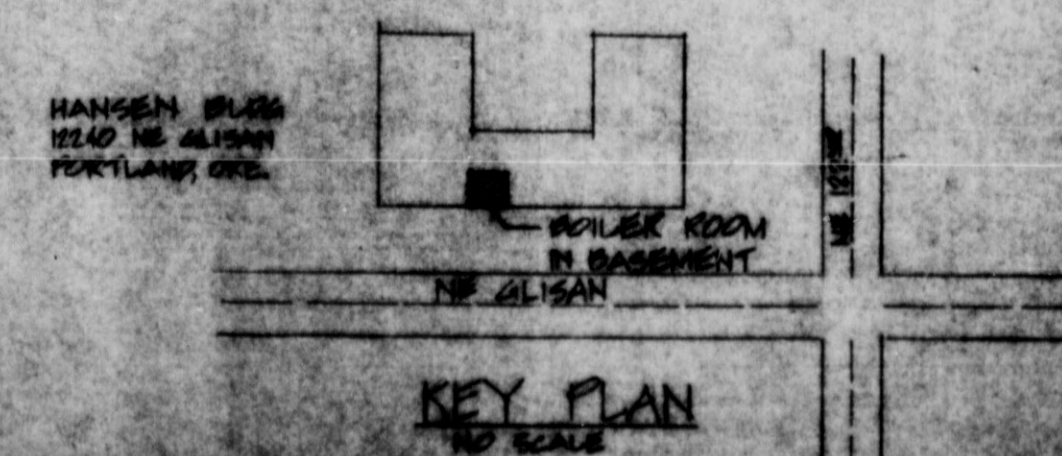
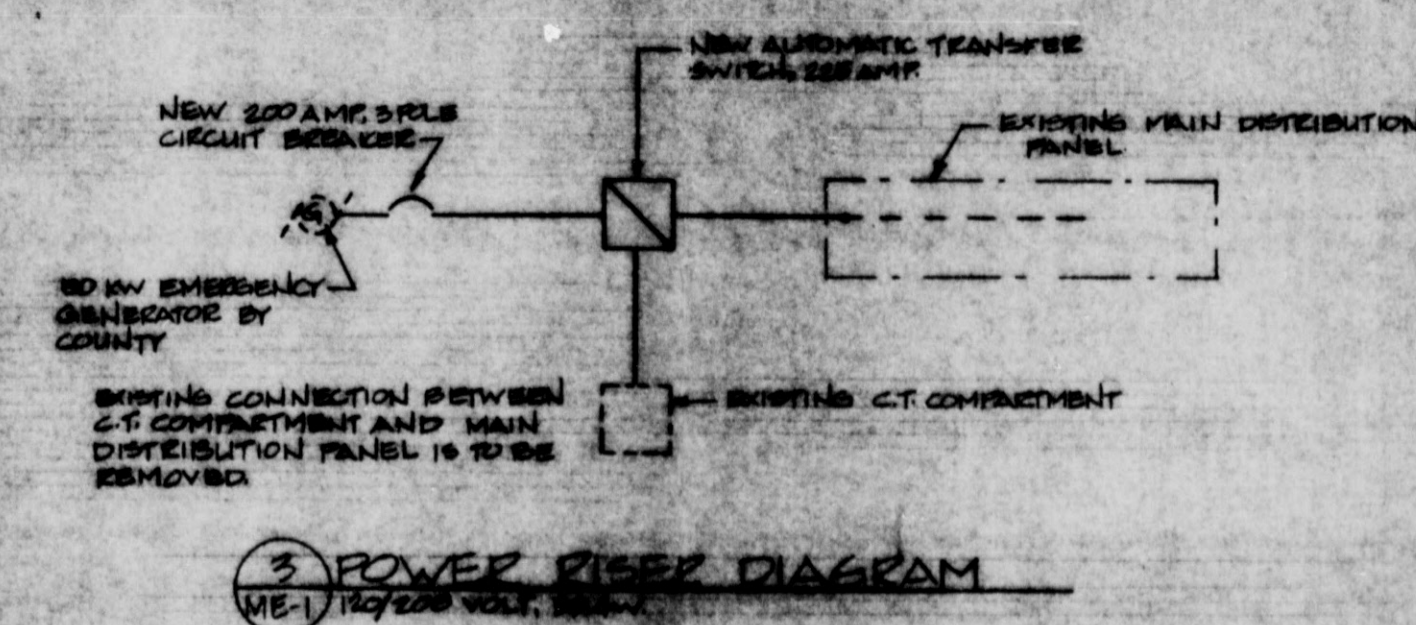
