filler, thus affording a uniform strength throughout the monolithic structure, lessening the chances for rupture; for just to the extent that the filler lacks in strength and uniformity will a crack rupture or destruction of the pavement follow.

To what extent cracks appear in pavements, or if at all, due to the variations that follow a wet and dry condition we are unable to say. That a certain minimum amount of contraction and expansion parallels the condition, no one can doubt; but it is believed that the strength of a monolithic structure is such that a crack occurring from such cause rarely takes place. There is no question but that cracks frequently occur due to the expansion caused by frost, or more particularly resulting from the expansive force of the frozen ground underneath the pavement. Dry earth is in no way affected by low temperature. The action which is disastrous to all pavements alike, and all kinds of roadways, in fact, which results from low temperature only happens when moisture is present. The remedy, therefore, is found in perfect drainage.

We have, then, but two elements with which to deal in preventing cracks and ruptures in cement-filled brick pavements. First, simply a provision along the curb for an expansion cushion, which is an easy matter and only requires very simple implements to make effective the necessary provision. The trouble generally has been either a determination not to make proper provision or undertaking to do it without any implements at all, merely substituting some one makeshift or another for the purpose.

As to the cracks due to low temperature, it is simply a question of drainage. The manner and method of proper drainage are controlled entirely by the character of the soil and grades. Most soils are easily drained by tiles along either side, either within or without the curb, surplus water being taken out through "T" outlets at frequent intervals. Long drains underneath the roadbed are obviously objectionable for many reasons, though they are sometimes resorted to. A better method of drainage where the soil is such that by capillary attraction the moisture climbs to the highest point, is by alternate side drains heading slightly beyond the center line.

ALLEGED CAUSE OF AUSTIN DAM FAILURE.

The following has been given out by the State Conservation Commission, at Albany, regarding the recent failure of the dam at Austin, Pa. It is based upon a preliminary report by R. McKim, State inspector of dams.

"Mr. McKim found that in two vital points, which heretofore have escaped public notice," says the statement, "portions of the dam as actually constructed differed so widely from the original plans that from the outset it was doomed to failure. In the first place, he was surprised to find that at least one portion of the dam, which drawings published showed to be 30 feet thick at the base, was only 20 feet thick.

"He could find no trace of the existence of a cut-off wall, or 'key,' which the drawings showed extended the entire length of the dam from bank to bank of the stream. This cut-off wall was an extension down into bedrock of the upstream face of the dam. The designs showed that it was to be sunk four feet into the rock and be four feet thick in the direction of the flow of the river.

"The primary purpose of this cut-off wall was to prevent the impounded water from creeping under the dam and lifting it upward—a vital point. In addition to this function it was intended to prevent the sliding of the dam on the bedrock.

"A simple illustration of this latter purpose is that a box which lies on the floor may be easily slid along, but if a strip nailed to the bottom should be placed in a groove in the floor that obstruction would make sliding the box a much harder task.

"Only twice in its brief history was this dam filled with water, and then only for short periods. The first time the water rose to the top of the dam was on January 21, 1910. Two days later the dam slid down stream about eighteen inches, and the water was drawn off, as the newspapers stated at the time.

"The water never got so deep again until the rains of the last week of September, 1911, brought the water nearly to the crest of the dam again, and utter failure resulted. In view of the conditions noted above no other result was possible."

ESTIMATES ON STANDPIPES AND TANKS.

The Aberthaw Construction Company of Boston, who have erected standpipes at Attleboro, Mass., and Westerly, R.I., have made some interesting estimates as to the cost of certain standpipes and tanks as below:—

	Dia.	Ht.	Cost	Cost M. gals	Remarks.
Waltham	100	43	$25,786	$12.90	Roof steel trusses, concrete slab.
*Attleboro ...	50	100	36,000	24.50	Central pier.
Manchester, Mass.	60	72	36,000	23.60	
Lester	80	30	12,382	11.00	No roof.
*Westerly, R.I.	40	70	16,000	24.30	
Warren, R.I..	40	50	10,591	22.50	
Paris, Me. ..	80	14	7,150	13.60	No roof.
Gilbert & Bennett	30	70	9,000	24.30	
Gilbert & Bennett	30	30	8,000	50.00	On tower 40 ft. high.
Douglass	46	20	5,260	21.15	
Burlington, Vt.	30	30	5,050	31.40	On tower 25 ft. high.
Vineyard Haven	20	70	6,000	36.60	
Walker & Pratt	35	20	3,275	22.75	
Littleton, N.H.	27	27	2,080	18.10	
Danbury	20	30	7,250	130.00	On tower 25 ft. high.
Modfield, Mass	20	23	1,530	27.80	
Modfield, Mass	20	20	1,400	29.20	
Littleton, N.H.	17	17	1,080	38.60	
Fall River ...	16	15	850	38.60	
Madison, N.J.	25	130	16,000	33.40	Around old steel pipe 75 ft. high. Top part a separate tank.

* Constructed by Aberthaw Construction Company.

PERSONAL.

Mr. Alexander Potter has assumed the entire engineering work in connection with a five foot intake tunnel, one-half mile long, and intake tower; a six million gallon purification plant; a reinforced concrete, circular reservoir, 200 feet in diameter, 30 feet deep; new 24-inch pipe line to city from reservoir; pumping machinery; outlet sewer to Arkansas River, eight miles long, 48 inches in diameter, main stem; sewage disposal for the northern district of the City of Muskogee, Oklahoma.