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CATALOG

of

HANFORD BUILDINGS AND FACILITIES

300 AREA

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A Report by the AEC-GE Study Group
for the Economic Development of Richland

APRIL 1964

RICHLAND, WASHINGTON

APPROVED FOR
PUBLIC RELEASE
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FOREWORD

For twenty years Hanford has been the chief producer of plutonium in the United States and in this capacity has made a major contribution to the security of this country. However, in the past few years it has become increasingly apparent that stockpile requirements of this material were declining and that a reduction in plutonium production was inevitable.

Recognizing that shutdown of reactors and supporting facilities could have an unfavorable impact on the local economy, the Atomic Energy Commission has undertaken, in the past two years, a number of steps to stimulate diversification of the economic base of the region. One of the steps was establishment by AEC Headquarters of the "Atomic Energy Commission - General Electric Company (AEC-GE) Study Group for the Economic Development of Richland," consisting of P. G. Holsted, AEC, and F. W. Albaugh, GE. In the course of its work, the Study Group concluded that a concise, but relatively comprehensive, description of the facilities at Hanford would be useful for use in diversification activities and, therefore, arranged for the compilation and publication of this document.

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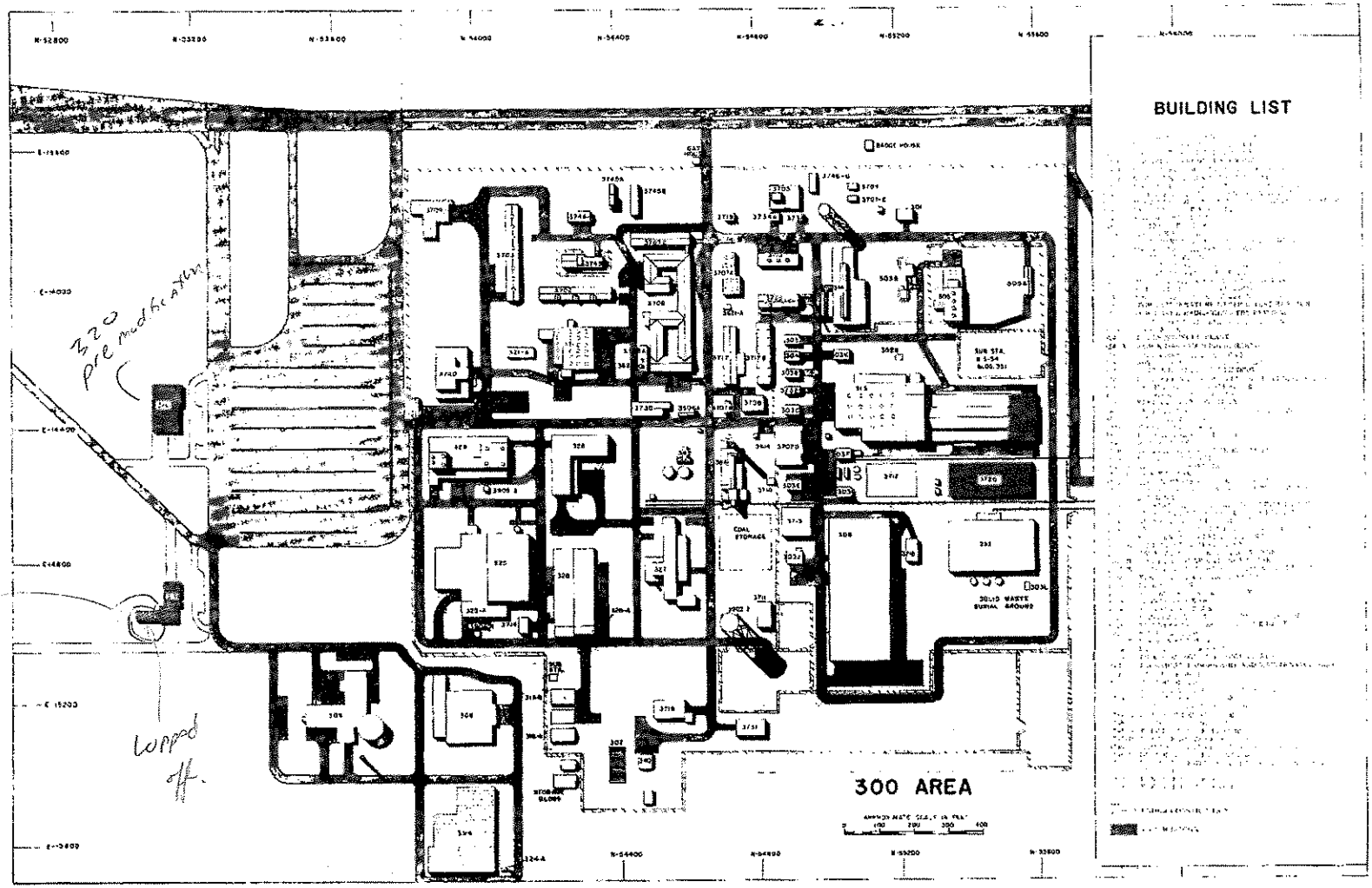
HANFORD FACILITIES - 300 AREA

The facilities, primarily buildings, are listed according to number but are also indexed alphabetically under name. A brief description is given which includes dimensions, essential and special features, and appurtenances. Simple line drawings are used to exemplify typical facilities and an indication of current usage is included for most of the buildings.

This compilation is published in four parts; covering, respectively, the 100, 200, 300, and "other" Areas. The pages have been punched so that after removal of the binding they may be used in a loose-leaf binder.



300 Area

AEC-GE RICHLAND, WASH.

NUMBER: 301

NAME: Garage and Equipment Storage

PURPOSE: Provides storage for labor service type tools and snow removal and salt-sand spreading equipment. Contains venetian blind washing equipment and drying racks. Contains storage for one auxiliary fire tanker truck on standby.

DIMENSIONS: 1520 ft^2 storage; 86 ft^2 common; 1606 ft^2 total area: 31 x 52 ft.

DESCRIPTION: One story wood frame structure built on concrete slab on grade. Siding is asbestos shakes. Roof is tar and gravel. Building is heated with steam radiators. Cooling is provided with one evaporative type unit.

STATUS: In use

REFERENCE DRAWING: H-3-71699

NUMBER: 303-E

NAME: Magazine - Storage

PURPOSE: This building is used as storage space for engineering materials, equipment, and supplies for use in 306 Building pilot plant.

DIMENSIONS: 1296 ft^2; 27 ft x 48 ft.

DESCRIPTION: This is a concrete block structure with concrete foundation and floor. The roof is precast concrete slab with tar and gravel surface.

STATUS: In service

REFERENCE DRAWING: HW-69534

NUMBER: 303-J

NAME: Office Building

PURPOSE: Provides office space for N-Reactor Fuels engineering and related personnel. Also, has a prototype mock-up room and drafting and layout planning room.

DIMENSIONS: Office, 993 ft^2; Work Area, 1282 ft^2; Shop, 256 ft^2; Storage, 207 ft^2; Common, 925 ft^2; Total Area, 3663 ft^2; 64 x 66 ft.

DESCRIPTION: One story wood frame structure built on concrete foundation and floor slab. Siding is asbestos shakes. Roof is roll tarpaper. Ventilation is provided with combination steam heat and evaporative type cooling. Office section of floor is covered with asphalt tile. Lighting throughout the building is fluorescent. The building is equipped with a fire detection alarm system.

STATUS: In use

REFERENCE DRAWING: H-3-10475

NUMBER: 303-L

NAME: Uranium Scrap Burning Facility

PURPOSE: The building provides facilities for the burning of uranium scrap.

DIMENSIONS: 384 ft^2; 16 x 24 ft.

DESCRIPTION: A sheet metal structure, with concrete foundation and floor and a corrugated metal roof.

STATUS: In service

REFERENCE DRAWING: H-3-9761, SK-3-8817, SK-3-9999

NUMBER: 305

NAME: Hanford Test Reactor

PURPOSE: The building contains a low power reactor used to perform nuclear purity tests on graphite and reactivity control tests on bare and canned uranium core. The reactor serves as a ready neutron source for special irradiation in support of technical and instrument development work. In addition, tests are made of any materials that are used in the nuclear industry.

DIMENSIONS: Office, 143 ft^2; Work Area, 8095 ft^2; Storage, 2220 ft^2; Common, 1762 ft^2; Total Area, 12330 ft^2: 86 ft 8 in. by 161 ft 8 in.

DESCRIPTION: The building is a steel frame structure with interior and exterior walls of concrete block. The floor and foundation are of reinforced concrete. The roof is precast concrete slabs covered with asphalt composition material. The building contains an office, a control room, two storage rooms, lunch room, and a personnel locker room. Ventilation is supplied with a combination 40,000 cfm steam-heated and water-cooled unit except the control room. This room is supplied with a combination steam-heated and refrigeration cooling closed system.

STATUS: In use

REFERENCE DRAWING: H-3-6601

NUMBER: 305-A

NAME: Storage Building

PURPOSE: Provides storage for miscellaneous out-of-service equipment and materials.

DIMENSIONS: Storage, 1909 ft^2; Common, 107 ft^2; Total Area, 2016 ft^2: 24 x 84 ft.

DESCRIPTION: One story wood frame structure built on concrete slab on grade. The siding is covered with asbestos shakes. The roof is roll tar paper. Heat is provided by electric heaters, and the building is cooled by one evaporative type cooler. There is steam supply to the building and provisions for sewers. Water is supplied to two fire hose outlets.

STATUS: In use

REFERENCE DRAWING: H-3-883

NUMBER: 305-B

NAME: Experimental Test Reactor

PURPOSE: Contains two reactors for the determination of Physics constants of various reactor concepts. The zero power Physical Constants Testing Reactor is characterized by a flexible core which can be loaded to duplicate reactor arrangements.

The smaller more sensitive thermal test reactor has a low flux thermal column. The building also has a critical approach tank.

DIMENSIONS: 71 x 38 x 9 ft above grade; 121 x 18 x 8 ft 8 in. below grade; Offices, 110 ft^2; Work area, 3300 ft^2; Common, 496 ft^2; Total area, 3906 ft^2.

DESCRIPTION: Built in two phases; (1) underground–two reactor rooms, two assembly rooms, common control room, and restroom at head of entrance stairs, (2) on grade–offices, counting room, instrument rooms, computing room, maintenance shop, and change room. The underground part has concrete walls and roof.

The control room has asphalt tile. Roof elevation is about 1 ft except over reactor rooms where it is 5 and 10 ft above grade. The above ground addition has concrete block exterior walls with structural steel supporting roof and monorail. The roof is built up tar and gravel on plywood. The floor in some rooms has asphalt tile. The interior partitions are steel in the control room and plaster board on first floor. There are casement windows in offices.

Ventilation is by two 6000 cfm evaporative coolers and small exhaust fans. The underground area is heated by electric duct heaters. The above ground rooms are heated by electric baseboard or space heaters. Lighting is fluorescent. There is a fire detector system. The alarm systems include fire, evacuation, and criticality. 110, 220, and 440 v power is available.

REFERENCE DRAWINGS: H-3-8314, H-3-9005

NUMBER: 306

NAME: Metallurgical Semi-Works

PURPOSE: Provides large, high clearance, heavy floor loading metallurgical research and development laboratory and pilot plant space. Although designed for metallic reactor fuel element development, the utility grids and variety of metallurgical equipment make the semi works of general utility.

DIMENSIONS: 160 x 380 x 25 ft; Offices, 6511 ft^2; Labs, 51,939 ft^2; Shops, 1720 ft^2; Storage, 3082 ft^2; Common, 16,908 ft^2; Total area, 80,160 ft^2.

DESCRIPTION: This building was built in two phases. It is two stories high with no basement. Framework is bolted steel. Roof on original building is metal deck; Class I built-up roof was installed in 1963. Addition has concrete roof with Class I tar and gravel 20 year built up finish. Exterior siding is fluted steel insulated panels. Fixed windows protected by storm sashes and shade screens extend across the first floor offices of the original building. First floor is reinforced concrete on grade. Second floor is steel deck topped with concrete. Office section floors are asphalt tiled. Partitions are moveable metal panels except for concrete shielding walls. Laboratory space is mostly unpartitioned and roof height. Suspended acoustic ceiling is used in office section.

Heating and ventilating is provided by an extremely flexible system. The building is not designed for plutonium or fission product work; consequently, air pressure barriers for radioactive contamination containment are not needed. The original building has 20 roof mounted supply units, three of which are complete with dry filters, air washers, wet filters, pre- and reheat coils. Sixteen units have wet filters and coils, while one has a wet filter only. Hoods and special locations have individual exhausters. Three exhaust fans provide general ventilation. The shops exhaust to bag filters. The addition has three 50,000 cfm supply units complete with filters, steam coils, and spray chambers. Hoods have individual exhausters. Chemical and acid tanks exhaust through two 12,000 cfm fume scrubbers to a 40 ft high, 3 1/2 ft diameter stainless steel stack. Equipment exhaust collects through a grid which leads to two 20,000 cfm exhaust fans. Supplementary heating is provided by radiators and space heaters. Plastic hoods and duct work are provided for highly corrosive service.

Major equipment includes 50 kw vacuum induction furnace; consumable arc furnace; 700 ton vertical extrusion press; swages; rolling mills; 3600 ft-lb pneumatic hammer; 125 ton hammer press; 400 ton hydraulic press; 5 roll tube straightener; 25 ton stretch straightener, 7 ton draw bench, roller leveler; 4400 ft-lb magneform; 4 kw ultrasonic welder; 30 kv electron beam welder, 100 KVA-75,000 amp Sciaky spot welder; 600 KVA, 30,000 amp Sciaky projection welder; 957 C and 1100 C vacuum resistance furnaces; 2500 F controlled atmosphere furnace; 200 kw induction unit; 160 kw salt baths; 10 kw electron beam evaporation unit; and 50 kw vacuum brazer.

Utilities are distributed throughout the laboratory. They include hot and cold water, propane, helium, acetylene, argon, nitrogen, steam, and process sewer. Special materials such as acids are provided at some locations. A special acid drain and neutralizing tank are furnished. Vacuum pumps are located with the equipment they serve. All the water is specially filtered to remove sand and other impurities.

Electrical system includes 440, 208, and 110 v ac. Emergency power with backup at powerhouse steam turbine is available for essential use. Direct current for certain machines is supplied by motor generator sets or rectifiers as needed. Lighting is fluorescent with mercury vapor lamps in high bays. Electrical fire detectors are provided. There are three emergency alarm systems—fire gongs, evacuation sirens, and criticality horns. Areas of the building are served by three 5 ton cranes, two 2 ton cranes, and many smaller cranes and monorails. Normal power is furnished by two 1500 KVA transformers. The emergency transformer is rated at 30 KVA.

REFERENCE DRAWINGS: H-3-8221, H-3-10856, H-3-12752, H-3-12757

(See Figure A-1 in the Appendix)

NUMBER: 308

NAME: Plutonium Fabrication Pilot Plant

PURPOSE: Provides laboratories for research and development of technology for fabricating reactor fuel elements containing plutonium.

DIMENSIONS: Main building—140 ft 9 in. x 142 ft 6 in., 33 ft high; Office wing—169 ft 4 in. x 40 ft 8 in., 10 ft 9 in. high; Offices, 2006 ft^2; Labs, 22,206 ft^2; Shops, 1364 ft^2; Storage, 5542 ft^2; Common, 21,626 ft^2; Total area, 52,744 ft^2.

