

Sanderway Architecturally Integrated Subdivision
January 24, 2019

CREDLE ENGINEERING
TRUTH IN DRAINAGE STATEMENT

1. Overview

a. MEETS OR EXCEEDS CARRBORO LAND USE ORDINANCE

The stormwater management of Sanderway has been designed to meet and exceed all of the current Carrboro Ordinance standards. Additionally it has been accomplished in an environmentally sensitive fashion utilizing underground detention in lieu of creating a pond that would have necessitated the removal of hardwoods and an important buffer between this project and the neighboring properties. Treatment of run-off is being accomplished with bio-retention features that are spread throughout the project. Stormwater Management of Sanderway AIS goes beyond the ordinance required conditions of handling the 1,2,5,10 and 25 year 24 hour storm, and reduces the 100 year flow at the point it leaves the site (Point of Interest).

b. CRAFTED WITH RESPONSIVENESS TO NEIGHBORS CONCERNS

Throughout the design process, there has been constant input from neighboring property owners. Their concerns have been translated by our engineers into fact based solutions that respond to the stormwater dynamics of the site. A pre-development existing condition of stormwater overtopping the neighbors' driveway is being addressed by diverting flow from that location. The pre-development effect of the 100 year storm entering the neighbors' properties is being reduced by this project. Additionally, usage items have been incorporated into a set of Conditions that will guide the development to have minimal impact on the neighboring properties. These Conditions are above and beyond the Carrboro Ordinance requirements, and are solely at the expense of the developer.

c. DOES NO DAMAGE TO NEIGHBORS PROPERTIES

This project categorically does no damage to the neighboring properties. One of the key elements of stormwater management is to ensure that post development conditions do not create greater stormwater effects than pre-development conditions. This project manages not only the 1,2,5,10 and 25 year 24 hour storms as required by the Ordinance, but also reduces the effect of the 100 year storm as it leaves the site. The neighboring properties will receive a direct benefit from stormwater management on the basis of this project.

2. Project Description

a. 18 LOT SUBDIVISION ON A SLOPING SITE

Sanderway Architecturally Integrated Subdivision is an 18 lot neighborhood on a sloping site encompassing 8.54 acres of mixed hardwoods and pines. The top of the site borders Hillsborough Road and the bottom of the site includes a tributary drainage area that eventually feeds Bolen Creek. The pre-development condition of the site intended for development includes only a non-jurisdictional ephemeral stream that feeds the tributary during heavy rain events and is otherwise a dry bed.

b. THE SITE REPRESENTS 1.6% OF THE CATCHMENT AREA AT THE POINT OF INTEREST

The entire site – both pre-development as well as post-development contributes 1.6% of the volume of the tributary drainage area at the bottom of the site through the existing ephemeral stream. The total acreage from surrounding properties contributing to the drainage area at the bottom of the site is approximately 293 acres. The contributory volume from 4.7 acres caught by the ephemeral stream is less than the margin of error for the calculation of any 24 hour storm event.

c. FLOODWATER IMPACTING NEIGHBORING PROPERTIES

This property does not contribute – either pre development or post development - to the effects of the volume of floodwaters affecting the neighboring properties. Significant water volumes course through the neighboring properties from both upstream sources as well as the adjacent Riggsbee property that include jurisdictional perennial streams and handle significant roadway run-off. None of the floodwaters affecting the neighboring properties pass through this property.

3. General System Description

a. TREATMENT OF THE FIRST INCH OF RAIN FOR REMOVING SOLIDS

Treatment of stormwater for removal of solids as required by NCDEQ standards adopted by the Town of Carrboro is being accomplished through the use of bio-retention systems located at the curb. There are six bio-retention systems sized to treat the first inch of run-off from the impervious surfaces on the site that include all roadways, drives, and roofed areas. The new multi-use path, while being accounted in the stormwater modeling for run-off, is excluded from requirements for total suspended solids treatment.

b. DETENTION ON SITE FOR THE 1,2,5,10,AND 25 YEAR 24 HOUR STORMS

Detention of stormwater on site to meet the requirements of the Carrboro Ordinance is accomplished through a system of underground storage devices. Water is detained in the devices during the rain event and released into the down-site drainage area through a system of weirs at a rate that is below the pre-development rate. A level spreader creates a non-linear distribution of the released water.

c. REDUCTION OF THE 100 YEAR STORM AT THE POINT OF INTEREST

At the point that stormwater leaves the site (the Point of Interest), the stormwater management system as designed not only meets the requirements of the Carrboro Ordinance to have pre-development and post development rates be equal for the 1,2,5,10 and 25 year 24 hour storm, but additionally reduces the volume of the 100 year storm event at the Point of Interest.

d. BYPASS NEIGHBOR'S DRIVEWAY

Under Current drainage patterns, the ephemeral stream emptying into the drainage area at the bottom of the site was obstructed by the construction of a raised driveway serving three neighboring properties. Pipes under the driveway were undersized when the driveway was constructed leading to a back-up of water during extreme rain events and water overtopping the driveway. This project alleviates that condition by diverting water around the existing ephemeral stream and bypassing the driveway. During extreme rain events, less water will be traveling in the ephemeral stream and affecting the neighbors' driveway.

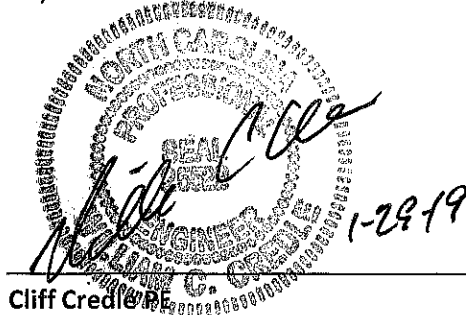
4. Beyond the Ordinance

a. INCORPORATING THE NEIGHBORS REQUESTS

From an ordinance required neighborhood meeting on April 7, 2016, through the public hearing process, scheduled meetings with the Town as well as numerous non-required meetings, both at the neighbor's properties as well as in Town Hall, the project has accommodated the concerns of the neighboring property owners. Stormwater management has been at the center of these conversations and the project as designed addresses with fact based design, the concerns raised. Interaction and response to neighbor concerns that affect the land owner's rights to develop his property have been addressed significantly beyond the Ordinance requirements.

b. DIMINISHING THE EFFECTS OF THE 100 YEAR 24 HR STORM

This project not only diminishes the effect of the regulated storm occurrences, but goes beyond the ordinance to diminish the effect of the 100 year event.



Cliff Credle

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