

DIVISION NO. 30

PLUMBING AND DRAINAGE

Sec. 30-1 GENERAL:

The General Conditions, Division G, written for this project, shall form a part of this Division and shall apply fully to all work hereunder.

Sec. 30-2 SCOPE:

- (a) The work included under this Division shall be the furnishing and installing of the entire plumbing system as shown on the drawings, called for herein, or reasonably implied. In general, it shall include sanitary drainage, water piping, plumbing fixtures, drains, sill cocks, all excavation necessary for the installation of this work, backfill, connections to sewers, connections to water mains, and the repairing of streets and footways, (if damaged when connections are made). It shall also include procuring and paying of all permits, deposits, connection charges, etc.; also providing and maintaining all guards, barriers, and warning lights required. Provision shall be made for expansion and contraction of all lines.
- (b) The entire installation shall meet the requirements of the various public authorities having jurisdiction.
- (c) **Furnish and install basement sub-surface foundation drains.**

Sec. 30-3 LAYOUT PLANS:

This Contractor shall review with the Architect where pipe will be run before installing same, and prepare a complete layout of same. After it is satisfactory to the Architect, he shall submit the layout to the authorities having jurisdiction, and, when approved by them, shall deliver three (3) copies of the approved layout to the Architect.

Sec. 30-4 SERVICE AND SEWER CONNECTIONS, ETC.:

- (a) **This Contractor shall, at his own expense, connect to the existing water service and meter, and shall continue water piping from this point to all connections and fixtures shown on the drawings or specified.**
- (b) **This Contractor shall, at his own expense, make connections to sewer and continue all soil, waste, and vent piping to all fixtures shown or specified. Storm drains shall also be connected to public storm drain.**

Sec. 30-5 SANITARY DRAINAGE SYSTEMS:

- (a) Furnish and install a sanitary drainage system, which shall be connected to the sanitary sewer, and shall serve all sinks, lavatories, closets, and other fixtures. All sewer lines shall be laid with sufficient slopes to prevent deposition of solids in the lines.
- (b) All sanitary lines below ground, where required by Code, shall be extra heavy cast iron pipe and fittings, made up with pure pig lead and oakum joints, properly caulked; 12 ounces of lead shall be used for each one inch diameter of joint.
- (c) All sanitary lines below ground, where permitted by Code, may be of terra cotta or first quality pipe, deep and wide socket pattern type, and of 3'-0" lengths. Consult with Architect regarding this.
- (d) All interior soil, waste and vent pipes above ground shall be standard weight galvanized steel pipe and galvanized drainage fittings. Interior soil pipes may also be of cast iron, code weight.
- (e) The minimum size of sanitary lines and soil pipes shall be 4" diameter, except drains from lavatories, which shall be 2" minimum, (of galvanized steel or cast iron). All lines shall be properly vented; vents to go through the roof, properly flashed with lead flashing. Roof flashings shall be 6 lb. sheet lead not less than 24" square and extending up and turned down into vent pipes.
- (f) Provide all necessary traps, cleanouts, etc., for proper operation of system. Cleanouts for underground pipe shall be countersunk. Cleanouts to be of a design approved by the Architect.

Sec. 30-6 WATER PIPING:

- (a) Furnish and install all water piping required, both hot and cold. **Connect to the existing** water main, as called for under Sec. 30-4 (a). Furnish and install all valves, stops, etc., for proper control and maintenance.
- (b) All water pipe, both below and above ground, shall be Type "K" copper tubing, made up with cast or wrought bronze sweat fittings. Valves in water lines to be similar to Crane Company's No. 438. All water piping shall be installed properly graded for drainage, and, where run overhead, shall be supported on substantial hangers. Run overhead wherever possible.

Sec. 30-6 WATER PIPING (Cont'd):

- (c) The hot and cold water branch lines in the building shall be not less than 3/4" lines; other lines and mains of required sizes. Install hot water lines from water heater in the boiler room to fixtures and equipment noted on drawings and as hereinafter specified. Other fixtures shall have cold water connections. Insulate hot water lines with a standard 1" approved covering. Cold water lines shall be insulated where run above ceilings and in enclosed spaces (to eliminate condensation dripping).
- (d) Hot and cold water connections shall be provided for each lavatory and service sink.

