A. Brick: $480.00 per 1,000 bricks (materials only)
B. Ceramic Floor Tile: $3.50 per square foot (materials and installation)
C. Carpet: $22.00 per sq. yd. (material and installation)
D. Light Fixtures: $1,000.00 per duplex (materials only)
E. Plumbing Fixtures: $500.00 per duplex (faucet & trim only, toilets, sinks & tubs/showers in base bid)
F: Appliances: $2,300 per duplex (range, range hood, dishwasher, microwave, garbage disposer)

OWNER: Quapaw Tribe of Oklahoma

DATE: MARCH 2013

BID FORM

PROJECT DATE:

QUAPAW TRIBAL ELDERS HOUSING
FOR QUAPAW TRIBE
OKLAHOMA

The Undersigned proposes to complete the New 1 & 2 Bedroom Duplexes for Quapaw Tribe, Quapaw, Oklahoma and to furnish all materials, machinery, tools, equipment, labor, transportation, and other means required to complete the project in accordance with the Drawings and Specifications, by this reference made a part thereof, prepared by Patterson Latimer Jones Brannon Denham (hereafter called the Architect) and dated March 2013.

Bidder acknowledges receipt of the following Addenda:_____

The Bidder has made a careful examination of the site on which the Project is to be constructed, has become informed as to the kind of facilities required before and during the construction of the Project, and has become acquainted with the labor conditions which would affect the work.

The Bidder agrees that if his bid is accepted, the terms and conditions set out in these Contract Documents shall govern.

BID SCHEDULE

BASE BID

The Undersigned agrees to perform all work indicated on the Drawings and described in the Specifications and Addenda thereto, for the General Contract for this work for the sum of:

_____

_____ Dollars ($_____)

ALTERNATE BIDS

For the alternates described below, the Undersigned agrees to add to or deduct from the Base Bid sum the following amounts as itemized:

ALTERNATE BID NO. 1 – (ADD/DEDUCT)_____

_____ Dollars ($_____)

To provide refrigerator, wash and dryers in each unit.

TIME OF COMPLETION

The Undersigned agrees, if awarded the contract, to complete construction and service installations by _____ calendar days. The Undersigned further agrees to commence construction no later than fourteen (14) calendar days from date of receiving Notice of Award.

The Undersigned further agrees that, from the compensation otherwise to be paid, the Owner may retain the sum of $1,000.00 for each day thereafter, Sundays and legal holidays excluded, that the Contract remains incomplete, which sum is agreed upon as the proper measure of liquidated damages which the Owner will sustain per diem by the failure of the undersigned to complete the work at the time stipulated, and this amount is not to be construed as in any sense a penalty.

DECLARATION

The Undersigned hereby declares that he has carefully examined the Invitation to Bid, the Instructions to Bidders, the Drawings and Specifications, has visited the actual location of the work, has consulted his sources of supply, has satisfied himself as to all quantities and conditions and understands that in signing this Bid, he waives all right to plead any misunderstanding regarding the same.

The Undersigned understands that the base bid, alternate bids and unit prices, as well as his competence, responsibility and any other factors of interest to the Owner will be a consideration in making the contract award.

The Owner reserves the right to reject any or all bids, to accept or reject any or all alternate bids and unit prices and to waive any informality or irregularity concerning the bids received as it may be in his interest to do so.

SUPERVISION

The Undersigned agrees that he will provide experienced, competent supervision to the work, using his best skill and attention. He will carefully study and compare all drawings, specifications, and other instructions and report at once to the Architect any error, inconsistency or omission which he may discover.

_____
Legal Name of Bidder

_____
Address of Bidder

_____
Authorized Officer

(seal if bid is by a corporation)

_____
Title

DIVISION 3 CONCRETE

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 WORK INCLUDED

A. Furnish all material, equipment, transportation and facilities, and perform all labor necessary for the following:
   1. Cast-in-place concrete.
   2. Finish and curing of concrete.
   3. Concrete mix designs.

1.03 TESTING

A. The Contractor shall employ the services of a qualified testing agency and laboratory to perform testing of concrete as required in these Specifications.

B. The Contractor shall give timely notice to the testing agency prior to ordering the delivery of any concrete so that the testing agency can schedule the presence of testing personnel for sampling and testing.

1.04 SUBMITTALS

A. Submit two (2) copies of laboratory trial mix designs proposed in accordance with Method 1 ACI 301, or one (1) copy each of five (5) consecutive test results and the mix design used from a record of past performance in accordance with ACI 301 Method 2.
   1. Selection of Proportions: Proportions of ingredients for concrete mixes shall be determined and/or certified by an independent testing laboratory in accordance with the requirements of the ACI Standard "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318).
   2. All concrete mix designs shall include the following information:
      a. Proportions of cement, fine and coarse aggregates and water.
      b. Water-cement ratio, design compressive strength, slump and air content.
      c. Type of cement and aggregates.
      d. Type and dosage of all admixtures.
      e. Special requirements for pumping.
      f. Range of ambient temperature and humidity for which the design is valid.
      g. Any special characteristics of the mix which require precautions in the mixing, placing, or finishing techniques to achieve the finished product specified.

3. The testing laboratory providing concrete mix designs shall be selected by the Contractor, and paid for by the Contractor.

B. Submit manufacturer's data showing compliance with specifications for the following products:
   1. Curing compounds
   2. Admixtures

C. Submit a sample ready-mixed concrete delivery ticket in accordance with requirements of ASTM C 94.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. All materials shall be so delivered, stored and handled, as to prevent the inclusion of foreign materials and damage of materials by water or breakage. All materials shall be clean and processed from reliable sources. Contractor (or supplier in the case of using ready-mixed concrete) shall submit to the Architect a mix proportion certification for approval before placing of any concrete. Contractor shall acknowledge the requirement of the use of curing compound as specified and its availability before placing of any floor slabs.

B. Portland Cement: Portland cement shall conform to the Standard Specifications of the ASTM C 150, Type 1, latest edition. Cement produced by the same mill shall be used throughout the project. One sack of cement shall be considered as one cubic foot of volume or 94 pounds by weight.

C. Fine Aggregate (Sand): Fine aggregate shall consist of sand having clean, hard, durable, uncoated grains, free from deleterious substances and conforming to ASTM C 33.

D. Coarse Aggregate: Coarse aggregate shall consist of crushed limestone, or other approved inert materials with similar characteristics having clean, hard, durable, uncoated particles, free from deleterious matter and conforming to ASTM C 33, Size 67.

E. Mixing Water: Mixing water shall be clean and free from oil, acid, and injurious amounts of vegetable matter, alkalies, and other impurities. Preferably, City water shall be used for concrete mix.

F. Air-Entraining Admixture: Master Builders MB-AE10 or approved equal, conforming to ASTM C 260. All exterior concrete subject to exposure shall be air-entrained. Total air content required shall be between five (5) percent and seven (7) percent.

G. Water Reducing Admixture: Master Builders Pozzolith 322-N or approved equal containing no calcium chloride. (ASTM C 494 Type A) (See Cold Weather Requirements. For temperatures between 30 degrees and 40 degrees use Accelerating Pozzolith NC534. The use of calcium chloride in the concrete is prohibited.)

2.02 MIX PROPORTIONS

A. Portland Cement: 5½ sacks per cubic yard (minimum) for all concrete.

B. Pozzolith: 3 to 6 fluid ounces per 100 lbs. of cement.

C. Water: as required not to exceed slump requirement.

D. Strength:
   1. Floor Slabs: As indicated on the Drawings.
   2. All other concrete: 3,000 psi at 28 days.
   3. For curb & gutter, sidewalks and for other exterior flatwork refer to Section 32 16 00.

E. Moisture found in aggregates shall be taken into consideration. Moisture in the aggregate shall be measured in accordance with ASTM C 566. The methods of measuring concrete aggregates shall be such that the proportions can be accurately controlled and easily checked at any time during the work. Measurements and materials for ready mixed concrete shall conform with the Standard Specifications of the ASTM C 94, latest edition.

2.03 WORKABILITY

A. The mixture shall produce a concrete that can be worked readily into corners and angles of forms and around reinforcement without excessive spading or separation of materials. In no case shall more than one part of fine aggregate be used to one part of coarse aggregate nor shall amount of coarse aggregate be such as to produce harshness in placing, or honeycombing in the structure. The standard slump test (ASTM C 143) shall be used to check the workability of each batch of concrete. The maximum slump allowable shall be as indicated on the Drawings. The maximum slump allowable for pavement shall be 4 inches. The Architect may allow or order variations from this amount as required by specific conditions of the job.

2.04 MIXING

A. Concrete shall be mixed in a truck mixer until there is a uniform distribution of materials. The entire contents of the drum shall be discharged before recharging. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer. The mixer shall be operated at not greater than twenty r.p.m. Mixing shall continue for at least one and one-half minutes after all the ingredients are in the mixer. The delivery ticket for each load of concrete shall state the proportions of each material in the mix for that load.

