Chloride Reduction Innovation Grant

Village of DeForest

Open Pick Hole Manhole Casting Replacement

The Village of DeForest has successfully completed our project for the Chloride Reduction Innovation Grant. We have replaced 14 open pick hole manhole castings and replaced adjustment rings located in the roadway. This project will help with reducing salt from entering the manhole through the open pickhole, casting and adjustment rings.

The Village had contracted with IBA Manhole, their expertise is reconstructing manholes and flowlines. They used a system called MR. Manhole, which cuts a circle in the asphalt and then manually dig down to the cone of the manhole about 4-6 below the cone and remove all existing adjustment rings or blocks to get to a solid foundation. They rebuild the chimney using a 27" vylon pipe, new casting with gasket under the cover and then concrete around the vylon chimney, casting and filling the circle cut area with concrete to the surface of the roadway. They also use a sealant below the casting and at the manhole cone. Below is link to a YouTube video of the Mr. Manhole system.

https://www.youtube.com/watch?v=-vt4aydYcMI

With the Innovation Grant we have worked with MMSD on inflow predictions of salt to the manholes with open pick holes. We have calculated that roughly 300 lbs./ lane miles of salt is put down per snow storm event, which equals roughly .56lbs/ft. We looked at the number of centerline feet that drains to the manholes and have come up with an average of 14 feet. To calculate for each event at each manhole you would calculate 14 ft. x .56 lbs./ft. = 7.8 lbs./event. If we had 12 events in a year the calculation for one manhole would be 7.8 x 12 x 1 divided by 2=46.8 lbs./year potential of salt leaking into the sewer system.

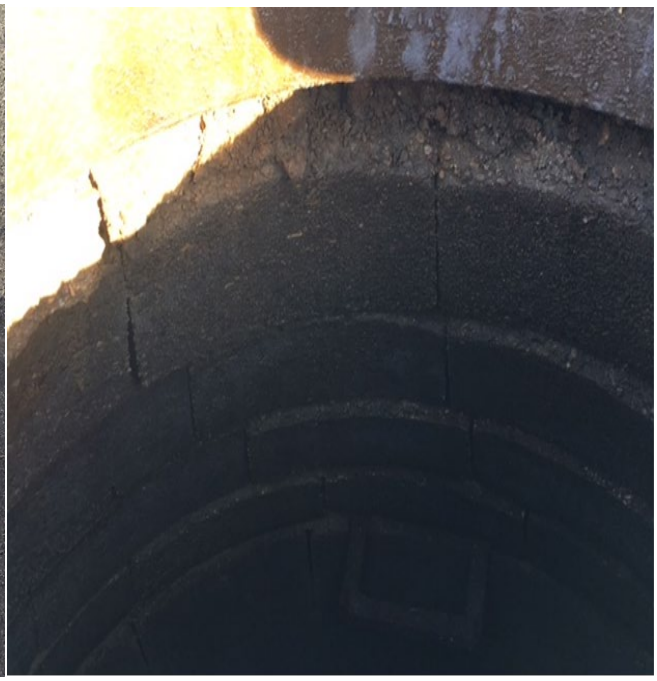
Last year, we had 21 snow/freezing rain events. With our inflow predictions with 14 manholes, we possibly could have seen 1,146.6 lbs. of salt that either flowed into the open pick holes or infiltrated into the deteriorated adjustment rings.

During this project, we had great weather and it took 4 days to complete all 14 manholes. We did not run into any difficulties during this project. I would recommend other communities to invest in replacing open pick castings and replacing deteriorated adjustment rings to prevent salt laden water from entering the sewer. One issue, is that the Contractor has to work in the road which can always be a bear, but they put out traffic warning signs and were able to do their work with no issues.

Below are before, during and after photos of the manhole repairs.

Before:





During:





After:









Also, attached below are pictures of where salt is typically laid down in the street and the path of water that can be seen flowing to the manholes or sitting around the edges of the casting.