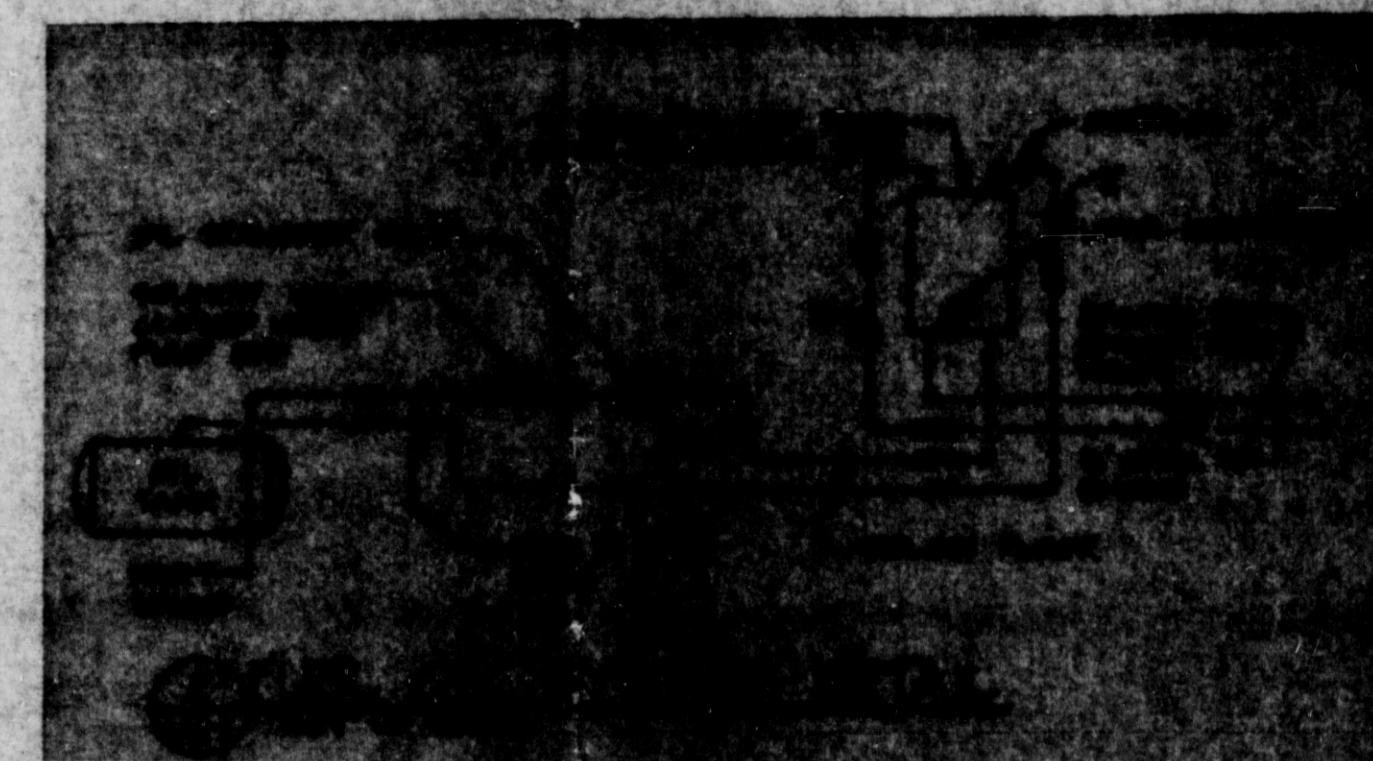