- (i) Furnish and install any necessary air chambers required for water lines to fixtures, same to be concealed in partitions or construction wherever possible.
- (j) A one-inch cold water supply line shall be run to the Boiler Room to serve the heating boiler.

Sec. 30-7 HOSE CONNECTIONS:

Furnish and install three (3) hose connections, same to be a key-type, anti-freezing 3/4" wall hose bib provided with a valve having a drip (on the interior of the building), made by Crane, or an approved equal. The location of these hose bibs shall be as shown on the drawings.

Sec. 30-8 PLUMBING FIXTURES:

(a) Furnish and install all plumbing fixtures shown and called for on the drawings. All fixtures shall meet with the requirements and regulations of the Local Public Authority. Any approved make of plumbing fixtures will be considered, with the understanding, of course, that the Architect retains right of rejection of products deemed unsatisfactory. In any event, whichever fixtures are used, the equipment, fittings, trimmings, etc., shall be of the same type, character, and quality as called for hereinafter. For reference purposes, the following descriptions refer to American Standard Sanitary and to Crane:

(b) Water Closets: To have split white toilet seats.

American Standard Sanitary:- Siacto F2442VS, complete with flush valve and vacuum breaker, trimmings.

Crane:- 3-300-T Santon elongated rim bowl with 1-1/2" top spud; fitted with 9-405-W Triumph flush valve with vacuum breaker.

(c) Lavatories:

American Standard Sanitary:- Hexagon P-3867-R, size 20" x 18", cast iron enameled bowl, rear wall outlet, wall hanger, two compression faucets, 3/8" supply pipes with stops, pop-up drain, 1-1/4" "P" trap. At option of Architect - a common spout.

Crane:- 1-195-V Norwich, 20" x 18", china wall hung lavatory; fitted with
8-562-A combination supply and waste fitting
8-304 3/8" angle supplies with stops
8-401 1-1/4" "P" trap.

(d) Urinals:

American Standard Sanitary:- Chinal F-6000-C, complete with flush valve and vacuum breaker.

Crane:- Sanitor 7-40 with 1-1/4" top spud; fitted with Triumph flush valve and breaker.

(da) Drinking Fountain:

American Standard:- Neo-toric F8355

Crane:- 6-520 Waterfall

Sec. 30-8 PLUMBING FIXTURES (Cont'd):

(e) Service Sink:

American Standard Sanitary:- Argo P-7705-1 acid resisting enameled inside, with rim guard.

Crane:- 7-563, 24" x 20", acid-resisting enameled inside service sink; fitted with
8-101 Utility faucet
Enameled inside "P" or "S" trap standard with strainer
8-979 rim guard.

(f) Fixture Cutoffs: Each line of supply to fixtures shall be equipped with a cutoff valve of the key type, placed in an accessible place immediately under the fixture. This applies to water closets, lavatories, sinks, etc., so that any one may be cut off without interfering with others.

(g) All fixtures shall be white. All exposed metal parts of all fixtures shall be chromium plated.

Sec. 30-9 GAS LINES:

(a) Furnish and install gas lines of size to adequately serve the gas-fired Kitchen equipment; (minimum size of line - 1-1/2"). Gas lines shall be standard black steel pipe with galvanized malleable iron fittings. Lines shall be properly sloped to drain, and drip pockets shall be provided at all low points, same to be accessible for servicing.

Sec. 30-10 TESTS:

From time to time, and upon completion, all work under this division shall be tested to determine whether or not there are any leaks and to check operation. Make all repairs and adjustments required.