B. Concrete transported in a truck mixer, agitator, or other transportation device, shall be discharged at the job and placed in its final position in the forms within one and one-half hours after the introduction of the mixing water to the cement and aggregate, or the cement to the aggregate, except that in hot weather or under other conditions contributing to quick stiffening of the concrete, the maximum allowable time may be reduced by the Architect.

C. Retempering of concrete which has partially hardened, that is, remixing with or without additional aggregate, cement or water, will not be permitted.

2.05 REINFORCEMENT

A. Reinforcing steel shall be manufactured from new billet steel of 60,000 psi yield strength and shall conform to ASTM A 615. Wire mesh fabric shall conform to ASTM A 185.

2.06 FORMS

A. Forms shall be true and rigid and built to line, shape and grade shown on the plans. They shall be made of sound and reasonably smooth lumber, plywood, or steel. Joints shall be mortar tight and forms shall be tied and braced to prevent any bulging or deflection during concreting. Cut cleanouts at bottom as required for removal of sawdust and debris.
   1. Plywood: PS 1, sound, undamaged sheets with straight edges.
   2. Lumber: Construction grade.
   3. Steel: Minimum 16 gage sheet, well matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
   4. Carton Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete until initial set.
   5. Form Release Agent: Colorless mineral oil which will not stain concrete.

B. All form ties shall have ¾" cones with 1" break-back.

C. Before reusing forms, or when using second-hand lumber for forms, they shall be cleaned and all nails removed therefrom. Immediately before erecting formwork, all forms shall be thoroughly cleaned of all dirt, debris and foreign matter, and a light coating of form release agent applied.

D. Box out for all slots, chases, recesses or openings as shown on the Drawings and as required by the work of all other trades. Box out for all temporary openings such as pipe spaces, and build forms to seal up when and as required.

E. Design, engineer, and construct forms, shores, bracing, and other temporary supports to support loads imposed during construction, in accordance with ACI 347. Design under the direct supervision of a licensed Professional Engineer experienced in design of this work.

2.07 VAPOR BARRIER UNDER SLAB-ON-GRADE

A. 10 mil thick polyethylene film, clear or black, with 12 inch minimum lap at adjoining edges.

2.08 WATERSTOP

A. PVC as manufactured by Vinylex Corporation; Knoxville, TN (423) 690-2211, Greenstreak, St. Louis, MO (314) 225–9400, or BoMetals, Inc., Powder Springs, GA (770) 439-8577.

B. Profile: 4 inch width, ribbed, with center bulb.

2.09 EPOXY BONDING AGENT (ASTM C 881)

A. Concresive Liquid (LPL) by Master Builders Technologies; San Carlos, California (800) 227-8464.

B. EVA-POX Epoxy Paste No. 22 by E-poxy Industries, Inc.; Ravena, New York (800) 833-3400.

C. Uniweld by Permagile Industries, Inc.; Plainview, New York (800) 645-7546.

D. Substitutions: Similar product by other manufacturers. Submit name, compressive strength and tensile strength for acceptance.

2.10 PREMOLDED JOINT FILLER

A. Non-extruding resilient type conforming to ASTM D 1752, Type I or Type III. For sealant and backer material over premolded joint filler refer to Section 07 92 00.

2.11 CHEMICAL CURE FOR SLABS

A. Non-residual compound designed and certified to be compatible with finish flooring:
   1. Dress & Seal by L&M Construction Chemicals, Inc.; Omaha, Nebraska (800) 362-3331.
   2. Kure-N-Seal by Sonneborn Building Products; Minneapolis, Minnesota (800) 433-9517.

2.12 MOISTURE CURE

A. Water: Potable.

B. Moisture-retaining Coverings: Burlap, cotton mats, or other moisture-retaining fabrics; AASHTO M 182, ASTM C 171, or AASHTO M 73. Provide burlap free of sizing. Rinse thoroughly in caustic soda to remove soluble substances and make burlap more absorbent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify anchors, seats, plates, reinforcement, precast catch basins, floor drains and other items to be cast into concrete are accurately placed, held securely, and will not cause hardship in placing concrete.

B. Refer to Drawings showing plumbing for location of precast catch basins and floor drains.

3.02 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Apply bonding agent in accordance with manufacturer's instructions. Do not apply bonding agent at slab-on-grade construction joints.

3.03 PLACING REINFORCEMENT

A. Reinforcing bars shall be accurately placed and securely tied with No. 18 iron wire at all intersections. Bars and mesh shall be supported above subgrade on precast concrete blocks and above forms on steel chairs and spacers. Metal hangers shall be used for support of vertical reinforcing. Metal chairs, which are in contact with the exterior surface of the concrete, shall be galvanized. Layers of bars shall be separated by supporting bars with wire from formwork. The use of pebbles, pieces of broken stone or brick, metal pipe and wood blocks for support of bars shall not be permitted.

B. Splicing and laps shall be as shown on Drawings.

C. In slabs on grade and elevated slabs, position welded wire fabric or reinforcement bar 2" above bottom of slab. During concrete placement operations, assign one man to keep fabric properly positioned and during this time "he shall do nothing else". Reinforce such slabs with wire mesh fabric of the sizes indicated on the Drawings. For all exterior stoops, walks, curbs, and exterior slabs, refer to Drawings.

D. All reinforcement shall be unpainted, uncoated, clean and free of rust or scale before being placed.

E. Placement of reinforcing shall be approved by the Architect and/or Engineer before concrete is placed.

3.04 PREPARATION FOR PLACING CONCRETE

A. Preparation: Equipment for chuting, pumping, and pneumatically conveying concrete shall be of such size and design as to assure a practically continuous flow of concrete at the delivery end without separation of the materials, and all of the details thereof shall be submitted to Architect for approval in advance of the use of such equipment. The use of gravity-flow or aluminum chutes or conveyors for transporting concrete horizontally will not be permitted. Where placing of structural concrete by pumping methods are required comply with ACI 304.2R "Placing Concrete By Pumping Methods".

B. Inserts: Give the various trades and subcontractors ample notification and opportunity to install anchors, nailers, pipes, conduits, boxes, stair nosings, pipe bollards, inserts, thimbles, sleeves, frames, vents, wires, supports, or other items required to be built into the concrete by the provisions of the Drawings or of the Specifications governing the work of such trades and subcontractors, or as may be necessary for the proper execution of their work. Obtain suitable templates or instruction for the installation of such items as are not required to be actually placed in the forms by the affected trades or subcontractors themselves.

C. Contractor shall provide access for delivery and provide sufficient equipment and manpower to rapidly place all concrete.

1. All work shall be in accordance with ACI 304-83 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete".
2. Formwork shall have been completed; snow, ice, water, and debris shall have been removed from within forms.
3. Expansion joint material, anchors, and all embedded items shall have been positioned.
4. Subgrades shall be sprinkled sufficiently to eliminate water loss from the concrete.

3.05 DEPOSITING CONCRETE

A. General: Place concrete in reasonably uniform layers, approximately horizontal, 12 to 18 inches thick exercising care to avoid vertical joints or inclined planes. The piling up of concrete in the forms, in such manner as to cause the separation or loss of any of its ingredients, will not be permitted. Concrete which has partially set or hardened shall not, under any circumstances, be deposited in the work. Place concrete in the forms as nearly in its final position as is practical to avoid rehandling. Exercise special care to prevent splashing the forms or reinforcement with concrete. Remove any hardened or partially hardened concrete which has accumulated on the forms or reinforcement before the work proceeds. Do not place concrete on previously deposited concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the respective member or section, except as hereinafter specified. Do not permit concrete to drop freely any distance greater than four feet (4'-0"). Where longer drops are necessary use a chute, tremie, or other approved conveyance to assist the concrete into place without separation. Do not place directly into any excavations where water is standing. If the place of deposit cannot be successfully pumped dry, place through a tremie with its outlet end near the bottom of the place of deposit.

B. Slump: Concrete shall not be placed when its plasticity, as measured by slump test, is outside the limits shown on the Drawings.

C. Vibration: As soon as concrete is deposited, thoroughly agitate the same by means of mechanical vibrators and suitable hand tools, so manipulated as to work the mixture well into all parts and corners of the forms, and entirely around the reinforcement and inserts. Mechanical vibrators shall have a minimum frequency of 7000 revolutions per minute and shall be operated by competent workmen. Over-vibrating and use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at many points, from 18 to 30 inches apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from 5 to 15 seconds duration. A spare vibrator shall be kept on the job site during all concrete placing operations. Do not insert vibrator into lower courses that have begun to set. Avoid placing vibrator in contact with reinforcing steel.

D. Concrete shall not be placed on frozen ground.

E. Thoroughly wet all forms and contact surfaces before placing concrete. For pavement the base shall be thoroughly wetted prior to placing concrete and kept moist at all times during the placing operation. If a situation arises such that the base is allowed to dry out, it shall be rewetted before placement is allowed to continue.

F. Conveying Concrete: Convey concrete from the mixer to the place of final deposit by methods which will prevent the separation or loss of the ingredients. Concrete to be conveyed by pumping will require approval of Architect for each class of concrete specified before being used.

G. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during the depositing of concrete.

3.06 FINISHING

A. For all surfaces covered in final construction or below grade, the ties shall be broken off and all voids shall be grouted.

B. For vertical surfaces exposed to view all ties shall be broken off, all voids grouted, all fins, joints, ridges, and form defects carefully removed. Surfaces shall be rubbed with cement or abrasive bricks and water within 24 hours after removal of forms, and a general uniform appearance attained.

C. Interior slabs shall be floated to a uniform level surface with a uniform slope to drains, as shown on the Drawings. Final finish for building floors shall be hard steel trowel finish giving a hard, dense, smooth surface. If sufficient fines cannot be worked up from base slab, the Contractor may apply a dry mix of cement and sand passing a No. 16 sieve and mixed in the ratio of 1:2½ by volume. Compact and work surface mix into base course. The surface mix shall never be added as a "drier" to absorb excess surface water.

D. Monolithic Slab Finishes:
   1. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping, mortar setting beds for tile, or other bonded applied cementitious finish flooring material, and as otherwise indicated.
      a. After placing slabs, plane surface to tolerances for floor flatness (Ff) of 15 and floor levelness (Fl) of 13. Slope surfaces uniformly to drains where required.
      b. After leveling, roughen surfaces before final set with stiff brushes, brooms or rakes.

   2. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified.
      a. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating.
      b. Begin floating, using float blades or float shoes only, when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of Ff 18 - Fl 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
   3. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and surfaces to be covered with resilient flooring, carpet, thin set ceramic tile, paint, or other thin film finish coating system.

a. After floating, begin first trowel finish operation using power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of Ff 20 - Fl 17.

4. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified; then immediately follow with slightly scarifying surface by fine brooming.
5. Nonslip Broom Finish: Apply nonslip broom finish to exterior concrete sidewalks, stairs, landings, ramps, and elsewhere as indicated.
   a. Immediately after light steel trowel finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

E. As soon as floor will bear weight after final troweling, sweep clean of any dirt and soil.
1. Apply two (2) coats of chemical curing compound in strict accordance with manufacturer's instructions, except where finish floor will be thin-set terrazzo or seamless troweled flooring.
2. Preferred cure for floors where terrazzo finish or seamless troweled flooring will be applied is moisture cure. Cover floor with burlap or cotton mats and maintain continuously moist by misting spray for a minimum of seven days after concrete is placed.

3.07 CURING AND REMOVAL OF FORMS

A. After placement, exposed concrete not covered by forms shall be moist cured. After forms are removed, exposed concrete surfaces shall be moist cured for an additional time to total seven (7) days since the placement of the concrete.

B. Concrete shall be cured at a temperature within the range of 50°F., to 100°F. For cold weather and hot weather requirements, see articles so titled below.

C. Forms shall remain undisturbed until the concrete has gained sufficient strength to sustain its own weight and any temporary or permanent load that may be placed on it during the building of the structure. For pavement, forms may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations, but not sooner than 24 hours from cessation of concrete placement. In no case shall forms for other concrete items be removed in less than three (3) days after placing concrete.

3.08 REQUIREMENTS FOR COLD WEATHER

A. No concrete shall be placed on iced or frozen subgrade. No concreting will be permitted in temperatures below 32°F. Do not use frozen materials containing ice or snow. Ascertain that

forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost, snow, and ice and temperature of these materials is above 32°F before placing concrete.

B. Comply with the following for minimum temperature of concrete delivered to jobsite:
   1. Air temperature 32-45°F: Concrete temperature 60°F minimum.
   2. Maximum concrete temperature: Not to exceed the minimum required temperature by more than 10°F.

C. Combine water heated to above 100°F with aggregates before cement is added. Do not add cement to water or aggregates having temperature greater than 100°F.

D. When temperatures of 40°F or lower occur during the placing and curing of concrete, maintain temperature of concrete at not less than 55°F for at least three (3) days.
   1. Make arrangements before placement to maintain required temperature without damage from excessive heat.
   2. Do not use combustion heaters during first 48 hours without precautions to prevent exposure of concrete to exhaust gases containing carbon dioxide and carbon monoxide.
   3. Provide temporary housings or coverings including tarpaulins or plastic film. Keep protection in place and intact at least 24 hours after artificial heat is discontinued.
   4. Avoid rapid dry-out of concrete due to overheating, and avoid thermal shock due to sudden cooling or heating.

E. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306R and as herein specified.

F. No admixtures shall be used except with approval of the Architect. For temperatures between 32°F and 40°F, use Master Builders Accelerating Pozzolith NC 534.
   1. Mix proportions shall be as follows:
      a. 32-40°F 24-32 oz. per 100 lbs. of cement

G. The use of salts, chemicals, or other foreign materials in the concrete mix to lower the freezing point is prohibited.

3.09 REQUIREMENTS FOR HOT WEATHER

A. When hot weather conditions exist that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305R and as herein specified.

B. Temperature of concrete at time of placing: Not to exceed 90°F. Maintain an accurate reading thermometer at the job site to check temperature of concrete. Reject concrete before placing if temperature of concrete exceeds 90°F.

C. Execute special precautions to protect fresh concrete before and during finishing when the rate of evaporation of surface moisture from concrete exceeds 0.2 pounds per square foot per hour. Determine rate of evaporation in accordance with ACI 305R. Provide special precautions as required:

1. Cool ingredients before mixing to reduce concrete temperature at time of placement. Mixing water may be chilled, or chopped ice may be used to control the temperature provided the water equivalent of the ice is calculated to the total amount of mixing water.
2. Dampen subgrade and forms.
3. Cover reinforcing steel with water-soaked burlap so the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

3.10 EXTERIOR AND INTERIOR CONTROL JOINTS

A. Saw concrete slab within 12 hours after placing. Saw joints shall be 1/5 of the total slab thickness in depth for building floor slabs.

B. Joints for slabs shall be where shown on Drawings.

3.11 TESTING

A. Testing shall include unconfined compression test of molded concrete cylinders, slump tests, air content tests (where air-entrainment is required) and fresh concrete temperature tests.
   1. Testing for Building: Concrete shall be sampled, cured and tested for compressive strength in accordance with ASTM C 31, ASTM C 39 AND ASTM C 172. Compressive tests shall be prepared in sets of three (3) cylinders for each test. Specimens for each set shall be obtained at regularly spaced intervals during discharge of the middle half of a load from a stationary mixer or truck. A minimum of one (1) set shall be taken for each 1000 square feet of surface for slabs or walls. Not less than one (1) set shall be taken per 40 cubic yards of concrete nor less than one (1) set shall be taken for each foundation or structure except when placing a number of items each smaller than 10 cubic yards, in this case one (1) set per 10 cubic yards shall suffice.

   2. All cylinders must be immediately stored adjacent to pour under similar atmospheric conditions, under wet sand, burlap, or polyethylene for approximately 24 hours after preparation. Avoid any impact during this time period.
      a. After initial storage the cylinders (still in their molds) shall be packed in sealed polyethylene bags, wet sand or other resilient materials and delivered to the testing laboratory.
      b. The testing laboratory shall moist-cure the cylinders until they are tested.
   3. Test for Slump, Air Content and Temperature:
      a. Slump test shall be taken for each set of test cylinders as well as from each load from a stationary mixer or truck to test consistency of concrete. Tests shall be in accordance with ASTM C 143 and ASTM C 172.
      b. The acceptance test for air content of air-entrained concrete shall be made regularly in accordance with ASTM C 173.
      c. The temperature of the fresh concrete from each set of cylinders shall be recorded.
   4. Test Cylinder Identification: Test cylinder sets shall be dated and numbered consecutively. Each cylinder of each set shall be given an identifying letter (A, B, C). In areas such as floor slabs and foundations, a sketch shall be prepared to identify pour locations. The following data shall be recorded to the cylinder mold at the time the cylinders are prepared and shall be included in the test report:

a. Test cylinder number and letter.
b. All foundations or structures covered by this test.
c. Proportions of concrete mix or mix identification.
d. Maximum size coarse aggregate.
e. Specified compressive strength.
f. Slump, air content (where applicable) and fresh concrete temperature.
g. Date placed and time placed.
h. Ambient temperature at time of placement
i. Name of inspector making cylinders.

5. Test Cylinder Results: Specimens shall be tested in accordance with Standard Method of Test for Compressive Strength of Molded Concrete Cylinders (ASTM C 39).
   a. Cylinder A at seven (7) days. The result should be at least 60% of the specified 28 day compressive strength.
   b. Cylinder B at 28 days.
   c. Cylinder C shall not be tested but shall be kept in reserve for possible testing at a later date, not to exceed 60 days.
   d. A report of test results shall be furnished directly to the Architect/Engineer.

