

320 S. Perry

NOTICE TO OPERATOR AND CONTRACTOR

A L D, Inc. has prepared the enclosed specifications and plans for use by the operator as a guide only, in effecting an efficient and economical installation of equipment purchased from the Sofspira Division of ALD, Inc. In performing this service, ALD, Inc. is basing its suggestions as to specifications and plans on methods, arrangements and technical specifications of electrical, heating, concrete and plumbing work which meet the requirements of the respective manufacturers for satisfactory performance from their equipment. It is not intended that the plans represent the only possible method of installation and they may contain certain compromises to meet the desires of the operator.

Because the plans and specifications are to be used as a guide only, SOFSPRA, a Division of A L D, INC., shall not be responsible for faulty design, error, or omission in or resulting from its plans and specifications or for any damage or injury resulting from, caused by or in connection with the use of its plans and specifications.

In performing this service, ALD assumes no responsibility for the hiring of a contractor or contractors, the quality of any contractors work, the recommendations of any contractor, nor for the location of the building. All matters pertaining to the actual installation of the equipment remains the sole responsibility of the operator and the contractor or contractors employed by the operator. The arrangement and location of equipment as finally installed shall be that approved and desired by the operator which may, but need not necessarily conform to the suggestions of the Sofspira Division of ALD, Inc.

It is urged that the specification sheets be read carefully by operator and contractor before bids are prepared and/or accepted.

SOFSPRA CAR WASH

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GENERAL CONDITIONS

SCOPE - The contractor or sub-contractor will, in his contract, supply all the labor, materials, services and equipment necessary to complete that portion of the work as described by him in his agreement with the owner.

PLANS AND SPECIFICATIONS - Are intended to complement each other, any work shown on the drawings, but not noted in these specifications or vice-versa, shall be executed as though both shown and noted. The work shall be done in accordance with standard practice in manner acceptable to the owner and in accordance with any national, state, or local codes that may apply.

INTENT - The true intent and meaning of the drawings and specifications shall be followed by the contractor. Should any clerical or drafting room errors or omissions appear or any obvious discrepancies be discovered, no advantage detrimental to the owner shall be taken by the contractor. Interpretation of the true intent and meaning shall be by the owner and his decision will be final and not subject to appeal by arbitration.

EXAMINATION - The contractor shall be held to have examined the site and to have fully informed himself of all work which will be carried on and compared same with drawings and specifications before delivery of his proposal. No additional charges will be allowed for work needed to properly complete the agreement when occasioned by disregard for this provision.

PROTECTION OF WORK - Work shall be protected at all times from damage by person or weather and all damaged work made good before final acceptance.

INSURANCE - Contractor shall be responsible for the protection of his workmen and materials during fulfillment of his contract, in addition to the usual Workmen's Compensation Insurance applicable to all labor under the rules of the Workmen's Compensation Law. Contractor shall be responsible to hold owner harmless from all claims, including Workman's Compensation Public Liability, claims of sub-contractors, liens and the like, whether insured or not.

TAXES AND FEES - Contractor shall be responsible for the payment of all payroll taxes and municipal permit fees necessary for the execution of his work.

LAWS - All work shall be done in accordance with all Federal, State, and Local building laws and ordinances in force. The contractor hereby binds himself to protect and save harmless the owner from all damages arising from violation of the rules, laws and regulations including the use of the Public Right of Way while executing his contract.

FAILURE OF WORK - If the contractor should neglect to prosecute the work or fail to perform any provision of the contract, the owner after three days written notice to the contractor, may without prejudice to any other remedy he may have, make good such deficiencies and may deduct the costs thereof from the payment then due or thereafter due.

EXTRA COSTS - Owner will not be responsible for extra costs, resulting in failure or delay in obtaining any or all materials necessary to complete the work as specified. Any changes involving an extra cost will only be deemed valid by an agreement in writing, signed by the owner, authorizing such damages or extra work to be executed by the contractor.

METHOD OF PAYMENT - Shall be agreed upon between contractor and owner before commencement of any portion of the work and stipulated in writing as agreed upon by both parties. In addition to the manner of payment, as progress payments are made, contractor will provide waivers of liens for labor and material incorporated to date of payment, and that final payment will not be made until the general contractor affidavit has been delivered and the owner is satisfied that all bills have been paid and all waivers of liens for work performed and materials furnished are in hand.

EQUIPMENT - Contractor is to be responsible for notifying freight terminal as to delivery of equipment to building location and to furnish sufficient help needed to unload equipment from truck. All equipment is to be placed in position by the contractor. ---

EARTHWORK:

SCOPE: The work consists of all work of excavating, backfilling and grading necessary for the completion of the building and paving, as shown and indicated on the drawings and as specified herein.