Sec. 30-11 SUB-SURFACE BUILDING FOUNDATION DRAINS:

- (a) Furnish and install 4" terra cotta foundation drains around the basement of the building, where and as shown on the drawings, both inside and outside the building walls. Foundation drains shall be laid below the level of the ground floor, but in no case shall they run below the bottom of the foundations. Drains shall be sloped as called for on the drawings. Foundation drains shall be stock hub type terra cotta tiles, laid with open joints, that is, the spigot end shall be laid in the bell end, without the use of any caulking or jointing materials. The spigot end shall be laid in the direction of the flow. Over the top half of the joints in the drain lines, lay strips of burlap and bronze or aluminum screening (16 x 18 mesh) about 6" wide. The drain tile shall be bedded in gravel, broken stone, or slag, same to be of a large size, 2" and larger. There shall be not less than 12" of stone on top of the drain, 4" below it, and at least 6" on each side of the drain.
- (b) Furnish and install a 4" terra cotta drain to connect foundation drains to public storm drain (see drawings). Construct manhole called for, of 8" brick or other masonry, with 24" light-weight cover; and furnish and install backwater valve.

Sec. 30-12 STORM DRAINS:

- (a) Furnish and install all storm drains called for on the drawings, sizes as noted.
- (b) Downspouts and rain leaders connected to storm drains shall be fitted into a heavy cast iron pipe, same to be extended about 6" above grade (or paving), with cleanout (we with plug).
- (c) All storm drains within 5' of the building must be of extra heavy cast iron pipe. Beyond that, a stock vitrified clay sewer pipe or reinforced concrete pipe may be used in place of the iron pipe, provided at least 30" of earth cover is available. Under driveways, clay drains must be encased in at least 6" thickness of concrete.
- (d) Pipe drains shall run generally as indicated on the drawings, of adequate size to carry off the rain water; but size shall not be less than that noted on the drawings. Cement or bituminous joints may be used in clay pipes. Swab inside of pipe to clean. Provide necessary cleanouts for drain lines.

DIVISION NO. 151

HEATING INSTALLATION

Note:- Heat for Existing Building shall be available by Oct. 15, 1956
Refer to Sec. G2-2, Par. (e), pg. G2-2 and G2-3

Sec. 151-1 GENERAL:

The General Conditions, Division G, written for this project, shall form a part of this Division, and shall apply fully to all work hereunder.

Sec. 151-2 SCOPE:

- (a) The work included under this Division shall be the installation of a new steel boiler, oil burner, condensate pump and tankless heater for the present steam heating system in the Educational Building, and the complete installation, in the New Church Building, of a 4-zone Forced Flow Hot Water Heating System, including steel boiler, oil burner, convector radiation, flow control equipment, fin tube radiation, including hangers, end caps, splicer plates, inside and outside corners, air tanks, balancing valves with all appurtenant equipment called for herein or shown on Drawings, or reasonably implied and required.
- (b) The drawings indicate the general arrangement of the heating system. Details of proposed departures necessitated by field conditions or other causes shall be submitted in writing to the Architect for approval.

Sec. 151-3 TYPE OF SYSTEM:

The system in the new Church is to be a forced flow hot water heating system with four (4) zones controlled by thermostat and relay all as shown on the drawing. Present heating system in Educational Building is to remain.

Sec. 151-4 MATERIALS AND EQUIPMENT:

- (a) All materials and equipment shall be of first-class manufacture, suitable to the intended use. Contractor shall furnish and install all items required to complete the installation.
- (b) Piping which is run under the Basement floor slab is to be wrought iron. All other piping shall be steel, except as specified. All piping behind Fintube enclosures shall be steel.
- (c) Pipe nipples shall be steel or wrought iron.

Sec. 151-4 MATERIALS AND EQUIPMENT (Cont'd):

- (d) Steel pipe shall be similar and equal to National Tube Company, black [or zinc-coated (galvanized), if hereinafter specified]. Pipe shall be free from all defects which may affect its durability for the intended use. Each length of pipe shall be stamped with the manufacturer's name.
- (e) Electrical materials and appliances shall meet the applicable requirements of the "Electrical Installation" Section.
- (f) Fire brick and fire clay shall be of the highest quality for this type of work. Samples shall be submitted for approval.
- (g) Check valves shall be suitable for a working pressure of 125 p.s.i., equipped with brass discs of the regrinding type.
- (h) Gate valves shall be similar and equal to Crane Company's manufacture and shall be suitable for a working pressure of not less than 125 p.s.i. Gate valves, 1-1/2" and smaller, shall have bronze bodies, non-rising stems and interior screws. Gate valves, larger than 1-1/2", shall have cast iron bodies.
- (i) Unions shall be malleable iron.
- (j) All major items of mechanical equipment shall be the latest standard catalog products of reputable manufacturers. Where two or more items of the same kind of equipment are required in the same installation, they shall be the product of a single manufacturer.