END OF SECTION

DIVISION 4 MASONRY

SECTION 04 05 00 MORTAR AND GROUT FOR MASONRY

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

B. American Society for Testing and Materials (ASTM):
   1. ASTM C 91 - Specification for Masonry Cement.
   2. ASTM C 94 - Specification for Ready-Mixed Concrete.
   3. ASTM C 109 - Test Method for Compressive Strength of Hydraulic Cement Mortars.
   4. ASTM C 143 - Test Method for Slump of Hydraulic Cement Concrete.
   5. ASTM C 144 - Specification for Aggregate for Masonry Mortar.
   6. ASTM C 150 - Specification for Portland Cement.
   7. ASTM C 207 - Specification for Hydrated Lime for Masonry Purposes.
   8. ASTM C 270 - Specification for Mortar for Unit Masonry.
   9. ASTM C 387 - Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
   10. ASTM C 404 - Specification for Aggregates for Masonry Grout.
   11. ASTM C 476 - Specification for Grout for Masonry.
   12. ASTM C 1019 - Method of Sampling and Testing Grout.
   13. ASTM C 1142 - Specification for Ready Mixed Mortar for Unit Masonry (Prohibited).

C. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

1.02 SUMMARY

A. Section Includes: Mortar and grout for unit masonry.

B. Related Sections:
   1. Section 04 21 00 - Clay Masonry Units: Installation of mortar and grout, reinforcement and anchorages.
   2. Section 04 22 00 - Concrete Masonry Units: Installation of mortar and grout, reinforcement and anchorages.

1.03 TESTING

A. The Contractor shall employ the services of a qualified testing agency and laboratory to perform testing of mortar and grout.

B. The Contractor shall give timely notice to the testing agency prior to the start of masonry work and during the progress of masonry work so that test specimens can be made and tested to adequately control the quality of the work.

1.04 QUALITY ASSURANCE

A. Testing CMU Grout:
   1. Determine and certify that proportions of ingredients for mix design will provide the specified compressive strength for each type of grout.
   2. Test mix design prior to beginning construction of CMU walls. Test grout during construction of CMU walls 16 feet high, or higher, at the rate of one test for each 5000 square feet of wall. Test in accordance with ASTM C 1019.

B. Mortar:
   1. Determine and certify that proportions of ingredients for mix design in accordance with ASTM C 270 will provide the specified strength.
   2. Test mortar during construction of CMU walls 16 feet high, or higher, at the rate of one test for each 5000 square feet of wall. Test mortar in accordance with ASTM C 109.

1.05 SUBMITTALS

A. Submit mix proportions for grout and test data indicating mix meets the minimum strength required at 28 days.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store sand for mortar on plastic sheeting to prevent contamination by extraneous chemical in earth beneath.

1.07 PROJECT CONDITIONS

A. Environmental Requirements:
   1. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
   2. Specific Cold Weather Requirements: When the ambient air temperature is below 40 degrees F, heat mixing water to maintain mortar temperature between 40 degrees F and 120 degrees F until placed. When the ambient air temperature is below 32 degrees F, heat the sand and water to maintain this mortar temperature.

B. For other measures and hot weather requirements refer to Section 04 21 00 and Section 04 22 00.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C 150, normal-Type I or Type II; gray color. Fly ash, slag, and pozzolans not permitted as substitutes for Portland Cement.

B. Mortar Aggregate: ASTM C 144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter.

C. Grout Aggregate: ASTM C 404; use of blast furnace slag is not permitted. Maximum coarse aggregate size, 3/8 inch.

D. Calcium chloride is not permitted in mortar or grout. Admixtures or other chemicals containing Thyocyanates, Calcium Chloride or more than 0.1 percent chloride ions are not permitted.

E. Hydrated Lime: ASTM C 207, Type S.

F. Quicklime: ASTM C 5, pulverized to pass a #20 mesh sieve.

G. Water: Potable.

H. Admixtures: Not permitted unless approved by the Architect prior to construction.

2.02 MIXES - MORTAR

A. Mortar: Type S for general use in accordance with the Proportion specification of ASTM C 270.
1. Mortar Proportions:

	Proportions by Volume		
Mortar Type	Portland Cement	Hydrated Lime or Lime Putty	Damp Loose Aggregate
S	1	½	2¼ to 3 times sum of volumes of cements and lime used

2. Mixing of components on-site is acceptable.
3. Mixing on-site water and packaged dry blended mix for mortar (ASTM C 387) is acceptable.
4. Use of ready mix mortar (ASTM C 1142) is prohibited.

B. Pointing Mortar: Duplicate original mortar proportions. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2% of Portland cement weight.

C. Mortar Color: Control mortar mix to determine desired gray tone color. No additives.

2.03 MIXING - MORTAR

A. Thoroughly mix mortar ingredients in accordance with ASTM C 270, in quantities needed for immediate use.
1. Maintain sand uniformly damp immediately before the mixing process.
2. Slake lime according to manufacturer's directions and allow to become cold before using.
3. Provide uniformity of mix and coloration.
4. Do not use anti-freeze compounds.

5. If water is lost by evaporation, retemper only within 2 hours of mixing. Do not retemper mortar more than 2 hours after mixing.

2.04 MIXES - GROUT FILL

A. Grout fill is for concrete masonry unit bond beams, lintels, and reinforced cells with reinforcing bars and embedded plates.
   1. Compressive Strength: 2500 psi minimum at 28 days, as determined in accordance with the provisions of ASTM C 1019.
   2. Slump: 8 inches, minimum; 10 inches, maximum, taken in accordance with ASTM C 143.
   3. Use coarse grout when grout space is equal to or greater than 4 inches in both directions.
   4. Use fine grout when grout space is smaller than 4 inches in either direction.
   5. Do not use air-entrainment admixtures.

2.05 MIXING - GROUT

A. Grout: Batch and mix grout in accordance with ASTM C 94 or ASTM C 476 for site batched and mixed grout. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 INSTALLATION

A. After reinforcing of masonry is securely tied in place, plug cleanout holes with masonry units. Brace against wet grout pressure.

B. Install mortar and grout under provisions of Section 04 21 00.

END OF SECTION

SECTION 04 21 00 CLAY MASONRY UNITS

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Provide clay masonry units, in place, with ties, flashing, and other accessories required for structurally sound walls, partitions, and veneer.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store on the site, masonry units, sufficient in quantity for the entire job, and secure approval by Architect and/or Owner's Representative before placing any of same in the work.

B. Store units on pallets above grade.

PART 2 PRODUCTS

2.01 BRICK

A. King size brick 9 5/8" x 3 5/8" x 2 5/8” as required, laid in running bond as indicated on Drawings.

B. Brick for Base Bid shall have an allowance of $480.00/ 1,000 bricks materials only, no labor or mortar.

2.02 VENEER TIES AND VENEER REINFORCING

A. Manufacturers:
   1. Dur-O-Wal, Inc.
   2. Heckmann Building Products, Inc.
   3. Masonry Reinforcing Corporation of America.

B. In seismic categories D, E, and F the assembly shall consist of:
   1. Dur-O-Wal, seismic veneer anchors, or
   2. Heckmann channel slot No. 132 and anchor No. 362, or
   3. Masonry Reinforcing Corporation of America RJ-711 veneer anchor and wire-bond clip.
   4. Continuous 9 gauge wire veneer reinforcement snapped into the shear lugs of the assembly anchor or clip.

C. In seismic categories A, B, and C the assembly shall consist of:
   1. Dur-O-Wal D/A 213, or

2. Heckmann No. 75 Pos-i-Tie, or
3. Masonry Reinforcing Corporation of America RJ-711 veneer anchor.

D. The assembly shall allow for an adjustment up or down of 1¼ inch.

E. Components shall be hot-dipped galvanized in accordance with ASTM A 153, Class B-2.

2.03 CLEANER

A. Sure Klean, as manufactured by Process Solvent Company, Inc.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas, preparatory work, and conditions under which work of this Section will be performed. Correct any unsatisfactory conditions. Do not proceed with masonry work until unsatisfactory conditions have been corrected.

B. Beginning masonry work indicates acceptance of existing conditions.

3.02 INSTALLATION

A. Lay no units having a film of water or frost on their surfaces.

B. Lay no masonry when temperature is below 45 degrees F, unless it is rising, and at no time when below 40 degrees F, without Architect's permission. Such permission shall not relieve the Contractor from responsibility for the work, however. If permitted to work below 40 degrees F, make provisions to heat and dry materials and protect work from freezing.

C. Install cavity wall drainage net and weep vents as specified and indicated on the Drawings. Cavity wall drainage net shall be run continuously between block back-up and brick veneer, near the bottom course.

D. Build in bolts, ties, other metal anchors, sleeves, miscellaneous metals, and wood nailing strips as necessary to secure masonry together or to other materials. Use no continuous wood nailing strips.

E. Build in steel lintels, bearing plates and flashings in contact with masonry. Bed flashings in mortar.

F. Close up any recesses after pipes, ducts, conduits and other items are in and have been inspected by Architect and/or other proper authorities and do all patching after other trades have completed their work. Special attention shall be taken in closing all voids at cuts for outlet boxes, plumbing rough-ins, cleanouts, or other temporary openings.

