

"The Modernization Program"

Source: Unknown

It is easy to understand how the growth of a city, such as Portland, may eventually render the arrangement of fire stations obsolete. New freeways, the evolution of an industrial district into a residential district, and any number of other factors can change the use, arrangement, and accessibility of a city district to fire department service. Portland has experienced this several times over its history and will likely continue to see this into the future.

Perhaps the first experience was when the department became a paid agency in 1883. This "reorganization" resulted in one truck company and four engine companies, each occupying their own firehouse. This downsized the volunteer force that had one truck company and six engine companies.

The next big shift came when horse drawn vehicles succumbed to the motorized fire apparatus. Many stations, including those held over from the volunteer era, were still in service and in desperate need of upgrading. Modern construction methods and the reduced need for horse accommodations were key to design changes. 1912 would also see Station 19 as the final all-wood fire station being built. The early days of the fire service often saw fire spread through a city by flying fire embers and brands and wooden buildings were particularly susceptible to ignition.

The first bungalow fire station would be built in Irvington (Station 18) in 1913. The design proved practical and construction of several more of this design would take place in the early 1920s. These stations supplanted other outdated stations.

The next big reorganization would take place in the late 1950s. The story of this modernization program is below. The study was funded by a federal grant and the actual project through city bonds. It would significantly change the arrangement of emergency resources in the city.

In 1984, when Portland Fire entered into a contract for service agreement with Fire District #10 (east Multnomah County), several stations were combined or closed to add more efficiencies, particularly where the boundaries between the two agencies met. This occurred on a more minor scale in 1986 with a contract for service was made with Clackamas County Fire District #1.

Between 2000 and 2010, a general obligation bond was approved by voters to provide seismic upgrades to all Portland stations. This also afforded an opportunity to abandon a couple stations and build or rebuild others. Stations were also fitted with individual sleeping areas and better accommodations to provide for both men and women firefighters. Several stations were also equipped with public meeting rooms too.

Modernization Program in the Portland Fire Bureau - February 19, 1960

The Fire Bureau of Portland, Oregon is now in the middle of a \$3,000,000 modernization program. The initial planning for this program began 4 years ago; it will not be fully accomplished for two to

three more years. To get this story into a logical sequence let's inquire into the background and reasons for this project and progress from there.

BACKGROUND AND PROBLEMS

Over the past several decades Portland's growth pattern has been one of merging with separate outlying communities. Most of these satellite communities were distinct municipalities, each with its own complex of commercial and residential facilities, including, in most instances, a "one station" fire department. The areas between these annexed municipalities gradually became subdivided and thickly settled, requiring fire protection. This was provided by filling in with neighborhood stations to complete the protection pattern. In many instances, these stations were spaced to provide reasonable protection based on the allowable running distances of horse drawn fire apparatus.

Over a period of several generations, the distribution of fire stations developed as required by the exigencies of the day - with each new growth. As motorized fire apparatus replaced the horse, allowable running distances approximately doubled. After World War II, population pressures developed new areas badly in need of fire protection. Portland was confronted with a pattern of fire station locations unnecessarily close in older areas and too sparse in the new growth areas. Some stations then in use were erected 50 years or more ago in districts once suburban. Industrial, business, highway, and neighborhood developments since that time had completely changed the determining factors involved in station location. Also, the ratio and distribution of engine and truck companies had become badly out of balance.

In the past, funds had not been available to make annual or biannual replacements of obsolete fire apparatus in the Portland Fire Bureau. The Bureau had requested necessary replacements each year, but due to taxing limitations, had invariably been turned down because of lack of money in the City's normal budget. This had resulted in severe replacement cycles, or expensive replacement intervals. As a result, in 1958 Portland found itself with approximately 30% of its apparatus over 18 years of age. 7 of 24 pumpers were 15 to 20 years old, 3 of 8 ladder trucks were 15 to 30 years old, 5 of 8 hose trucks were 15 to 20 years old, 3 of 8 miscellaneous pieces of fire apparatus were 18 to 27 years old and all 3 fire boats were 31 years old and badly in need of overhauling.

In regard to Portland's fire alarm equipment; underground, lead-sheathed cables (many of them 40 years old) were breaking down as the result of normal deterioration. Frequent emergency repairs were required. Also, new alarm circuits, and extensions of communications to new fire stations as they were being built, were needed.