EXCAVATION:

Contractor shall accept the site as found and excavations shall be carried to depths and dimensions as indicated and necessary for the footings and foundation concrete slab, sand traps and black-top pavement shown on the drawings, and to allow for erection and removal of the forms for the concrete work.

The bottoms of excavations for footings shall be approved and shall be level or horizontally stepped on undisturbed earth. Excavations for footings and foundations carried below indicated depths shall not be backfilled with earth, but shall be filled with concrete at the expense of the excavating contractor.

Contractor shall remove all obstructions which may exist on the site of the work as may be required for construction operations, also earth bearing slabs or foundations of former buildings, if any, within the area of excavations for the new construction.

All old sewers, piping, etc., active sewers, water pipes or other underground utilities shall be properly taken care of and protected and, where directed by the general contractor, shall be removed.

BACKFILLING AND FILL:

Do no backfilling against newly placed concrete until the concrete has been approved by the general contractor. Remove all rubbish, trash and debris from the excavation and trenches before placing backfill. Only approved suitable excavated materials shall be used as backfill, and it shall be free of refuse, trash, wood scraps, frozen material or other debris. Place fill in layers not exceeding 8 inches and compact thoroughly before placing more fill.

Bring the fill outside the walls to a level above the present grades to allow for settlement and to insure water draining away from the building.

Bring the fill outside the walls to a level, providing a minimum of 2 inches sand fill for the sub-grade of the concrete slab floor.

SUB-GRADE FOR PAVEMENT:

Remove the unsuitable bearing material, cut and fill for the concrete and black-top pavement using 4 inches crushed stone, and grade away from the building. Delay sub-grade preparation until pavement is to be placed.

EXCESS EXCAVATED MATERIAL:

Excess excavated material not required for backfill shall become the property of the contractor and shall be removed from the premises.

CONCRETE WORK

SCOPE: The work consists of all concrete work and cement finishing of every description as shown and indicated on the drawings and as hereinafter specified including the furnishing and erecting of all reinforcing mesh and the furnishing, erection and removal of all forms for concrete work.

MATERIALS -

Cement shall be Portland Cement conforming to ASTM Specification C-150 for type 1.

Water used in mixing concrete shall be free from injurious amounts of acids, alkalies, oil or organic matter.

Aggregate - All aggregate shall conform to the current "Standard Specifications for Concrete Aggregate" - ASTM Designation C-33 except coarse aggregate shall be gravel. Sand shall be clean hard uncoated grains; be free from deleterious substances, and shall range in size from coarse to fine.

Wire mesh reinforcement shall conform to ASTM Specification A-185.

Reinforcing steel bars shall conform to ASTM Specification A 15.

ANCHORS: Install 1/2" x 8" anchors which are provided by the owner in concrete as shown on drawings to support prefabricated building channel iron.

CONCRETE QUALITY -

The proportioning of cement, fine aggregate, coarse aggregates and water shall be such as to produce a workable plastic mix.

All concrete shall be designed in accordance with the ACI Standard Recommended Practice for the Design of Concrete Mixes to produce the strength for each class of concrete shown on the plans and with slumps and maximum sizes of coarse aggregate in accordance with the requirements outlined. The concrete shall be so designed that the concrete materials will not segregate and excessive bleeding will not occur.

Concrete shall have a minimum compressive strength of not less than 3000 P.S.I. in twenty-eight (28) days.

MIXING CONCRETE:

All concrete shall be mixed in an approved type of power operated batch mixer which will insure a uniform distribution of materials.

All concrete mixing and conveying equipment shall be thoroughly cleaned of all hardened concrete and foreign material before use.

READY MIXED CONCRETE:

The use of ready-mixed concrete of the above specified quality and characteristic and from an approved source will be permitted.

WOOD FORMS:

Forms shall be provided for all concrete work.

Forms shall be constructed accurately to dimension and true to line, with vertical work plumb and horizontal work made level.

Forms shall be substantial, mortar tight and braced and tied so as to maintain position and shape during placing of all reinforcing and concrete. Wavy surfaces and bulged wall or slab surfaces resulting from settlement or springing of form work will not be acceptable.

Wood forms for concrete shall be constructed of sound and merchantable lumber and/or plywood of "plyform" grade.

Wood forms for concrete surfaces exposed in finish work on the exterior of the interior shall be constructed of "plyform" grade plywood.

Concrete shall not be placed in any forms until the general contractor has inspected and given approval to the placing of the concrete.