G. Cut exposed masonry with masonry saw to produce clean-cut edges.

H. At end of each work day or shut down period, cover walls with strong waterproof membrane overlapping walls 12 inches minimum on each side and securely anchor in place.

I. Use a full height story pole at all corners. Level first and frequent courses with instrument.

J. Build in door and window frames and their anchors. Slush steel door frame jambs and heads full of grout. Slush cells full of mortar where excessive cutting for conduit or other devices has weakened masonry.

K. Where fresh masonry adjoins previously set masonry, clean, roughen and lightly wet the set masonry before joining with new. Where stop-offs are necessary in horizontal runs, rake back the masonry; toothing not permitted unless approved by Architect.

L. Position scaffolding walk-way in vertical position at end of each work day to prevent mortar splatter due to rain.

3.03 POINTING AND CLEANING

A. Point up masonry mortar joints having holes, cracks, gaps, or loose mortar, after first cutting out any defects.

B. After walls have been "topped-out" and allowed to dry a minimum of 7 days, clean face brick surfaces with cleaner. The specific formulation of cleaning agent shall be determined by consultation between cleaner manufacturer and masonry manufacturer, based on the final masonry selection and the installation conditions. Apply cleaning agent and rinse per manufacturer's directions and as hereinafter specified.

C. Carefully clean masonry, removing large particles of mortar with a putty knife or chisel. Before the cleaning agent solution is applied, thoroughly soak surface with clean water. Apply solution with long-handled, stiff fiber brush, taking precaution to cover clothing, hands, and arms to prevent burns. Place over area no greater than 15 to 20 sq. ft. before the wall is again hosed down with clear water immediately after cleaning. Remove all trace of cleaner before it attacks the mortar joints.

D. Application of water repellant to all exterior brick work shall be done after walls are thoroughly cleaned, as specified. Refer to Section 07 19 00.

END OF SECTION

DIVISION 6 WOOD AND PLASTICS

SECTION 06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Rough carpentry includes blocking, nailers, framing, furring, and other wood items required for support and attachment of other construction materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Framing lumber:

Use	Grade	Species
Studs, Joist & Plates	No. 2	Southern Pine
Other Blocking, Nailers, Furring	Utility	Any Species

B. Blocking and nailers in contact with block, concrete, roof deck, or roof membrane shall be treated to prevent decay and meet AWPA Standard C2 and ASTM E 84. Lumber shall be grade stamped and bear AWPA mark.

C. Lumber and Boards: Sound, kiln-dried to 19% moisture content, maximum, well manufactured and free from warp that cannot be corrected by bridging or nailing. Unless otherwise indicated, furnish dressed wood for exposed-to-view work and S4S for concealed work.

D. Grade and trade mark each piece of lumber (or each bundle). (Not required if each shipment is accompanied by certificate of inspection issued by grading association.)

E. Plywood: U.S. Product Standard PS 1; size and grade as indicated or as appropriate for the use.

F. Nails, spikes, bolts, washers, nuts, screws, gun-driven pins, and other anchors and accessories indicated or required to secure all items. Fasteners for use with preservative treated wood shall

have coatings or be of a corrosion resistant material that will provide long-term protection from the corrosive effect of the preservative.

PART 3 EXECUTION

3.01 FRAMING

A. Frame openings required by other trades.

B. Add nailers, blocking, and furring as necessary to secure finish materials and fixtures.

C. Unless indicated, cut all members square and erect in full bearing; nail, screw or otherwise rigidly secure.

END OF SECTION

SECTION 06 17 20 WOOD TRUSSES

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

B. Reference Standards: The design and fabrication of wood trusses shall conform to:
   1. "National Design Specifications for Stress Grade Lumber and Its Fastenings" by National Forest Products Association (latest revision).
   2. "Timber Construction Standards" by American Institute of Timber Construction (latest revision).
   3. "Design Specifications for Light Metal Plate Connected Wood Trusses" by Truss Plate Institute (latest revision).

1.02 SECTION INCLUDES

A. The work in this section shall consist of furnishing all materials, equipment and labor necessary for the prefabrication, delivery, and permanent setting of wood trusses shown on the Drawings.

B. The work shall include all the miscellaneous parts, including bridging, temporary and permanent bracing, and all related items of hardware, metal hangers, anchors and special metal shapes deemed by the truss manufacturer to be necessary for the proper prefabrication, erection, assembly, supporting, and anchoring of the wood trusses.

1.03 DESIGN REQUIREMENTS

A. Roof trusses shall be designed for the live load and bottom chord load indicated on the Drawings plus dead load.

B. Design calculations for trusses shall be by a qualified Structural Engineer registered in the State of Oklahoma and pertinent data, calculations, and shop drawings shall bear his Professional Engineer's Seal.

1.04 SUBMITTALS

A. Shop drawings of proposed trusses showing member sizes, and connections shall be submitted to the Architect for approval.

B. Design calculations shall be submitted to the Architect indicating conformance to required loads, codes, and standards.

1.05 QUALITY ASSURANCE

A. All trusses and other roof structural components shall be fabricated in a properly equipped manufacturing facility of a permanent nature.

B. Trusses shall be manufactured by experienced workmen, using precision cutting and truss fabricating equipment, under the direct supervision of a qualified foreman. All trusses shall be fabricated under strict rules of inspection and quality control, open to the inspection of the Architect or his representative at all times.

C. Each truss shall be stamped with the name and address of the truss manufacturer.

D. Field Assembly: Where field assembly of the truss sub-components is necessary, the connections shall be in accordance with the details shown on the truss design drawings, approved by the Architect.

PART 2 PRODUCTS

2.01 LUMBER

A. All lumber used for truss members shall conform to the published stress ratings for the species and grades as set out in the official grading rules of the appropriate lumber association or as listed in the referenced standards. Wherever notes on the Drawings or truss engineering designs calls for lumber which exceeds the minimum set forth therein, the Drawings and/or truss engineering designs shall govern.

B. Moisture: At the time of fabrication, the moisture content of all lumber shall be within the proper limits, as stated in the reference standards.

C. Dimensions: All lumber shall be kiln-dried fir or yellow pine of the fully recognized nominal sizes shown on the Drawings or truss engineering designs. All members shall be cut from lumber.

2.02 CONNECTIONS

A. All truss connector plates shall be manufactured from ASTM A 446, Grade A prime commercial quality galvanized sheet steel of no less than 20 gauge thickness which has a minimum yield of 33,000 psi and a minimum ultimate tensile strength of 45,000 psi. The corrosion resistant coating shall be ASTM A 525, G90 or G60 commercial class hot dipped galvanized before stamping.

B. Framing anchors and ties shall be provided by the Contractor in accordance with the Drawings.

2.03 FABRICATION

A. All truss members shall be accurately cut to length, angle, and be true to line to assure tight joints for finished truss.

B. All truss members and connector plates shall be properly placed in special jigs and the members tightly clamped in place, remaining in that position until the connector plates have been pressed into the lumber simultaneously on both sides of the joints.

C. Camber shall be built into the trusses by the fabricator at a rate 1.5 x (dead load + live load deflection) by properly positioning members in fabrication jig.

PART 3 EXECUTION

3.01 HANDLING, ERECTION, AND BRACING

A. Fabricated trusses and sub-components shall be so handled and stored that they are not subject to damage. If the trusses are to be stockpiled prior to erection, sufficient bearing points and/or bracing shall be provided to prevent excessive lateral bending or tipping over.

B. Erect trusses using procedures, handling, safety precautions, and temporary bracing to prevent toppling or dominoing of the trusses during erection, and any other safeguards or procedures consistent with good workmanship and good building erection practices.

C. During the entire construction period, Contractor shall provide means for adequate distribution of concentrated loads so that the carrying capacity of any one truss and/or other component is not exceeded.

D. Proper erection bracing shall be installed to hold the trusses true and plumb and in safe condition until permanent truss bracing and bridging can be solidly nailed in place to form a structurally sound roof framing system. All erection and permanent bracing shall be installed and all components permanently fastened before the application of any loads.

E. The permanent structural horizontal or diagonal truss bracing, to ensure the overall rigidity of the roof system, shall be in accordance with the Drawings and manufacturer's shop drawings.

END OF SECTION

SECTION 06 40 00 ARCHITECTURAL WOODWORK

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. This Section includes furnishing and installing:
   1. Standing and running trim.
   2. Cabinets.
   3. Countertops.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings indicating dimensions, materials, fastenings, joinery, and interface with other materials.
   1. Cabinet shop drawings shall include plans, elevations, sections, trim details, and hardware.

B. Samples: Submit samples of plastic laminate and grommets for color selection.

C. Warranty: At the completion of the cabinetry and casework, submit manufacturer's written warranty covering installation, material, and workmanship for not less than one (1) year from time of completion of the work.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. All wood kiln-dried to 6% to 11% moisture content for interior; 9% to 12% for exterior.