SEE PAGE 151-2A

Sec. 151-5 BOILERS:

Furnish and install, in the Boiler Room, as shown on plans, two (2) 3-pass steel boilers with two (2) passes in the tubes, of manufacture as shown on the plans. One (1) boiler to be steam to serve the present Educational Building, and one (1) hot-water boiler for the New Church Building. Boilers to be rated in strict accordance with SBI and to bear the A.S.M.E. stamp and to be arranged for oil firing. Boilers to be connected to chimney through proper size smoke breeching. Both boilers to be equipped with approved type balanced draft adjustors. A tankless heater to be installed on the steam boiler and hot water to be connected to both the kitchen equipment and toilet facilities, with a Taco tempering valve installed on line to plumbing fixtures, while the line to kitchen equipment shall be taken directly off heater. A flow regulator of Taco manufacture and of proper size shall be installed on cold water line to tankless heater.

Sec. 151-6 OIL BURNERS:

- (a) Furnish and install, in new boilers, gun type oil burners of Esso, Williams Oil-O-Matic, or approved equal. An approved type combustion chamber and brick base to be installed in each boiler. A combustion chamber and boiler setting drawing is to be submitted to the Architect for approval. This Contractor to connect oil burners to new oil storage tank and also to install all electric wiring for oil burners, circulators, and all electric controls. This Contractor shall, upon completion of the oil burner installation, furnish the Owner with a certificate of acceptance and a one year's fuel service guarantee covering the complete burner installation. New oil storage tank to be 1,000 gallon, Underwriter's label tank; see drawings.
- (b) The following controls to be installed complete on each boiler:

Hot Water Boiler:

One (1) thermostat and one (1) relay to be installed for each zone.

One (1) operating aquastat and one (1) high limit aquastat.

Paragon time clock for each zone.

Steam Boiler:

One (1) pressuretrol

One (1) operating aquastat

One (1) low water cut-off

All controls to be as manufactured by Minneapolis-Honeywell Regulator Company and to be completely wired, including Paragon clocks, by this contractor.

Sec. 151-7 BREECHINGS:

Breechings shall be fabricated of not less than #18 U.S. Standard gauge galvanized iron or steel smoke pipe, and shall be substantially reinforced with angle irons and expansion joints as required. All connections shall be made in an approved manner, and cleanouts shall be provided, arranged to permit easy access, all as required or as directed. Hang and support smoke pipe as required in an approved manner.

Sec. 151-8 BOILER DRAIN:

Boiler shall be provided with boiler drain valve arrangement as indicated on the drawings or as directed.

Sec. 151-9 TOOLS:

Provide all tools that are necessary for operation and maintenance of boiler, oil burner, etc. There shall be included with boiler unit, a boiler brush and suitable smoke breeching cleaner.

Sec. 151-10 WALL FIN RADIATION:

Furnish and install, where shown on drawings, Fintube Radiation of manufacture as shown in notes on Heating Drawings, or Wall Fin of other manufacture, if approved in writing by the Architect. Fintube shall be 2" in diameter, complete with sloping top cover, and of tiers as shown on drawings. Radiation shall be installed complete with fintube, hangers, end caps, hanger strips, splicer plates, etc., all of the manufacturer's standard. The tiers shall be connected in series so as to assure adequate circulation. Make adequate provisions for expansion and contraction. Two cast iron convectors with enclosures to be installed in Bell Tower.