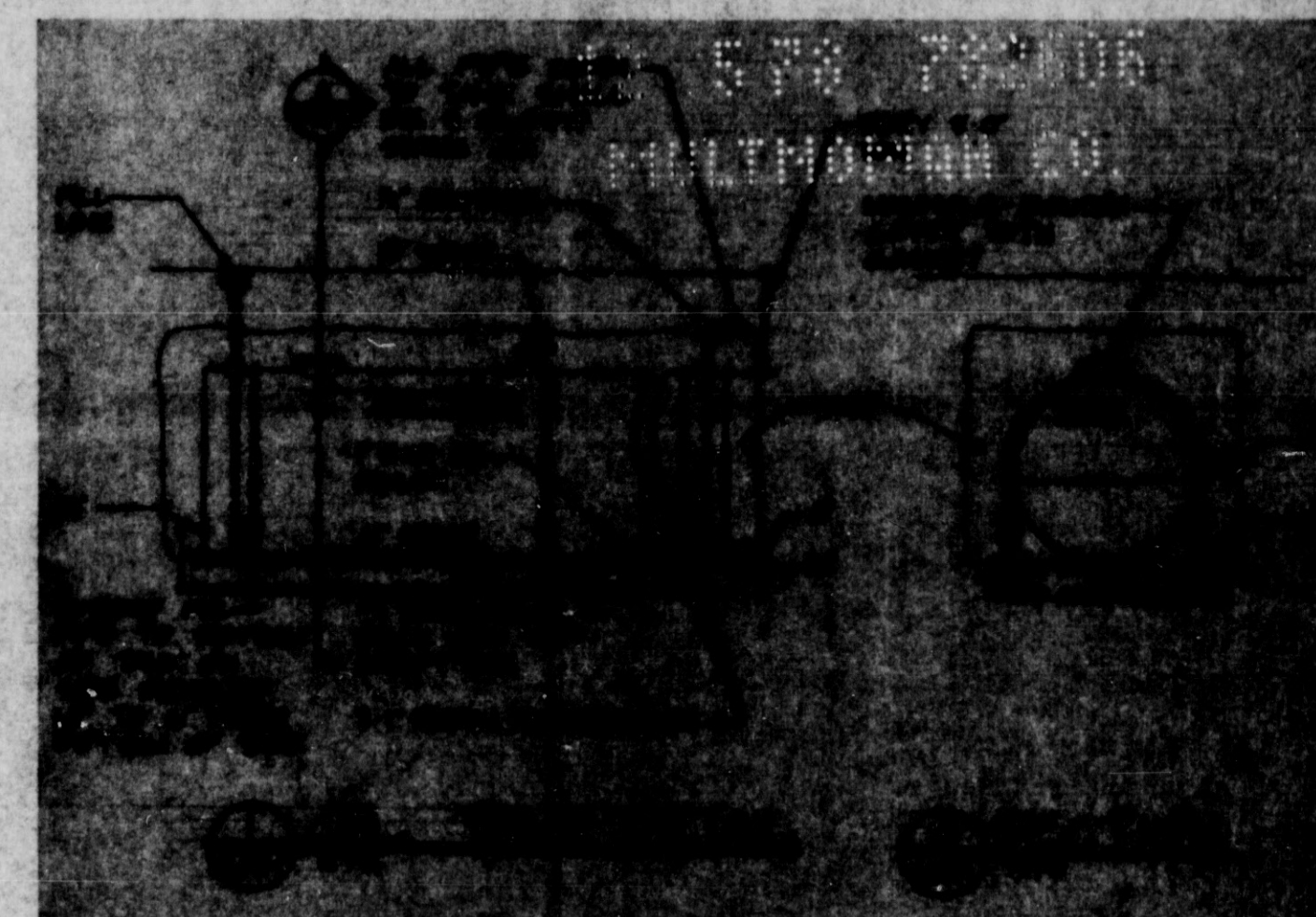
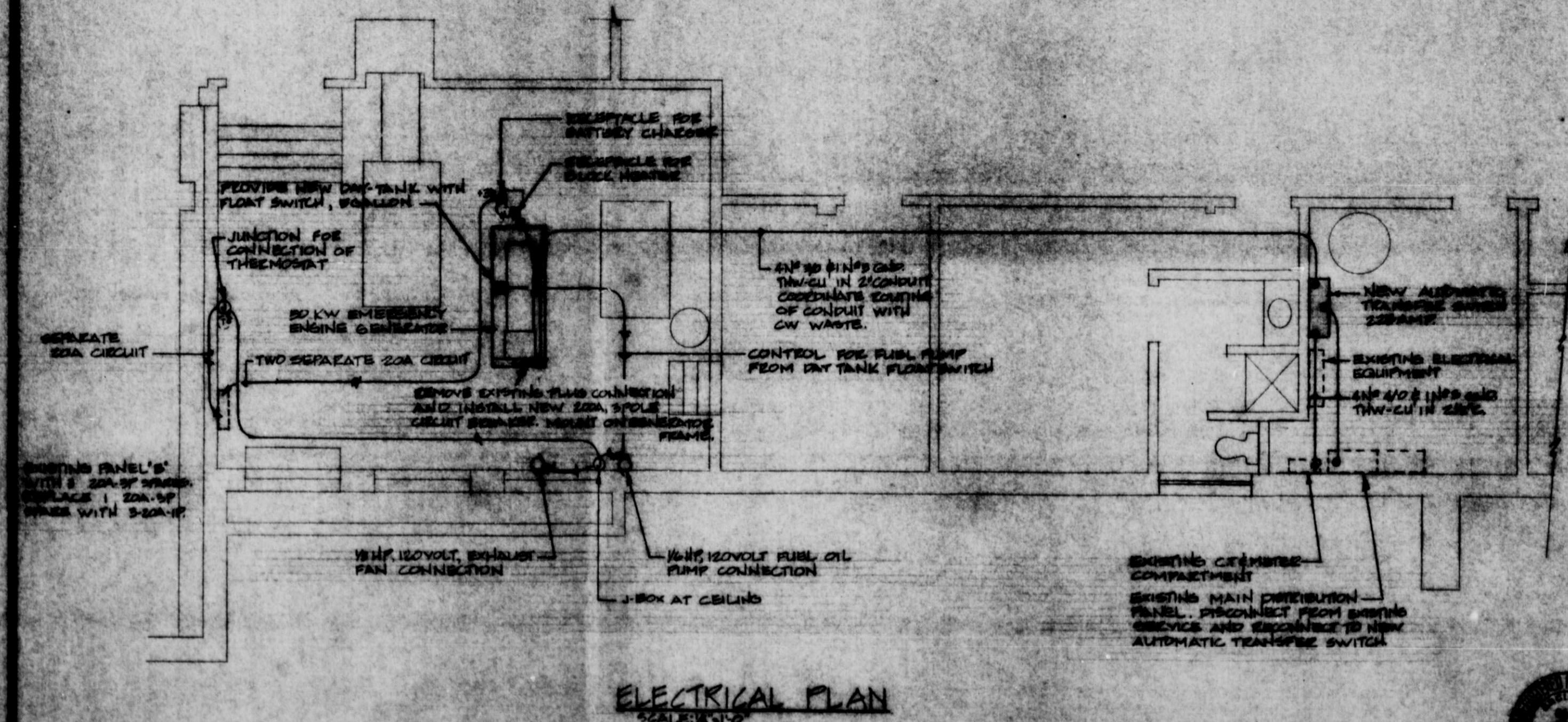
