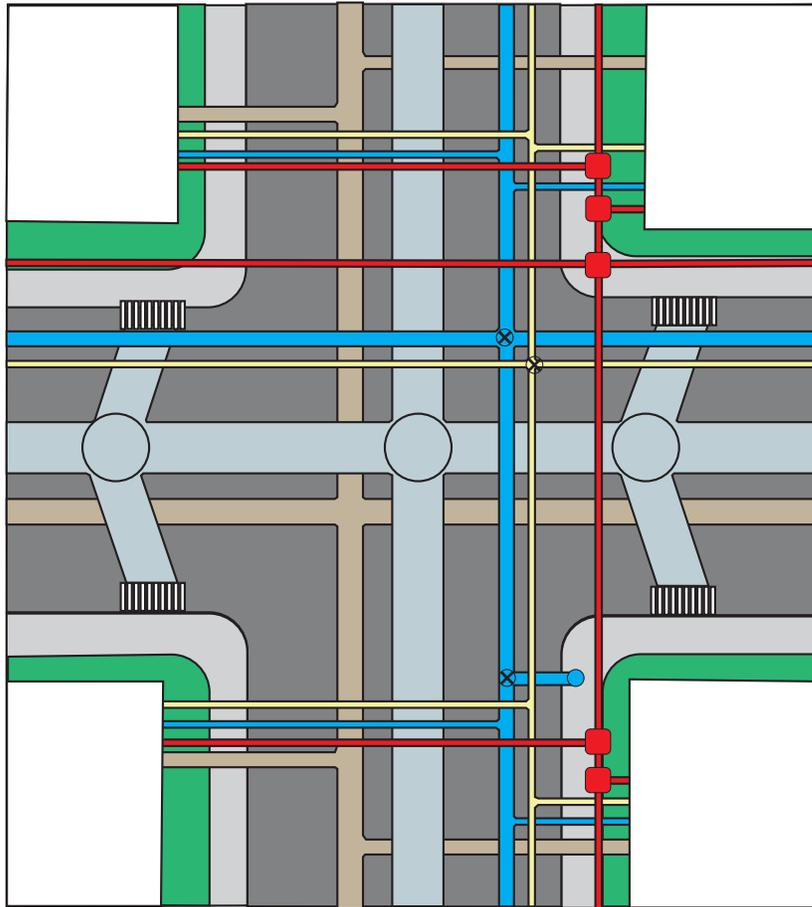
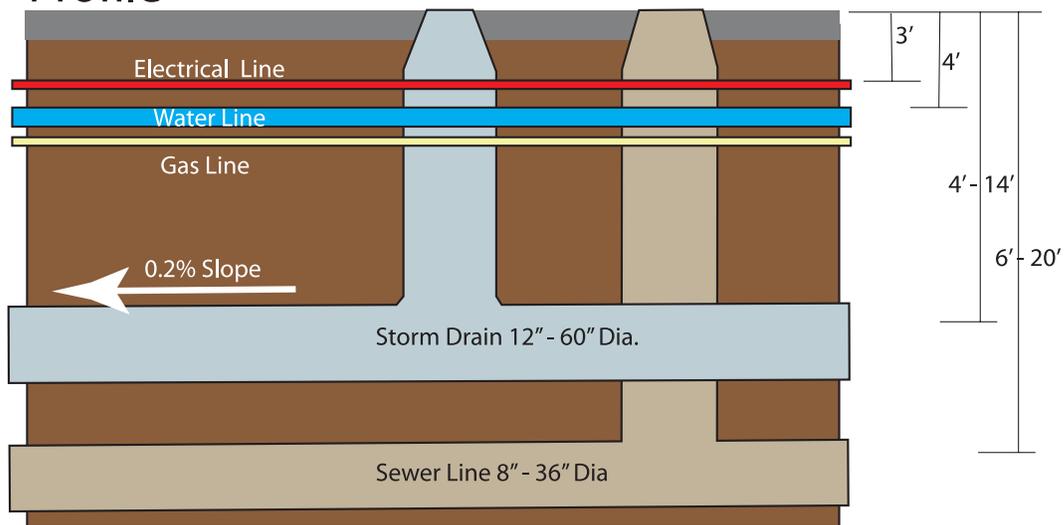


# Under the street



- Storm Drain
- Sewer Line
- Water Line
- Gas Line
- Electrical Line
- Service Box
- Fire Hydrant
- Valve
- Man Hole

# Profile



# Looking Down

## *Pavement and What's Underneath*

Like all cities, Visalia has grown in spurts and under different political climates. Regulations have played a large part in how the city has grown, as has advancement in technology and building techniques. Various city ordinances, state laws, and simple agreements with developers have played a role in the manner in which the city's services have been supplied.

### **Sidewalks**

Sidewalks are one example. Sidewalks were expected along all streets until after World War II, when rapid growth and the fact that nearly everyone had a car made them seem superfluous. Now, as we strive to make it possible to use cars less, we have again required sidewalks in new developments.