DESCRIPTION: The two story main building is almost square with a one story rectangular office wing extending across and beyond the front. Framework is bolted steel and reinforced concrete. Parapeted roof is slightly sloped. The main building roof is steel decked, topped with concrete, and built up 20 year tar and gravel finish. The office wing roof is steel decked with a Class I tar and gravel finish. Exterior walls are reinforced concrete and concrete block. Casement windows extend across the front of the office wing. Floors are reinforced concrete with painted vinyl tile finish. Permissible floor loadings are 200 lb/ft^2 on first floor and 150 lb/ft^2 on second floor. There is a tunnel under the main corridor which contains downdraft exhaust ducts. Interior walls are concrete block with plaster and polyvinyl chloride finish. Painted under surfaces of upper floor form most first floor ceilings. Second floor and other ceilings are suspended acoustic tile. There is a service gallery above the main corridor below the second floor. Main floor laboratories are 18 ft high. Specially designed gloved stainless steel enclosures with auxiliary equipment make up most of the furniture.

The laboratories are characterized by large gloved enclosures containing metallurgical apparatus. Ventilation and enclosure atmospheres can be closely controlled. Equipment available for work with metals, ceramics, or cermets includes 30 kw vacuum induction furnace, 30 kw air induction furnace, 145,000 ft-lb high energy rate impaction equipment, 280 ton horizontal extrusion press, 4 die stationary swage, rolling mills, 10 ton draw bench, crushing and classifying equipment, pellet press, sintering furnace, grinder, vibrational compacter, capacitor discharge spot welder, vapor degreaser, autoclaves, and radiograph.

The main heating and ventilating system has three 45,000 cfm (laboratory) and one 25,000 cfm (office) supply fans. Complete with heating coils, filters, and spray chambers located in the supply equipment room at the south of the second floor, and three 40,000 cfm exhaust fans in the exhaust equipment room at the rear of the building. An emergency exhaust fan (6000 cfm) provides exhuast in the event of failure of the regular system. It exhausts the hood ducts to insure proper flow. The main floor is divided into eleven separate zones for contamination control. A panel board with room condition annunciators is located in the south equipment room. The building ventilation operates at negative to atmosphere pressure and has anti-back-flow dampers in the supply system to effect containment. The exhaust system contains absolute filters at the hood, at the room register, and in large filter rooms adjacent to the exhaust fans. Each fan has its own stub stack. Radiators are provided for heating in the offices.

Utilities are distributed along the walls and to the hoods from the gallery above the main corridor. Services include hot, cold, and deionized water; steam; compressed air; propane; nitrogen; argon; oxygen; hydrogen; and laboratory and contaminated drain. Vacuum for air sampling is provided by two 950 cfm rotary pumps. Special oil free compressed air is provided by two 75 cfm graphite ring compressors. Power house compressed air is also furnished. High purity deionized water is produced at the rate of 150 gph by two deionizers in a series. Nitrogen is produced by an ammonia unit. Fire sprinklers are provided. Vacuum is provided to equipment as needed by individual pumps.

Electrical system provides 440, 208, and 110 v ac. Emergency power with backup by the powerhouse turbine is available for essential use. Lighting is generally fluorescent. Electrical fire detectors and carbon dioxide extinguishing equipment is provided at gas storage dock. There are three emergency alarm systems—fire gongs, evacuation sirens, and criticality horns. A 4000 lb electric elevator serves all floors. The normal transformer is rated at 1000 KVA; the emergency transformer at 45 KVA.

REFERENCE DRAWINGS: H-3-12005, H-3-12006, and H-3-14378

(See Figure A-2 in the Appendix)

NUMBER: 309

NAME: Plutonium Recycle Test Reactor

PURPOSE: Provides a facility to develop the technology for the utilization of plutonium as a fuel in thermal heterogeneous power reactors. PRTR permits direct investigation of reactivity and long exposure plutonium isotope effects; provides a facility for radiation testing of plutonium bearing fuel elements; provides pilot plant quantities of prototypical irradiated fuels for the use in the fuel reprocessing and fuel fabrication development programs; provides a facility for the investigation of control characteristics, reactor dynamics, and reactor operating problems for plutonium recycle operation; and provides the principal facility for a pilot plant scale demonstration of the economics of various fuel cycles.

DIMENSIONS: Service Building, 80 x 100 ft; M&M wing; 61 x 100 ft; Containment vessel, 80 ft in diameter, 75 ft high; Critical Facility (PRCF), 37 x 40 ft; Work area, 60 x 80 ft.

Offices, 7067 ft^2; Labs, 247 ft^2; Work area, 22,962 ft^2; Shops, 384 ft^2; Common, 13,500 ft^2; Total area, 44,160 ft^2.

DESCRIPTION: Building modifications include the maintenance and mockup wing, critical facility, conversion of work area space to a water lab, change rooms, and additional offices, and additional air conditioning for the service building.

The PRTR is a vertical pressure tube type reactor, heavy water moderated and cooled, with a thermal power rating of 70 megawatts. Fuel elements are charged into and discharged from the 85 Zircaloy process tubes from the top face. Control of the reactor is achieved by regulating the level of the heavy water moderator, which is held in the reactor vessel by helium gas. Eighteen shim rods are provided to compensate for local flux and permit adjustment of the moderator level to the desired control range for equilibrium operation.

The fuel elements are cooled by pressurized, recirculating, heavy water. Pressurization is accomplished by helium pressure in the pressurizer. Steam is condensed in a barometric condenser before disposal to the Columbia River.

An all welded cylindrical containment vessel houses the reactor, process equipment, test loop equipment, unirradiated fuel storage facility, fuel discharge water pit, and

fuel examination facility. The containment vessel has a hemispherical dome and a hemielliposoidal bottom and is 121 ft 6 in. high, extending 75 ft above grade. Design pressure of the vessel is 15 psig. Normal access to the vessel is by a personnel air lock, approximately 10 ft in diameter and 15 ft long. The vessel exterior above grade is covered with 3 in. of insulation with a water proof membrane.

Adjoining the containment vessel is the Service Building. The storage basin, work area, control room, offices, lunchroom, toilets, mechanical and ventilation Equipment maintenance shop, instrument shop, electrical shop, and electrical switchgear are located in the service building.

Framework is welded steel. Roof is slightly sloped steel deck topped with 20 year tar and gravel finish. Exterior walls are fluted steel insulated panels. The floor is steel reinforced poured concrete covered with vinyl tile. Floor loading averages 200 lb/ft^2. Original partitions are metal lath and plaster; additional walls are dry wall construction. suspended ceilings are perforated pans backed with fiber glass pads, and some are plastic egg-crate panels.

The service building basement houses the emergency well pump, the chilled water equipment, the compressed air equipment, the emergency well pump, the process water pumps, and the process water reservoir. The electrical switchgear room and battery room are located in the basement. The process water softening equipment and chemical makeup equipment; various pipe runs and containment valves are located in the basement tunnel.

The main air lock from the containment vessel opens into the storage basin area which is the point of connection of the service building and containment vessel. An under water fuel transfer opening between containment vessel and the storage basin permits irradiated fuel elements to be moved to the basin for storage or to the reactor for recharging. A fuel element loadout facility adjoins the storage basin area on the east side; it is from this facility that elements are loaded in shielding casks and shipped to the 327 Building or 200 Area.

The containment vessel ventilation exhaust fan is housed in the exhaust fan pit east of the storage basin at the -12 ft elevation; exhaust is to the 150 ft stack east of the fan pit.

The following data summarize important facts of the PRTR and service building:

(1) Power Level, 70 Mw Thermal
(2) Primary Coolant, 8400 gpm
(3) Number of Process Tubes, 85 Zircaloy-2
(4) Shim Rods, 18
(5) Containment Vessel Thickness, 9/32 in. dome; 9/16 in. shell; 5/8 in. bottom
(6) Containment Vessel Material, Carbon Steel
(7) Thermal Shield Material, Iron
(8) Thermal Shield Thickness, 6 in.
(9) Thermal Shield Weight, 10,100 lb
(10) Biological Shield Material, Concrete
(11) Biological Shield Thickness, 71 in.
(12) Top and Bottom Shields Material, Carbon Steel
(13) Top Shield Diameter, 14 ft 10 in.
(14) Bottom Shield Diameter, 11 ft 4 in.
(15) Top Shield Weight, 101.4 tons
(16) Bottom Shield Weight, 44.8 tons
(17) Primary Coolant Pumps, 3
(18) Primary Pump Rating, 4200 gpm
(19) Primary Pump Motor, 350 hp
(20) Moderator Pump, 3
(21) Moderator Pump Rating, 600 gpm
(22) Moderator Pump Motor, 3 hp
(23) Reflector Pumps, 2
(24) Reflector Pump Rating, 200 gpm
(25) Reflector Pump Motor, 25 hp
(26) Heat Exchangers, 8
(27) Process Water Pumps, 3
(28) Process Water Pump Rating, 200 gpm
(29) Process Water Pump Motor, 50 hp
(30) Water Softener Units, 4
(31) Flow/Softener Unit, 250 gpm
(32) Boiler Feed Pumps, 3
(33) Boiler Feed Pump Motor, 125 hp
(34) Boiler Feed Pump Rating, 275 gpm
(35) Top and Bottom Shield Pumps, 2
(36) Top and Bottom Shield Pumps Rating, 100 gpm
(37) Top and Bottom Shield Pumps Motor, 5 hp
(38) Ion Exchange Vault, 4 Exchangers; Primary System; Reflector System; Moderator System; Top and Bottom Shield System
(39) Ion Exchange Vault Size, 15 ft 6 in. Diameter x 21 ft 4 in. High
(40) High Pressure Helium Compressors, 2
(41) Low Pressure Helium Compressors, 2
(42) Operating High Pressure, 2200 psig
(43) Operating Low Pressure, 1000 psig

(44) Emergency Diesel Water Pump, 1
(45) Emergency Diesel Water Pump Rating, 750 gpm
(46) Emergency Diesel Water Pump Motor, 100 hp
(47) Emergency Diesel Generator, 1
(48) Emergency Diesel Generator Rating, 300 kw at 480 v
(49) Emergency Diesel Generator Motor, 400 hp
(50) Air Compressors, 2
(51) Air Compressors Rating, 75 cfm at 100 psig
(52) Air Compressors Motor, 20 hp
(53) Normal Power Source, 13.8 kv from 300 Area Substation

The 309 Building Complex has an extensive communication and alarm system which includes two telephone systems, public address system, intercommunication system, evacuation alarm system, criticality alarm system, fire alarm system, and process alarm system. These services are located strategically throughout the entire building.

Separate heating and ventilation systems are provided for the service building and containment vessel. Contamination control is achieved by maintaining the air pressure slightly higher than process area pressure. A single supply fan in the south of the service building provides 22,000 cfm of filtered and tempered air. Air supply is through galvanized steel ductwork. There are five mechanical exhausters and nine gravity exhausters on the roof. Heating and ventilating for the containment vessel apparatus is provided by nine fan units equipped with electric heating elements and chilled water coils. Chilled water is furnished by two 23 ton water chillers. A 5000 cfm supply unit complete with heating coils, filters, and spray chambers provides general heating and ventilating for the containment vessel.

Electrical distribution provides 2400 v power to the primary pumps and the river pumps and 480 v power to all other loads. Distribution of the 480 v power is divided between normal and emergency systems.

Water systems provide raw water, process water, and sanitary water. Raw water is used exclusively as the coolant for the process steam condenser. Either one of the river pumps can supply 8000 gpm of water required by the condenser. A 24 in. concrete pipe runs from the river pump facility to a junction near the steam condenser. From this junction, an 18 in. steel pipe supplies water to the condenser and a 10 in. steel line to the service building basement for future test loops.

The 8 in. sanitary water main passes through the service building basement. The maximum capacity of the 8 in. main is approximately 2000 gpm. Water quality is the same for the process and sanitary systems, the only difference being that process water is softened. Water pressures are 90 psig for sanitary system and 100 psig for process system.

Uncontaminated liquid wastes and slightly contaminated and low-level irradiated wastes are discharged through the process sewer. The sanitary sewer connects with the 300 Area sanitary sewer system.

Contaminated liquid waste is collected in sump of the containment vessel and pumped to three 5000 gal holdup tanks buried on the north side of PRTR. The waste may be pumped to the 340 Building for disposal by a 100 gpm pump in each tank.

THE PLUTONIUM RECYCLE CRITICAL FACILITY (PRCF)

PURPOSE: The PRCF is a unique zero-power reactor connected to the PRTR by a water canal. It is a heavily shielded mockup of the PRTR core, in which are measured the nuclear reactivities of the PRTR fuel elements at intervals during the course of their irradiation.

DESCRIPTION: The Critical Facility was the second major addition to the 309 Building. Framework is the same as the service building and the utilities are an extension of the service building services. The entire facility is housed in the 37 x 40 ft addition on the east side of the main building adjacent to the loadout facility. The reactor is located near the center of the room below grade. The reactor may be moderated with heavy or light water.

The criticality facility consists of an aluminum tank with fuel elements suspended vertically in the heavy water moderator from a top grid plate. The reactor operates at powers up to 100 w during critical experiments. Fine reactivity changes may be made with three poison-type control rods. The moderator level is variable within 4 ft with a telescoping weir arrangement.

The reactor tank is located in a 10 x 13 x 32 ft deep impervious concrete cell. A crane in the reactor cell is used for loading and unloading the reactor and for moving equipment within the cell. Personnel access to the cell is gained by removing the 4 ft thick high density concrete cell cover blocks.

Irradiated fuel elements are transferred into the reactor from the water filled PRTR loadout canal through an air-to-water fuel transfer lock. Such operations are performed remotely and are observed through a periscope.

Auxiliary services provided in the critical facility include the following: untreated process water from the PRTR process water system; control and instrument air from the PRTR compressed air system; electrical services are supplied from the PRTR normal and emergency electrical system; liquid wastes are pumped to the PRTR sewer systems; the heating and ventilation system consists of a heat pump supplemented with steam heating coils and will maintain the operating area with a temperature of 75 F. The exhaust system is connected from the cell to the PRTR exhaust system.

MAINTENANCE AND MOCKUP WING (M&M WING)

PURPOSE: The addition of the M&M wing was the first major addition at the 309 Building site. The wing was added to the west side of the 309 Building and connects with the containment vessel and the storage basin. This addition provides the space below grade for the rupture loop facility and the mockup cell along with engineering offices. The ground level space provides a maintenance work area, access to the mockup cell, and management offices for maintenance, operation, and programming.

DESCRIPTION: The M&M wing construction matches the exisiting structure of the PRTR building. The unique feature of the wing is the 40 x 40 ft open mockup area. The mockup area is designed to resemble one quadrant of the PRTR containment area at the -27 ft level; this area is used for prereactor assemblies. The mockup area is enclosed on all sides, which provides a sound barrier from the rest of the wing which is composed of restrooms, conference room, and offices for supporting personnel.

REFERENCE DRAWINGS: H-3-11059 and H-3-11060

NUMBER: 313

NAME: Fuels Preparation Building

PURPOSE: Provides manufacturing and related space for preparation of fuel and target elements for use in production reactors. These facilities include incoming inspection of components, chemical cleaning of steel sleeves and aluminum components, vapor degreasing and nitric acid pickling of uranium cores, preheating and canning of the uranium cores, removal of excess metal and shaping of the correct contour on both ends of fuel elements, cap and base welding, ultrasonic testing of welds and bonds, etching and visual inspection of canned fuel elements, ultrasonic welding of supports to side of canned fuel elements, autoclaving, sizing and measurement of the height of fuel element supports, final inspection, and storage and shipment. Also includes instrument and electrical shop, uranium recovery and rework facilities, special products production facilities, engineering and quality control laboratories, tool crib, restrooms, and offices for management, engineering, supervisory and related personnel.

