

## COTUIT FIRE DISTRICT

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Report of the special committee made up of the Prudential Committee and the Board of Water Commissioners for the construction of the new water system to the voters at the Annual Meeting held January 11th, 1937.

### **Authorization:**

At a special meeting held on February 3, 1936, the Cotuit Fire District voted to build a complete water system and authorized the Prudential Committee and Board of Water Commissioners to proceed with the project. \$164,650 was appropriated as follows:

From sale of water bonds	\$92,000.00
Grant from PWA	72,000.00
From current tax levy	650.00
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	\$164,650.00

### **Organization:**

The Prudential Committee and the Board of Water Commissioners met and organized on February 4th, 1936. The committee has held a meeting each week and, when necessity has arisen, more than one meeting a week. Mr. F. M. Gifford was appointed clerk of the project. He has also served as clerk of the committee. The committee engaged the services of Whitman & Howard, civil engineers, to design and supervise the construction of the entire water works. Mr. George C. Brehm, an experienced water works man, was designated by Whitman & Howard as resident engineer. The committee appointed W. H. Perry, Jr., as permanent employee of the water works.



## Bonds

Proposals for the purchase of the \$92,000 issue of water bonds were opened by the District Treasurer on February 21st, 1936. There were three offers at  $2\frac{3}{4}\%$  and one at 3% with varying premiums. The loan was awarded to the Hyannis Trust Company whose offer was most advantageous to the District. The premium and accrued interest amounted to \$1,648.28, of this amount \$1,465.56 is in the treasury and may be used only toward the principal, the first payment of which is due in February, 1939.

## Contracts

The project was divided into two parts for the purpose of making contracts. First, the construction of the wells and, second, the remainder of the work. Both contracts were let on a unit basis which made it possible for the committee to effect economies not otherwise possible.

The bids for the construction of the wells were opened on March 4th, 1936. There were seven bidders as follows:

1. Crandall, Inc.	\$7,010.00
2. L. P. Frederico & Son	7,406.00
3. C. Reppucci & Co.	7,730.00
4. L. T. Hammond	8,348.64
5. Continental Well Co.	8,595.00
6. H. A. Hanseom	9,485.00
7. Edward F. Hughes (Bid only on driven wells)	

The committee awarded the contract to Crandall, Inc., the lowest bidder, a long established firm specializing in underground water work. This contract was completed June 6, 1936. The cost was \$6,242.15.



The bids for the general contract were opened on May 26th. There were nine bidders as follows:

1. R. H. Newell Co.	\$139,037.50
2. C. L. Shea	139,337.50
3. Michael A. Trafficanti	139,367.10
4. Ralph Susi	141,022.00
5. Anthony Ross & Son	141,399.50
6. Bruno Construction Co.	143,728.00
7. Richard White's Sons, Inc.	146,355.00
8. Martin J. Kelly	147,946.00
9. C. Reppucci & Co.	169,230.00

Attention is directed to the fact that but \$330 stands between the lowest and third lowest bidder. The general contract was awarded to R. H. Newell Co. of Uxbridge, the lowest bidder, a company with a fine record. This contract was completed December 31st, 1936. The cost will be approximately \$138,400.00.

#### **Land Purchases—Well Site**

The preliminary examination of the district made in 1935 had disclosed the fact that a fine supply of water existed in Santuit on route 28 near Shaving Hill. Consequently the committee purchased a parcel of land at this location of some 24 acres with a frontage on route 28 of 362 feet extending back to Lovell's pond, with a frontage on the pond of 158 feet and with access to Newtown road and Route 28 in several places. This lot cost \$1,000. In order to provide additional protection from pollution the Maderios property just west of the well site on Route 28 was purchased when it came on the market during the summer for \$1,800. This purchase was strongly recommended by the Massachusetts Department of Public Health. Thus the District is assured a permanent, safe and adequate supply of water of superior quality.



### **Tank Site**

The highest parcel of land available, centrally located in the district, was obtained for a tank site for \$300.