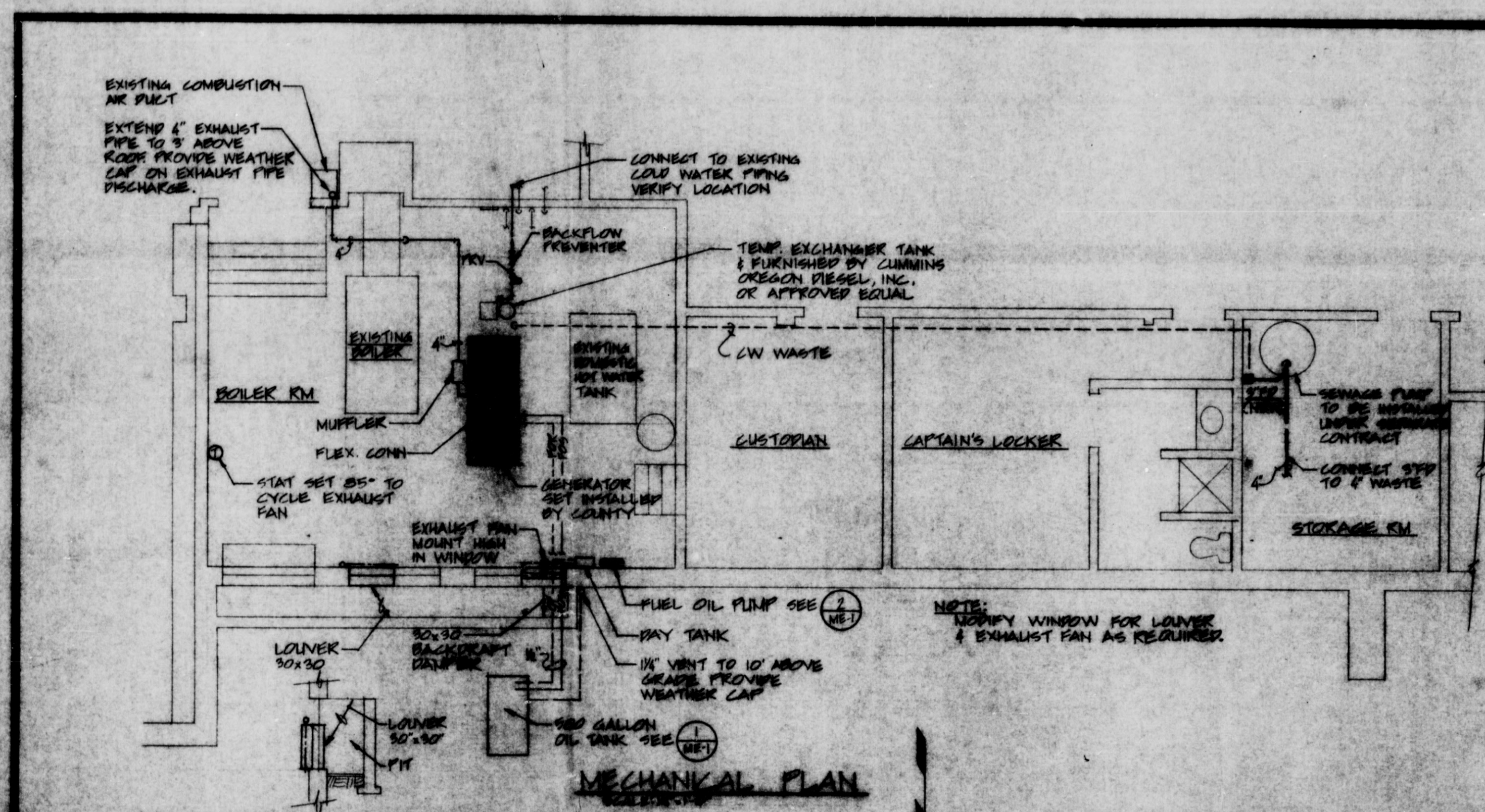