The last major overhaul and expansion of the fire alarm system was done in 1928, when the alarm headquarters were moved from the City Hall to its present location. This resulted in an awkward "patched-up" and expensive cable layout. The city has grown considerably during the past 32 years and the efforts of the Alarm Superintendent to keep the alarm system in phase with growth and provide adequate maintenance and improvements were stifled by limited funds.

STUDY AND PLANNING

It became apparent to Portland's Assistant Chief Harold E. Simpson that to continue to add new fire stations to protect new growth areas without reducing the overlapping coverage in the older areas of the city would present a considerable and possibly unnecessary tax burden on the entire community. Chief Simpson convinced Fire Chief Edward Grenfell (now retired) of the need for immediate planning toward a major fire department modernization and fire station relocation project. Together they approached Fire Commissioner Stanley Earl, who in turn, recognized the need for such a program.

In July of 1956, then Deputy Chief Simpson was instructed to initiate a careful study of the city's fire protection requirements and make recommendations for operating economies and modernization within the Fire Bureau. Chief Simpson assigned five teams of fire officers to make separate staff studies of Portland's fire station distribution in relation to present and anticipated protection needs. All were instructed to use the principles set forth in Municipal Fire Administration (International City Manager's publication) and the requirements of the National Board of Fire Underwriters as criteria for the study. Each staff study group, working independently, produced strikingly similar solutions. Each of the solutions was examined and evaluated. After consultation with the planning teams, a preliminary station relocation plan was developed. After innumerable conferences and adjustments of the preliminary relocation by N. B. F. U. and Oregon Insurance Rating Bureau engineers, the City Planning Commission, the Federal Highway Coordinator and City Council, a final relocation and modernization plan was adopted. The necessary readjustment of fire station locations could not be made piecemeal without leaving many areas uncovered. It was therefore concluded to accomplish the modernization program in one coordinated project.

The modernization plan, in addition to station relocation, included a program for the replacement of obsolete tools, equipment, fire apparatus, a major overhaul of all three fireboats, and refurbishing the alarm system.

Commissioner Earl directed that careful and extensive studies be conducted to inquire into the relative merits and costs of the several alarm system modernization proposals under consideration. It was his desire that maximum economy, reliability, and functional utility be controlling considerations. After several inspection trips, and considerable correspondence, a comparative analysis of the two primary types was accomplished. Based on economy and basic needs it was concluded to adopt a low cost "city owned" straight telegraph system employing dispersed repeating stations. It was determined that by the use of substations, cable construction and service costs would be reduced and the resulting dispersion of alarm facilities would increase reliability, particularly in time of war or disaster.

SOLUTIONS AND PROCEDURES

By this time Chief Simpson had been elevated to Chief of the Fire Bureau (upon retirement of Chief Grenfell in July, 1957) and was in a position to see his modernization plan proceed toward an eventual fulfillment.

It was concluded to be most practical and economical to borrow capital to finance the modernization program. A \$3,000,000 Fire Bureau Facilities and Equipment bond measure was prepared to submit to the voters of Portland. The proposed expenditures were to be allocated generally as follows:

- \$1,500,000 for the construction and relocation of 13 new fire stations and the remodeling of 3 others. Twenty-two old and poorly located stations were thereafter abandoned, leaving a total of 31 stations, which would be six less than had been in use at one time with a smaller city.
- \$900,000 for new fire apparatus and equipment and extensive overhauling of Portland's three 33 year old fireboats.
- \$600,000 for modernizing, refurbishing, and extending the fire alarm system.

Portland newspapers, churches, civic organizations and other responsible groups were invited to send committees or individuals to meet with Fire Bureau officials to inquire into the merit and urgency of this measure. Each of the groups engaged in these studies recognized the urgent need for these funds to continue a safe level of public protection. They rallied in support of the improvement program. No organized opposition appeared against this measure. Both Portland newspapers editorialized to support it and the Junior Chamber of Commerce actively campaigned in its behalf. The measure was submitted to the voters in May, 1958, and was approved.

Immediately after the bond measure was approved by the voters, an architect was engaged and station planning was started. Additional conferences were held with N. B. F. U. and O. I. R. B. engineers, highway engineers, city planning officials and the City real estate officer. Bonds were sold. Specifications were prepared for the purchase of apparatus and bids were taken. Land was purchased. Contracts were awarded for station and apparatus construction. Negotiations with the State Highway Department were initiated regarding station sites that were possibly in the path of new highway routes. Liaison with this agency is being maintained to preclude station location complications.