All surfaces of forms in contact with concrete shall be coated with a non-staining mineral oil or well wetted before concrete is placed except in winter, water shall not be used.

Forms shall not be removed until the concrete has attained sufficient strength to support its own weight and any construction loads.

REINFORCEMENT:

In general, reinforcing for concrete work shall have the size, shown on the drawings. Except as indicated or specified otherwise, all reinforcement shall conform to all applicable recommendations of the American Concrete Institute.

Reinforcing steel in slabs on earth shall be supported on metal wyes or rods.

All reinforcing shall be accurately located in the forms and firmly held in place before and during the placing of the concrete by means of supports adequate to prevent displacement during construction and to keep the steel of proper distance from the form.

Mesh reinforcement shall be well lapped at least six (6) inches at ends and edges, wired together at joints and supported as required.

Before any concrete is deposited, the arrangement of reinforcing steel in the forms must be approved by the general contractor.

WORK OF OTHER TRADES:

While forms are being placed, the contractor shall see that all other mechanics have been properly notified and are given sufficient time to complete the installation of their work. Placing of reinforcing steel shall proceed progressively with the work of other mechanics and each shall arrange their working schedules so as to avoid disturbing or moving of work already installed by one trade to admit the work of another.

WORK OF OTHER TRADES (Continued)

Each trade shall be entirely responsible for the proper installation and securing of the work, and each shall keep his work under observation during placing of the concrete.

DEPOSITING:

No concrete shall be placed until after the bearing soil has been inspected and approved by the general contractor. Dry soil or fill shall be thoroughly dampened, except in freezing weather, or as otherwise directed. Forms shall be thoroughly cleaned out, wetted, oiled or lacquered before concrete is placed.

The contractor shall keep a capable mechanic on the job during the placement of concrete to keep all reinforcing in proper alignment and spacing.

Concrete after mixing shall be handled rapidly from place of mixing to place of final deposit. Under no circumstances shall concrete be used which has partially set before final placing. All such concrete will be rejected and shall be thrown away. Retempering will not be permitted.

Concrete shall be deposited in such manner as will prevent separation of the ingredients and permit thorough compacting, it shall be compacted by the use of mechanical vibrators of a type satisfactory to the Contractor until all the ingredients have settled into their proper places and surplus water is forced to the surface.

Concrete shall be placed in layers of uniform thickness and distribution. Dropping in a distance of more than 5 feet in relatively thin wall sections or depositing a large quantity at any one location and running it along the forms will not be permitted.

All concrete placed under this division shall be vibrated. Concrete shall be placed in layers not over 8 inches deep, and each layer shall be vibrated into place in such a manner as will not cause the ingredients to separate. Where necessary, vibration shall be supplemented by hand spading to secure these results.

PATCHING CONCRETE:

Immediately after removing the forms, all concrete surfaces shall be inspected and any pockets showing unsolidified materials or any other defective areas, and all holes shall at once be patched before the concrete is thoroughly dry. The patching shall be made of the same materials and of the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and white cement shall be substituted for a part of the gray Portland Cement to match color of surrounding concrete. Patching mortar shall be mixed dry, dampened only with water and allowed to stand for an hour, trowelling occasionally to prevent setting. Add only enough water to work into the defects, screed off and allow to set.

PATCHING CONCRETE (Continued)

Use no chemicals to accelerate the setting period of cement. Allow no concrete to reach a freezing temperature within a period of not less than 72 hours (or 24 hours for high early strength concrete) after placing. Provide heat and protective coverings, such as fireproof tarpaulins, so placed as to permit warm air circulation and means of maintaining the air well above freezing temperature.

CONCRETE SURFACES EXPOSED IN THE FINISHED WORK:

Extreme care shall be taken in all details of forming, setting reinforcing, mixing and placing concrete to procure smooth, even surfaces of dense concrete and clean sharp arrises and outside corners. Any fins shall be rubbed and holes shall be patched.

FLOOR SLABS:

Provide and install all cement finished concrete floor slabs and sand traps on earth or fill as shown on the drawings.

After all pipe and sewer work under concrete slabs on earth or fill shall have received the required tests and surface of the ground has been brought to a true, even plane and compacted to a solid bearing, install the concrete slab fill as hereinafter specified.

All concrete floor slabs resting on ground shall be poured over a compacted sub-grade.

All slabs on ground where no other reinforcing is shown or called for shall be reinforced with 6 x 6 #6 welded wire mesh reinforcing, weighing not less than 42 pounds per one-hundred (100) square feet.

The mesh shall be raised above the underside of the concrete slab and be properly lapped and wired as hereinbefore specified. The mesh shall extend through all door or wall openings and under all partitions or curbs that are placed on slabs.