Item	Page	Detail	Comment	Code Provision
			UNDERGROUND TANK TO STORE OIL FOR GENERATOR.	
			GENERATOR AND BOILERS ARE IN ROOM CLASSIFIED AS B1, AND REQUIRED THE CONSTRUCTION FOR OCCUPANCY SEPARATION. SHOW THE CONSTRUCTION AS EXISTING, OR HOW IT IS GOING TO BE OBTAINED.	
			L.F.C. 1444	15, J30.

Page 1 of 1

MULTNOMAH COUNTY - DES/PERMIT SECTION
2115 S.E. Morrison, Portland, Oregon 97214



1960 10/10/60. 1000 ft. PLANT & DETAILS

DIVISION 15
MECHANICAL

15010 GENERAL TECHNICAL

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

This Contractor is bound by the General Conditions, in addition to this Specification and accompanying Mechanical Drawings. It is the intent of these specifications and the drawings to provide a complete and workable facility.

1.2 CODES, RULES, AND REGULATIONS

All work and materials shall conform to the local and state codes, and all state and other applicable laws and regulations. Whenever indicated material, workmanship, arrangement or construction is of higher quality or capacity than that required by the above codes, the drawings and/or specifications shall govern. Should there be any direct conflict between codes and the drawings and/or specifications, the codes, rules and regulations shall govern.

1.3 WORKING DRAWINGS

The working drawings are generally diagrammatic. They do not show every offset, bend, or elbow required for installation in the space provided. All locations for mechanical work shall be checked and coordinated. Contractors shall visit the site prior to bidding and familiarize themselves with all conditions which may affect his work. Where equipment is shown, dimensions have been taken from typical equipment of the class indicated. Carefully check the drawings to see that the equipment under consideration for installation will fit the space provided and that all connections may be made thereto without impairment of area and height requirements and of code required clearances.

1.4 SHOP DRAWINGS AND SAMPLES

Provide (7) sets of shop drawings to the Architect for approval. Each item shall be clearly referenced by page and paragraph to the applicable portion of the specifications. Where equipment is designated by number or symbol on the drawings, the submittal shall also show this number or symbol. All specified features and performance data must be specifically noted on the submittal. The Contractor shall check shop drawings for space requirements and conformance with the specifications and shall mark his corrections and approval on all shop drawings prior to submittal to the County Architect.

1.5 RECORD DRAWINGS

Provide two copies of record drawings showing all deviations from contract drawings. Keep a clean set of prints on job at all times for recording as-built conditions. Transfer this information to new clean prints at completion of job. Drawings shall be accurate, neat and finished in appearance when delivered to the County Architect and shall show accurate dimensions from building lines.

1.6 GUARANTEES

Furnish written guarantee to owner for period of one year covering all defects in material and workmanship. Should any trouble develop during this period due to defective materials or faulty workmanship, the contractor shall furnish all necessary labor and materials and correct the trouble promptly and without any additional cost to the owner. Refer to Supplementary Conditions.

