Tuesday, July 18, 2023

Informational Memo
Roadway Drainage Systems in Berthoud
Differentiating Functional Efficiency from Flooding Risks

Due to this season's excessive rainfall, it is natural for concerns about flooding in the area to arise. Being able to distinguish when a drainage system is functioning as intended, and when the threat of flooding is present is very important in this rainy year.

In accordance with Berthoud's design and construction specifications, residential drainage systems are designed for both the minor, 2-year storm events and the major 100-yr rainfall. During a minor storm event, up to 6 inches of standing water in the street is to be expected, and means that the drainage system is functioning as it should be to direct flows to storm inlets and the ultimate creek or river outfalls.

Pictured to the right is an example of a minor storm event depth at its maximum. The water in the photo is flowing over the crest of the road to the gutters, where it pools and flows to the next intended drainage conveyance system. This is an example of efficient roadway drainage with flows up to the top of the curb line.

Source: Town of Berthoud Resident

Major storm events, like 100-year storm events, can result in as much as 12 inches of standing water in the street. The example to the right of a near-major storm event in Berthoud where the water level in the street has nearly reached the undercarriage of the car.

Source: Town of Berthoud Resident

The system is designed to withstand up to 12 inches of standing water; at this point, the road is still considered passable with emergency overflows being directed to the detention pond. Although this may look intimidating, the drainage system is still functioning as it should, and at this point, there is no cause for concern. In this case the inlets will take time to catch up with the intensity of the event but the detention ponds are sized to hold and release this volume. A 100-year storm is the amount of rainfall measured at a certain location, during a specified length of time, that has a 1% chance in any given year of being equaled or exceeded. It is normal in Colorado to experience many storms that locally equal or exceed rainfall defined as the 100-year storm. It is likely that between 100 and 300 "100-year storms" occur somewhere in Colorado in a typical year.

There are times when a real threat of flooding is present. When storms breach the capacity of the 100-year storm design, inefficient draining and flooding is possible.

In the case on the right, the storm has exceeded the limits of the drainage system and flooding has occurred. If severe flooding is happening in the area, avoid driving and going into the street, and feel free to use the Citizen Request Tracker to report a concern on the Town of Berthoud website. If you are already on the road, drive

Source: Mile High Flood District

slowly and carefully, and do not drive through flooded roads or large pools of flood water. Otherwise, the drainage systems in Berthoud are designed to withstand harsh storms; if there is standing or fast-moving water in the street or the gutters, do not worry, and let the system do its job.

During periods of excessive rainfall and multiple storm events, the ground becomes saturated, inhibiting infiltration and causing an increase in the volume of stormwater downstream. The saturated ground is unable to absorb additional water, leading to surface runoff that flows into drainage systems and ultimately increases the load on downstream areas. This phenomenon highlights the importance of effective stormwater management strategies to mitigate the potential for flooding and ensure the proper functioning of drainage systems during such weather conditions. The Town appreciates your consideration of this information and feedback when flooding occurs.