Sec. 151-11 VALVES:

(a) Gate and globe valves of one and one-half (1-1/2) inch size or smaller shall be threaded, and shall be constructed of either brass or bronze or have cast iron bodies with brass mountings. Valves larger than one and one-half (1-1/2) inches shall have iron bodies, removable seats, bolted bonnets, brass mountings, and shall be either threaded or flanged as required. All stuffing boxes shall have packing glands. Gate valves shall be used throughout, unless otherwise shown on the drawings, specified or directed by the Architect. Gate valves shall have double noncorrodible seats of the wedge type with rising or non-rising stems. Gate valves larger than two (2) inches shall be outside screw and yoke type. The working pressure and manufac-

Sec. 151-11 VALVES (CONT'D)

turer's name shall be stamped or cast on each valve body. All valves shall be installed with their stems or spindles above the horizontal.

- (b) Check valves, in all cases, shall be of the horizontal swing type. The check valves shall be designed for the same working pressure as the Gate valves, and shall be of the same manufacture.

Sec. 151-12 PIPING:

- (a) All pipes shall be cut accurately to measurements established at the building, and shall be worked into place without springing or forcing, properly clearing all windows, doors and other openings. Excessive cutting or other weakening of the building structure to facilitate piping installation will not be permitted. All pipes shall have burrs removed by reaming and shall be so installed as to permit free expansion and contraction without causing damage. All changes in direction shall be made with fittings. Bending of pipe up to and including two (2) inches nominal diameter will be permitted, provided a hydraulic pipe bender is used. Bent pipe showing kinks, wrinkles or other malformations will not be acceptable. All boiler outlets shall be run full size to the main. Piping connections to equipment shall be in accordance with details shown on the drawings, or as directed by the Architect. All open ends of pipe lines, equipment, etc., shall be properly capped or plugged during installation to keep dirt or other foreign material out of the system.
- (b) All fittings, not otherwise specified, shall be standard-weight, uncoated grey cast iron, designed for a working pressure of one hundred twenty-five (125) pounds per square inch. Fittings for galvanized pipe shall be standard-weight galvanized malleable iron beaded pattern fittings, designed for one hundred fifty (150) pounds working pressure.
- (c) The locations of all risers shown on the drawings are approximate. Exact location of the risers shall be as directed by the Architect.
- (d) All horizontal runs of pipe shall be supported securely. Suspended pipe shall have adjustable expansion pipe hangers with bolted hinged loops and turnbuckles as indicated on the drawings. Pipes, two (2) inches or less in diameter and supported from side walls, shall have expansion hookplates. No strap hangers will be permitted.
- (e) All pipes passing through masonry construction shall be fitted with sleeves. Each sleeve shall extend through its respective floor or wall, and shall be cut flush with each surface unless otherwise required. Unless otherwise specified, sleeves shall be two (2) pipe sizes larger in diameter than the overall outside diameter of the pipe when insulated.

Sec. 151-12 PIPING (CONT'D)

- (f) All pipes passing through the floors, walls or ceilings or finished rooms shall be fitted with enameled floor, wall, or ceiling plates of cast iron or steel, securely fastened in place.
- (g) The piping system is clearly indicated on the drawings, and is to be run as shown, with adequate provision for expansion and contraction. Balancing cocks to be installed on each loop of each zone.
- (h) All heating pipes run in earth shall be installed in terra cotta pipe of adequate size.

Sec. 151-13 TEMPERATURE CONTROLS; FLOW CONTROL EQUIPMENT:

- (a) This Contractor shall furnish the circulators, flow control valves, and thermostats, and wire the thermostats to the circulators for Hot Water Heating System.
- (b) Each zone shall be controlled by a thermostat. All controls shall be Minneapolis-Honeywell, or an approved equal acceptable to the Architect. Thermostats to be low voltage, with relay.
- (c) Flow control equipment shall be of the size shown on the drawings. A 3/4" reducing valve, 3/4" relief valve, and air compressor tanks shall be furnished and installed in the Boiler Room. All flow control equipment shall be Taco or an approved equal, acceptable to the Architect.
- (d) Approved type automatic float type air valves to be installed on each unit of fin tube, convectors, high point of mains, or where required for adequate venting of system.

Sec. 151-14 CONDENSATE PUMP:

Furnish and install, for steam boiler, one (1) condensate pump and receiver, of manufacture as shown on the plans. Pump to be complete with receiver, float switch, motor, and pump; to be connected complete to return system and boiler through discharge line with gate valve and check valve, vent and overflow.