Floor screed, shall be rigidly secured in place to exact levels for use in striking off and leveling concrete slab. Spade around all edges and at joints and tamp or otherwise compact the fill, then screed off. Screeds shall be removed and slots filled with concrete well tamped. Slab fill shall be finished as hereinafter specified.

FINISH OF FLOORS:

All interior floor slabs shall be worked up without the addition of top mortar. Slab concrete may be slightly over-sanded to facilitate finishing, but no dry cement shall be dusted on the surface and precaution shall be taken to avoid working fines to the surface.

The cement floors shall be floated with a power float and compacting machine with a rotating disc, until all irregularities are removed and the floor is smooth, even and to the required level. Delay the final finishing at least two (2) hours, when the surface shall be steel trowelled twice over and not more than three (3) times to a smooth hard, dense and even surface.

As soon as the concrete has hardened, it shall be cured and protected as hereinafter specified.

CURING AND PROTECTION:

Concrete of every description shall be protected from freezing, rapid drying and from damage by mechanics of other trades. These protections shall remain until all concrete has been properly cured and as much longer as necessary to protect the concrete from surface damage.

OUTSIDE PAVING:

Provide edge forms for paving full depth of slab, layout expansion, contraction and construction joints accurately. Place concrete only after forms and reinforcing has been approved by the general contractor.

Spade concrete along all joints, strike off with an accurate screed, using a sawing motion and keeping mortar ahead of the screed. Float to an approved slip resistant finish.

PREFABRICATED BUILDING

SCOPE: The work includes prefabricated channels and sheeting which are supplied by the owner as shown on the drawings and/or described in these specifications.

MATERIALS: 5" x 3" channel iron both column and beam portion are to be erected and joined as indicated in drawings. All #26 gauge galvanized sheeting on walls and roof is to be applied with #14 x 5/8" self tapping screws cad plated with neoprene washers as indicated in drawings.

WORKMANSHIP: All work shall be straight and true, level and plane and concrete square.

MISCELLANEOUS METAL AND SPECIALTIES

SCOPE: The work includes miscellaneous metal and metal specialties as shown on the drawings and/or as described in these specifications.

MATERIALS: The materials used shall conform to the following requirements:

Iron shall be standard commercial mild steel well finished and clean.

WORKMANSHIP: All work shall be straight and true, level and plane and corners square.

Provide and set all steel plates over drain box and sand traps to sizes and shapes indicated in drawings. This will include all necessary angle iron supports.

Contractor is to install the 360° swivel boom which is supplied by owner in the center of each bay at the ceiling as indicated in drawings.

PLUMBING

SCOPE OF WORK: This section of the specifications shall provide for and govern the furnishing and installation of all labor, materials and equipment necessary for and incidental to the installation of plumbing, all as shown on the accompanying plans and herein specified and described.

WATER SERVICE:

Furnish and install a valve and valve box between sidewalk and curb and water meter of the size and type approved by the city.

This contractor shall provide all street openings and repairs and pay all tapping charges as required by the city.

COLD WATER SUPPLY PIPING:

The cold water supply piping under this contract includes all cold water piping inside and outside of building, including valves, fittings, etc. Furnish and install cold water mains, branches and connections to fixtures and equipment as shown on plans.

All water lines outside building shall be laid with a minimum of five feet dirt covering.

Provide air chambers at fixtures where code requires to prevent water hammer.

HOT WATER SUPPLY:

The hot water supply and return piping under this contract includes all hot water piping inside of building. From the hot water heater in utility room, furnish and install a hot water supply main with branches and connections of plumbing fixtures and other equipment as shown on plans.

SUPPORTING OF PIPING:

This contractor shall properly support all piping wherever necessary using adjustable hanger rods.

Wall plates shall be provided by this contractor at wall lines on all uncovered piping passing through walls. No wall plates shall be required on covered pipe lines passing through walls.

VALVES:

All gate valves in piping shall be Crane Company or approved equal, all brass wedge disc gate valves.

UNIONS:

Unions three inches and smaller shall be standard weight galvanized malleable iron railroad unions.

HOSES:

The contractor shall install all hoses which are supplied by the owner. This will include all supply hose to and from the pump mechanism, vats and sill cocks. In addition all high pressure supply hoses shall be installed to each bay and supported as necessary.

EXPANSION AND CONTRACTION:

This contractor shall take care in running of all mains, branches and risers to provide swing joints for expansion and contraction of the piping without injuring fittings, equipment or building construction. Any damage from this cause shall be repaired by this Contractor without cost to the owner.