### **Wells**

The first problem to be settled in regard to the wells was the type to be used. The choice lay between an ordinary driven well of which fifty would be needed and the gravel packed well of which four would safely yield the 500 gallons per minute deemed necessary. The latter type was decided upon as having a low maintenance cost, long life and being particularly suitable in fine sand such as was found at the well site. Furthermore the cost of connecting driven wells to the suction line and pumps would have been considerably higher than was the case for the gravel packed wells.

The wells, four in number, are 52 inches in diameter and from 30 to 33 feet deep. They are located 200 feet apart in a line extending generally north and south. The strainers are six inches in diameter, are five feet long and are of the enamelled cast iron plate type. The riser pipes are extra heavy wrought iron pipe six inches in diameter. The wells are sealed at the top with an eight inch slab of concrete and 24 inches of well tamped clay to exclude any surface water. The wells were accepted by the Massachusetts Department of Public Health after the usual severe tests which include a continuous ten day run. Two of the four wells were used in this test. There appears to be a great deal of water as the draw down on the wells at the end of the run was about five feet and the recovery, as soon as pumping stopped, immediate. The quantity of water pumped each day during this test was equal to, or greater than, the average daily consumption reported in 1934 for such towns as Wareham, Middleboro, or Cohasset and was seven times greater than the average daily consumption for that year reported for the town of Yarmouth.



### General Contract

The general contract was divided roughly as follows:

1. Connecting wells and placing suction pipe.
2. Laying mains.
3. Building pumping station.
4. Furnishing pumping equipment.
5. Building tank.
6. Laying house services and setting meters.

### Suction Line

The suction line from the wells to the pumps is made up of about 700 feet of 10 inch, 8 inch and 6 inch bell and spigot cast iron pipe with the usual gates and flexible joints. This pipe has a special enamelled lining to reduce friction and is laid well below frost.

### Mains

40,949 feet of water main have been laid as follows:

12 inch	207 feet
10 inch	3,678 feet
8 inch	27,459 feet
6 inch	9,605 feet

All 8 and 10 inch main between the pumping station and the tank has the special enamelled lining. All the pipe laid in Main street, on Route 28, on the Cotuit-Santuit road and on the old Post road is eight inch or larger to provide for large fire flow at the hydrants and for possible future extensions. In addition to the pipe mentioned about 1,220 feet of two inch main was laid making a total of 42,169 feet or 7.98 miles. It should be noted here that the preliminary estimate made in 1935 planned for 38,991 feet of main. Due to the low figure at which the contract was let the committee was able to lay 1,958 feet of six inch and 1,220



feet of 2 inch main more than was originally contemplated. The extensions laid were chosen after careful consideration of all the possibilities because they would produce the greatest revenue. Additional revenue is thus provided and better fire protection as well. The additional mains were laid as follows:

Bay View Road, 808 feet of six inch and 522 feet of 2 inch.

Popponessett Road, 591 feet of 6 inch.

Nickerson Lane, 350 feet of 2 inch.

Newtown Road, south of Route 28, 385 feet of 6 inch.

Shell Lane, west of Main street, 350 feet of 2 inch.

### **Hydrants**

There have been installed sixty-six hydrants or six more than originally planned. In addition, two private hydrants have been set by property owners at their own expense. It may be of interest to know that the tests made by the New England Insurance Exchange at hydrants at various points in the system show flows of water a good deal greater than were estimated so we are assured that our system is conservatively designed and that extensions that may become desirable will be possible with no more expense than that of the mains themselves.

### **Pumping Station**

The pumping station is a substantial brick building with slate roof of pleasing colonial design built for utmost permanence. Office space is provided for the commissioners and superintendent. The pump room is large and well lighted and is equipped with work bench and storage bins.



### **Pumping Equipment**

The first important question to be decided in regard to pumping equipment was that of the kind of power to be used. The committee investigated this situation carefully. Detailed bids were submitted by the Cape & Vineyard Electric Co. covering the cost of providing electric power. These were compared with the probable cost of pumping with Diesel engine power. It appeared that the saving in the use of Diesel power over electric would nearly approximate the salary of the operator. As it seems necessary to employ one full time man to take charge of the water works no matter what form of power is used the committee decided upon a Diesel engine for driving the main pump.