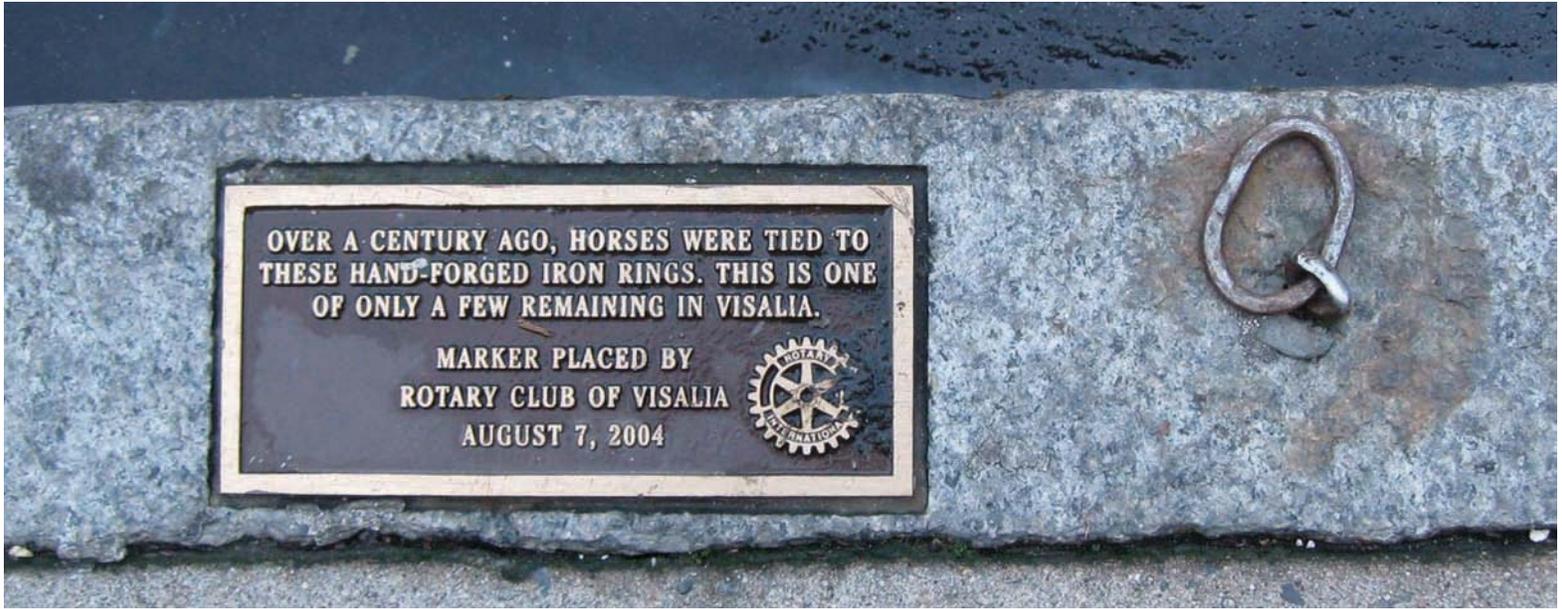
In the 1800s, Visalia was dusty, dirty, and often muddy. Mill Creek and the other distributaries of the Kaweah ran almost year-round and overflowed the banks regularly. Pedestrians shared the streets with horses and carriages pulled by horses, mules, and oxen. The first wooden sidewalks were installed by store owners in the 1850s. The first bridge crossed Mill Creek in 1865, creating what is still called Bridge Street. Some Visalia streets were paved in the late 1860s with gravel hand-mined from the river beds and with a material they found in the foothills that is still used today – decomposed granite. When wetted down



and compacted, decomposed granite, or D.G. as it is called, becomes relatively hard and dust free. Later, concrete and asphalt were used as they are today.

There are still many sidewalks from the 1910s and 1920s around town. Although concrete generally gets tougher as it ages, many older sidewalks were poorly constructed and they are crumbling. The underlayment is cheap concrete, made with less cement than is needed. It's less than two inches thick. On top is one half inch or less of smooth slurry (cement-sand mixture.) The foundation crumbles and the top flakes off. You can find these sidewalks wherever there are older homes.

With sidewalks and paved streets, curbs were needed to separate the two. The first curbs were made of hard granite



Granite Curb with original horse ring in downtown Visalia

mined in the mountains and brought here. Some of these are still lining Main, Locust, Church, and Court Streets in the downtown area. There are a few horse rings still installed in these granite curbs – keep a sharp eye out for them as you go on downtown walks.

Poured concrete curbs were the standard from the early 1900s until the 1950s, when rolled curbs came into vogue. Rolled curbs allowed builders to use the same curb configuration all the way across a property and not have to change to a driveway cut. However, they do not define driveways well and modern cars with low clearance bottom out on them. Curbs of today are more like the original granite curbs, but they are angled away from the street and are constructed low enough for a pickup to drive over when needed. Driveways are well defined by ramped cuts.