1.7 PERMITS

Refer to Special Conditions, arrange and pay for permits, fees, service charges and inspections by governing authorities.

PART 2 - PRODUCTS

2.1 MATERIAL

All materials and products used for construction shall be new, American made, when available, and/or approved otherwise and the latest products as listed in printed catalog data. All articles of a kind shall be the standard product of a single manufacturer. Trade names and manufacturers names denote the character and quality of equipment desired and shall not be construed as limiting competition. All equipment manufacturers must be listed in specification by name. If not listed, prior approval is required.

PART 3 - EXECUTION

3.1 SUPERVISION AND WORKMANSHIP

Constantly supervise work covered by these specifications. Verify all conditions on job site and lay out work accordingly.

3.2 COMPLETION REQUIREMENTS

Upon completion of the work and adjustment of all equipment, all systems shall be tested by the Contractor to demonstrate to the Owner's Representative that all equipment furnished and installed or connected under the provision of these specifications functions mechanically in the manner required. At the time of this demonstration, the Contractor shall deliver to the Owner's Representative two bound (8 1/2 x 11) copies of the following materials:

1. Format: Looseleaf 3-ring binder with index tabs for identifying system components.
2. Copy of guarantees and warranties issued on equipment and devices installed.
3. Manufacturers description of each fixture and item of equipment actually installed on the job.
4. Spare parts list of manufacturer's recommended replacement parts and part number for each fixture and item of equipment with name and address of the nearest vendor with replacement parts.

3.2 COMPLETION REQUIREMENTS (CONT.)

5. Operating and maintenance instructions for each item of equipment requiring inspection, lubrication or service, describing and scheduling the performance of such maintenance.
6. Valve list with valve size, location, normal position and function.
7. Copy of As-Built Record Drawings.
8. Neatly typed index at or near the front with emergency information and location clearly identified in binder.

15050 BASIC MATERIALS & METHODS

PART 1 - GENERAL

1.1 CONTRACT CONDITIONS

This Contractor is bound by the General Conditions, and accompanying Mechanical Drawings.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

Steel Pipe: schedule 40 pipe, black or galvanized. Fittings size 2" and smaller shall be screwed fittings. Welded fittings (larger than size 2") shall conform to ANSI B16.9.

Rubber ring mechanical joint: (Quentin Bacon type 160 or Victaulic type 77) conforming to ASTM A-47, approved for domestic cold water piping only.

2.2 VALVES

General: valves manufactured by Jenkins, Kennedy, Powell, Grinnell, Walworth, Crane, Hibco, Stockham, Hammond, or Lunkenheimer are approved. Unless otherwise approved, all valves shall be of the same manufacturer.

Gate Valves: Hibco Model 124, or Grinnell 3838.

Ball Valves: Hibco Model 359, Crane Worcester, Hill-McCanna, Grinnell 3589.

Check Valves: swing check, Grinnell 3368.

2.3 UNIONS

Steel Pipe Union: 150 lbs. malleable iron, brass to iron seat, ground joint, black or galvanized to match pipe.

2.4 ESCUTCHEONS

Brass material, chrome plated finish. Size sufficient to cover all pipe openings thru wall, floor or ceiling. Set screw or spring to secure to pipe. B & C or equal.

2.5 PIPE HANGERS AND SUPPORTS

Pipe hanger: See and Reason No. 199 or Figure 239.

PART 3 - EXECUTION

3.1 CUTTING STRUCTURAL MEMBERS AND FRAMING

Not permitted unless shown on drawings or otherwise approved by the Architect.

15100 VIBRATION ISOLATION & NOISE CONTROL

PART 1 - GENERAL

1.1 MANUFACTURERS

Manufacturers shall be Amber Booth, Mason, Pneumatics, General Rubber, Kinetics, or Vibration Mounting and Control, Inc. meeting all of the specified conditions. Kinetics number used as a basis for selection.

PART 2 - PRODUCTS

2.1 ISOLATOR TYPES

General: Treat isolators, (for installation outside the building) including springs, brackets and housing, with a rust inhibitor by the manufacturer.

Isolator stability: All springs shall be of sufficient diameter to maintain stability of the equipment being supported. In no case shall the horizontal to vertical ratio be less than 1:1.

Flex Connectors: minimum live length 18".