HOT WATER HEATERS:

Furnish and install breeching connection.

Furnish and install gate and check valves as required. Furnish and install thermometers, valved drain and approved relief valves, as indicated on plans.

SILL COCKS:

Furnish and install Johns-Manville, or approved equal covering as follows:

All cold water piping above ground throughout building shall be covered with 1/2 inch thick preformed non-sweat insulation.

All hot water supply and return piping shall be covered with 3/4" thick preformed air cell asbestos insulation.

RAW WATER SERVICE - Provide a 1 inch (maximum four bays) galvanized or equivalent water service from the city water main to utility area within building.

It shall be the responsibility of the contractor to make the necessary applications for, to provide drawings and to install a new water service from water main as shown on plans for the use of the car wash operation.

NOTE: In applying for and obtaining a new tap for water supply from the city main, the plumber shall be guided by the specific rules of the water company governing the size, supply and charges connected with the water meter to be supplied.

The water service must consist of water service from the main to meter, from meter to water softener, from softener branching off with cold water supply to the pump mechanism and a hot water supply from heater to pump mechanism, as indicated on the plans. This piping layout drawing shows the sizes of the piping within the utility area to feed both hot and cold water to the pump mechanisms.

PLUMBING FOR WATER SOFTENER:

Complete installation and operating instructions for water softener units are supplied with each softener. The gravel bed in the softener tank is to be placed by the plumbing contractor. The contractor shall also place softener mineral in softener tank.

PLUMBING FOR WATER SOFTENER: (Continued)

All pipe connections, which include inlet and outlet lines to valve and by-pass lines as indicated on the plans, to be made in accordance with manufacturer's recommendations.

BOTH HOT AND COLD WATER MUST PASS THROUGH SOFTENER:

Conditions of installation for proper operation of softener unit are that the softener equipment be installed as per directions supplied in every respect; that water delivered to the softener be clear, contain no oil or acid, must be free from hydrogen sulfide and be of a temperature not exceeding 100° F.

PLUMBING FOR GAS FIRED WATER HEATERS:

Smithway-Burkay Gas Fired Water Heaters are supplied by the owner as part of the equipment purchased. It shall be the responsibility of the plumbing contractor to install these heaters as part of the plumbing installation.

The water heaters are supplied with the gas burner, draft hood and controls, to be used in the course of setting up the water heater system by the plumber.

Specific details for correct installation of the heater are indicated in the plans, with attached instructions and illustrations.

Equipment as supplied by the owner shall be:

1 - Gas Fired Water Heater, Model No. B-95 (for two bays)
or B-197 (for four bays).

GAS PIPING:

Furnish and install the gas piping from street main to the gas meter in utility room to hot water heaters.

Furnish and install all drips as the Gas Company may require.

Piping to be standard black steel pipe and malleable iron fittings.

Arrange with Gas Company and obtain all required information as to their requirements and obtain all approvals required by them for all items concerned with the gas piping system.

Provide shut-off cock at each connection point of each piece of equipment.

The plumbing contractor shall provide gas service to supply gas to gas fired water heaters, to be installed as listed below.

Check with the Engineering Department of the Local Gas Utility Company to ascertain the correct size of service and size of pipe to be installed to supply gas to the equipment as shown on the drawings.

One (1), Model Aldheet B-95 Gas Fired Water Heater (for two bays), 95,000 BTU per hour.

One (1) Model Aldheet B-197 Gas Fired Water Heaters (for four bays), 197,000 BTU per hour.

DRAINAGE:

Materials - All fittings and pipes shall be of inside diameter as herein specified or shown on drawings. All material used in this work shall be strictly first class of its respective kind.

All soil and waste piping above ground, 3" and larger, shall be extra heavy cast iron coated bell and spigot, soil pipe and fittings or Clow screwed cast iron, IPS type and recessed drainage fittings.

All soil and waste piping above ground, 2" and smaller shall be screwed cast iron with recessed drainage fittings.

All soil and waste piping underground, inside the building shall be extra heavy cast iron, coated bell and spigot soil pipe and fittings. This includes all underground soil and waste lines leaving the building to 5 feet outside of the building.

All vent piping, except through roof, shall be galvanized steel pipe and cast iron screwed fittings. Vent piping passing through roof shall have a minimum of 4 inch cast iron increaser extending at least 12 inches above roof. Vent stacks 4 inches and larger shall have a one size larger increaser through roof.

All underground soil, waste and storm sewers from 5 feet outside of building to connection with sewers in street shall be vitrified, salt glazed, bell and spigot sewer pipe and fittings.