DIMENSIONS: Office, 6,401 ft^2; Lab, 1,724 ft^2; Work area, 49,475 ft^2; Shop, 4,999 ft^2; Storage, 5,752 ft^2; Common, 8,282 ft^2; Total Area, 76,633 ft^2: 182 ft 6 in. x 486 ft.

DESCRIPTION: The structure was built in two phases. The original phase is steel frame with exterior and interior walls of concrete block. The foundation is concrete and the floor is concrete on grade. The roof is precast concrete slab with built-up felt insulation and tar and gravel surface. The second phase is steel frame with double metal insulated panel exterior walls. Interior partitions are light weight metal panels. Foundation and floors are concrete. The roof is insulated metal panel covered with felt and roll tar paper recovered with tar and gravel surface. Ventilation throughout is combination steam heat and evaporation cooling forced air equipment. Additional ventilation is provided with exhaust fans. A mezzanine floor is in a portion of phase two to accommodate electrical distribution switchgear and a group of eight offices. The building is equipped with electrical fire detection system and partially covered with an automatic fire alarm sprinkler system.

APPURTENANCES: A loading dock at building floor level and adjacent to railroad siding is located on the east side of the building. Two loading areas at the north end of building place truck bed at building floor level.

STATUS: In use

REFERENCE DRAWING: H-3-10015 and H-3-10155

(See Figure A-3 in the Appendix)

NUMBER: 314

NAME: Metallurgical Engineering

PURPOSE: Provides high bay, heavy capacity space for mockups and test equipment. Includes autoclaves, high pressure high temperature loops, and test space for prototype equipment. Charging machines and reactor auxiliary equipment has been developed here.

DIMENSIONS: 118 ft x 65 ft 10 in.; 35 ft high, with an addition 25 ft x 109 ft 6 in.; Offices, 965 ft^2; Lab, 16,864 ft^2; Storage, 284 ft^2; Common, 1537 ft^2; Total Area, 19,650 ft^2.

DESCRIPTION: Building is rectangular with a rectangular addition along north side. Framework is bolted steel. Gable roof is corrugated asbestos. Exterior walls and partitions are concrete block. Casement windows extend across north wall of addition. Floor is reinforced concrete with test pits, and a basement room at the west end. There is a small second floor at the west end also.

The principal utilities are hot and cold water, steam, compressed air, and process drain.

Ventilation is by evaporative coolers, and heating is by steam space heaters and radiators.

Electric service includes 440, 208, and 110 v ac. Lighting is generally fluorescent. There are two emergency alarm systems—fire gong and evacuation alarm. A 7 1/2 ton bridge crane serves the entire building.

REFERENCE DRAWINGS: HW-71191, SK-3-10780

NUMBER: 315

NAME: Filtered Water Plant

PURPOSE: The filter plant was constructed to filter raw water from the Columbia River to supply the PRTR reservoir and rupture loop.

DIMENSIONS: 49 x 124 ft; Work area, 6050 ft^2; Common, 50 ft^2; Total Area, 6100 ft^2.

DESCRIPTION: The filtered water plant is a concrete structure located 285 yards east of the PRTR site. The PRTR reservoir demand is 1500 to 2200 gpm and the rupture loop a maximum of 200 gpm. The plant has a nominal rated capacity of 2400 gpm, producing water with turbidity of 0.005 ppm or less. The plant can be operated from the control room at the water plant or from 325 Building.

Impurities are agglomerated with alum and settled out in one of three sedimentation basins before the water enters one of three 6 gpm/ft^2 filters composed of anthracite, sand, and gravel. Filtered water is stored in a 70,000 gal clearwell.

The laboratory for the filter plant is located in the northeast portion of the plant control room. It is equipped with two microphotometers and two control filters. The alarm microphotometer is used primarily to monitor a continuous sample from the three filter effluent headers. The second microphotometer is used to monitor the control filters which are used to provide a continuous turbidity record. The turbidity reading is used to determine the correct alum dosage at the flash mix chamber.

Two air compressors, an aftercooler, an air receiver, and necessary auxiliaries are located in the pipe gallery. Each compressor is driven by a 5 hp motor, powered from the 480 v motor control center.

The process sewer system drains directly to the Columbia River from:

(1) sedimentation basin drains and overflows
(2) filter overflow and drain
(3) filter backwash waste
(4) clearwell overflow
(5) service area equipment drains
(6) floor drains.

The sanitary sewer system feeds to a 500 gal septic tank. The septic tank is of steel construction. The tank overflows to a drain field of 50 ft of 4 in. tile.

The filter plant is heated by four electrical unit heaters suspended from the ceiling to maintain a minimum inside temperature of 60 F with an outside temperature of 10 F. Heaters are controlled by separate thermostats. Each heater is equipped with an electric motor which drives a propeller type fan. The fan can be operated independently of the heater for ventilation purposes.

The filter plant is ventilated by three 14 in. gravity roof ventilators which are capable of exhausting 400 cfm each. The ventilators are equipped with chains at accessible points for damper adjustment.

The primary electrical service to the filter plant is provided by the existing 2400 v pole line serving the river pump facility. Service is supplied from the 2400 v line, by an underground cable, to a 1000 KVA transformer, located in an enclosure attached to the east side of the filter plant. Service from the transformer is 480 v to the plant motor control center. The 480 v motor control center is located in the control room and supplies the total electrical load for the filter plant.

REFERENCE DRAWING: H-3-14192

NUMBERS: 321 and 321-A

NAME: Cold Chemical Semi-Works and Annex

PURPOSE: Provides shielded high ceiling work space. The main laboratory is 106 x 40 x 30 ft high served by a 3 ton bridge crane. It has two tank farms outside for preparation and storage of process solutions. The facilities are suitable for demonstrating new chemical or related processes for separation of isotopes and for evaluating materials and process components under controlled radiation and chemical conditions.

It is to be replaced by 324 Building, Fuels Recycle Pilot Plant, which is under construction.

DIMENSIONS: 321—122 ft x 87 ft 8 in. x 24 ft; 321A—80 ft x 40 ft x 12 ft; Offices, 1499 ft^2; Work area, 15,580 ft^2; Shops, 3551 ft^2; Storage, 180 ft^2; Common, 2445 ft^2; Total Area, 23,255 ft^2.

DESCRIPTION: 321—Rectangular one story building with a full basement. Framework is reinforced concrete and bolted steel. Roof is reinforced concrete finished with 20 year tar and gravel. Exterior walls are concrete and concrete block with fixed sash windows. Floors and interior partitions are concrete. Some rooms have tiled floors.

321A—Rectangular one story building, north 26 ft is on grade, and south end is 5 ft below grade with a ramp entrance, aluminum frame, walls, and roof. There are no windows.

This complex of the main building, annex, and tank farms is equipped with tanks, pumps, scale tanks, agitators, and similar chemical engineering apparatus.

Heating is accomplished by coils in fresh air systems and by space heaters. Cooling is by evaporative units. A 3 ton refrigerated air conditioner is provided for an instrument room. Utilities include steam, compressed air, jet furnished vacuum, well water for process use, propane, and process sewer. Hot and cold water and sanitary drain are also provided. Electrical system provides 440, 220, and 110v ac. Lighting is fluorescent and incandescent. Electrical fire detectors are provided generally throughout both buildings. Sprinklers are located at the tank farm and in part of the laboratories. Both the main building and the annex have 3 ton bridge cranes as well as smaller hoists.

REFERENCE DRAWINGS: HW-74127 and HW-74126

(See Figure A-4 in the Appendix)

NUMBER: 325

NAME: Radiochemistry Building

PURPOSE: Provides specially shielded ventilated and equipped laboratories for radiochemical and radioceramic work including high temperature studies. Research instruments include a variety of emission spectrographs, mass spectrometers, spectrophotometers, electron microscopes, flame photometer, radiation measuring instruments, a radiation source, and a laser apparatus. The ceramics laboratory is equipped with special machines for compacting ceramic powders or pellets into fuel elements, special furnaces, welding machines, plasma jet guns, high temperature microscopes and pyrometers.

Chemical research is primarily research into new or improved separations processes. New concepts, such as salt cycle extractions have been pioneered here. Chemical behavior of important isotopes is studied for broad application. Analytical work assists the chemical research. Ceramic fuels for reactors are conceived here and pilot plant quantities are fabricated in the basement laboratories. Second floor offices are used by scientists and engineers studying chemical effluents.

DIMENSIONS: 194 x 196 ft; 75 x 110 ft; 122 x 48 ft; 65 x 33 ft; height, 40 ft at rear; Offices, 11,101 ft^2; Labs, 32,365 ft^2; Work area, 6491 ft^2; Shops, 4472 ft^2; Storage, 4591 ft^2; Common, 80,175 ft^2; Total Area, 139,195 ft^2.

DESCRIPTION: Building is largest in Hanford Laboratories. It is rectangular with a front wing containing offices, conference rooms and restrooms; an east wing equipped with chemical research cells; and a west wing including analytical shielded facilities. The main building contains over 50 laboratories, most of which have 100% fresh air ventilation for contamination control. The others are primarily instrument rooms with refrigerated air conditioning to provide temperature and humidity control. The building is equipped with about 200 hoods, as well as many glove boxes, for work with radioactive materials. The basement has been modified to contain a laboratory for the development of ceramic fuel elements. Modifications to the building include conversion of basement access space to laboratories, shops and offices, addition of offices on second floor, and two large wings for shielded cells.

Framework is welded steel. Parapeted roof is slightly sloped steel deck topped with Class II 20 year tar and gravel finish. Exterior walls are fluted steel insulated panels. Fixed windows protected by storm sashes and shade screens extend across front. First and second floors are steel deck topped with concrete finished with sheet vinyl. Floor loading of first floor averages 200 lb/ft^2. Metal moveable partitions in laboratories are decontaminable type in that minimum crack exists at joints. Some second floor and basement partitions are concrete block. Suspended ceilings are perforated metal pans backed with Fiberglas pads.

Standard laboratories of multiples of 10 x 12 ft bays. Steel, free standing, Formica topped furniture is arranged along the walls with peninsulas in large laboratories. The three radiochemical cells have 4 ft thick high density concrete. The interior of the cells measure 15 ft high and 7 ft deep. Two of them are 6 ft wide and one is 15 ft wide. The analytical cell has five 6 x 5 1/2 ft compartments inside 2 1/2 ft thick walls. These cells are equipped with manipulators, viewers, periscopes, and similar remote operation equipment.

Main heating and ventilating system has four 65,000 cfm supply fans complete with heating coils, spray chambers, and filters on the second floor and four 55,000 cfm exhaust fans in the basement. Three of each operate with one in standby. Pressure barriers for contamination control are achieved by supplying air to offices and corridors and exhausting it from laboratories.

Office air pressure is below atmospheric; corridor pressure, in turn, is below office pressure and laboratory pressure is below corridor pressure. Air is changed about every 2 min. HAPO designed, down-draft hoods built of polyvinyl coated aluminum with wrap-around construction are equipped with heavy stainless steel trays and steel bases capable of supporting 3 tons. Movement of the hood sash over a by-pass achieves constant volume. Absolute filters are located in boxes in the stainless steel ductwork system leading via the fans to an 8 ft diameter, 55 ft high stack. Separate exhaust fans serve the shielded analytical facility and the front of the building.

A 50 ton refrigerated air conditioning system serves special instrument rooms such as spectrographs, spectrometer, and counting rooms. A 20 ton refrigerated air conditioning system serves the basement fuel assembly laboratories. Certain isolated laboratories such as the electron microscope room have unit refrigerated air conditioners.

Utilities are distributed in pipe chases which are an integral part of the partitions. Groups of outlets are spaced every four feet. Services include steam; hot, cold, deionized, and distilled water; compressed air; propane; nitrogen; spare gas; oxygen; hydrogen; vacuum; contaminated; and uncontaminated drains. Carbon steel pipe is used for most services, except that galvanized steel is used for hot water, aluminum for demineralized and distilled water, and stainless steel for vacuum and drains. In addition to 26 in. Hg laboratory vacuum provided by two water seal 200 cfm pumps, high volume 15 in. Hg vacuum is furnished to air samplers by a 1450 cfm pump. Ionized water is produced by 400 gph unit and stored in a 1500 gal tank which feed the stills and distribution. Distilled water is produced by two stills with combined capacity of 75 gph.

The electrical system provides 440, 208, 110 v ac. Small quantities of dc are provided by package m. g. sets or rectifiers as needed. Emergency power with backup by the powerhouse steam turbine is available for essential use. Isolated circuits are provided for instruments. Lighting is generally fluorescent. Electrical fire detectors are provided. There are three emergency alarm systems; fire gongs, evacuation sirens, and criticality horns. The building has a 3000 lb electric elevator. The normal transformer is rated at 1500 KVA; the emergency transformer at 225 KVA.

REFERENCE DRAWING: H-4-50016, H-4-50017, H-3-19178, H-4-50018, H-3-9306

(See Figure A-5 in the Appendix)

NUMBER: 326

NAME: Physics and Metallurgy

PURPOSE: Provides laboratories and facilities for study of metallurgical chemical, and physical behavior of reactor components and fuel elements. Heavy metallurgical laboratories and large laboratories for reactor mock-ups and experimental work are located in the basement. Chemical laboratories for corrosion studies, metallurgical and materials laboratories, and physics laboratories are on the first and second floor. Instrumentation includes x-ray diffraction apparatus, mass spectrometers, and an electron microscope. Metallurgical facilities include tensile testers, creep test apparatus, and metallographic equipment.

DIMENSIONS: 190 x 180 x 38 ft maximum height; Offices, 10,071 ft^2; Labs, 25,046 ft^2; Shops, 2695 ft^2; Storage, 295 ft^2; Common, 25,000 ft^2; Total Area, 63,107 ft^2.

DESCRIPTION: L-shaped building has offices along outside and laboratories on inside of first and second floor and in basement. Equipment room is on grade in angle of L. Framework is bolted steel. Parapeted roof is slightly sloped steel deck topped with a Class II 20 yr tar and gravel finish. Exterior walls are fluted steel insulated panels. Fixed windows protected by storm sashes and shade screens extend across south and west walls. First and second floors are steel with concrete finished with asphalt or vinyl asbestos tile and with floor loading about 100 lb /ft^2. (Ref. SK-3-6706).

Partitions on first and second floors are moveable metal. Basement partitions are plastered gypsum block. Counting room has high density concrete walls. Suspended ceilings are of perforated metal pans backed with Fiberglas pads.

Standard laboratories are 20 x 25 ft. Steel, free standing laboratory furniture is arranged along the walls with peninsulas or islands in large laboratories. The basement laboratories have 15 ft ceilings. One of these laboratories has a lift served exterior door and a two ton monorail.

Main heating and ventilating system for laboratory section of building has three 39,000 cfm supply fans and three 35,000 cfm exhaust fans located in the equipment room. Two of each operate with one in a standby. Pressure barriers for contamination control are achieved by supplying air to offices and corridors and exhausting it from laboratories.

Hoods for radiation work are exhausted via absolute filters and fans to a 6 ft diameter, 45 ft high polyethylene lined aluminum stack.

The office wing at the north end of the building is supplied and exhausted by a 17,000 cfm fan which recirculates 90% of the air in winter.

There are five package air conditioners serving special instrument rooms and a bag filter serving a high velocity exhaust system from the metallographic grinding room.