Type 1: adjustable, free standing, open spring mounting with combination leveling bolt and equipment fastening bolt. Spring rigidly attached to baseplate and compression plate and enclosed in steel housing which serves as limit stop. Amber Booth Type CT or CTC. 1/4" neoprene pad bonded to baseplate. Baseplate provided with bolt holes and sized to limit pad loading to 100 psi. Amber Booth Type SW-1.

Type 2: Spring hanger Kinetics Model 88.

Type 3: flexible rubber hose, General Rubber or equal.

Type 4: flexible metal hose, Pneumatics Type RT-8 stainless steel.

2.2 MUFFLER

Furnished by Multnomah County.

PART 3 - EXECUTION

3.1 INSTALLATION

General: Under no circumstances shall the isolation efficiency be destroyed by bolting the isolators to the floor or equipment. If bolting is necessary, provide rubber grommets and washers to isolate the bolt from the base plate.

Isolator Application:

Equipment	Isolator Type	Deflection
Generator	Type 1	1"
Piping in Mechanical Room	Type 2	
Piping at Gen. Water Conn.	Type 3	
Exhaust cond. at Gen.	Type 4	

15200 INSULATION

PART 1 - GENERAL

1.1 MANUFACTURERS

Armstrong, Johns-Manville, Owens Corning, Certain-Teed Saint Gobin, Pittsburgh Corning, or approved equal.

PART 2 - PRODUCTS

2.1 PIPING INSULATION

Fiberglass sectional pipe insulation: thermal conductivity of .24 BTU-in. per sq. ft. per hour at 75 F mean temperature. Minimum density of 3.3 lbs. per cubic foot. Jacketed with white barrier laminated of aluminum foil and white Kraft reinforced with glass fiber strands.

Insulation covers for pipe fittings: PVC preformed molded insulation covers. Section of equal.

Non plastic pipe insulation: Armaflex, Aerotube or Ultraform thermal conductivity of 0.27 at 75 degrees F.

Rigid phenolic foam sectional pipe insulation: Continuously molded, extruded rigid phenolic foam with thermal conductivity of .23 BTU-in. per sq. ft. per hour at 75 degrees F mean temperature with factory applied vapor-barrier jacket.

Calcium Silicate: Hydrous calcium silicate bonded with asbestos fibers, minimum density of 18 lbs. per cubic foot and a maximum R factor of .35 @ 100 degrees F.

PART 3 - EXECUTION

3.1 INSULATION THICKNESS

General: Insulation shall be applied in strict accordance with the manufacturer's recommendations.

Domestic cold water: Cover with 1" fiberglass sectional pipe cover or 1 1/2" foam plastic.

Exhaust manifold and pipe within mechanical room: 2" calcium silicate.

3.2 INSTALLATION

Installation shall be continuous through walls, floors, partitions, except where noted otherwise.

Fiberglass sectional pipe insulation: Apply insulation to pipe and seal with self-healing tape. Use self butt strips to seal butt joints. Insulate all fittings, valves, and unions with single or multiple layers of insulation and cover to match pipe or use preformed PVC molded insulation covers.

Phenolic Foam Sectional Pipe Insulation: for pipe service temperatures below 250 degrees F, including dual-temperature lines, the vapor-barrier jacket tape are to be sealed with one of these methods: Acrotherm Lap-Seal tape; Armstrong 528 contact adhesive; conventional Lab-Seal adhesive. For pipe service temperatures above 250 degrees F, secure jacket tape with outward-climbing staples positioned approximately 3" apart. Insulate fittings with sintered sections of Acrotherm, or with the same methods specified under "Fiberglass Sectional Pipe Insulation."

Optional: insulate fittings with insulating cement to the manufacturer's instructions. Travel the coat to a smooth, even finish. Then cover the fittings with 8 ounce canvas and "Arabul Tapping Adhesive" on exposed fittings; and on concealed fittings cover cement with crinoline cloth while cement is wet, smoothing the surface and sealing the cloth with the hand. Upon completion of insulating, finish all exposed jacketing with 2 coats of white paint.

Exhaust Manifold and Pipe: Insulate manifold and pipe, cover with 2" thick calcium silicate. Insulation shall be preformed and sintered where necessary to fit the contour of the manifold. The insulation shall be applied wettedges tightly butted and secured with wire or bands. A smoothing coat of asbestos cement shall be troweled over the insulation, and a Fiberglas A-2078 light weight asbestos cloth, to be smoothly adhered with Benjamin Foster 85-28 adhesive.

15400 PLUMBING

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

Qualifications of workmen: use sufficient journeyman plumbers and competent supervisors in the execution of this portion of the work to ensure proper and adequate installation of plumbing throughout.