TRAPS:

Each and every waste through the building shall be provided with a trap at or near fixtures and drains. All traps shall be as specified.

CAST IRON PIPES.

Cast iron pipe fittings for soil and waste lines shall be especially made for drainage purposes and of same diameter as the pipe with which they are used and of same weight and quality.

All joints for cast iron pipe shall be made water tight with picked oakum and pure lead well caulked into the hub.

Cleanout branches shall be provided at a base of stacks and throughout the plumbing system wherever required by the nature of the work and where shown on plans. Provide cleanouts with brass cleanout screw. In all cases, those are to be brought to such points as to make them easily accessible and where same are in floors, they must be flush, using cleanout screws with sockets.

All cast iron pipe buried in the ground shall have a firm bearing along the entire length on undisturbed earth. At the foot of each riser, a brick or concrete foundation shall be provided for the stack to rest upon.

INSPECTION AND TESTS:

At the completion of the plumbing stacks through roof and before connecting up to sewer, the entire plumbing system together with all wastes and supply lines shall be stopped at the outlets and shall be filled with water and all leaks repaired or defective parts removed. The test shall then be repeated.

This contractor shall connect the sewers from the building to the sewers in street and shall include all street openings and repairs as required by the city.

The plumbing contractor shall install drain system as indicated on the plans. This includes Main Drain, Floor Drains, Sand Traps and Softener Drains, as shown on the plans.

Water Softener Drain - Before regenerating a water softener unit, a flow of raw water is used to backwash the mineral bed. The brine solution is then run through to regenerate the mineral bed and the bed is then washed with clear water to prepare the unit for further operation.

This requires an unrestricted drain outlet to discharge water from the softener unit during backwashing and regeneration.

The Plumbing Contractor shall provide a 4" floor drain adjacent to the softener unit as indicated on the plans. It is recommended that the waste outlet on the softener be so installed to permit the waste to spill into the floor drains; i.e., by the use of a divorced connection.

ELECTRICAL

SCOPE: This section of the specifications shall provide for and govern the furnishing and installation of all labor, materials and equipment necessary for and incidental to the installation of electrical, all as shown on the accompanying plans and herein specified and described.

CONDUIT, WIRE AND CABLE:

All wiring shall be concealed in conduit, except Greenfield which shall be used for equipment connection as shown in drawings. Conduit shall be run exposed or concealed as indicated on the plans.

All conduit inside and outside of the building shall be of galvanized steel rigid heavy wall type.

Tubing shall not be coupled together or connected to boxes, fittings, or cabinets by means of threads in conduit. Connections to boxes, fittings or cabinets to be made with threadless couplings and connectors using water-proof type in stall areas. Bends in tubing shall be so made that the internal diameter or the tubing will not be reduced, radius of any field bend shall not be less than eight times the internal diameter of tubing.

All exposed conduit to be run at right angles, to buildings and shall be installed on clamp backs or cleats, and shall be supported every seven feet.

Braided wire and cables shall be of the flame resisting type. Wire larger than #10 should be stranded. Wire larger than #8 shall be doubled braid. Rubber insulation shall be of high dielectric strength, mechanically tough and strong and shall be of new stock.

Wire shall be pulled in only after completion of conduit runs. All circuits to be tagged with fiber tagged with fiber tags, securely fastened to conductors. Tags have to have circuit number marked thereon. Six inch loops shall be left at each outlet for fixture installation.

Wires, except where noted on plans, shall be type "R" or "TW" in all areas above grade inside the building; in ground floor slab, in exterior walls below grade, and above grade on exterior of building.

All joints in conduits run in floor slabs on concrete walls shall be made water tight with white lead. All conduits to be swabbed dry before conductors are pulled in.

All circuit numbers indicated on drawings are for identification purposes only. Balance circuits as closely as possible.

OUTLET BOXES:

This contractor shall furnish and install outlet boxes as hereinafter specified and shown on the plans. Boxes shall be of the approved type for flush or surface mounting, iron or steel and sheradized or galvanized to prevent rusting. Use waterproof type in stall areas. Minimum depth of outlet boxes shall be 1-1/2".

OUTLET BOXES: (Continued)

Ceiling outlets in ceilings shall be 4 inch octagon.

Boxes for switches, receptacles, etc., shall be the sectional box type.

Exposed boxes for switches, receptacles, etc., inside the building shall be the solid box type.

This contractor shall furnish and install Hubbell or equivalent ground type receptacles and cover plates where shown on plans.

EQUIPMENT WIRING:

Furnish and install all conduit and wiring and make final connections to the equipment and associated controls hereinafter specified.