Utilities are distributed in pipe chases which are an integral part of the partitions. Services include steam, hot and cold water, compressed air, propane, argon, spare gas, oxygen, hydrogen, vacuum, and contaminated and uncontaminated drains. Carbon steel lines are used for most services except copper tubing for argon, hydrogen, oxygen, and spare gas; and stainless steel for drains and vacuum; and galvanized iron for hot rates. Twenty-six in. Hg laboratory vacuum is provided by two oil seal 110 cfm rotary pumps. Demineralized water is furnished by cartridge units in individual laboratories. Electrical system provides 440, 208, 110 v ac. Emergency power with backup by the powerhouse steam turbine is available for essential use. Isolated circuits are provided for instruments. 25, and 125 v dc are each furnished by a 10 kw motor generator set. Circuitry is provided for 100 kw, 125 v dc service if needed. Lighting is generally fluorescent. Electrical fire detectors are provided. There are three emergency alarm systems—fire gongs, evacuation sirens, and criticality horns. The electric clocks are on a master system. A 3000 lb hydraulic elevator serves all floors and an 8000 lb hydraulic lift serves the basement truck unloading door. The normal transformer is rated at 750 KVA; the emergency transformer at 200 KVA.

REFERENCE DRAWINGS: H-3-4501 and H-3-4502

(See Figure A-6 in the Appendix)

NUMBER: 327

NAME: Radiometallurgy Building

PURPOSE: Provides specially shielded, ventilated, and equipped laboratories for physical and metallurgical examination of irradiated nuclear materials. Examination includes measurements, metallography, hardness testing, tensile testing at room and elevated temperatures, dilatrometry, density, annealing, and x-ray diffraction studies. Radiation effects can be determined as an aid in developing stable materials.

DIMENSIONS: 215 x 140 ft maximum; height 32 ft; Offices, 1300 ft^2; Labs, 6049 ft^2; Work area, 1811 ft^2; Storage, 2079 ft^2; Common, 12,117 ft^2; Total Area, 23,356 ft^2.

DESCRIPTION: Building is roughly cruciform and has one story and basement. Additions are on grade. Framework is welded steel. Parapeted roof is slightly sloped steel deck topped with Class II, 20 yr tar and gravel finish. Exterior walls are fluted steel insulated panels. Fixed windows protected by storm sashes and shade screens extend across front. First floor is reinforced concrete or steel decking covered with concrete finished with sheet vinyl. Metal moveable partitions are decontaminable type in that a minimum crack exists at joints. Suspended ceilings are perforated metal pans backed with Fiberglas pads.

The main laboratory is 21 ft high, 21 ft long, and 29 ft wide. It contains cells of meehanite cast iron (density 7.0 g/cm^3) which are arranged along the long axis of the room. Two have 18 in., one 15 1/2 in., and six have 10 1/2 in. thick walls. Spaced symmetrically about the sides and top are 140 access holes, 7 1/4 in. in diameter. These holes provide for plugs with utilities, windows, manipulators, and instruments as well as general access. Steel plugs fill unused holes. The standard interior cell volume is 72 x 52 x 49 in. high. Stepped joints prevent leakage. Walls and tops can be removed for decontamination or to install or remove equipment. There are also two lead cells, a burst test facility, and a decontamination chamber. Cells are served by a 20 and a 15 ton capacity bridge crane. Two large water basins are available for storage of radioactive material.

Main heating and ventilating system has two 25,000 cfm supply fans in the main building basement and a 5300 cfm one in the west addition second floor equipment room. Two

21,000 cfm exhaust fans from the main building and two 6600 cfm exhaust fans from the cells and hoods are located in the basement. One of each pair of fans runs while the other is in standby. Air flow is toward the cells in the canyon since the entire building pressure is below atmospheric and each zone from office to canyon is at a relatively lower pressure. The downdraft exhaust air from cells and hoods is via absolute filters, stainless steel duct and fans to a 44 ft high, 5 ft diameter stainless steel stack. Utilities are piped to the cells and hoods. Services include hot, cold, and deionized water; laboratory and contaminated drains; vacuum; compressed air, steam, propane; inert gas; and spare gas. Carbon steel is used for most services except galvanized steel for hot water, aluminum for deionized water, stainless steel for drains and vacuum, and copper tubing for gases. Breathing quality air is distributed from a water seal compressor unit. Twenty-six in. Hg vacuum is produced by two oil seal rotary 27 cfm pumps. A high volume 395 cfm, 15 in. Hg vacuum is provided by a reciprocation pump for air samplers. Deionized water is produced by a 35 gpm deionizer for use in the storage basins.

The electrical system provides 440, 208, 110 v ac. 25, and 125 v dc emergency power with backup by the powerhouse steam turbine is available for essential use. Isolated circuits are provided for instruments. Patch panels provide electrical and instrument flexibility in the cells. Lighting is generally fluorescent. Electrical fire detectors are provided. There are three emergency alarm systems—fire gongs, evacuation sirens, and criticality horns. The building has a 10,000 lb electric elevator. The normal transformer is rated at 500 KVA; and the emergency transformer at 150 KVA.

REFERENCE DRAWINGS: H-4-50195, H-4-50196, and H-3-19423

(See Figure A-7 in the Appendix)

NUMBER: 328 and 328A

NAME: Engineering Management and Technical Shops (and annex)

PURPOSE: The shops provide facilities for fabricating the specialized and intricate apparatus and equipment required by research and development. These are machine, electrical, electronic, glass, paint, carpentry and plastic, welding, and sheetmetal in this complex. Optical (Bldg. 3708), calibration and standards (3717-B), graphite (3730), and radioactive material shops (306, 325, 326, 327, and 329 buildings) are related. Some of the shop tools include: A spark erosion machine for cutting delicate shapes in any conductive metal regardless of hardness, a tape controlled drill press, controlled atmosphere heat treating equipment, metallizing and hard chrome plating apparatus, paint spray booth, quartz working hooded facilities.

DIMENSIONS: 110 ft 10 in. x 222 ft 4 in. with 46 x 48 ft wing (H-3-9403) and 25 x 48 ft Annex; maximum height 42 ft 3 in.; Offices, 8070 ft^2; Shop, 17,209 ft^2; Storage, 2421 ft^2; Common, 11,528 ft^2; Total, 39,228 ft^2.

DESCRIPTION: Rectangular shaped, gabled steel building on grade has three floors of offices on the west end; shops occupy the remainder. Framework is bolted steel. Gable roof is built-up insulated, three-ply hot mopped asphalt felt. Exterior walls are smooth steel insulated panels. Casement windows protected by storm sashes and shade screens extend across the offices. The first floor is reinforced concrete. The second and third floors are steel deck with a smooth underside which acts as a ceiling. The steel deck is topped with concrete. The floors in the office wing are finished with asphalt tile. The basic partitions are gypsum board on steel studs. Some moveable steel partitions are also used.

Offices are served by a heating and ventilating system using heating crib, spray chamber and a 16,000 cfm fan for supply. Exhaust is through the shop. Additional shop cooling is by a 52,000 cfm supply fan which has a spray chamber. Additional heating is by steam space heaters. Recently added offices on the third floor have refrigerated cooling (15 ton unit) and steam coil heating. There are special exhausts from the quartz hood and paint spray booth.

Compressed air is distributed about the shop. Oxygen, acetylene, helium, and argon are piped to the welding shop. Hydrogen and hydrogen-propane and oxygen are piped to the glass shop.

300 Area
328 and 328A
Buildings

Electrical system provides 440, 120 v ac. Lighting is generally fluorescent. Electrical fire detectors are located throughout the building with sprinklers in the paint spray booth. Five gongs and evacuation sirens are provided. The normal transformer is rated at 500 KVA.

REFERENCE DRAWING: H-4-50423, H-4-50424, H-4-20843, H-3-9404, and H-3-9699

NUMBER: 329

NAME: Biophysics Laboratory

PURPOSE: Provides physics laboratories for developing instruments primarily for radiation detection. Includes chemistry laboratories for radioanalytical and low-level laboratories for study of isotopes in the environs. The building has outstanding facilities for low-level detection of radioactivity and for isotopic analyses.

DIMENSIONS: 217 ft 6 in. x 121 ft 7 in. x 34 ft; Offices, 3423 ft^2; Labs, 11,424 ft^2; Shops, 1288 ft^2; Storage, 680 ft^2; Common, 18,988 ft^2; Total, 35,803 ft^2.

DESCRIPTION: Building is rectangular with partial second story and no basement. Framework is bolted steel. Parapeted roof is slightly sloped steel deck topped with Class II 20 yr tar and gravel finish. Exterior walls are fluted steel insulated panels. There are no windows. Floors are reinforced concrete finished with vinyl asbestos tile with access trenches for utility distribution under the main floor. Metal moveable panels form interior partitions. Counting rooms are enclosed in 1 ft thick shielding walls and roof of concrete. Suspended ceilings are perforated metal pan backed with Fiberglas or are plastered.

Standard laboratories are about 13 x 24 ft. Steel, free standing, Formica topped furniture is arranged along the walls. Hoods are updraft and constructed of polyvinyl chloride coated aluminum stainless steel or plastic.

The main heating and ventilating system has two 44,000 cfm supply fans complete with heating coils, wet filters, and dry filters, and two 38,000 cfm exhaust fans in the equipment room. One of each operates while the other is in standby. Pressure barriers for contamination control are achieved by supplying air to office and corridors and exhausting from laboratories. Additional air to satisfy the hoods demands is provided through the laboratory ceiling. Hood sash openings are compensated by auxiliary air registers. A 25 ton refrigerated air conditioning system serves the instrument section at the south of the building. Smaller units totalling 12 1/2 tons serve the counting room.

Utilities are distributed in pipe chases which are an integral part of the partition. Services include hot, cold, and distilled water, compressed air, propane, vacuum, and

spare gas. In addition to 26 in. Hg laboratory vacuum provided by two 180 cfm water seal vacuum pumps, high volume 15 in. Hg vacuum is furnished to air samplers by two 260 cfm reciprocating pumps. Distilled water is produced by a 50 gph still with 500 gal tin lined tank. The still is supplied with deionized water from a 75 gph unit.

The electrical system provides 440, 208, 110 v ac, 6.3 and 120 v dc are available from rectifier sources. Emergency power with backup by the powerhouse steam turbine is available for essential use. Isolated circuits are provided for instruments. Lighting is generally fluorescent. Electrical fire detectors are provided. There are two emergency alarm systems—fire gongs and evacuation sirens. The normal transformer is rated at 1500 KVA; the emergency transformer at 225 KVA.

REFERENCE DRAWINGS: H-11-4520, sheets 1 and 2

(See Figure A-8 in the Appendix)

NUMBER: 330

NAME: Stress Rupture Test Facility

PURPOSE: Provides safe shielded space for stress rupture tests of tubular material at conditions to 700 F and 30,000 psi pressure.

DIMENSIONS: 31 ft 4 in x 23 ft 8 in. x 8 ft 10 in. high; 782 ft^2 laboratory

DESCRIPTION: Building is rectangular reinforced concrete with 20 yr tar and gravel built up roof on 8 in. concrete roof. Wall partitions are 8 in. concrete arranged to form eight test cells and a central corridor. Floor is concrete. Each cell has a blow out panel on roof. Ventilation and cooling is by a 7100 cfm evaporative cooler. Heating is by electric space heaters. Utilities include compressed air, water, process drain, and 440, 110 v ac. Instrument lines extend to control panels in 314 Building.

REFERENCE DRAWING: H-3-9524

NUMBER: 333

NAME: Coextrusion Shop or Fuel Cladding Facility

PURPOSE: This building houses the manufacturing and related facilities for the preparation of fuel elements for the dual purpose N-Reactor. These facilities include incoming inspection, chemical cleaning of zircaloy and copper components and uranium billets, billet closure and evacuation, billet extrusion and cut off, chemical copper removal, chemical milling to recess uranium on fuel ends, etching, end brazing, heat treating, end closure machining, abrasive blasting, end closure welding, ultrasonic testing of clad thickness and bond integrity, projection welding of fuel supports, autoradiography, autoclaves, final assembly and inspection, and storage and shipment. There is also a small area devoted to the manufacture of fuel supports, consisting of several bench-type punch presses. Supporting facilities include: instrument, maintenance, and electrical shops, metallurgy and quality control laboratories, restrooms, and offices.

DIMENSIONS: Office, 3550 ft^2; Lab, 750 ft^2; Work area, 21,575 ft^2; Shop, 1576 ft^2; Storage, 4354 ft^2; Common, 17,012 ft^2; Total Area, 48,817 ft^2. 300 x 140 ft.

DESCRIPTION: The structure is steel frame with double metal insulated panel exterior walls. Interior partitions are light weight metal panels. Foundation and floors are concrete. The roof is insulated metal panel covered with felt and roll tar paper, with a tar and gravel surface. A mezzanine along the east side to accommodate some distribution equipment and a group of fifteen offices. A smaller, central mezzanine houses ventilation equipment for the chemical bay. Air conditioning of the building is accomplished with steam heat and evaporation cooling forced air equipment. The building is equipped with electrical fire detection and an automatic fire alarm sprinkler system.

APPURTENANCES: The air conditioning equipment for the building is contained in a 30 x 75 ft structure adjoining the west side of the building.

STATUS: In service

REFERENCE DRAWING: H-3-18479; H-3-18482; H-3-18481; H-3-18480

(See Figure A-9 in the Appendix)

NUMBER: 334

NAME: Coextrusion Chemical Supply Building

PURPOSE: This building houses the control instruments for the acid system. There is also some minor storage of maintenance supplies, such as paint.

DIMENSIONS: 300 ft^2; 20 ft, 6 in. x 15 ft, 2 in.

DESCRIPTION: This is a steel frame structure with double metal insulated panel walls. The foundation and floor are concrete. The roof is insulated metal panel covered with felt and roll tar paper.

REFERENCE DRAWING: H-3-17667, H-3-18521

NUMBER: 340 and 340A

NAME: Waste Retention and Neutralization and Annex

PURPOSE: Provides facilities for temporary storage, neutralization, and load-out into tankers of radioactive waste from the laboratories.

DIMENSIONS: 340–40 ft x 42 ft 7 in. + addition 40 x 42 x 23 ft high; 340A–32 ft x 42 ft 8 in. x 23 ft high; Work area, 3643 ft^2; Common, 154 ft^2; Total, 3797 ft^2.

DESCRIPTION: Main building contains a concrete pit area 37 ft 10 in x 25 ft 8 in. x 21 ft deep for two stainless steel, well water cooler, agitated, 15,000 gal tanks, valves, and transfer pumps. This is covered by removeable concrete blocks. The operating gallery contains control panels and a caustic tank. The sampling room has sample wells and an air compressor for instrument air. The walls and roof of the main building are corrugated asbestos. Tanker garage and load out addition has a steel frame, steel siding, and roof. It has space for three tankers to load simultaneously.

The annex, 340A, is a steel frame rectangular structure with a concrete floor 3 ft below grade and stub concrete walls to grade. The above grade walls and roof are steel. The building contains six 8000 gal stainless steel waste storage tanks.

The utilities include cold water, well water, compressed air, steam, 440 and 110 v ac electricity. Heating is by steam space heaters.

REFERENCE DRAWINGS: 340–H-4-50282
340 addition–H-3-9388
340A–H-3-9389

NUMBER: 384

NAME: Power House

PURPOSE: The building provides space for equipment which supplies the 300 Area with process and heating steam, compressed air, and emergency electrical power.

DIMENSIONS: Office, 563 ft^2; Work area, 11,979 ft^2; Shop, 1542 ft^2; Storage, 619 ft^2; Common, 1809 ft^2; Total Area, 16,512 ft^2; 92 x 200 ft

DESCRIPTION: The building is steel frame with exterior walls of both concrete block and corrugated transite sheeting. The foundation and floor are reinforced concrete. The roof is tar and gravel surface. Four offices, lunch room and rest room facilities are provided.