Sec. 151-15 COVERING:

Boilers shall be covered with 1-1/2" thick asbestos cement, last coat rubbed to a smooth hard finish, or insulated jacket. All heat piping in Boiler Room to be covered with 3-ply air-cell covering, with lacquered bands.

Sec. 151-16 PAINTING:

All heat tube mains in the floor construction of the new building (space between basement ceiling and first floor slab) and all runouts and risers to wall fin units shall be painted or lacquered with a rust-resisting paint. All heating pipes, exposed boiler parts and equipment shall be painted as hereinbefore specified under division entitled "Painting and Decorating".

Sec. 151-17 TESTS:

- (a) The entire system, also the New Steam Boiler & Piping in Boiler Room, shall be tested hydrostatically before insulation covering is applied, and proved tight under the following gauge pressures:

Piping	50 p.s.i.
Boiler	50 p.s.i.

- (b) The entire system shall be operated under actual operating conditions to the satisfaction of the Architect. Operating tests shall cover a period of not less than six (6) hours and all tests shall be conducted at such times as the Architect may direct. All instruments, facilities and labor required to conduct tests properly shall be provided by the Contractor.

Sec. 151-18 MOTOR WIRING:

Heating Contractor shall install and connect all starters, control equipment, and motors.

Sec. 151-19 THE TERM "EQUAL":

The term "equal" used in this specification signifies that the material proposed to be used as a substitute for that specified must be equal in quality to the material, and must be approved in writing by the Architect.

Sec. 151-20 GUARANTEE:

The material and workmanship of all parts of the heating installation specified herein shall be guaranteed unconditionally for a period of one (1) year from the date of acceptance against defects arising from faulty materials or workmanship. Either replacement or repairs shall be made promptly to any defective materials or workmanship without cost to the Owner during that period. The Contractor shall further guarantee that the heating system will have free and even circulation to each unit of radiation and that the system is properly balanced.

DIVISION NO. 155

AIR CONDITIONING -- (COOLING)

(Separate Contract -- Not in General Contract)

Sec. 155-1 GENERAL:

The General Conditions, written for this project, shall form a part of this Division, and shall apply fully to all work hereunder.

Sec. 155-2 SCOPE:

- (a) Work under this division includes the complete furnishing and installing of a complete air conditioning system, for cooling and air movement (no heating), including all outlets, ducts, insulation, conditioning units, compressor, cooling tower or economizer, controls, wiring, and everything else required for a complete system, all in accordance with separate drawings and specifications to be prepared under the supervision of the Architect.
- (b) Attention is called to the need for cooperation between the Contractor (General Contractor) and the Air Conditioning Contractor in the conduct of the work. The Air Conditioning Contractor shall schedule his work and carry on his operations so that he will conform to the schedule and instructions of the Contractor (General Contractor).

DIVISION NO. 157

VENTILATING

Sec. 157-1 GENERAL:

The General Conditions, written for this project, shall form a part of this Division, and shall apply fully to all work hereunder.

Sec. 157-2 SCOPE:

- (a) Ventilation equipment to be provided in connection with Air Conditioning Equipment is NOT included in the General Contract, as this work is to be done under a separate contract.
- (b) Furnish and install electric ventilating fans as called for in this division. Note the following:
 - (1) The electrical wiring to serve the fans will be furnished and installed under the Electric Wiring Division, including the disconnects. The connection from the disconnects to the fan motors shall then be made under the Ventilating Division.
 - (2) The sheet metal ductwork will be furnished and installed under the Roofing and Sheet Metal Work Division. Connection to fan units shall then be made under the Ventilating Division.

