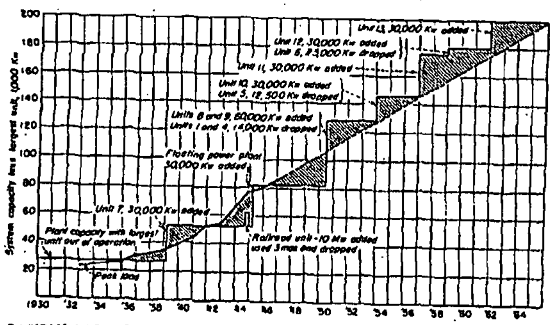

RAPIDLY ACCELERATING LOAD-GROWTH RATE since 1941 shows urgent need for additional generating capacity; some load will be dropped if largest unit is lost

ground and under the floor. Discharge conduits from the condensers will be similarly located and will connect to the discharge flume along the river bank. Each intake conduit will be of 36-in. diameter, supported on piling and concrete slab. Shear gates will be at the flume end of each discharge and intake conduit.

The discharge flume, about 260 ft long and 15 ft wide, will be reinforced concrete and sheet piling supported on rock. The flume will release the heated circulating water over 350 ft downstream from the intake head house.

The yard substation will step up voltage to 69 kv for transmission to the main distributing substations in the city and for local distribution at 13.8 kv. Electrical switchgear is so arranged that power may be supplied for starting up motor-driven auxiliaries from three external sources.

Station Building. Construction will be semioutdoor, with a building enclosing the turbine room and the boiler firing aisle to the face of the boilers. Boilers and fans will be outdoors.

Substructure will consist of a reinforced concrete mat extending under the turbine room and outdoor boilers supported on concrete piling, driven to rock. Slab under the boiler will be 30 in. thick, and under the turbine pedestals 48 in. thick with the remaining portions under the turbine room 15 in. thick.

Building proportions in terms of width x length x height in feet are:

Office 25x 88x41
Electrical bay 22x141x41
Turbine room 55x141x64
Boiler operating aisle....16x141x63

Superstructure will consist of a structural steel frame with masonry walls, concrete floors and roof, glazed tile wall and quarry tile finish for the turbine room. Partitions for toilet, locker rooms and other enclosures will be provided within the building.

Turbine room and electrical bay will have ventilation, and the office will have comfort-type air conditioning.

A 75-ton 50-ft-span station crane with 15-ton auxiliary hook will serve the turbine room. One 5000-lb 100-ft-per-min elevator will extend from the first floor to the building roof.

General Improvements. The contemplated site of the new plant is at an elevation somewhat less than 7 ft above mean low water. To protect the shore from erosion by river water and to permit construction of foundations, flumes and conduits along the river bank, a bulkhead of steel-sheet piling about 1500 ft long will be constructed. Certain areas beyond the pierhead line will be dredged to provide a deep river-water intake and a channel deep enough to permit docking fuel-oil tankers. The ship-docking area will be dredged to a depth of 34 ft to accommodate standard tankers.

A railroad spur-line siding will handle incoming equipment, and also off-tank cars if this becomes necessary. The spur line will pass through the plant structure and into the switch yard, to unload materials near the points where they will be used.

Eighteen-foot roadways will be provided around the plant proper and along the bulkhead to the unloading wharves. Concrete sidewalks will be laid from the street to the office; parking area will be adequate for employes and visitors. The property will be completely enclosed, except on the river front, with a standard industrial fence.

Floodlights will illuminate roadways and portions of the property where equipment is located. These lights will be mounted on high structures with separate pole lines required.

Water for domestic use and emergency plant needs will be taken from the city water-supply system. No sewers for property drainage will be needed, but drains from the structure will discharge to the river, entering the river. Proper grading will provide yard drainage directly to the St. Johns River.

Conclusion. The municipally owned utility is an integral department of the City Commission of the City of Jacksonville as to executive and administrative authority. George A P... commissioner of public utilities, is directly responsible for executing contemplated enlargements and improvements. Robert B Cowan, engineer-manager for the city, is in direct charge of the operation and maintenance of the city water and electrical utilities, reporting directly to Mr Pierce and the city commission.

Reynolds, Smith and Hills, of Jacksonville, is responsible for engineering recommendations, reports, studies and design of the new facilities.

Jacksonville Load History

Year	Annual consumption, kwhr	Peak demand, kw
1920	30,756,000	.....
1925	60,731,100	.....
1930	88,856,700	21,400
1931	90,491,100	22,400
1932	87,973,300	23,400
1933	87,179,700	22,600
1934	96,203,600	24,800
1935	103,750,200	25,500
1936	117,319,000	30,900
1937	134,730,500	31,800
1938	138,415,000	34,100
1939	159,286,700	38,000
1940	176,531,000	41,500
1941	213,585,700	52,000
1942	242,443,600	55,000
1943	318,975,480	73,000
1944	360,950,100	75,000
1945	367,406,500	76,000
1946	364,227,700	85,000
1947*	419,166,000	91,000
1948*	448,074,000	97,000
1950*	510,708,000	109,000
1955*	653,248,000	133,300
1960*	794,970,000	168,500

*Predicted

Similar to a radiant-heating installation, the wrought-iron pipe grid lies on a crushed stone foundation. After connections are welded and tested the concrete slab is poured. This serves as foundation for the insulation and room floor

Freezing-Room Floors Need Heat

If you are planning to erect a low-temperature freezing or storage room, ward off trouble by following these pointers on floor construction. They will keep down expensive repairs

By A W RUFF
V C Patterson & Associates, Inc.,
York, Pennsylvania

FLOOR CONSTRUCTION for refrigerated rooms maintained at temperatures of ...F and lower must receive special engineering attention when built directly on the ground. Experience proves that ice forming in the earth under the floor will eventually buckle the concrete slab. This is particularly true of large rooms, and where floors are at grade level or below. Gradual ice accumulation in the ground sets up a force that usually raises and eventually ruptures the floor slab. One preventive is to install the heating coils as in Fig. 1.

The Problem. Usual design of insulated floor consists of two concrete slabs separated by insulation, Fig. 2. Layers of ice form in the earth that have a highly destructive effect, Fig. 3. It often takes several years for enough to accumulate to cause visible damage. Cases have been observed where the floors buckled up 12 in. A few inches, however, is usually serious enough to put a room out of service. The complete floor must then be torn up, expensive cork insulation thrown away, and the floor completely relaid. This operation may cost as high as $4 per sq ft of area.

Why Ice Forms. When a room is refrigerated, temperature drop through the insulated walls and floor must be equal to the difference between inside and outside temperature. At the floor, the surface temperature of the earth or fill against the underside of the bottom concrete slab, will vary with the heat conductivity of the ground,