Major equipment for operation consists of:

- Six steam generating boilers with auxiliary equipment operating at 120 psi with a combined rated capacity of 189,000 lb/hr,
- Coal handling equipment including crusher, conveyor from storage to hoppers, and railroad car unloading pit. A shaker is provided to assist with car unloading.
- Ash sluicing equipment to transfer ash to waste basins,
- Water softeners with a combined maximum continuous rating of 300 gpm,
- Four air compressors operating at 100 psi with a combined rated capacity of 2300 scfm,
- A 1000 kw steam driven emergency electrical generator.

APPURTENANCES: A railroad siding is adjacent to the building for unloading and handling coal cars. Coal handling equipment as noted above. A coal storage area that contains approximately 8000 tons is also adjacent to the building.

STATUS: In use

REFERENCE DRAWING: H-3-6916, sheet 1

NUMBER: 3506-A

NAME: Telephone Exchange

PURPOSE: Provides 800 telephone dial system for 300 Area with trunk line connections to all other areas and the Richland City system.

DIMENSIONS: Work area, 738 ft^2; Common, 135 ft^2; Total Area, 873 ft^2; 20 x 43 ft 8 in.

DESCRIPTION: One story concrete block structure with concrete floor covered with floor tile. Roof is concrete slab with built-up tar and gravel surface. Ventilation provided with combination steam heat and evaporative type cooling. Lighting is fluorescent type. One room contains dialing equipment, and one is for storage of batteries for emergency operation.

STATUS: In use

REFERENCE DRAWING: H-3-4366

NUMBER: 3701-L

NAME: Badge House

PURPOSE: Provides security checking stations for personnel moving to and from 300 Area. Provides clock alleys for time clock recording. Contains racks for personnel radiation exposure and identification badges.

DIMENSIONS: Offices, 774 ft^2; Storage, 106 ft^2; Common, 2180 ft^2; Total Area, 3060 ft^2; 46 x 61 ft.

DESCRIPTION: Two story wood frame structure with concrete floor on grade. Siding covered with asbestos shakes. Roof is covered with asbestos shingles. First floor contains six clock alleys and Security Patrol checking stations. Also one interview room and rest room facilities and ventilation cooling unit. The second floor contains four offices, a small lunchroom, and a storage closet. Also one small rest room and janitor closet. Interior lighting is fluorescent type. Heating is provided with steam radiators and ventilation with evaporative cooling.

STATUS: In use

REFERENCE DRAWING: H-4-50404

NUMBER: 3701-Z

NAME: Badge House

PURPOSE: Provides storage space for badges of construction contractors.

DIMENSIONS: 10 x 14 x 8 ft high; 140 ft^2, storage

DESCRIPTION: This one story concrete block building has a door at each end and no windows. It has a concrete pad and built-up roof. It has evaporative cooling and electric heat.

NUMBER: 3702

NAME: Accounting and Administration

PURPOSE: Provides space for about thirty 16 x 12 ft offices, a lunchroom, conference room, and rest rooms.

DIMENSIONS: 216 x 40 x 20 ft high; Offices, 6118 ft^2; Common, 2522 ft^2; Total Area, 8640 ft^2.

DESCRIPTION: One story rectangular building has wooden frame with asphalt composition shingle roof, asbestos shakes on wooden drop siding, and steel frame casement windows with shade screens. The floor framing is supported on posts from concrete footings. The floor is finished with asphalt tile. A concrete block wall supports the perimeter of the building. Cooling is by three evaporative coolers located in dormers. Heating is provided by steam radiators and an attic steam coil which preheats air circulated by the evaporative coolers in winter by-pass condition. Lighting is fluorescent.

REFERENCE DRAWING: H-3-694

NUMBER: 3703

NAME: Production Fuels Administration Building

PURPOSE: Provides offices for IPD, Production Fuels Management, and supporting personnel. Also, Hanford Laboratories, Radiation Protection Operation.

DIMENSIONS: Offices (40), 7128 ft^2; Common, 3912 ft^2; Total Area, 11,040 ft^2: 40 by 276 ft.

DESCRIPTION: One story wood frame structure set on concrete block foundation. Wood floor covered with asphalt floor tile. Roof is roll tar paper. Heated with steam radiators. Cooling provided with five evaporative type units. Equipped with electrical fire detection alarm system.

STATUS: In use

REFERENCE DRAWING: H-3-811

NUMBER: 3704

NAME: J. A. Jones, Office Building

PURPOSE: Provides field office space and lunch room facilities for J. A. Jones Construction Company.

DIMENSIONS: Office, 240 ft^2; Common, 560 ft^2; Total Area, 800 ft^2; 20 by 40 ft.

DESCRIPTION: Building is metal frame structure with corrugated aluminum siding and roof. Foundation is concrete block. Floor is wood covered with masonite sheets except in office area which is covered with floor tile. Inside walls are masonite sheets and ceiling Celetex. Lighting is fluorescent. Heat is provided with protable electric heaters and cooling with forced air water evaporation equipment.

STATUS: In use

REFERENCE DRAWING: H-3-16748

NUMBER: 3705

NAME: Personnel Meters and Records

PURPOSE: Provides laboratory space for processing film badge and meters and for storing exposure records of personnel.

DIMENSIONS: 67 ft 9 in. x 93 ft 10 in. x 23 ft high; Offices, 880 ft^2; Lab, 979 ft^2; Work area, 2607 ft^2; Storage, 105 ft^2; Common, 2400 ft^2; Total Area, 6971 ft^2.

DESCRIPTION: Rectangular one story concrete building with corrugated metal sided equipment room penthouse. Roof is built-up tar and gravel. Floor is concrete. There are no windows. Interior partitions are gypsum board on stud frames or moveable metal. Utilities include compressed air, water, 440 and 110 v ac electricity. Heating and ventilating is provided by one supply unit complete with dry filters, wet filters, and steam coils. Lighting is fluorescent.

REFERENCE DRAWING: H-11-4366, sheet 1

NUMBER: 3706

NAME: General Services Building

PURPOSE: Provides space for chemical, spectrochemical, and metallographic analytical laboratories. Offices for chemists, engineers, administrative personnel and related clerical employees; drafting rooms; mail and duplicating rooms; photographic services; first aid station; and Security Patrol area headquarters.

DIMENSIONS: Offices, 10,898 ft^2; Labs, 7160 ft^2; Work areas, 4190 ft^2; Shops, 278 ft^2; Storage, 1349 ft^2; Common, 13,584 ft^2; Total Area, 37,459 ft^2; 327 ft 6 in. x 140 ft.

DESCRIPTION: One story wood frame and concrete block structure with concrete floor and foundation. Floor is surfaced with asphalt tile. Wood sections exterior walls covered with asbestos shakes. Roof is mineral surface asphalt shingles over roll tar paper. Lighting is fluorescent. Ventilation is provided with nine forced air units combining steam for heating and water evaporative cooling. Two units are refrigeration type for the spectrochemical labs and printing room. Supplemental heating is available from steam radiators and electric base board heaters. Each of two drafting rooms are equipped with additional evaporative cooling units. The building is equipped with automatic sprinkler systems throughout.

APPURTENANCES: See data 3706-A Building.

STATUS: In use

REFERENCE DRAWINGS: H-3-8364 and H-3-8365

(See Figure A-10 in the Appendix)

NUMBER: 3706-A

NAME: Ventilation Equipment for 3706

PURPOSE: Provides space for two large forced air ventilation heating and cooling units, one being refrigeration type. Also two vacuum pumps and a 50 gph water distillation apparatus complete with water softeners. One section of building contains electrical switch gear for 3706 Building power distribution.

DIMENSIONS: Common, 1510 ft^2; 74 ft 5 in. x 24 ft 8 in.

DESCRIPTION: One story concrete block structure with concrete floor and foundation. Roof is tar and gravel surface. Building heated with steam radiators and no cooling provided. Lighting is with incandescent bulbs.

STATUS: In use

REFERENCE DRAWING: W-73558

NUMBER: 3707-A

NAME: Maintenance Office Building

PURPOSE: Provides 12 offices for maintenance and engineering personnel, a lunch room, a locker room, and shower room.

DIMENSIONS: Office, 1771 ft^2; Common, 3263 ft^2; Total Area, 5034 ft^2; 121 x 50 ft.

DESCRIPTION: One story wood frame structure with concrete floor and foundation. Exterior walls covered with asbestos shakes. Roof is tar and gravel. Floors are covered with asphalt tile with exception of locker and shower rooms. Heating provided with steam radiators and cooling with three forced air evaporative type units. Lighting is fluorescent.

STATUS: In use

REFERENCE DRAWING: H-3-10060

NUMBER: 3707-B

NAME: Janitor Services Building

PURPOSE: Provides one office for the foreman of Area janitorial services and a storage room for service supplies and equipment.

DIMENSIONS: Office, 178 ft^2; Storage, 276 ft^2; Common, 237 ft^2; Total Area, 691 ft^2; 15 ft 10 in. x 43 ft 8 in.

DESCRIPTION: One story wood frame structure on grade, set on concrete block foundation with concrete slab floor. Office floor covered with asphalt tile. Exterior walls are covered with asbestos shakes. Roof is built-up felt with tar and gravel surface. Heating provided by steam radiators and cooling with forced air evaporation type equipment. Fluorescent lighting in office and incandescent in rest of building.

STATUS: In use

REFERENCE DRAWING: W-72089

NUMBER: 3707-C

NAME: Computer Laboratory

PURPOSE: Provides laboratory space for computers and electronic instrumentation development. Also furnishes rest room, change room, and lunchroom facilities for 3706 Building.

DIMENSIONS: 176 x 40 x 18 ft high; Offices, 1528 ft^2; Lab, 2382 ft^2; Shops, 194 ft^2; Common, 2936 ft^2 Total, 7040 ft^2.

DESCRIPTION: One story rectangular building connected to 3706 Building has gable roof with asphalt shingles, concrete floor on grade, concrete block exterior walls, casement windows with shade screens, and interior partitions of gypsum board on wooden studs on moveable metal. Cooling is generally by roof mounted evaporative units with refrigerated units in instrument rooms. Utilities include compressed air, steam, water, drain, 440 and 110 v ac. Lighting is mostly fluorescent. Transformer is rated at 100 KVA.

REFERENCE DRAWING: H-3-801

NUMBER: 3707-D

NAME: 303 Area Badge and Change House

PURPOSE: Provides lunch room, locker rooms, shower rooms, and rest rooms for reactor fuels production and maintenance personnel. Also provides a security patrol badge checking station for entering and leaving the 303 exclusion area.

DIMENSIONS: Storage, 629 ft^2; Work area, 117 ft^2; Common, 7831 ft^2; Total Area, 8577 ft^2: 76 x 115 ft.

DESCRIPTION: One story wood frame structure on grade, set on concrete foundation with concrete slab floor. Lunch room floor covered with asphalt tile. Exterior walls are covered with asbestos shakes. Roof is built-up felt with tar and gravel surface. Ventilation provided by forced air combination steam heat and water cooling equipment. Fluorescent lighted.

STATUS: In use

REFERENCE DRAWING: H-3-8025

NUMBER: 3707-E

NAME: J. A. Jones, Subcontractors Office Building

PURPOSE: Provides field office space and lunch room facilities for subcontractors of J. A. Jones Construction Company.

DIMENSIONS: Office, 200 ft^2; Common, 600 ft^2; Total Area, 800 ft^2; 20 x 40 ft.

DESCRIPTION: Building is metal frame with corrugated aluminum siding and roof. Foundation is concrete block. Floor is wood covered with masonite sheets except in office area which is covered with floor tile. Inside walls are masonite sheets and ceiling is celetex. Lighting is fluorescent. Heat is provided by portable electric heaters and cooling with forced air water evaporation equipment.

STATUS: In use

REFERENCE DRAWING: H-3-16747

NUMBER: 3708

NAME: Electrical and Optical Shops

PURPOSE: One section provides shop and parts storage for maintenance of electrical systems (other than source feed distribution) and electrical equipment. The other section provides shop and storage for maintenance of optical instruments and for optical instrument development.

DIMENSIONS: Office, 276 ft^2; Storage, 497 ft^2; Shop Area, 2275 ft^2; Common, 820 ft^2; Total Area, 3868 ft^2: 74 ft 6 in. x 51 ft 2 in.

DESCRIPTION: One story concrete block structure on grade with concrete foundation and concrete slab floor. The roof is concrete slab with tar and gravel surface. The electrical shop area is heated with space heaters and steam radiator. Cooling is provided by forced air evaporation type equipment. The optical shop area is ventilated with combination steam heat and evaporation cooling forced air equipment. Lighting is fluorescent.

STATUS: In use

REFERENCE DRAWING: H-3-762

NUMBER: 3709

NAME: Fire Station

PURPOSE: To provide space for fire fighting equipment and personnel.

DIMENSIONS: Office, 160 ft^2; Work Area, 1552 ft^2; Common, 901 ft^2; Total Area, 2613 ft^2; 47 ft 4 in. x 54 ft 5 in.

DESCRIPTION One story wood frame structure on grade, with concrete foundation and concrete slab floor. The roof is wood base with built-up felt and tar and gravel surface. The building accommodates three fire trucks and contains one office for supervision, a personnel locker room, a small lunch room, a two-way radio communication room and a hose drying tower. Heating is furnished by steam radiators, cooling by forced air evaporation type equipment. Lighting is fluorescent. Floors are covered with asphalt tile except the truck room and hose tower. Exterior walls are covered with asbestos shakes.

STATUS: In use, however, building will be vacated about June 1, 1964 upon completion of new station now under construction.

REFERENCE DRAWINGS: W-72922 and H-3-7536

NUMBER: 3711

NAME: J. A. Jones, Construction Shop

PURPOSE: Provide field shop space for J. A. Jones Construction Shop.

DIMENSIONS: Shop, 3200 ft^2; Total Area, 3200 ft^2; 40 x 80 ft.

DESCRIPTION: Building is metal frame with corrugated aluminum siding and roof. Foundation is concrete block and floor is concrete. Lighting is fluorescent. Heat is provided by steam space heaters and cooling with forced air water evaporation equipment.

STATUS: In use

REFERENCE DRAWING: None

NUMBER: 3712

NAME: Fuels Warehouse

PURPOSE: Provides storage space for bare uranium fuel pieces and component parts for fuel canning.

DIMENSIONS: Storage Area, 9720 ft^2: 90 x 108 ft.

DESCRIPTION: One story steel frame structure with metal panel siding and roof. Concrete floor and foundation. Lighting is incandescent. Minimum heat furnished by steam heated forced air. No cooling equipment provided. Building is equipped with automatic fire alarm sprinkler system.

APPURTENANCES: Building is adjacent to railroad siding where cars can be unloaded directly into storage. Direct access is provided to 313 Building for materials transfer for fuels processing.

STATUS: In use

REFERENCE DRAWING: H-3-9687

NUMBER: 3713

NAME: Maintenance Shops

PURPOSE: Provides shop space for painting, carpentry, and pipe fabrication.

DIMENSIONS: Office, 106 ft^2; Storage, 108 ft^2; Shop Area, 4402 ft^2; Common, 184 ft^2; Total Area, 4800 ft^2; 120 x 40 ft.

DESCRIPTION: One story wood frame structure on grade, with concrete foundation and concrete slab floor. Exterior walls are covered with asbestos shakes. Roof is wood base covered with built-up felt and tar and gravel surface. Lighting is fluorescent except in paint shop which is explosion proof incandescent. Other electrical apparatus is also explosion proof. Paint shop equipped with sand blasting apparatus and exhaust ventilated paint spray booth. Building heated with steam radiators and space heaters. Cooling is forced air evaporation type. Building is equipped with automatic fire alarm sprinkler system.