B. All oak suitable for transparent finish.

2.02 INTERIOR TRIM MATERIALS

A. Solid lumber for interior finish trim and handrails unless specified otherwise on Drawings, shall be select oak.

2.03 CABINETS AND CASEWORK

A. Cabinets and casework, unless noted otherwise, shall be as follows:
   1. Exposed face of cabinets shall be of solid Alderwood, Alderwood plywood, or Alderwood fibercore finish material. Shelving shall be A-B oak plywood with hardwood edge.

2. Furnish all anchors required for attachment of all units to walls and unit to unit.
3. All cabinets shall conform to custom grade as defined in AWI Quality Standards, Sixth Edition, Version 1.1, Section 400B.
4. Colors shall be as selected by Architect for all laminate interiors, exteriors and trim.

B. Construction:
1. Joinery: Cabinet corner joints incorporating dowel pin construction must be glued and clamped under pressure to assure rigid load-bearing corner joints.
2. End Panels: All cabinet ends shall be ¾" thick panels of balanced construction, precision bored for dowel pins installed in horizontal cabinet members. All units shall have continuous one piece end panels for added load capabilities.
3. Bottoms and Tops: All cabinet bottoms and tops shall be ¾" thick panels of balanced construction. Panels are to be precision bored to receive fluted dowel pins, inserted with glue. Dowel pins shall extend from the panel ends into mating hole patterns in the cabinet's side panels.
4. Doors: Solid hinged doors shall be ¾" thick material of balanced construction. Doors 36" and less in height shall have two (2) hinges per door. Doors over 36" must have three (3) hinges per door. All edges must be finished.
5. Cabinet Backs: All unit backs shall be ¼" thick panels of oak veneered plywood.
6. Drawers: Fronts ¾" thick material of balanced construction. Sides and ends shall be medium density particle board. Bottoms shall be ¼" A-B oak plywood.
7. Adjustable Shelves: All adjustable shelves in cabinets shall be ¾" thick when under 36" long and 1" thick when 36" long and over.

C. Plastic Laminate Countertops:
1. High pressure decorative plastic laminate shall be bonded to top, edges, and backsplash of industrial grade medium density particle board. Make straight runs in one piece whenever possible.
2. Countertops shall conform to custom grade as defined in AWI Quality Standards, Sixth Edition, Version 1.1, Section 400C.
3. Provide a post-formed high pressure decorative laminate edge at countertop edges not having a backsplash.
4. General Contractor shall cut holes in countertops for sinks, lavatories, grommets, and other inserts as required by various trades.

D. Hardware:
1. Pulls: Stanley #4484.
2. Hinges: Stanley self-closing as indicated on Drawings.
3. Shelf Supports: K & V #255 standards with #239 supports.
4. Drawer Guides: K & V #1300.
5. Grommets: Doug Mockett #BG - color to match laminate.
6. All hardware shall have satin chromium finish unless otherwise noted.

All hardware to be submitted for final approval by Owner.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all miscellaneous finish carpentry items indicated, in straight, true alignment with tight hairline joints between items.
   1. Apply finish in longest practical lengths; miter external corners; cope re-entrant corners; scarf splices, make all joints tight. Leave work in prime condition for finishes by other trades.
   2. In general, radius edges slightly, but where details indicate square edges, furnish as such and touch-sand exposed edges after installation.

B. Install hardware, metal, and other specialty items as indicated, where not installed by other trades.

C. Anchor all casework in place with concealed fastening systems and scribe to adjoining surfaces as required and as indicated in shop drawings.

D. Field Jointing Tops:
   1. Where practicable, make in same manner as factory jointing using dowels, splines, adhesives, and fasteners recommended by manufacturer.
   2. Locate field joints as shown on accepted shop drawings, factory prepared so that there is no job site processing to top and edge surfaces.
   3. Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection.
   4. Provide flush hairline joints in top units.
   5. Scribe and cut for accurate fit.

END OF SECTION

SECTION 07 21 00 THERMAL INSULATION

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Provide, install and complete all building insulation shown on the Drawings or specified herein, or both, including:
   1. Batt insulation (misc. closures).
   2. Blown cellulose

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original packaging with labels indicating the manufacturer, type of material, thickness, and R value.

B. Handle and store products in a manner to prevent damage and moisture absorption.

PART 2 PRODUCTS

2.01 INSULATION MATERIALS

A. 6" un-faced fiberglass insulation (rolls or batts) as required for use in miscellaneous areas as shown on the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install insulation in as great a length as possible, minimizing end joints. For faced insulation, tape end joints.

B. Provide adequate coverage so that insulation R value is provided for a complete wall or ceiling area.

C. Fit insulation into constricted areas to achieve complete coverage.

D. Fit mineral wool batting into gaps requiring a fire barrier as indicated on the Drawings.

END OF SECTION

SECTION 07 31 00 SHINGLES

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Provide all labor and materials necessary to complete the shingled roof with edge flashing and ridge vents.

1.03 SUBMITTALS

A. Samples:
   1. Submit samples of shingles in available colors for color selection.
   2. Submit a 12 inch long segment of roof vent.

B. Manufacturer's Data:
   1. Submit manufacturer's data on roof vent indicating free opening area per lineal foot.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's packaging, free of damage or soiling.

B. Store and handle materials in a manner to prevent damage or soiling.

1.05 WARRANTY

A. Contractor shall provide Owner with a 30-year limited warranty from the roof manufacturer.

PART 2 PRODUCTS

2.01 SHINGLES

A. Laminated double-layer, random-butt design fiberglass shingles shall be "Heritage 30", as manufactured by Tamko Asphalt Products or approved equal.

B. Shingles shall have ceramic mineral granules with self-sealing thermoplastic adhesive and be U. L. Class 'A' rated, meeting ASTM Spec. D 3462.

C. Shingles shall be 12" width by 36" length. Provide 5" exposure.

D. Color shall be as selected by Architect.

2.02 EDGE FLASHING

A. Prefinished style “D” drip edge flashing.

2.03 RIDGE VENT

A. Continuous roof ridge vent, shingle-over type, by one of the following:
   1. Shingle Vent II, as manufactured by Air Vent, Inc., A Certainteed Company.
   2. Roof-Over-Vent-A-Ridge, as manufactured by Alcoa Building Products, Inc.
   3. Ridge Master Plus, as manufactured by Mid-America Building Products.

2.04 UNDERLAYMENT

A. 30 lb. asphalt-saturated organic felt conforming to ASTM D 226 or ASTM D 4869.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install inderlayment and shingles in strict accordance with manufacturer's requirements.

B. Install edge flashing in accordance with the recommendations of the National Roofing Contractor's Association, Roofing and Waterproofing Manual, Fourth Edition.

C. Install ridge vent at all ridges in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Throughout the work, seal and caulk joints where shown on the Drawings and elsewhere as required to provide a positive barrier against passage of moisture and passage of air.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary craft and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.04 SUBMITTALS

A. Materials list of items proposed to be provided under this Section;

B. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;

C. Manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

D. Samples: Accompanying the submittal described above, submit Samples of each sealant, each backing material, each primer, and each bond breaker proposed to be used.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original packaging with labels intact.

B. Handle and store products in a manner to prevent damage.

C. Do not retain at the job site material which has exceeded the shelf life recommended by its manufacturer.

PART 2 PRODUCTS

2.01 SEALANTS

A. Except as specifically otherwise approved by the Architect, use only the types of sealants specified.

B. Application and Sealant Required:
   1. Concrete sidewalk joints: Sonneborn, Sonolastic SL1 (one-part self-leveling polyurethane) or SL2 (two-part polyurethane sealant for horizontal joint).
   2. Joints between surface applied reglets and umbrella flashings and other materials: Sonneborn, Sonolastic NP 1 (one part) polyurethane.
   3. Control joints in masonry and joints between precast concrete panels: Sonneborn, Sonolastic 150, one part silyl-terminated non-sag elastomeric sealant.
   4. Interior perimeter joints between metal and/or hollow metal door and window frames and adjacent materials, and other joints indicated by drawings for caulk: Sonneborn, Sonolac (acrylic latex caulk).
   5. Exterior joints between metal items or between metal and masonry: Sonneborn, Omniseal (silicone sealant).

C. Colors for each sealant installation will be selected by the Architect from standard colors normally available from the specified manufacturers.
   1. In concealed installations, and in partially or fully exposed installations where so approved by Architect, use standard gray or black sealant.

2.02 PRIMERS

A. Use only those primers which are non-staining, have been tested for durability on the surfaces to be sealed, and are specifically recommended for this installation by the manufacturer of the sealant used.

2.03 BACKER MATERIAL

A. Use only those backer materials which are specifically recommended for this installation by the manufacturer of the sealant used, which are non-absorbent, and which are non-staining.

B. Acceptable types include:
   1. Closed-cell resilient urethane or polyvinyl-chloride foam.
   2. Closed-cell polyethylene foam;
   3. Closed-cell sponge of vinyl or rubber;
   4. Polychloroprene tubes or beads;
   5. Polyisobutylene extrusions;
   6. Oil-less dry jute.

