

STURGIS STORMWATER DESIGN REQUIREMENTS

SUMMER 2020

Stormwater runoff will be analyzed using the rational method and comply with the City's MS4 guidelines, and SD DENR SWPPP guidelines, and state drainage law.

- A) Summation of State Civil Law Rule—A lower estate is subject to a legal burden to accept surface water that naturally drains across it, although the owner of an upper estate can do nothing to increase the burden.

State law requires that the downhill receiving party not be adversely affected by any change in the upstream drainage. This means quantity, timing and /or direction of the water.

Upper landowners have an inherent right to drain onto lower landowners, provided:

- No inter-watershed transfer;
- Water moves over, but does not stay on the land;
- No substantial change in the rate or nature of flow;
- Capacity of the water course is not exceeded; and
- Water quality is not degraded.

B) Lot Drainage

Anytime anyone makes changes to their property, they have the potential to change the flow of surface water, or the timing of the release of water.

Subdivisions are built and lots are graded to an approved plan. After the house is built, the lot should drain the way that it was sloped to drain in the original plan. A change in lot drainage will require a grading permit and may require an engineer analysis. Common Best Management Practices (BMP) should be used and may be required during construction and until vegetation is established. Soil, dirt, and materials should not leave the lot during rain events. The lot owner will be responsible for restoration.

Anyone grading any area of 1000 square feet or more must obtain a grading permit. This may be a sub permit of a building permit. The grading permit is required by city ordinance 2.11.02.

Buildings need to be designed to have positive drainage away from them. Ideally the house finished floor should be above the adjacent curb and gutter or street. If the topography does not allow for that then the landowner is responsible for designing the drainage so that water does not come into their buildings.

Retaining walls over 4 feet high or within 10 feet of a building require an engineer to design them.

C) Larger grading project (1 acre or more)

Grading on an acre or more requires a more detailed drainage plan, and a DENR SWPPP permit. An erosion control plan must be submitted with the grading permit.

BMPs will be required. BMPs may be a strip of grass wide enough to catch any displaced dirt. Straw wattles or erosion control fence may be needed. Soil, dirt, and materials should not leave the lot during rain events. The lot owner will be responsible for restoration.

D) Subdivisions

When a parcel is subdivided, a hydraulic analysis will be required. No more water may exit the property after the proposed development than before the development. This may require a detention pond. Before water is accepted into the City's storm water system, permission from the City Engineer must be granted.

The detailed analysis needs to fit within the existing City's HMS model and stormwater master plan.

The detail of the analysis would be based on the change of the land usage. If a low density lot is split into 2 low density lots, a detailed hydraulic study may not be required. If extensive pavement is proposed, then a detailed hydraulic study will be required.

The development shall be graded so that drainage flows to logical places such as drainage channels or to the road. The developer shall hire a professional engineer licensed in South Dakota to complete an analysis of the 100-year flow. The engineer shall ensure that the area downstream of the development is not affected by the timing, intensity, or quantity of water produced by the development. This may require storage of stormwater. Road drainage shall be designed to a minimum 10 year flow, though additional accommodations may be required to accommodate the 100 year. Existing storm sewer systems may not have the capacity to carry the additional load created from the development, as such other alternatives may be needed.

Previous FEMA maps may not have extended into this proposed area as it is currently an uninhabited area. Future mapping may extend the planned homes into the floodplain or floodway. The City will not be held responsible for any change in the mapping. The design of the subdivision should consider future flood mapping when determining home sites.

E) Adding pavement or buildings to existing lots

Each zoning designation has a maximum lot coverage allowed. Exceeding this coverage area will only be allowed if a hydraulic analysis indicates that it will NOT drain more water into the City's storm water system. Impervious pavement such as concrete or asphalt counts towards the maximum lot coverage.

F) Design Manual

Until the City creates their own design manual, the City of Rapid City's Infrastructure Design Criteria Section Four – Storm Water will be accepted as a design methodology.

G) Certification

The landowner's engineer will have to sign off that any area downstream of the developed area is not affected by the timing, intensity, or quantity of the water produced by the changes.