APPURTENANCES: A transite paneled concrete pad is adjacent to paint shop for sand blasting large pieces.

The carpenter shop is equipped with a vacuum blower system for disposal of sawdust, etc.

STATUS: In use

REFERENCE DRAWING: W-69305

NUMBER: 3714

NAME: Solvent Storage

PURPOSE: Provides safe storage for laboratory solvents, lubricants, and flammable chemicals.

DIMENSIONS: 24 x 42 x 12 ft; 1008 ft^2 storage.

DESCRIPTION: A rectangular one story building with reinforced concrete walls, roof, and floor, with blow out windows with pressure release latches on all but the solid west wall. It has two doors, an expanded metal partition, and evaporative cooling. The roof mounted supply fan also has a steam heating coil. The lights and motors are explosion proof. Special grounding grid restricts static electrical discharge. Blow out windows, fire resistant construction, and wet sprinklers restrict explosion and fire potential.

REFERENCE DRAWING: H-3-8279

NUMBER: 3715

NAME: Manufacturing Operations Warehouse

PURPOSE: Storage space for reactor fuels component parts, AlSi billets, and related materials.

DIMENSIONS: Storage, 6400 ft^2; 80 x 80 ft.

DESCRIPTION: One story steel frame structure, on grade with corrugated metal siding and roof. Floor is concrete slab. Lighting is incandescent. No heating or cooling provided. Building is equipped with automatic fire alarm sprinkler system.

APPURTENANCES: A small concrete dock adjacent to railroad siding is provided for unloading cars with ramp down to building floor level.

STATUS: In use

REFERENCE DRAWING: SK-3-8224

NUMBER: 3716

NAME: Process Development Laboratory

PURPOSE: To develope alternate reactor fuel processes.

DIMENSIONS: Lab, 3200 ft^2: 40 x 80 ft.

DESCRIPTION: One story metal frame structure with insulated aluminum siding and roof. Structure mounted 4 ft above grade on concrete wall with concrete floor slab on grade. Heating provided with forced air through steam heated coils. Cooling with evaporation type equipment.

STATUS: In use

REFERENCE DRAWING: H-3-7943

NUMBER: 3717

NAME: Maintenance Sheet Metal Shop

PURPOSE: Provides shop space for maintenance and fabrication of sheet-metal and polyvinylchloride items. Also provides 12 offices presently used by equipment development engineers and related personnel.

DIMENSIONS: Office, 1902 ft^2; Storage, 1164 ft^2; Shop, 5568 ft^2; Common, 1023 ft^2; Total Area, 9657 ft^2; 73 x 165 ft.

DESCRIPTION: One story wood frame structure on grade, built on concrete foundation with concrete slab floor. Exterior walls are covered with asbestos shakes. Lighting is fluorescent throughout. Shop area includes foreman office, tool crib, and curtained-off arc welding areas in addition to craftsmen's work benches. Office area ventilation is provided with combination heating and cooling equipment. The shop area is heated with steam space heaters and cooled with forced air evaporation units.

APPURTENANCES: A 25 x 40 ft paved area with fence is adjacent to building for material storage. An electric jib crane is installed at the storage yard for movement of heavy materials such as boiler plate sheets.

STATUS: In use

REFERENCE DRAWING: HW-69303 and H-3-7606

NUMBER: 3717-B

NAME: Instrument Shop

PURPOSE: Provides instrument maintenance, calibration, and standards shops and associated offices.

DIMENSIONS: 41 ft x 168 ft x 14 ft 4 in.; Offices, 1062 ft^2; Shop, 4213 ft^2 Common, 1697 ft^2; Total, 6972 ft^2.

DESCRIPTION: A one story concrete block and metal rectangular building. The roof is a typical quonset arch with built-up finish. Lighting is mostly fluorescent. Cooling is by evaporation and heating by steam.

REFERENCE DRAWING: H-3-4346, sheet 27

NUMBER: 3718-A, -B, -C

NAME: Laboratory Equipment Pool

PURPOSE: Provides a storage and loan service for laboratory equipment to assure best use of equipment.

DIMENSIONS: Each 40 x 80 x 18 ft; 3718-A has 28 x 22 x 12 ft office addition; Office, 512 ft^2; Storage, 12,752 ft^2; Common, 171 ft^2; Total, 13,435 ft^2.

DESCRIPTION: Each is a prefabricated metal storage type building set on a concrete floor and stub wall. Each has a gable roof. 3718 is heated by steam space heaters and is cooled by evaporative cooling. The office addition has casement windows, block walls, and built-up tar and gravel roof. It has baseboard electric heat.

REFERENCE DRAWING: AEC 3A-1325, sheet 1

NUMBER: 3719

NAME: Fire Protection Headquarters

PURPOSE: Provides offices for Fire Protection supervising officers and storage facilities for spare fire extinguishers and miscellaneous fire fighting equipment and tools.

DIMENSIONS: Office, 227 ft^2; Storage, 303 ft^2; Common, 286 ft^2; Total Area, 816 ft^2.

DESCRIPTION: One story wood frame structure with concrete foundation and concrete floor on grade. Floor is covered with asphalt tile. Outside walls are covered with asbestos shakes. Building consists of two offices and two rooms used for storage purposes. A one water closet rest room is provided. Roof is roll tar paper. Lighting is both incandescent and fluorescent. Building is heated with steam radiators and cooled with forced air evaporation type equipment.

STATUS: In use

REFERENCE DRAWING: H-3-1511

NUMBER: 3722

NAME: 303 Area Maintenance Shop

PURPOSE: Maintenance and fabrication including machining, welding and grinding for Fuels Preparation Building (313) and related facilities.

DIMENSIONS: Office, 118 ft^2; Shop, 4159 ft^2; Storage, 427 ft^2; Common, 296 ft^2; Total Area, 5000 ft^2.

DESCRIPTION: One story wood frame structure with concrete foundation and concrete floor on grade. Outside walls are covered with asbestos shakes. Roof is mineral surface interlock tar paper shingles over roll tar paper. Building is equipped with automatic fire alarm sprinkler system. Lighting is fluorescent. Heat is provided with steam radiators and cooled with forced air water evaporation type equipment. Building contains shop foreman's office, tool crib, and a welding booth.

APPURTENANCES: A concrete pad is adjacent to the building for material storage racks. There is also a 12 x 15 ft open side shed for a material cut-off saw and a forge.

STATUS: In use

REFERENCE DRAWING: HW-69302

NUMBER: 3730

NAME: Graphite Laboratory and Shop

PURPOSE: Provides shielded facilities for studies on irradiated graphite in the laboratory section at the south end and shop facilities for machining and fabricating specialized graphite shapes.

DIMENSIONS: 32 ft x 97 ft 8 in.; 18 ft 7 in. and 16 ft x 10 ft; Shops, 2722 ft^2, Storage, 122 ft^2; Common, 340 ft^2; Total, 3184 ft^2.

DESCRIPTION: This original rectangular one story prefabricated steel frame building has aluminum siding and roof. The interior walls are lined with transite and the ceiling is asbestos board. The addition has concrete walls and a vault. The entire building is on a concrete pad. Ventilation is by evaporative cooling with space heaters for heat.

REFERENCE DRAWING: H-3-8401

NUMBER: 3731

NAME: Graphite Storage

PURPOSE: Provides storage for graphite and other special materials.

DIMENSIONS: 40 ft x 80 ft x 17 ft 6 in. high; 3200 ft^2, storage.

DESCRIPTION: Prefabricated metal storage type building is set on a concrete pad and stub wall. It has a metal wall and gable roof.

REFERENCE DRAWING: AEC-3A-1325

NUMBER: 3732

NAME: Process Equipment Development Laboratory

PURPOSE: Toxic reactor fuel process and equipment development. Equipped with an absolute filter system and controlled hood system for thorium oxide in canning process. Development and testing mechanical equipment. Primary work in end milling, dc tungsten inert gas welding and load deflection material testing.

DIMENSIONS: Laboratory, 1294 ft^2; Common, 91 ft^2; Total Area, 1365 ft^2; 28 ft 4 in. x 48 ft 2 in.

DESCRIPTION: One story metal frame structure with exterior walls and roof of corrugated sheetmetal. Building has concrete foundation and concrete floor on grade. Lighting is fluorescent. Heat is provided with steam radiators and cooling with forced air evaporation type equipment.

STATUS: In use

REFERENCE DRAWING: H-3-4108

NUMBER: 3734-A

NAME: Paint and Solvent Storage

PURPOSE: Provides storage space for the numerous paints used for maintenance of buildings and equipment. Also, a limited amount of cleaning solvents.

DIMENSIONS: Storage, 780 ft^2; Total Area, 780 ft^2: 26 x 30 ft.

DESCRIPTION: One story wood frame structure with exterior walls of wood tongue and groove vertical siding. Concrete foundation with floor 3 ft 6 in. above grade. Interior lined with two layers of 1/2 in. sheetrock. Heat provided with two steam heated space units. No cooling equipment installed. Has exhaust fan for any excessive fumes. Lighting is incandescent. All electric fixtures and motors explosion proof. Building is equipped with automatic fire alarm sprinkler system.

APPURTENANCES: A 6 x 14 ft concrete loading dock is provided at floor level.

STATUS: In use

REFERENCE DRAWING: AEC 3A-1267

NUMBER: 3745

NAME: Calibrations and Standards

PURPOSE: Provides a laboratory for calibrating radiation detection and measuring instruments using a 220 kev X-ray source, or a wide range of gamma, alpha, and neutron sources. The wood frame of the X-ray room minimizes backscattering. The personnel area is shielded by a concrete wall.

DIMENSIONS: 35 ft 9 in. x 117 ft 3 in. x 36 ft maximum; Offices, 181 ft^2; Work area, 3399 ft^2; Storage, 146 ft^2; Common, 1426 ft^2; Total, 5152 ft^2.

DESCRIPTION: This two story wood frame rectangular building has a multiple gable roof. Part of the roof is built-up hot mopped asphalt, the rest is asphalt shingle. The exterior walls are asbestos shake and concrete block. The concrete main floor is on grade. The second floor is wood with asphalt tile. The lighting is mostly fluorescent. Electric power is 440, 220, 110 v ac. Heating and ventilating is by a central unit complete with heating coils, filters, and spray chamber. Radiators and space heaters supplement this.

REFERENCE DRAWING: H-3-6489

NUMBER: 3745-A

NAME: Electron Accelerator

PURPOSE: Provides shielded laboratory space for research with electron bombardment utilizing a 200 mev Van de Graaf accelerator and a 600 KVP flash X-ray machine.

DIMENSIONS: 17 ft 4 in. x 73 ft x 28 ft 10 in. (Original); 1277 ft^2 work area.

DESCRIPTION: This rectangular one story flat top building has concrete slab floor on grade and concrete roof with tar and gravel finish and concrete and concrete block walls. The electron accelerator has 3 ft thick concrete end walls and 8 in. concrete block side walls.

REFERENCE DRAWING: H-3-683

NUMBER: 3745-B

NAME: Positive Ion Accelerator

PURPOSE: Provides shielded laboratory space for research with positive ion bombardment using a 2 mev accelerator.

DIMENSIONS: 30 ft 6 in. x 86 ft x 19 ft; Work area, 1559 ft^2; Storage, 28 ft^2; Common, 882 ft^2; Total, 2469 ft^2

DESCRIPTION: This rectangular one story flat top building has a concrete floor and concrete walls and roof at the target area but has frame construction with asbestos shakes on the walls. The roof is tar and gravel built-up surface. General ventilation is by evaporative cooler with refrigeration in instrument room.

REFERENCE DRAWING: H-3-8157, sheet 2
H-3-9084

NUMBER: 3746

NAME: Radiation Protection Administration

PURPOSE: Provides office space for Radiation Protection management.

DIMENSIONS: 30 ft 5 in. x 72 ft 5 in. x 17 ft; Offices, 1226 ft^2; Common, 977 ft^2, Total, 2203 ft^2.

DESCRIPTION: A rectangular one story and frame building with asbestos shake siding and asphalt shingle roof. Concrete pad floor is covered with asphalt tile. Cooling is by evaporation and heating by steam.

REFERENCE DRAWING: H-3-6687

NUMBER: 3746-D

NAME: Craft Training Hutment

PURPOSE: Building used to conduct training classes for craftsmen on techniques for maintenance of complex equipment, chiefly instrumental and electrical.

DIMENSIONS: Work Area, 1187 ft^2; Total Area, 1187 ft^2; 21 x 56 ft 6 in.

DESCRIPTION: Exterior surface is corrugated sheet metal except the ends which are plywood. The interior walls are plywood with insulation between it and outer surface. The floor is concrete. Lighting is fluorescent. Heat is supplied by portable electric heaters. Cooling is by forced air and water evaporation equipment.

REFERENCE DRAWING: H-3-16746

NUMBER: 3760

NAME: Laboratory Management and Technical Information

PURPOSE: Provides offices for management, a 100-seat conference room on the second floor, and a display room. The first floor houses the central Technical Library of 45,000 volumes, 17,000 bound periodicals, 200,000 unclassified documents, and a classified file of 161,000 documents. There is a large reading room with periodical alcoves, open stacks, and private study rooms. The document files have a microfilm viewing room. The library operates largely by mail because of the diversified locations of scientists and engineers.

DIMENSIONS: 102 ft 6 in. x 152 ft x 32 ft; Offices, 3189 ft^2; Work area, 11,988 ft^2, Common, 6523 ft^2; Total, 21,700 ft^2.

DESCRIPTION: Building is rectangular, two storied with no basement. Framework is bolted steel. Parapeted roof is slightly sloped steel deck topped with Class II 20 yr tar and gravel finish. Exterior walls are fluted steel insulated panels. Fixed windows protected by storm sashes and shade screens form almost continuous bands around the building. First floor is reinforced concrete; second floor is steel deck topped with concrete. Both floors are finished with rubber tile. Metal and composition moveable panels form interior partitions. The classified vault is enclosed in 8 in. thick concrete. The stacks and library furniture are birch and steel.

The main heating and ventilation systems have two 20,000 cfm supply fans complete with heating coils, one spray chamber, and dry filters and two 18,750 cfm exhaust fans. All four fans operate together. The system recirculates the air in winter. Refrigerated air conditioning is provided in the key punch and instrument room by a one-ton unit.

