

DETENTION OVERVIEW

Property of: NAIOP Development and Construction Committee

Detention

Detention is used to protect against flooding by storing stormwater for a limited period of time. Detention helps manage excess urban runoff generated by impervious surfaces such as roads, parking lots, and rooftops. Detention functions by allowing large flows of water to enter a basin, but limiting the outflow by having a small opening.

Detention Pond

Detention pond or detention basin, also known as “dry pond” or “dry basin” is an excavated area which temporarily stores water after a rain event. Detention ponds have an outfall structure which discharges the stored water at a controlled rate, and are designed to be dry as they do not hold water permanently. [Animation: Simulation of Detention Basin filling and emptying.](#)

Retention Pond

Retention basins are wet ponds that are designed to hold water permanently. Retention ponds are designed to provide detention as well as to improve water quality in an adjacent river, stream, lake, or bay. Retention ponds are not typical in the greater Houston area.

Detention vs. Retention

Detention is temporary, short-term storage of excess stormwater. Retention implies the stormwater is stored indefinitely.

Underground Detention Systems

Underground detention systems are used to store excess runoff and discharge it over a certain period of time. These systems are typically installed below parking lots, streets, and open areas to maximize property usage. There are a multitude of underground detention systems currently available, such as oversized storm pipes, chambers, tanks, etc., details vary per vendor. Underground detention is an efficient option, but cost should be taken into consideration.

Disclaimer: This chart is for reference only. Exact codes and local requirements and amendments should be confirmed with each governing jurisdiction independently. NAIOP assumes no responsibility for incorrect information. Last updated: 10/03/2016

DETENTION RATES OVERVIEW

Property of: NAIOP Development and Construction Committee

Required Detention Volumes

Governing agencies have established minimum required detention criterias to minimize the impact of new development.

City of Houston

Detention required for increased impervious cover.

Site Area < 1.0 Acre	Site Area > 1.0 Acre	Detention Rate: 0.20 acre-feet/acre of increased impervious cover.
Note: Existing impervious cover may require additional detention.		Detention Rate: 0.50 acre-feet/acre of increased impervious cover.

Harris County

Detention required for site acreage to be developed.

Storm sewer outfall to Harris County Underground Storm System	Detention Rate: 0.65 acre-feet/acre of area to be developed.
Storm sewer outfall to Harris County Roadside Ditch	Detention Rate: 1.0 acre-feet/acre of area to be developed.
Storm sewer outfall to Harris County Flood Control Ditch/Channel	Detention Rate: 0.55 acre-feet/acre of area to be developed. Verify with HCFCD, some areas require higher rates.

Fort

Bend

County

Detention required for site acreage to be developed. Minimum detention rate varies, dependent on percentage of impervious cover.

TXDOT

If storm sewer outfalls to a TXDOT ROW, drainage calculations are required to determine minimum detention volume.

Montgomery

County

If proposed impervious cover exceeds 15,000 s.f., detention will be required. Drainage calculations are required to determine minimum detention volume.