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Chambers Reservoir and Pump Station Project



Chambers Dam and Reservoir is owned and operated by Arapahoe County Water and Wastewater Authority (ACWWA). ACWWA contracted with United Water and Sanitation District (United) for the planning, design, permitting and construction of the 1,400 ac-foot reservoir. After completing the construction of the dam and reservoir, the ownership of the project was transferred to ACWWA. Chambers Dam and Reservoir is located near the southwest corner of the intersection of Chambers Road and E-470 in Douglas County.

ACWWA's plan for utilizing the storage capacity in the reservoir is to provide for the off season pumping of alluvial water from Cherry Creek to fill the reservoir and then pump the water into ACWWA's non-potable/irrigation water distribution system for customer use. A membrane lining system to control seepage out of the reservoir has been installed.

In 2021-2022, a new pumping system has been constructed to allow the pump station to deliver varying irrigation flows to our customers. This project included installing 5 new pumps and to control the output of the pump station to meet the varying demands through the spring, summer and fall irrigation seasons.

The reservoir is currently at approximately 87% capacity. Additional filling will occur during the fall and winter months of 2023-24. The plan will be to have the reservoir and pump system ready for the delivery of irrigation water starting in the 2024 season. All things are looking ready to be able to supplement ACWWA's irrigation season demands starting in the Spring of 2024.



The Surprisingly Technical Reason That Manhole Covers Are Round

There is no immutable law demanding that manhole covers must be round—so why are they? While some sewer covers are square or rectangular, these types are rare and are generally only found in cases where there is a need for heavy equipment to go through them. The answer to why manhole covers are round is relatively straightforward but requires an understanding of their purpose and history.

Where Does the Name “Manhole” Come From?

What even is a manhole, exactly? It’s just as the name would suggest—no funny business here. Manholes emerged in the mid-nineteenth century to access sewer systems, which had begun to be built underground to accommodate the growth in sewer systems. Originally, the access points to the sewer system were only large enough to shine a light through the hole to see if the sewage was flowing as it should. Eventually, though, humans needed to be able to enter the sewer system. So, simply put, the term “manhole” is short for a man-sized hole.

Why Are Manhole Covers Round?

What exactly is the reason why manhole covers are round and not square in today’s world? Is it simply because they have always been round? Is there some complex manufacturing reason that round manhole covers prevailed against their less popular square counterparts? If you’ve ever thought to yourself that there must be some logic to it, your hunch is correct. After all, it was engineers that were responsible for the original design! There are quite a few good reasons why sewer covers are circular, all of which have to do with structure, safety, and efficiency.

1. Geometry

Firstly, there is the geometric fact that a round manhole cover cannot fall through its own opening. For example, if you have a square cover, the diagonal distance across the length of the square is 1.414 times the length of the sides. This means that if you were to drop a square cover onto its opening at a diagonal angle, it could easily fall through.

2. Ease of Movement

Depending on the size of the hole being covered and the material from which the cover is constructed, manhole covers may be heavy and difficult to remove. A round cover can be rolled away relatively easily.

3. Ease of Installment

When you want to replace the cover of a manhole, there is no need to worry about the alignment of a round cover—it can go on at any angle, unlike covers of other shapes. Another factor in favor of circular manhole covers is that they are the most likely to drop back into position if they are bounced off by the forces of a heavy vehicle passing by.

4. More Geometry

Another geometrical reason why manhole covers are round is that circular coverings offer the strongest shape, especially because the cover only rests on a shallow lip around the perimeter of the hole. Each point of its edge is the same distance from the center of the cover. In many ways, each of these points has the same strength as the corners of a square or rectangular cover.

Final Thoughts

It’s not just tradition that dictates why manholes are round—there are many practical reasons why manufacturers produce round sewer covers. Next time you find yourself staring down at the sidewalk in your neighborhood, take note of the manhole covers. You now have multiple reasons to appreciate their circular shape!