Sec. 157-3 VENTILATING FANS:

- (a) Furnish and install, as shown on the plans and as hereinafter specified, the fan for the Boiler Room and the exhaust fan for the Women's and Men's Basement Toilet Rooms, together with ducts, etc. All metal ducts, etc. shall be painted (see Painting Division).
- (b) Fan for Boiler Room shall be Propellair No. CD-20C with a capacity of 1,580 CFM @ 1/4" W.G. and to be equipped with 1/6 H.P., 60 cycle, single phase, 110 volt motor, and to be connected to both oil burners through a switch

Sec. 157-3 VENTILATING FANS (Cont'd):

or switches so that fan will start on the call of one or both oil burners; fan to start before burners go on and to stop when the temperature is satisfied. Fan to be complete with 2-speed switch. All electric controls, such as switches, relays and electric wiring to be done by Ventilating Contractor. A 20" #18 gauge galvanized sheet metal duct shall be installed from the outside and connected into the fan. There shall also be a discharge outlet with duct, about 24" x 24", 18 gauge galvanized sheet metal (see drawings). Ducts shall have rain hoods and insect screens.

- (c) Fan for the Toilet Rooms to be Peerless Utility Unit, size 1-1/4 with a capacity of 585 CFM at 1/4" W.G., complete with 1/6 H.P., 1160 R.P.M. single phase, 60 cycle, 110 volt motor. Fan unit to be installed complete with platform and isolators and to be wired up complete to the light switches for both Toilet Rooms so that fan will start and stop on the action of either of the switches. An 8" x 12" grille to be installed in the duct for each Toilet Room. A 12" x 12" - #18 gauge galvanized metal duct to be run from the discharge of the fan up the side of the brick chimney of the existing Educational Building to the height shown on the drawings, discharge end to be provided with a goose neck outlet and insect screen.

(Note: The entrance doors to the two Basement Toilet Rooms are to be cut off about 1/2" to 5/8" above the floor, for air intake.)

DIVISION NO. 500

TOWER BELLS

Sec. 500-1 GENERAL:

The General Conditions, written for this project, shall form a part of this Division, and shall apply fully to all work hereunder.

Sec. 500-2 SCOPE:

- (a) The Contractor (General Contractor) shall, as a part of the General Contract, carefully remove the two bells from the existing Church tower, shall store and protect same, repair them as required, and, at the proper time, erect the bells in the new Church tower.
- (b) Furnish and install new bell ropes, pulleys, bell rope housing, etc., all as specified and/or as required. Provide all holes in floors, etc., and/or construction required for proper operation of bell ropes, etc.

Sec. 500-3 BELL INSTALLATION AND SERVICING:

- (a) Bell ropes shall be new, best quality manilla or equal ropes, of proper and adequate size, as directed by the Architect. Furnish and install all pulleys, rope housings, etc., as called for and as required.
- (b) Bells shall be repaired as required and put in perfect operating condition. Attention shall be given to the bearings; repair as required, and lubricate.

DIVISION NO. 510

TOWER CLOCK

Sec. 510-1 GENERAL:

The General Conditions, written for this project, shall form a part of this Division, and shall apply fully to all work hereunder.

Sec. 510-2 SCOPE:

- (a) The work included in this division is the removal of the present Tower Clock from the existing Church tower, the storage of the clock mechanism during the construction period, the rebuilding, modernizing, and electrifying of the clock mechanism, the drive shaft, and center cluster, the rebuilding, repair, and/or replacement of the dial, hands, etc., all as covered in a Separate Contract to be entered into by the Owner with the Tower Clock Contractor.
- (b) The electrical wiring to serve the Tower Clock will be furnished and installed as a part of the General Contract; however, the Tower Clock Contractor shall do all mechanism wiring, shall connect his clock wiring at junction boxes (or switches) furnished and installed under the General Contract, and shall furnish and install the electric motors required for the Clock mechanism.
- (c) The Tower Clock Contractor shall have the right to use any scaffolding which has been installed under the General Contract (and is in place at the time the Tower Clock is installed).
- (d) The General Contractor shall, as a part of the General Contract, furnish and install, for each of the four (4) dials, a circular opening approximately 4'-7" in diameter, also a 3" bezel or moulding (of metal) having an outside diameter of approximately 4'-9". The detail of the openings and bezel moulding will be furnished by the Tower Clock Contractor.

Sec. 510-3 DETAILED SPECIFICATIONS:

Detailed installation specifications for the Tower Clock will be as set forth in the separate agreement for this work between the Owner and the Tower Clock Contractor.