

E. Braby and others asked that the special water tax assessed against Mrs. M. P. Rasmussen be remitted. On motion of Anderson, chairman of the waterworks committee, the petition was tabled for the reason that it could not lawfully be granted.

The resignation of M. J. Mack as a member of the expert water commission was tendered and accepted.

The city engineer rendered a report, showing the cost of paving Main Street from South Temple to Third South streets, three blocks, with the materials indicated, as follows:

GRANITE BLOCKS, ABUTTERS' PROPORTION.	
Grading.....	\$ 2,490
Curbing.....	2,960
Gutters.....	2,475
Paving.....	52,624
Conduits for irrigating water.....	2,000

Total.....\$63,549

CITY'S PROPORTION.	
Grading.....	\$ 3,522
Curbing.....	480
Gutters.....	310
Paving.....	10,205
Catch basins and conduits.....	1,500

Total.....\$16,017

Total cost.....\$79,566

STREET ASPHALT, ABUTTERS' PROPORTION.	
Grading.....	\$ 2,490
Curbing.....	2,960
Gutters.....	2,475
Paving.....	60,720
Conduits for irrigation water.....	2,000

Total.....\$61,645

CITY'S PROPORTION.	
Grading.....	\$ 3,522
Curbing.....	480
Gutters.....	310
Paving.....	11,775
Catch basins and conduits.....	1,500

Total.....\$17,587

Total cost.....\$89,232

VITRIFIED BRICK—ABUTTERS' PROPORTION.	
Grading.....	\$ 2,490
Curbing.....	3,960
Gutters.....	2,475
Paving.....	40,480
Conduits for irrigation water.....	2,000

Total.....\$51,405

CITY'S PROPORTION.	
Grading.....	\$ 3,522
Curbing.....	480
Gutters.....	310
Paving.....	7,850
Catch basins and conduits.....	1,500

Total.....\$13,662

Total cost.....\$65,067

MACADAM—ABUTTERS' PROPORTION.	
Grading.....	\$ 2,490
Curbing.....	3,960
Gutters.....	2,475
Paving.....	12,144
Conduits for irrigation water.....	2,000

Total.....\$23,069

CITY'S PROPORTION.	
Grading.....	\$ 3,522
Curbing.....	480
Gutters.....	310
Paving.....	2,355
Catch basins and conduits.....	1,500

Total.....\$ 8,167

Total cost.....\$31,236

The report continues:

"In this connection I desire to state briefly regarding the respective pavements named, that stone is the most durable and the most noisy of all pavements. The best types of this class are laid on concrete or sand foundations, the joints being filled with a mixture of hot pitch and sand or dry sand alone. Cobble stones have

been condemned as "a barbarous inheritance of a past age," and rectangular blocks are now used exclusively, granite being classed as the best. Stone pavements can be used successfully on grades of 10 per cent or less, and where care is taken to properly calk the joints a safe sanitary condition is secured.

Sheet asphalt is regarded with much favor on account of being noiseless and at the same time capable of withstanding heavy traffic. The surface being impermeable it is preeminently the sanitary pavement. Owing to the extreme smoothness of surface it is not adapted to steep grades, and for the same reason it is easily cleaned of mud or dust. The best pavements have concrete foundations, although broken stone and gravel are often used under the cheapest pavements.

Vitrified brick is gaining favor as a paving material. Lack of uniformity has been the chief cause of failure heretofore. Experiment, however, is developing greater uniformity as well as greater strength and consequent durability. Some specimens of brick have successfully stood the most severe tests required of granite blocks. So far the best results have been obtained from bricks containing about 73 per cent of silica, 17 per cent alumina and 1 per cent iron. Surely such material can be had from the many deposits which abound in the neighborhood of this city, and I am confident a native brick can be produced that will fill all the requirements of a first-class "pavor."

Brick pavements are comparatively noiseless, and approximate closely to the sanitary requirements. Concrete and sand foundations are both employed. Hot pitch and sand or sand alone is used to fill the joints. Brick can be used on streets having about the same grades as for stone blocks.

Macadam is the pioneer pavement, and while possessing great superiority over the original "mudroad," is no longer considered suitable for city streets on account of the excessive cost for repairs and cleaning and sprinkling. In the larger European cities the cost of maintenance is as high as 65 cents per square yard per annum. With moderate city traffic it is estimated that 25 cents per square yard per annum is a fair cost for repairs. In Boston 50 cents per square yard per annum is expended for maintenance. All large cities have abolished macadam and are substituting stone blocks and sheet asphalt, either of the latter proving cheaper at the end of five to ten years. Macadam admits of grades absolutely impracticable with any of the other pavements named. It is absorbant, and therefore excluded from the class of sanitary pavements. Unless properly sprinkled, macadam pavements soon break up and the stones work to the surface, presenting all the features of a cobble-stone and dirt roadway.

Pavements, of whatever material, require constant supervision to insure against dust and mud, and in order that the first appearance of weakness may have attention and so prevent defects developing into failure. Otherwise the best pavements must, in a comparatively short time, become worthless.

Paving should be the last act in the series of street improvements, and should not be undertaken before all the sewers, gas, water and other pipes are properly and permanently laid, the curbs and gutters set and every precautionary measure executed in order to guard against subsequent displacement of the pavement, which

once disturbed or patched is never as good as before.

Home materials should be used in all cases when it is possible to do so. Depots for the supply of such have yet to be established, which will require time and the expenditure of considerable means before a reasonable assurance can be given that suitable and sufficient materials for any extensive work can be procured. Desiring as much as any other citizen to see our streets permanently improved I question at the same time the wisdom of attempting any street pavement, except on Commercial Street, before another season. All the preliminaries, however, should be arranged for rapid execution when the work shall be commenced.

Pending the inauguration of any general paving movement much can and should be done in the way of preparation. Most of our principal streets will require to be cut down from one to two feet before being paved. As a rule our streets have an excellent natural foundation of clean gravel, the surface of which has during the past forty years been subjected to a process of grinding by the wheels of passing vehicles and as a result we now have a covering several inches in thickness of finely powdered stone which in summer is an unbearable dust, in winter an impassable mud, and at all seasons a detriment and disgrace to our city.

No street cleaning having ever been done, this powdered surface has become foul with animal and vegetable matter, and is, no doubt, pregnant with germs of fatal diseases. The continued inhalation of this polluted dust is a menace to the public health, and the concern of every thoughtful citizen.

I suggest, as a means of lessening both the dust and mud and at the same time advancing a step in the direction of permanent pavements, that our street surfaces generally be reduced by cutting them down four to six inches, or to such depth as will remove the wornout material and expose a new surface of clean gravel, which if properly dressed and rolled can be made equal, or but little inferior, to a macadam pavement, and at infinitely less cost. As each successive surface shall become worn out, it can in like manner be removed, until the proper sub-grade shall have been reached, when the permanent pavement can be put down without any direct outlay for gradation. In the meantime we will have had all the benefits of streets as free from dust or mud as can be expected from macadam pavements. As a general proposition the worn out material of our street surface should be carefully gathered up and removed, in place of being buried, with all the absorbed filth that it contains, under a covering of new material hauled long distances at great cost.

The plan of cutting down instead of filling up to maintain smooth surfaces, will on most of our streets prove the cheapest, and is unquestionably the sanitary method. I recommend it for all streets having natural gravel foundations, and especially on streets that require cutting down to admit of permanent pavements.

Respectfully,

A. F. DOREMUS,  
City Engineer.

Referred to the committee on streets.

A number of petitions were presented asking to have certain men appointed special policemen as follows: The petition of the Utah