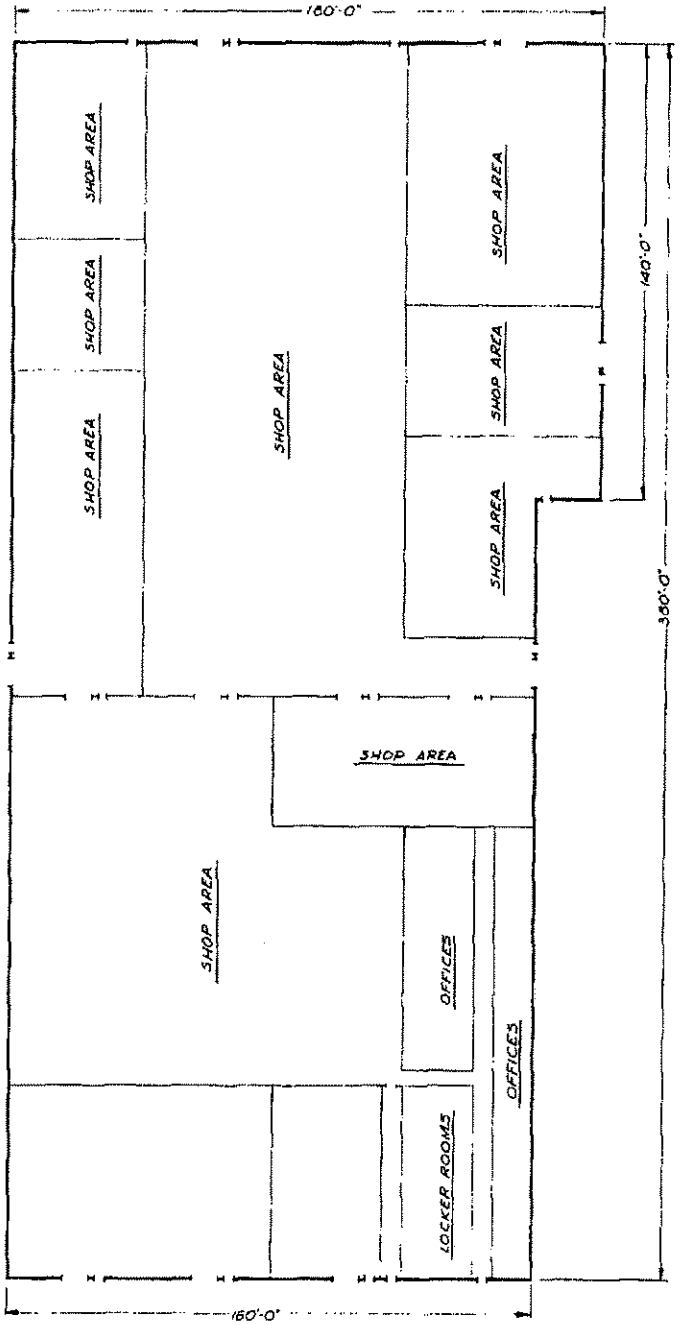
The electrical system provides 440, 208, and 110 v ac. Lighting is generally fluorescent. Electrical fire detectors are provided. There are two emergency alarm systems—fire gong and evacuation siren. The normal transformer is rated at 225 KVA.

REFERENCE DRAWING: H-3-4650, sheets 2 and 3

(See Figure A-11 in the Appendix)

APPENDIX

SELECTED BUILDING FLOOR PLANS



FIRST FLOOR PLAN

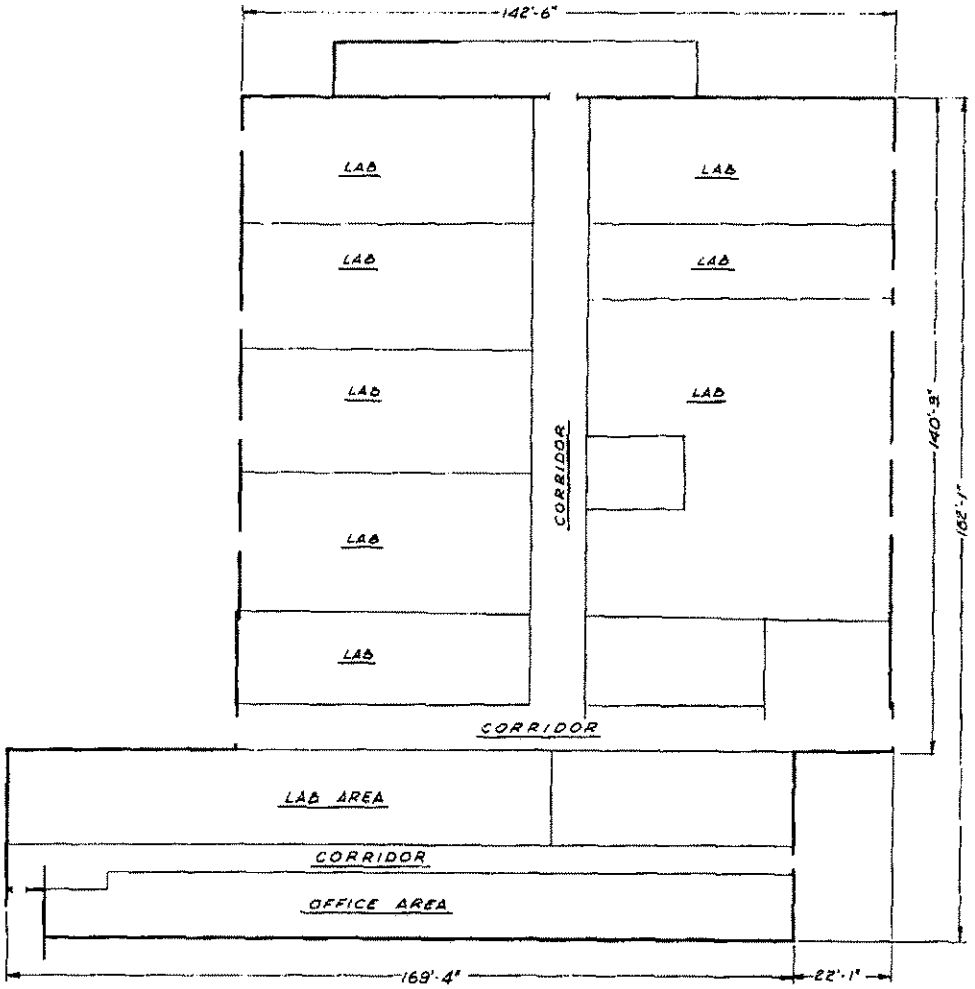
306 BLDG

SCALE: 0 4 8 12 16 FT

FIGURE A-1

Metallurgical Semi-Works

AEC-GE RICHLAND, WASH.



FIRST FLOOR PLAN

308 BLDG

SCALE: 0 15 FT

FIGURE A-2

Plutonium Fabrication Pilot Plant

AEC-DE RICHLAND, WASH.

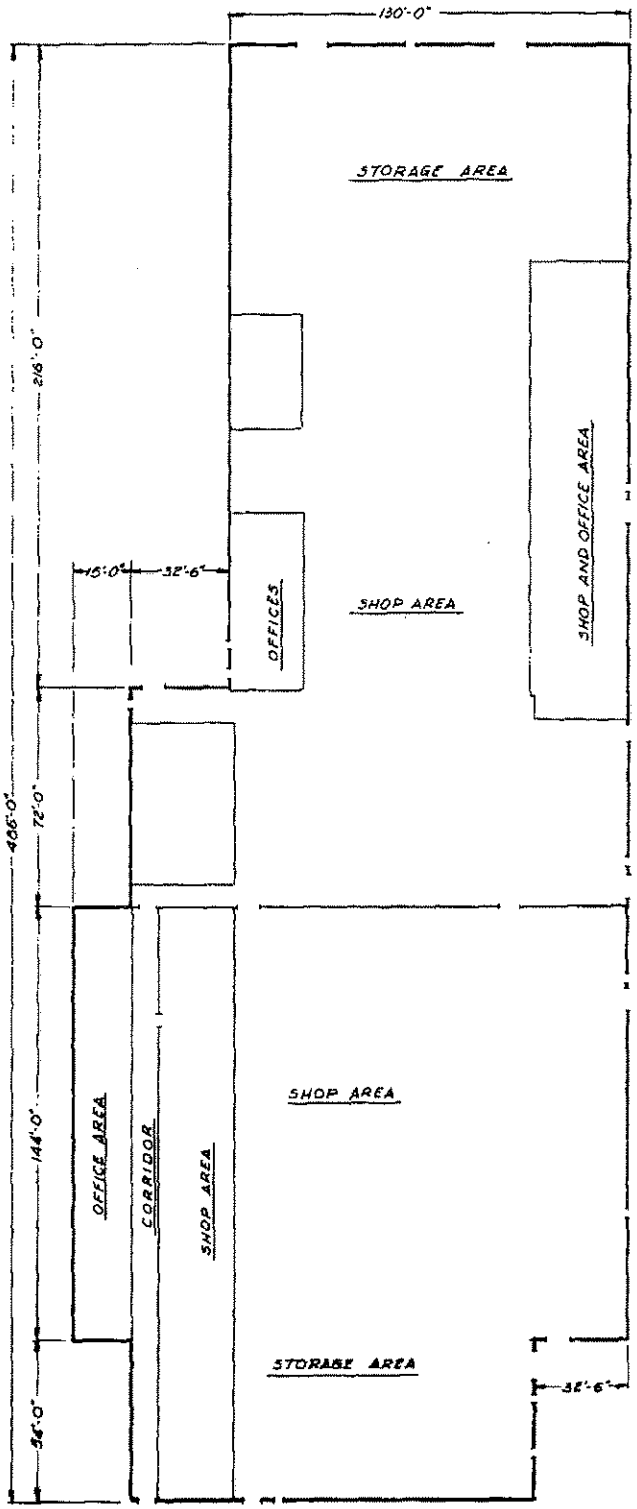
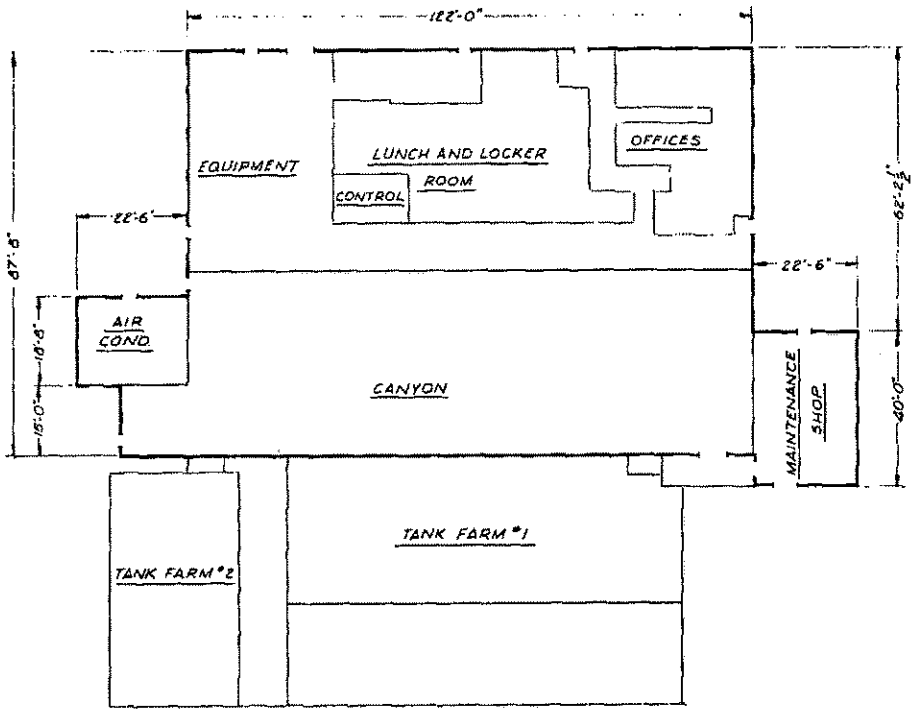


FIGURE A-3

Fuels Preparation Building

AEC-GE RICHLAND, WASH.



FLOOR PLAN

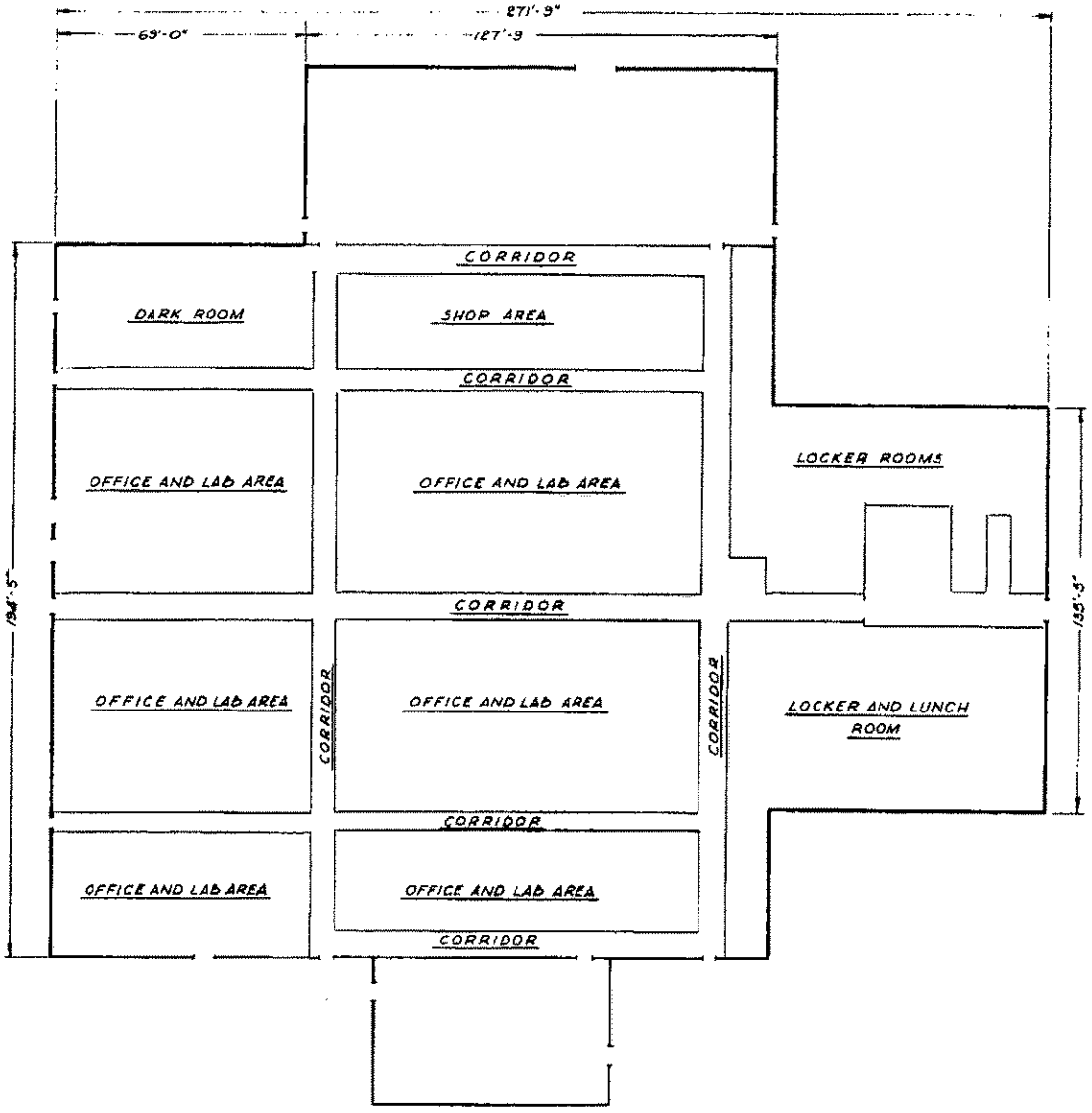
321 BLDG

SCALE 0 15 FT

FIGURE A-4

Cold Chemical Semi-Works

AEC-GE RICHLAND, WASH.