Bicycles are an important form of transportation. When Acequia Avenue was changed from one-way to two-way in 2009, a controversy arose over putting

bike lanes on Acequia. Some businesses were sure that street parking was needed, while bicycle commuters held that there were no safe bike paths through the downtown area. The new parking garages were built to help relieve street parking issues, and Acequia got bike lanes. The City of Visalia Waterways and Trails committee is a volunteer group that is



commissioned to help make these decisions. This group also places the new bike racks around town like the ones by the Fox Theatre and Bank of America. The purpose is to encourage alternatives to cars and to make Visalia accessible for bicyclists and pedestrians.

## **Street Striping**

The stripes on the streets are sprayed on as needed for traffic separation and safety. Most smaller residential streets have no stripes, but larger streets have lane separation lines and crosswalk stripes. The paint is either a thick latex paint, specially designed for durability and fast drying, or sometimes a thermoplastic that is heated like nacho cheese as it is applied. Both paints are infused with small glass beads that increase the reflective qualities of the paint. Many stripes are enhanced by epoxied-on reflectors that reflect oncoming light. These reflectors stick up about one-half inch, just enough to appear above a light-reflecting puddle after a rain storm and to provide a warning bump to cars that cross the line. The city hires striping companies to put paint on streets. These crews usually work late at night or very early in the morning so the paint can dry before heavy traffic. A truck follows the paint truck, just far enough behind to let the paint dry and keep any traffic off it for ten minutes or so.

Eric Bons, city traffic engineer, recalled a phone call he received one day. A young man said there was paint all over his truck from some fresh street painting. Luckily, the striping company had called earlier and told him about a truck that had been swerving between the paint truck and the follower truck, running over the fresh paint again and

again at 2:00 AM. Eric asked if the truck was a silver Ford 4×4. The man said it was, and Eric referred him to the striping company, saying that they were responsible for damage.

When the driver called the striping company, they told him to come down and make a statement, “and the police will be here to hear what you have to say.” That ended the matter.

## **Fire Hydrants**

Fire hydrants are connected to water mains by 6 inch diameter pipes. They are designed so that a full stream of water at pressure is available with a quick turn of the valve. Since fire hoses carried by city trucks are 150 feet long, hydrants are no more than 300 feet apart. The hydrant is connected to the pipe with shear bolts – these are made to break off if the hydrant is hit, so as to minimize damage to the plumbing in the ground. There is no check valve, though, so a sheared hydrant results in quite a fountain until someone can come and shut the valve, which is usually under a small cover in the street where the hydrant connects to the main.

Hydrants are owned by California Water Service, the company that supplies our water here in Visalia. New hydrants cost about \$1,000 and installation costs add another \$2,000–5,000 to that. Although they do not charge for the water used on a fire, they may charge you for the water spilled if you knock a hydrant off its base, plus \$400 or so to re-install, and the cost of replacement if needed. Sometimes hydrants survive getting hit by a car, but usually they are damaged beyond repair. (Thanks to Mike Makarian for the information about water service and fire hydrants.)

## Manhole Covers

The round covers we see on many streets are properly called sewer grates, although “manhole cover” is universally used. Sewer grates have been in use since sewers were invented – stone grates can be found on aqueducts from Roman times. Their purpose is to provide ventilation, especially air to replace the air displaced by moving sewer water, and to give access to the pipes for inspection and repair.

Manhole covers need to be heavy, so they are made of cast iron and weigh about 100 pounds.

Most are 25½” in diameter and cover a 24”

shaft. They have a texture so they are not too slippery when wet.

They are best when round

because they cannot fall in the hole – a rectangular one could fall through on the diagonal. They are also round

because the shafts they cover are usually round; a round shape is best for resisting crushing forces from all sides. They are heavy to prevent people from picking them up, although low slung race cars traveling very fast can loosen them – in France they weld down the covers before the Lemans road race. The small holes in the covers are for venting and also to insert a pick with which a worker can move the cover out of the way when service is required.

Covers provide access to the four chief pipes running under city streets. The largest pipes are storm drains, 12” to 60” diameter, which gather water from gutters and dump it in settling basins and waterways throughout the city. Drains must be sized so that they are never more than half full. If too full, they could vacuum lock and stop the water from moving, like a straw with your finger over the end. On the corner of two large streets you will often see

two covers over the trunk line where the street drains on each corner empty into it. There is an access point with a manhole cover over it at every junction of two storm drain pipes. Trunk lines are at least six feet deep throughout the city.



The manhole covers are still 25½ inches in diameter, of course, because they must be large enough for a person to enter. The sanitary sewer pipes that run throughout the city are 8” to 36” in diameter, and again must be sized so that they are never more than half full.

The third covers in the streets are usually small – 12” in diameter. These are over junctions in water mains (sometimes