2.04 BOND-PREVENTATIVE MATERIALS

A. Use only one of the following as best suited for the application, and as recommended by the manufacturer of the sealant used:
   1. Polyethylene tape, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated;
   2. Aluminum foil complying with MIL-A-148E;
   3. Wax paper complying with Fed Spec UU-P-270.

2.05 MASKING TAPE

A. For masking around joints, provide masking tape complying with Fed Spec UU-T-106c.

2.06 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Concrete and masonry surfaces:
   1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.
   2. At open joints, remove dust by mechanically blown compressed air if so required.
   3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
   4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
   5. Remove laitance and mortar from joint cavities.
   6. Where backup is required, insert the approved backer material into the joint cavity to the depth needed.

B. Steel surfaces:
   1. Steel surfaces in contact with sealant:
      a. Sandblast as required to achieve acceptable surface for bond.
      b. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale.
      c. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
   2. Remove protective coatings on steel by sandblasting or by using a solvent which leaves no residue.

C. Aluminum surfaces:
   1. Aluminum surfaces in contact with sealant:

a. Remove temporary protective coatings, dirt, oil and grease.
b. When masking tape is used for protective cover, apply the tape just prior to applying the sealant.

2. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.03 INSTALLATION OF BACKER MATERIAL

A. Use only the backer material recommended by the manufacturer of the sealant used for the particular installation, compressing the backer material 25% to 50% to achieve a positive and secure fit.

B. When using backer of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backer stock.

3.04 PRIMING

A. Use only the primer recommended by the manufacturer of the sealant for the particular installation, applying in strict accordance with the manufacturer's recommendations as approved by the Architect.

3.05 BOND-BREAKER INSTALLATION

A. Install an approved bond-breaker where recommended by the manufacturer of the sealant adhering strictly to the installation recommendations as approved by the Architect.

3.06 INSTALLATION OF SEALANTS

A. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.

B. Equipment:
1. Apply sealant under pressure with power-actuated or hand gun, or by other appropriate means.
2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.

C. Thoroughly and completely mask joints where the appearance of sealant on adjacent surfaces would be objectionable.

D. Install the sealant in strict accordance with the manufacturer's recommendations thoroughly filling joints to the recommended depth.

E. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.

3.07 CLEANING UP

A. Remove masking tape immediately after joints have been tooled.

B. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

END OF SECTION

DIVISION 9 FINISHES

SECTION 09 21 16 GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Furnish and install gypsum drywall assemblies for interior finishing and related items required to complete the work indicated on the Drawings and herein specified, or both.

B. For steel studs and accessories refer to Section 05 40 00.

1.03 SUBMITTALS

A. Submit a one foot long sample of each casing bead, "L" bead, expansion joint, bull nose corner bead, and corner bead for approval.

B. Submit manufacturer's data for each type of gypsum board.

1.04 QUALITY ASSURANCE

A. The Contractor shall coordinate the work between the trades to insure compliance with the Specifications, and to permit orderly and expeditious procedure in executing the work.

B. Workmanship: Installation and taping of drywall interior finish shall be done by qualified mechanics experienced in this craft and capable of rendering a satisfactory installation in every respect.

C. Temperature Requirements:
   1. If gypsum wall board is installed in the winter, heat not less than 60° F shall be maintained in the structures at all times.
   2. Temperature shall be maintained during installation of board as well as during the taping process.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packages or bundles with name of manufacturer, type of material, and sizes clearly marked on the packaging and containers.

B. Store materials above the ground, protected from the weather.

PART 2 PRODUCTS

2.01 MATERIALS

A. In exposed locations wall board shall be fire-rated type X panels 5/8 inch thick x 48 inches wide as manufactured by U.S. Gypsum Company, Temple-Inland Forest Products Corporation, National Gypsum Company, or approved equal.

B. Gypsum wall board in locations above ceilings shall be fire rated type X in thickness as detailed on Drawings x 48 inches wide with tapered edges as manufactured by U.S. Gypsum Company, Temple-Inland Forest Products Corporation, National Gypsum Company, or approved equal.

C. Tape shall be cross-fibered, with chamfered edges feather thin, as recommended by the gypsum wall board manufacturer.

D. Joint cement and topping cement shall be that approved product manufactured by, and recommended by, the gypsum wall board manufacturer.

E. Fasteners: U. S. G. Type S Bugle Head screws.

F. Adhesive for direct applications shall be per gypsum wall board manufacturer's recommendations.

G. "MJ" casing beads, "L" beads, expansion joints, bull nose corner beads and corner beads shall be rigid PVC as manufactured by Alabama Metal Industries Corporation (800-366-2642).

PART 3 EXECUTION

3.01 EXAMINATION

A. The Contractor shall examine the framing to which the gypsum board is to be applied. If any defects in alignment or blocking are noted which would not allow the installation of the gypsum board as set forth in the Specifications, the defects shall be corrected before the gypsum board installation is started. Commencement of work on the framing constitutes acceptance of the framing by the Contractor.

3.02 GYPSUM BOARD INSTALLATION

A. To minimize end joints, use wall board of maximum practical length. End joints shall be staggered.

B. Provide PVC edge trim where wall board edge abuts dissimilar material.

C. All flat joints shall be reinforced with tape, cemented with joint cement and finished with topping cement as recommended by gypsum board manufacturer, to a smooth, invisible joint.

D. Where joints are not exposed to view, all flat joints shall be reinforced with tape and cemented with joint cement (Fire Taped), or UL listed adhesive fire tape.

E. All screws shall be slightly set and covered with topping cement so as to become invisible.

F. Corners shall be constructed as follows unless otherwise shown on the Drawings.
   1. Inside corners shall be reinforced with tape folded to conform to adjoining surface to form straight true angle.
   2. Outside corners shall have PVC corner bead. PVC corner bead shall be concealed by at least two coats of compound.

G. No cracked boards shall be accepted in any case. Boards with occasional marred surface or edge may be allowed, if in the judgment of the Architect, these boards can be patched with compound.

H. After final coat of topping compound has dried, sand lightly to produce smooth finished surface. Apply one (1) coat of interior latex primer on all finished surfaces after sanding to seal drywall prior to application of spray texture. Final finish by spray application of a light orange peel texture in areas scheduled to be painted.

I. All ends of gypsum wall board shall occur over studs, joists, furring channels, or other firm support.

3.03 CLEAN-UP

A. At the completion of the work, all areas shall be left in a clean and neat manner with debris removed. All stains and other foreign matter shall be cleaned from floors, trim, walls, and ceiling. All areas shall be left ready for painting.

END OF SECTION

SECTION 09 90 00 PAINTING AND COATING

PART 1 GENERAL

1.01 REFERENCES

A. General Conditions and Special Conditions of the Contract and Division 1 of the Specifications are a part of this Section as if stated in full herein.

1.02 SUMMARY

A. Paint and finish schedules indicate the minimum coatings that can be anticipated to produce the desired results. Before submitting bid, Contractor and material suppliers examine such schedules and these specifications and should number or type of coatings be insufficient or inappropriate to achieve proper results notify Architect and receive his instructions; otherwise, should coatings specified not produce the desired coverage or finish results, Architect may require additional or other type coating and such shall not constitute a basis of claim for "Extra Work".

B. Notwithstanding any omissions or discrepancies in paint and finish schedules, every item logically requiring paint or finish shall be properly painted or finished. Consult Architect for proper finish if not specified.

1.03 SUBMITTALS

A. Contractor shall submit full range of color chips for Architect's color selection. It is anticipated that a limited palette of colors will be selected, however, no color or variety of colors selected will constitute claim for extra charge by Contractor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish first-quality paints as manufactured by Sherwin-Williams, Pittsburgh, Glidden, Pratt and Lambert or Benjamin-Moore.

2.02 MATERIAL

A. Except as noted, schedules herein indicate selections of materials from Sherwin-Williams to be used as a guide for establishing type of quality and finish desired.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces of rust, grease, oils, and other foreign matter that would adversely affect finished appearance or protective properties of the paint.

B. Fill holes and cracks in surfaces with spackle. Apply no paint until spackle is thoroughly dry.

C. Touch up knots and sappy spots on wood materials to be painted with pure shellac before priming.

D. Sand and otherwise clean and smooth wood surfaces to be finished. Do not use steel wool on surfaces scheduled to receive water-based finishes.

E. Before painting or finishing adjacent areas, remove and protect hardware, accessories, plates, light fixtures and similar items. On completion of area, replace such items.

3.02 APPLICATION

A. Spread materials evenly and smoothly, without runs or sags. Apply interior latex paints with roller and/or brush. Sprays apply paints to metal doors and metal frames.

B. Prime exterior surface materials immediately after their installation, or whenever possible, before installation.

C. Color undercoats to approximate value of finish coat.

D. Sand woodwork and metal trim between coats with fine sand paper to produce an even, smooth finish.

E. Cover surfaces to be stained with uniform stain coat; wipe off as required.

F. Apply materials per manufacturer's directions and obtain good coverage and perfect finish for type of paint or finish.