FIRST FLOOR PLAN

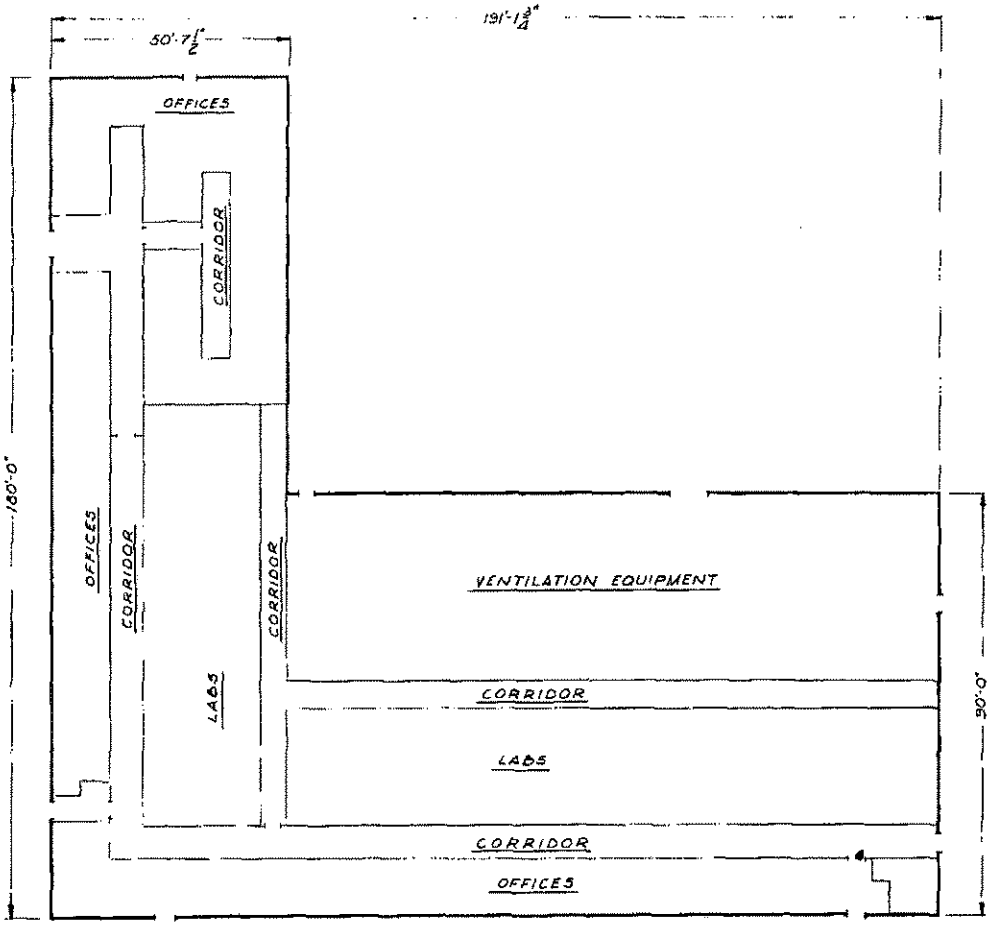
325 BLDG

SCALE: 0 5 10 15 20FT

FIGURE A-5

Radiochemistry Building

AEC-GE RICHLAND, WASH.



FIRST FLOOR PLAN

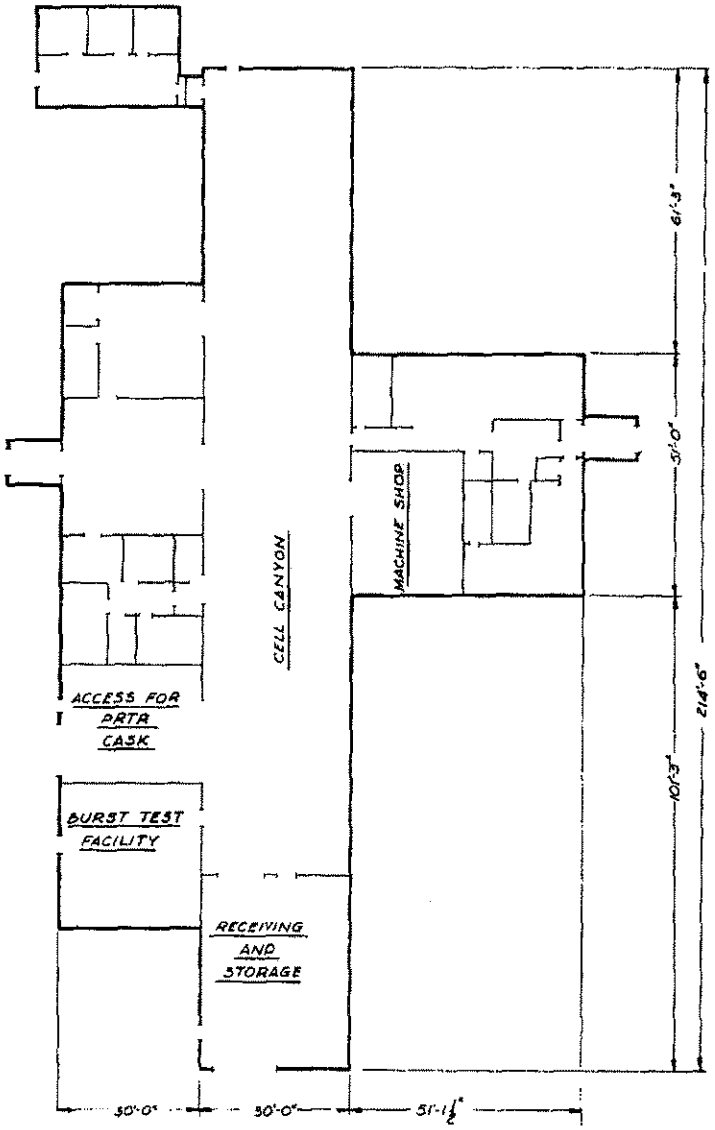
326 BLDG

SCALE: 0 15 FT

FIGURE A-6

Physics and Metallurgy

AEC-GE RICHLAND, WASH.



1ST FLOOR PLAN

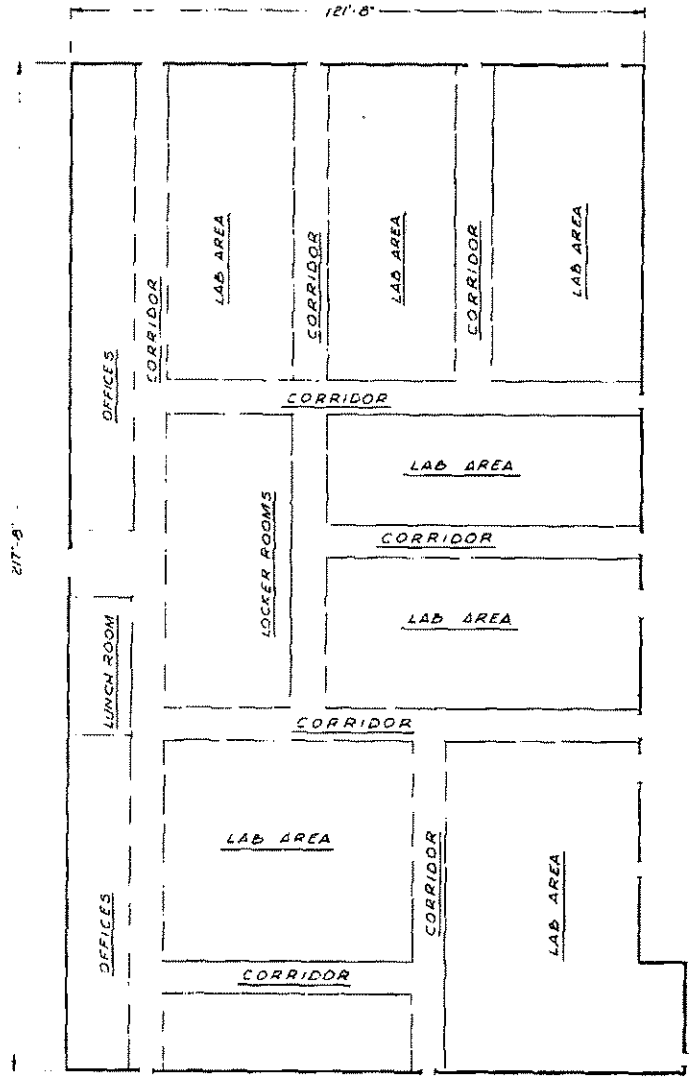
327 BLDG

SCALE: 0 16 FT

FIGURE A-7

Radiometallurgy Building

AEC-GE RICHLAND, WASH.



FLOOR PLAN

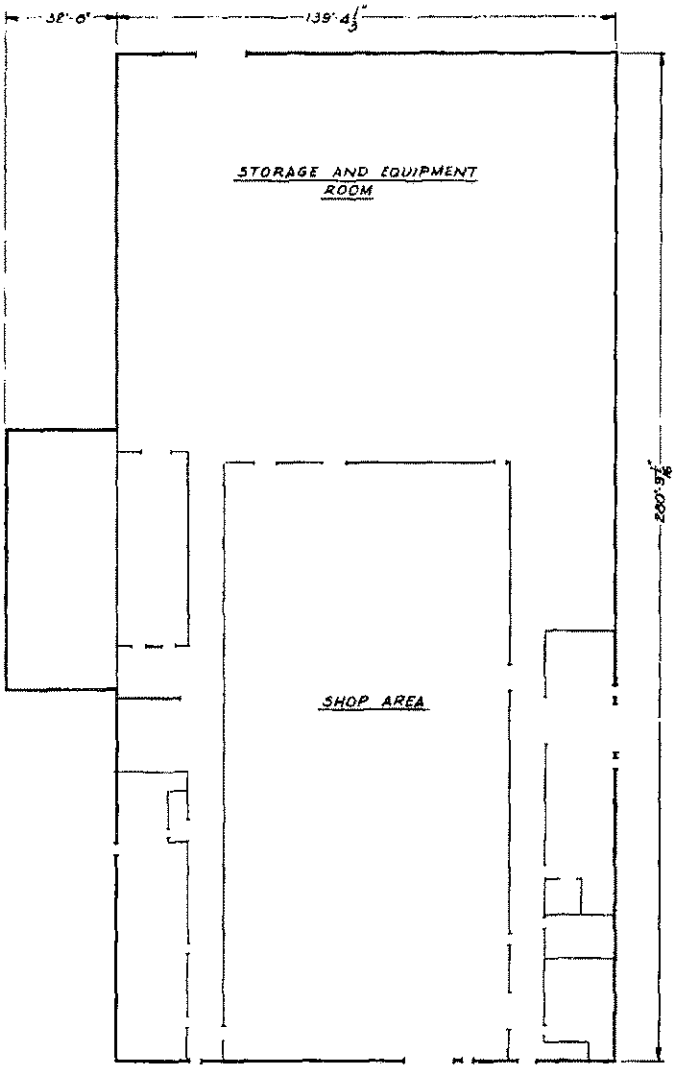
329 BLDG

SCALE: 0 4 8 12 16 FT

FIGURE A-8

Biophysics Laboratory

AEC-GE RICHLAND, WASH.



FLOOR PLAN

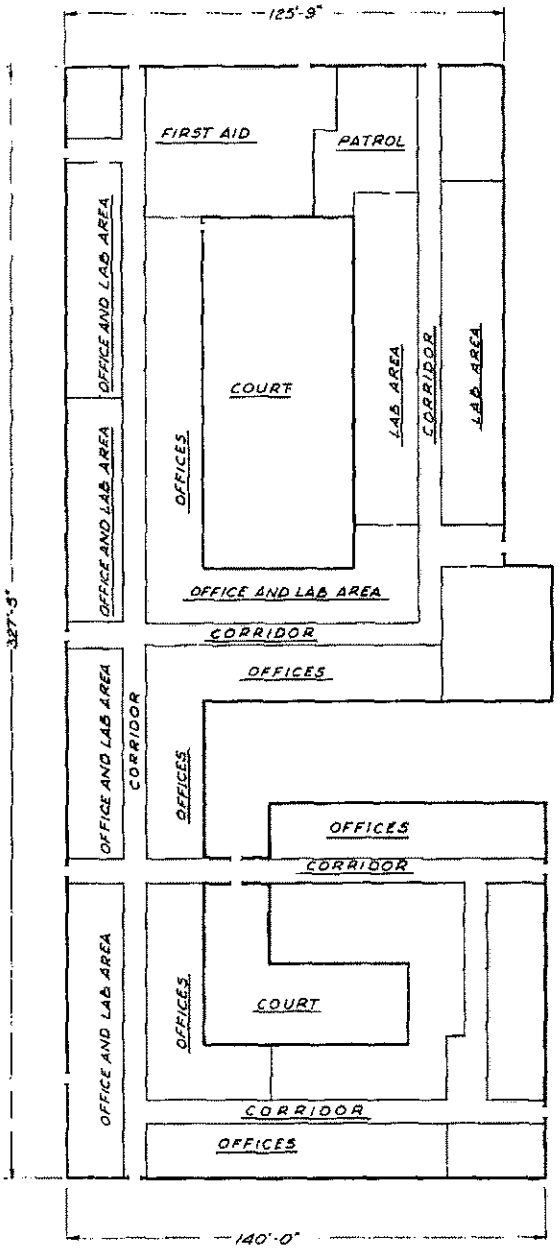
333 BLDG

SCALE: 0 20 FT

FIGURE A-9

Coextrusion Shop or Fuel Cladding Facility

AEC-GE RICHLAND, WASH.



FLOOR PLAN

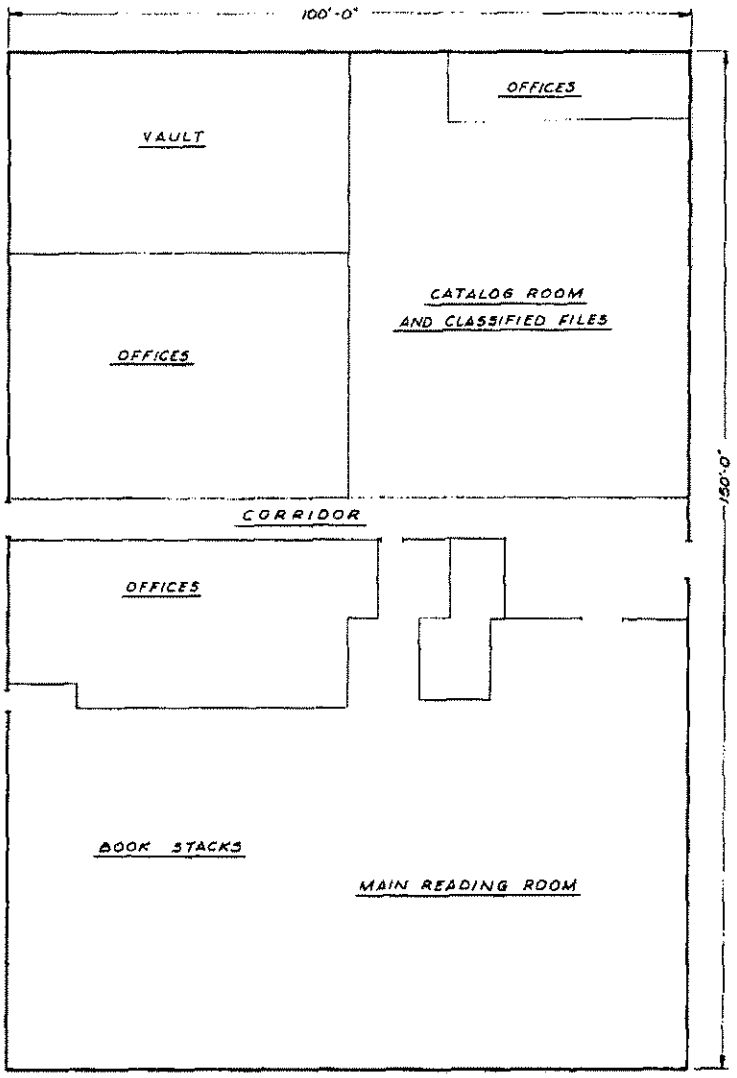
3706 BLDG

SCALE: 0 20FT

FIGURE A-10

General Services Building

AEC-GE RICHLAND, WASH.



FIRST FLOOR PLAN

3760 BLDG

SCALE: 0 10 FT

FIGURE A-11

Laboratory Management and Technical Information

AEC-GE RICHLAND, WASH.

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