PART 2 - PRODUCTS

2.1 MATERIALS

Galvanized steel pipe: Domestic cold water piping, waste, above grade where approved by State Code.

Copper pipe: Type K fuel oil lines.

Black Absorbent: Acceptable manufacturers: Burn, Wade, Smith, Jones or Precision Plumbing Products, Inc.

Size per Institute Standard ISO-88 281.

Valves: See Section 15050 Basic Materials & Methods.

Accessories: brass, chrome plated.

Exhaust Piping & Fittings: red brass, chrome plated.

Oil Tank: Furnish and install a U.L. approved 500 gallon oil tank complete with 3" Ell, 1 1/4" vent, sumpole, supply and return pipe connections.

Oil Transfer Pump: 3 GPM, 17 1/2" head, Sun Ray or equal 1/2 HP, 120 V, 1 PH.

PART 3 - EXECUTION

3.1 INSTALLATION

General: Do not cover up or enclose work until it has been properly and completely inspected and approved.

Exhaust Piping: extend to above roof as shown on the drawings.

Water: Connect to existing water main. Verify conditions at connection point before starting work.

Structural Members: Cut center of steel studs as required for mechanical installation, being careful not to cut

3.1 INSTALLATION (CONT.)

edges. Do not cut beams, girders or similar structural members except as authorized by the Architect.

Layout: Layout the piping system in careful coordination with the Drawings, determining proper elevations for all components of the system.

Do not block openings or passageways with piping.

Keep piping free from contact with structure or installed equipment. Provide hangers to support weight of pipe and contents.

Valves: Provide valves at equipment and on branch pipe connections to mains. Install valves in accessible locations.

Provide valve at cold water connection to hot water heater.

Provide valves for draining entire domestic water system.

3.2 TESTS

Testing: Test piping system before insulating or covering piping.

Disconnect equipment and devices which may be damaged by test pressure.

Test for leaks: 150 psi for 6 hours.

15500 AIR DISTRIBUTION

PART 1 - GENERAL

1.1 GUARANTEES

Deliver all guarantees and warranties on this portion of the work to the County Architect. All equipment, materials, and workmanship shall be guaranteed to be free from defects for a period of at least one year following date of acceptance by the County. Replace all parts proving defective during that time, including the replacement of lost refrigerant and repair of leaks, to the approval of the Architect and at no additional cost to the County.

PART 2 - PRODUCTS

2.1 DUCTWORK

Low Pressure: Supply exhaust air ducts. Construct from galvanized sheet metal to conform to Chapter 19, Uniform Mechanical Code, Volume II, 1970 Edition, or 1969 or later ASHRAE Guide.

2.2 OUTSIDE AIR LOUVERS

Provide Casco L-400 louvers of sizes shown on drawings. Harkin, Dumas, Louvers & Dampers Inc., Wonder Metal or approved equal. Roshia RSH-6375 combination louver damper construction option for locations where dampers are required behind louvers.

2.3 IN-LINE EXHAUST FAN

Combination exhaust fans shall be direct driven in-line type. Fan housing shall be of heavy gauge formed steel. Fan and housing shall be such certified. Exhaust fans shall be mounted on rubber power line type DW.

Exhaust Motor: West, Greenheck, or approved equal.

Exhaust Fan: Size CFM, 1/2" S.P., 990 RPM, 1/8 HP, 120 volt, 1 Phase Power Line 120V/24.

PART 3 - EXECUTION

3.1 SYSTEM BALANCING

At the completion of the work, the adjustment of the system shall be done by the mechanical contractor. System shall be adjusted to within plus 10% or minus 5% of capacities shown.

15600 TEMPERATURE CONTROL SYSTEM

PART 1 - GENERAL

1.1 ELECTRIC CONTROL SYSTEM

Low voltage electric system, complete with required transformers with circuit protection, connected to electrical system at points indicated or required and as approved.

PART 2 - PRODUCTS

2.1 WIRING

shall be in conduit and in accordance with the "Electrical" Division 16 of these specifications and all applicable codes. It shall be the responsibility of the Control Contractor to study the mechanical and electrical project drawings and specifications and provide all wiring relating to the control system not furnished therein. This wiring can include contractors, relays, etc., and incidental power wiring (ap control compressor wiring, power when run, through the stat, etc.)

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATION

Exhaust Fan: provide room stat to cycle fan on above 85 deg. room temp and open outside air damper.

THE MECHANICAL SPECIFICATIONS
SHALL BE READ
WITH THE DRAWING



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