G. "Touch up" paint and finish surfaces after all trades and contractors have completed their work. H. After wood doors are fitted, remove and give top and bottom edges one coat of pure shellac for interior doors, and one coat of same followed by one coat of spar varnish for exterior doors. Do not allow edge coating to lap onto face surfaces where natural finishes are required.

3.03 PAINTING SCHEDULE (INTERIOR)

A. Gypsum Wall Board (acrylic latex) (semi-gloss)
1. One (1) coat Proline Premium Interior Latex Wall Primer.
2. Two (2) coats Martin Senour T.P.S. Interior Multi-Surface Alkyd Stain Blocker Latex Enamel.

B. All wood trim (polyurethane):
1. One (1) coat Natural Paste Wood Filler (tinted)
2. One (1) coat Wood Classics Oil Stain (match pre finished wood doors)
3. Two (2) coats Wood Classics Cabinet Grade Lacquer Sealer Clear, DFT-1.0 mils/coat.

END OF SECTION

SECTION 15060

MECHANICAL

PART1

1.01 GENERAL·

The General Conditions of specifications and all preceding sections bound herewith are included in and made a part of these sections.

1.02 NOTICES TO BIDDERS:

All parties bidding on this work shall be sure that they understand all requirements of the plans, details, these writings and local conditions thoroughly, for each will be bound by all things appearing therein, should the contract be awarded him, and in case of any obscurity or uncertainty, he shall apply to the Owner's representative in writing for a correct interpretation before submitting his bid.

1.03 EXCAVATION AND BACKFILLING FOR PIPING

A. The Contractor shall do all excavating, backfilling, shoring, bailing and pumping for the installation of his work. Sewer lines shall not be used for draining trenches and the end of all pipe and conduit shall be kept sealed and l1nes left clean and unobstructed during construction. Only material suitable for backfilling shall be piled a sufficient distance from banks of trenches to avoid overloading.

B. After testing and approval of the pipe lines, trenches shall be backfilled to a depth of 6 inches over the top of pipe with washed river and. Balance of fill material shall contain no rock, wood or other organic materials, and shall be placed in layers not over 6 inches thick and each layer thoroughly compacted so no later settlement will take place.

C. The Contractor shall install six inches below grade and directly above all domestic water, sanitary sewer, storm sewer, electrical conduits and natural gas lines a standard marking tape. The tape shall consist of a 4 mil insert plastic f1lm specifically formulated for prolonged use underground.

D. Protection of Existing Utilities - Existing utility lines uncovered during excavation operations, shall be protected from damage during excavation and backfilling, or 1f damaged shall be repaired by Contractor.

1. 04 START-UP AND SERVICE

A Place all equipment and systems in trial operation and adjust all components for proper operation and balance.

PART2

2.01 SCOPE OF PROJECT:

The contractor shall furnish all labor. Materials, tools, transportation, equipment, services and facilities required for the complete installation of all work as shown on plans and outlined in the specifications. The work shall also include all material, equipment, and apparatus not shown, but which are necessary to make a complete working installation of systems, including meters and valving.

A. Sanitary sewage systems, including connections, except as otherwise noted to all fixtures, etc., to sanitary sewer.

B. Domestic cold water system and service to all fixtures and outlets including connections to water main.

C. Domestic hot water system and services to all fixtures.

D. Natural gas system services and connections to all openings.

E. All excavation and backfill necessary for installation of all underground utility and plumbing work and all cutting required to complete the work.

F. Furnishing and installing air conditioning and ventilating equipment with all piping and ductwork.

G. All condensate drains (whether indicated on drawings or not).

2.02 PIPE AND FITTINGS:

A. All sewer and drainage lines Sch. 40 PVC.

B. All hot and cold domestic water lines inside building and above grade shall be type "L" hard drawn copper.

C. Storm sewer below grade shall be SDR 35.

2.03 VALVES

A. Interior - Install valves on each fixture and each bank of fixtures and

elsewhere shown on plans. All valves shall be acceptable and fully equal in area to the pipes on which they are placed.

2 04 SHEET METAL:

A. All main distribution ducts shall be constructed of prime, copper bearing, galvanized sheet metal with gauges clearly stamped on external duct surface.

B. All ductwork must be in accordance with current ASHRAE and SMACNA Guides and shall comply with minimum reinforcing recommended.

C. Low Pressure Rectangular Duct:

Width of Duct	Gauges of Metal
Upto12"	Not less than 26 ga.
13" to 30"	Not less than 24 ga.
31"to53"	Not less than 22 ga.
54" to 84"	Not less than 20 ga.
Over 84"	Not less than 18 ga.

2.05 FLEXIBLE DUCT:

ThermaFiex MKA, factory fabricated and assembled consisting of an inner sleeve of continuous vinyl-coated spring steel helix, fused to a continuous layer of vinyl-coated fiberglass mesh, encased in a 1-1/4" thick fiberglass blanket insulator, sheathed with reinforced mylar/neoprene laminate. Flexible duct shall be rated with max1mum working velocity of 2400 fpm and shall be U.L. listed with UL181 standards as Class I duct and shall comply with NFPA standard #90A. Geneflex Type SLR-25 approved as equal.

2.06 EXHAUST AND VENTILATING SYSTEM:

Furnish and install a complete exhaust and ventilating system as shown in the drawings and called for in the equipment scheduled on plans.

2.07 BUILDING CODES:

This project is to be installed to satisfy the most current International Mechanical, Plumbing, Fuel & Gas, Building, Fire Codes and NFPA (I.B.C.,I.M.C., I.F.C., I.F.G.C., & I.P.C.). .

SECTION 16010
ELECTRICAL

PART1

1.01 GENERAL:

The General Conditions of specifications and all preceding sections bound herewith are included in and made a part of these sections.

1.02 NOTICE TO BIDDERS:

All parties bidding on this work shall be sure that they understand all requirements of the plans, details, these writings and local conditions thoroughly, for each will be bound by all things appearing therein, should the contract be awarded to him, and in case of any obscurity, discrepancy or uncertainty, he shall apply to the Owner's representative in writing for a correct interpretation before submitting his bid.

1.03 START-UP AND SERVICE:

A. Place all equipment and systems in trial operation and adjust all components for proper operation and balance.

PART2

2.01 GENERAL CONDITIONS:

A. The General Conditions bound herewith are included and made a part of this specification and contract. All of the conditions mentioned here-in shall apply except as otherwise amplified or altered in the following specifications. Particular reference is made to the paragraph pertaining to material substitution.

2.02 ELECTRICAL WORK INCLUDED;

A. The work under this contract shall include the furnishing, delivery, installation, testing and placing in operation of all equipment, materials and devices required to provide a complete electrical installation as shown on the accompanying drawings and/or set forth in these specifications.

B. Deliver to Owner upon completion, ready for use in all respects, the following complete electrical systems and equipment.
1. All power panel-boards, lighting panel boards, etc.
2. All disconnecting switches complete with fuses.
3. Furnish, install and connect all lighting fixtures, complete with lamps.
4. Furnish and install all wiring devices, time switches, contactors and transformers.
5. Furnish and install telephone service and outlets in conduit system.
6. Provide a system for cable tv.

2.03 SERVICE ENTRANCE:

A. Utility Company will furnish and install the primary service conduit, conductors and pad mounted service transformer.

2.04 OUTLET BOX: (ES)

A. Each outlet shall be provided with a one piece, stamped electro galvanized steel knockout box suitable to the space and purpose they serve. Switch and receptacle outlets located in dry and plaster walls shall be standard single or gang 4" boxes with covers as required for concealed work. Boxes shall be manufactured by Appleton Electric Co., Universal, Raco, National Electric Products or Steel City.

B. Set outlet boxes accurately in wall, roof, floors, or ceilings so as to be flush with finished surface and rigidly secure. Any junction or outlet box not equipped with a fixture, switch or receptacle shall have a beveled edge flat sisal blank covers to match device plates. All boxes shall be anchored with cadmium plated screws.

2.05 WIRE AND CABLE: (S)

A. All wire shall be new soft drawn, annealed, copper having conductivity not less than 98 percent of pure copper and with 600-volt d1enno-plastic insulation. Wire shall conform to the latest requirement of the NEC and meet all ATM Specifications and shall be standard A WG size. (No wire less than size #12 will be used.)

2.06 GROUNDING:

A. . The identified (white) neutral and the complete conduit system shall be effectively grounded per Article 250 of NEC. Identified neutral shall be run in conduit with other conductors and shall be insulated copper.

B. All grounding conductors shall be "Green" and indicated when required as marked by an "X" on

2.07 TESTING:

All wire and cable shall be tested after installations are completed. The test results shall meet the minimum requirements as listed in the NEC.

2.08 BUILDING CODES:

This project to be installed per the most current National Electrical Code (NFPA 70). The electrical contractor for this project is to be one who shall be totally familiar with these codes. The contract documents (plans and specifications) are not step by step instructions. Their intent is to establish the minimum standard of performance that is acceptable for this project. If any system, or device, etc. is not mentioned in the contract documents and is required to meet the N.E.C. the Contractor shall install the item per code as part of the base contract with no additional compensation.