The pumping units are two 500 gallon per minute at 227 foot head Pennsylvania centrifugal pumps, one driven by a two cylinder 60 IIP 600 RPM Worthington 4 cycle Diesel engine through a Falk speed increaser and the other direct connected to a six cylinder Buda engine of 60 IIP. Both electrically and gasoline driven air compressors and vacuum pumps are provided together with the usual auxiliary machinery. The station is equipped as far as possible with automatic protective devices. We may pride ourselves in having a most efficient up to date pumping plant.

### **Tank**

The tank is of steel, with ellipsoidal bottom and is of 200,000 gallons capacity. The diameter is 38 feet and the height above foundation 161 feet. The riser pipe, extending from the concrete chamber, containing an underground space for control apparatus to the tank, is five feet in diameter. A pressure of at least 75 pounds per square inch is maintained over the entire system. The tank was placed at the back of the lot to make it as inconspicuous as possible.



### **House Services**

Cement lined pipe is used for all services. Three-fourths inch and 1 inch sizes are used except in the case of a few large customers where 2 inch was necessary. To date 134 services have been laid. Applications for three more are on file so apparently we are going to better the estimated figure of 125 takers the first year. The trident meter made by the Neptune Meter Co. has been used. Every water taker is metered in accordance with modern water works practice.

### **Rate Schedule**

The rate schedule is the result of a good deal of study and discussion. It follows the general practice of many towns in Massachusetts. It divides, in an equitable manner, the cost of the system between the individual user and the District as a whole. By its use the committee feels sure we will be able to pay for our system while enjoying its benefits without exceeding the estimated cost to the tax payers of \$1.29 on the tax rate.

### **Fire Pump**

In view of the fact that a reduction in fire insurance rate was one of the chief reasons for building the water works aside from fire prevention itself and in view of the fact that to obtain the most favorable rate, an automobile pumping engine of 500 gallons per minute capacity and acceptable to the New England Insurance Exchange must be provided, the committee has held seven meetings with the board of fire engineers to study the situation. We find that most manufacturers of fire apparatus will furnish their regular 500 gallon pumper at around \$6,000 and that they will furnish the same pump and equipment on a Ford or Chevrolet chassis at around \$3,000 plus the chassis. They would deliver either piece of apparatus after acceptance by



the New England Insurance Exchange which would make the desired change of rate available at once. It would appear further that we may expect a life of from 20 to 25 years for a piece of standard apparatus whereas the life of a commercial piece would be probably from 10 to 15 years. Thus it would appear that over a period of 25 years there would be little difference in cost to the district. The chief disadvantage to a piece built on a Ford or Chevrolet chassis is that when carrying full equipment and several men it is somewhat overloaded.

It will be remembered that the water works and the pumper will make possible a reduction in the dwelling house rate from 65 cents per hundred dollars of insurance per year to 31 cents or a saving of over 50%.

The New England Insurance Exchange has already made tests of the water system. With the purchase of a pumper all the conditions required to bring about the new rates will have been complied with.

The committee is happy to report that the water system has been built well within the estimates made at the time the appropriation was made. It has laid 3,178 feet more of main than was included in the original estimate and has set six additional hydrants. There seems to be no reason why the amount of money to be raised by taxation should not be about as estimated.

The Massachusetts Department of Public Health has made its final tests and has declared the water suitable for drinking and other domestic purposes.

Attention of the voters is directed to the fact that the total labor cost of this project was \$29,998.38 of which local men received approximately \$9,885.51. This amount has returned directly to the neighborhood.



While this report cannot be considered final as there are still a number of matters to be closed up we are able to give a summary of the cost of the project as follows:

Preliminary expense	\$185.60
Tank site and well site	1,382.81
Wells	6,242.15
Mains, pumps, house and tank	134,720.40
Engineering	12,865.10
Legal and administrative	1,960.54
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	\$157,356.60
Maderios property	1,800.00
Additional mains and hydrants	4,243.40
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Total cost	\$163,400.00

At this time the committee wishes to express its thanks to the engineers, Whitman & Howard, to the Massachusetts PWA Officials, to the resident engineer, Mr. George C. Brehm, to the resident PWA inspector, Mr. J. J. Campobasso, to the contractors and to other District Officials all of whom have helped to carry this project along to a successful finish.

Respectfully submitted.

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