After deciding on the type of alarm system to adopt, it was decided to call in a consulting engineer, to advise the Fire Bureau how it might get the best results for dollars expended. The city was fortunate in being able to retain a National Board of Fire Underwriters engineer, who had recently retired, and who previously made the Underwriters insurance grading for Portland in 1936. His study has been completed and it has confirmed the work and planning thus far accomplished as being sound and efficient.

Briefly, the fire alarm system as adopted calls for de-centralization of alarm facilities. Instead of all alarm circuits originating at fire alarm headquarters, there will be four substations strategically located. The North Portland and Linnton area will be served by a substation located at the fire station at N. Lombard and Hereford. The Southeast district will be served by a substation in the fire station at SE 52nd and Mall, The Southwest district will be fed from the fire station at SW Pendleton and Kelly. The fire station at NW 15th and Glisan will supply the Northwest and Central West side areas.

By utilizing substations a minimum number of conductors are needed, running into the central fire alarm headquarters. Consequently, a great deal of the existing serviceable underground cable can be continued in use. Each substation will be equipped with automatic repeating mechanisms that causes

the signals from all street box alarms to be recorded at fire alarm headquarters, from where the dispatching of fire fighting and emergency equipment will continue in the usual manner.

The use of substations will permit almost indefinite future expansion of the system without necessitating the construction of a new and larger central fire alarm headquarters. The present obsolete switch board facilities at alarm headquarters will be removed and new much smaller modern "dead front" circuit panels installed. The operator's desk will be replaced with a 26 foot console equipped with the latest devices to automatically record, date, and time stamp all alarms received and all transmissions dispatched by the fire alarm operators.

The outside plant, which consists of approximately 1,200 miles of circuit wire, and 1,265 fire alarm boxes will remain substantially as it is at the present time. Only a limited number of new boxes will be added. At the conclusion of this project 50% of the outside circuit wire will be in underground cables.

ACCOMPLISHMENTS TO DATE

To date six new fire stations have been completed during the present modernization program. The first was occupied in September, 1959, and the most recent one in January, 1960. All of these are almost identical in design to take advantage of economies in architectural, construction and equipping costs. They are constructed of S.C.R. (Structural Clay Reinforced) brick and contain 4,153 square feet of floor space. The buildings as constructed have no hose towers (for drying and storing fire hose). The original plans included hose towers, but they were later eliminated to reduce costs approximately



8,000 per station, and to present less objectionable building lines in residential neighborhoods. Fire hose will be dried in electric hose dryers and stored in portable hose racks. The roof is a 20 year roof with 1 ½ inch insulation to retain heat in the building. Heat is by hot water with the building divided into four zones or areas.

Each station contains a garbage disposal unit, and an automatic dishwasher. The disposal unit is expected to afford a saving in garbage collection services. The dishwasher is expected to more than pay for itself by the improved sanitation which comes from sterile eating utensils and is expected to reduce costly lost hours from common colds and other related communicable illnesses.

Toilet and wash basins are installed in the basement for use by ladies of the election board and other similar needs. A shower stall is also included in the basement for use by firemen returning from unusually dirty fires to avoid an unnecessary mess in the main living area.

The sprinkling systems in the lawn areas were installed by the regular fire department plumbers. All wiring and work relative to the fire alarm system was done by regular fire department electricians. At all times a watchman is on duty in the watch room, immediately inside the public entrance. He is able to selectively communicate with all areas of the station by speaking into a microphone on his desk. He

is thus able to forward information immediately to all men when he receives a fire alarm. This is in addition to the loud speaker system which receives instructions and information directly from the fire alarm headquarters. The main doors to the apparatus floor have automatic opening devices which can be activated from fire alarm headquarters. After the fire apparatus has left the building, the doors are set to automatically close 3 minutes after opening. A horn gives a 20-second warning before they close.

The automatic door opening and closing device includes an "electric eye" positioned to preclude accidental closing on any object which might remain in its path. In addition to conserving heat by closing the door, the electronic controls extinguish station lights and shut off the electric range. The apparatus floor is equipped with drive-through doors in the rear of the station. Thus, fire apparatus, when returning from a fire or drill, will drive directly in front rear of the building, rather than stopping and backing in from the front with resulting, traffic congestion. Each station is designed to hold two pumpers and one aerial ladder truck.