NEW ELECTRICAL SERVICE:

This Contractor shall furnish and install the new overhead 115/230 volt, 1 phase, incoming service to new building as indicated on plans.

Furnish and install service attachments, service head and incoming conduit.

All work associated with new service and associated equipment to be approved by the Electric Company. Submit detailed prints for Electric Company's approval indicating location and size of service equipment with connections to same, before any service equipment is ordered or installed.

NEW SERVICE EQUIPMENT:

This Contractor shall furnish and install the new service equipment in the new building as hereinafter specified and shown on the plans.

Furnish and install meter board and meter panel with instrument and coded wires furnished by the Electric Company where shown on plans.

Main Switch to be Westinghouse or equivalent on service to be furnished and installed where shown on plans.

Main distribution panel circuit breaker Westinghouse or equivalent to be furnished and installed where shown on plans.

DISTRIBUTION PANELBOARDS:

Furnish and install distribution panelboard as indicated on drawings and as hereinafter specified.

Breakers in panelboards to have quick make and break toggle mechanism, delayed time limit characteristics and shall be trip free on overload or short circuit. Breakers shall be of the type and size recommended by the manufacturer to handle the circuits indicated in drawings, and shall conform to all local and state codes.

DISTRIBUTION, PANELBOARD: (Continued)

All cabinets to be flush or surface mounted with doors over breaker section equipped with concealed hinges, director frames, as hereinafter specified, and shall conform with the Underwriter Laboratories requirements and shall bear the Underwriter's label.

MISCELLANEOUS EQUIPMENT WIRING DIAGRAMS:

This Contractor shall obtain drawings from the various equipment manufacturers for the specific locations of all equipment and necessary wiring diagrams so that he can properly wire and connect all equipment to meet the manufacturer's requirements.

The Contractor shall correct his mistakes and relocate wiring not conforming to the manufacturer's drawings at no additional expense to the owner, should he fail to obtain these drawings before proceeding with his work.

LIGHTING FIXTURES:

This Contractor shall furnish and install all lighting fixtures and wiring indicated in schedule drawings.

The fixtures shall be complete with all necessary fittings, starters, canopies, sockets, etc., ready for attachment to outlet. All metal parts of fixtures to be finished as directed. Fixtures are to be wired with colored wires to indicate polarity.

Stripliner fixtures where shown shall be Westinghouse or equivalent two tube industrial type, 8'-0" long type 2 WSO 100R, and 4'-0" long type 2 WSO 60R fixtures mounted flush with ceiling.

Contractor to carefully examine each room before installing fixtures for interferences with piping, beams, ducts, etc., and where such interferences occur, this Contractor shall provide a fixture of proper length or design so as to overcome such interferences. Fixtures in same room must be hung at same heights and must not be obstructed wholly or in part by any piping, ducts, etc., running directly under the same.

LAMPS:

This Contractor shall furnish and install lamps in all fixtures furnished and installed by him under this contract, Lamps shall be of the type and size indicated for fixtures.

Lamps shall be installed in the fixtures as the work progresses, and at time of acceptance of work any lamps burned out, broken, or not operating properly, shall be replaced by this contractor.

This Contractor shall, in completion of his work, turn over to the owner six (6) spare lamps furnished and installed by him under this contract.

The power shall be distributed to the outlets as described and shown on the drawings. Drawing shows location and type of equipment to be supplied from each outlet as per summary list on the drawings.

Actual planning of the circuits shall be the responsibility of the contractor.

ELECTRICAL REQUIREMENTS FOR EQUIPMENT:

Pump and Vat Assembly - Provide 230 Volt, 60 Cycle, 1 Phase A.C. electrical circuit using two #8 T.W. wire fused for 25 AMPS (for two bays) or 45 AMPS (for four or five bays). Provide ground wire from unit to cold water pipe.

Water Softener - Provide a 115 Volt, 60 Cycle, 1 Phase A.C. electrical circuit of two #14 T.W. wire for automatic softener control.

Exterior Sign - One (1) 5 x 5 foot Double Face Sign. Provide circuit of two #12 T.W. wire through outside direct burial cable. All signs to be installed and connected by contractor.

Vacuum Units - Provide a 115 Volt, 60 Cycle, 1 Phase A.C. electrical circuit using two #10 T.W. wire through outside direct burial cable for each 1½ h.p. vacuum unit.

Note: Various equipment is supplied with a two conductor service cord. Where electrical code specifies that polarized plug outlets are required, it shall be the responsibility of the electrician to change the wiring on the equipment to three conductor service cords and to provide polarized outlet boxes.

Note: Where expansion is anticipated beyond the number of units of equipment listed above, care should be taken to provide adequate power facilities at time of original installation so that costly addition of power is not encountered at a future date.

Furnish and install conduit and wiring for Westinghouse or equivalent flood lights for exterior lighting of lot area to insure a minimum light level of 5 foot candles.

COIN METER:

The contractor shall install the coin meter and all associated wiring which are supplied by the owner. This will include furnishing the necessary electrical boxes and conduit as specified in drawings.

SHEET METAL WORK:

SCOPE: This section of the specifications includes all labor, materials, services and supplies necessary for the completion of all sheet metal work as indicated on the drawings and hereinafter specified.

All duct work shall be securely supported and shall be installed so as not to interfere with electric outlets or other trades.

METAL GAUGES:

All ducts exposed to the atmosphere shall be at least 20 gauge. Ducts shall be of prime grade galvanized steel. All ducts shall be stiffened with galvanized structural angle reinforcing to prevent sagging or buckling and to provide a rigid installation.

VENTING:

The contractor shall provide and install galvanized metal duct, from water heaters to exterior of building. Check Local Gas Company Engineering Dept., before installation concerning local requirements.

Each heater requires a 5" vent (for B-95) or 7" vent (for B-197), to be carried individually from outlet, and directly up through roof to a point of 5 feet above highest point of roof.

Install 20 gauge thimbles at points where vents pass through roof, size as indicated on plans. Provide metal collars and necessary flashing to make water tight.

BLACK TOP PAVING:

SCOPE: The work includes all labor, materials services and equipment necessary for the completion of the parking area paving shown and indicated on the drawings and/or as specified herein.

WORK NOT INCLUDED:

Excavating and grading for sub-grade for Black Top paving will be the work of Section "EARTHWORK" of these specifications.

GENERAL REQUIREMENTS:

Except as specified or shown otherwise on the drawings, all work shall conform to the State Department of Public Works and Buildings, Division of Highways, Standard Specifications for Road and Bridge Construction.

BASE COURSE:

Provide a wood edge strip on properly line, well staked, to line and level. The areas of the lot not occupied by the building shall be provided with four (4) inch compacted stone, where indicated on the plot plan.

SURFACE COURSE:

Install a black top wearing surface where indicated on the plot plan prepared base course to two (2) inch of asphaltic concrete wearing course in strict accordance with the state specifications for hot mix paving.

CLEAN UP:

Upon completion of the work, remove all equipment excess materials, trash and debris resulting from this section of the work.

MISCELLANEOUS WORK

SCOPE OF WORK: This section includes preliminary and incidental work necessary to meet fully the requirements of the drawings and specifications in order to obtain a complete project.

Install towel dispensers, vacuum units, and miscellaneous equipment indicated on drawings which are supplied by the owner.

Install instruction signs indicated on drawings which are supplied by the owner.

REMOVAL OF RUBBISH:

The general contractor shall be responsible for the proper removal of all rubbish and shall see that each contractor keeps the areas in which he is working clean and free of dirt, debris and rubbish.

PAINTING:

The general contractor shall be responsible for touching up paint chips and scratches on siding and metal channel members of the pre-fabricated building.

On buildings with winter enclosure, overhead doors of masonite construction are furnished to enclose each stall. The general contractor shall be responsible for painting these doors.

On buildings incorporating winterizing, where radiant type heaters are used, all exposed brass and galvanized water pipe and fittings above grade in stall area are to be primed and given a finished coat of flat black paint.

HEATING:

SCOPE: This section of the specifications shall provide for and govern the furnishing of all labor, materials, and equipment necessary for and incidental to the installation of the heating system, all as shown on the accompanying plans and herein specified and described.

The contractor shall install two (2) Model IR-50-HBI radiant gas fired heaters for each stall, which are furnished by the owner. These units are rated at 60,000 BTU gas input.

The contractor shall install one (1) Model IR-30-HBP radiant gas fired heater in the utility room, which is furnished by the owner. This unit is rated at 30,000 BTU gas input.

GAS PIPING:

The contractor shall furnish and install all gas piping required for the heaters in this installation. Provisions and materials as indicated in the 'Plumbing Section' of these specifications shall apply.

WIRING AND CONTROLS:

The contractor shall furnish and install all the necessary wiring required for the heaters in this installation. This will include installing thermostats, heat sensor elements, and Model 368-1002 or 368-1003 coin meter for controlling additional heat as indicated in drawings. Provisions and materials as indicated in the "Electrical Section" of these specifications shall apply.

VENTING:

The contractor shall install the vent and roof ventilator which is furnished by the owner over the utility room radiant heater as indicated in drawings.