Since passage of the \$3,000,000 bond levy, 3 pieces of fire apparatus have been rebuilt into manifold trucks and 13 pieces of new apparatus have been purchased and delivered, including, 7-1,250 G. P.M. Seagrave triple combination pumpers, 4 - 85 ft. Seagrave aerial ladder trucks and 2 - 100 ft. Seagrave aerial ladder trucks.

The three manifold fire trucks were completely rebuilt from hose trucks released from service by the consolidating of fire companies. They have been placed in service in the high value district to meet National Board of Fire Underwriters grading schedule requirements for two piece apparatus. Each manifold truck operates as a team with a pumper company and requires no additional manpower. All work on this conversion project was done in Portland at approximately one fourth the cost of comparable new fire apparatus. These manifolds carry portable turrets and have 6 "take-offs" for working hose lines and 4 intakes to receive supply lines from the accompanying, pumper.

The 13 new pieces of Seagrave fire apparatus are all powered by the latest design, 315 hp Hall-Scott engines with five speed synchro-mesh design. Apparatus assigned to hill areas have "no-spin" type differentials. They are equipped with electric sanders for braking and traction on icy or slippery streets.

The 7 new pumpers are equipped with high pressure booster pumps and carry 300 gallons of water. The new pumpers and aerial trucks are of "cab-forward" design with wraparound windshields for better



vision. The apparatus provides seats for five men. Each new apparatus is equipped with 100 ampere alternators, wired for "plug-in" cords to supply flood lights or other electrical equipment directly from the vehicle engine. Self contained gasmasks are carried on all this apparatus.

The two 100 foot aerials are of the tractor-drawn type. The four 85 foot aerials are of four wheel design. Each aerial truck has a two-way inter-communication system from the man at the top of the ladder to the ladder operator at the base on the turn table. A dependable safety belt that allows maximum freedom of movement is provided for the man who operates a monitor nozzle from the top of the aerial ladder, Hydraulic rescue kits for prying apart wreckage, lifting heavy machinery or forcing access to a trapped victim are carried on all ladder trucks. They also carry smoke ejectors with explosion proof motors of 5,000 cu. ft. per minute capacity. Portable 1,500 watt generators are carried to supply current for portable lights when used some distance from the apparatus, or when electrical outlets are not available.

UNCOMPLETED PHASES OF THE PROGRAM

Construction has recently been started on three additional fire stations with completion scheduled for this summer. One is an engine company relocation from a semi-commercial type station in a village annexed since World War II. Its purpose is to more properly locate the company in the overall protection pattern. The other two are combination land and boat stations whose companies will have both a water and land capability (amphibious) and will run either a fire boat on water, or a fire pumper on land as the alarm operator directs. This concept of a combination land and water company affords a fuller utilization of manpower. These new combination stations will be better located along the high value port and dock area than the old stations and will establish the 3 fire boats more nearly equidistant along Portland's bustling and valuable waterfront. The relocation of one of these boat stations was dictated also by the East Bank Freeway, presently under construction. Money for this old station was recovered from the State of Oregon as a result of the condemnation proceedings.

One prime multiple company station situated in the southwest commercial and apartment house area will have to be relocated to make room for the South Auditorium Urban Renewal project. This project was programmed anticipating a reasonable return on the old site. A new site cannot be obtained until the west side freeway interconnection has been finalized.

A site in the south central East Side is also being delayed because of difficulties negotiating this desired transaction. This would be a key installation for a double fire company, a district chief's quarters, a drill and training school, and shops for fire bureau carpenters, painters and plumbers.

Other existing fire stations are due for remodeling in the near future, with first priority for those which will house the new fire alarm substations.

Additional fire apparatus is still to be purchased, including an immediate order for three 750 gpm pumpers. Also, there are plans for one additional manifold truck to operate in conjunction with a pumper in the high value district. Two modern hose trucks that have recently been released from service because of fire company consolidations will each be rebuilt into a 500 gallon tank wagon with

booster pump. Specifications are now being prepared to call for bids for the complete re-powering of all three fireboats with full conversion to diesel fuel.

Now that the final planning and decisions have been made on Portland's fire alarm system, construction will get under way in the near future. It is estimated that this project will require two or more years to complete.