

35 foot S.W.I.M. Buffer

A stream segment located on the subject property drains greater than or equal to 100 acres and less than 300 acres. According to the City of Charlotte Zoning Ordinance, Chapter 12, Part 8- Surface Water Improvement and Management (S.W.I.M.) Stream Buffers, Section 12.804, *Buffer Standards*, streams meeting this criterion are required to have buffers 35 feet in width on both sides of the stream measured from the top of the bank.

The proposed project will include a substantial amount of impervious area, which will directly affect surface water quality due to storm water runoff from the project. Storm water runoff becomes contaminated with pollutants associated with the impervious area usage, transporting these pollutants to surface waters. In addition, this impervious area acts to increase the volume and velocity of storm water entering surface waters, which affects stream channel stability and negatively impacts water quality and aquatic habitat. In order to mitigate the impacts of these pollutants and to protect water quality conditions, the proposed project should incorporate the criteria specified below.

Additional Stream Buffers

If applicable to the subject property, intermittent and perennial stream segments draining less than 100 acres shall be delineated by a certified professional using the U.S. Army Corps of Engineers and N.C. Division of Water Quality methodology. The locations of streams and the required buffers shall be depicted on site plans.

If applicable to the subject property, a 35-foot protective buffer shall be established on both sides of intermittent and perennial stream segments draining between 50 acres and 100 acres. A buffer shall include two zones, a 20-foot undisturbed Streamside Zone, and a 15-foot limited-use Upland Zone. The allowable uses in these Zones are to be the same as those outlined in the City of Charlotte Zoning Ordinance, Chapter 12, Part 8, S.W.I.M. Stream Buffers, for streams draining greater than 100 acres, but less than 300 acres. If applicable to the subject property, all intermittent and perennial stream segments draining less than or equal to 50 acres shall have a minimum 30-foot vegetated buffer including an undisturbed or bioengineered 10-foot zone adjacent to the bank. Disturbance of the buffer is allowed; however, any disturbed area in the 10-foot zone adjacent to the bank shall require stream bank stabilization using bioengineering techniques approved by MCWQP. All buffers shall be measured from the top of the bank on both sides of the stream.

Storm Water Quality Treatment

Any separate, defined drainage area within a project that will have greater than 24% built-upon area is to have water quality best management practices (BMPs) to treat storm water runoff from the entire built-upon area within the separate, defined drainage area. The BMPs are to be constructed to achieve 85% Total Suspended Solid (TSS) removal for the entire post-development runoff volume for the first 1-inch of rainfall. The BMPs must be designed and constructed in accordance with the N.C. Department of Environment and Natural Resources (NCDENR) Best Management Practices Manual, April 1999, Section 4.0.

The use of Low Impact Design (LID) such as bioretention systems in tree islands, grassed swales, vegetated buffers, level spreaders, and other innovative systems in a "treatment train" is optional and encouraged, where applicable. LID systems can be employed in whole or in part, to meet the 85% TSS treatment standard for storm water runoff. LID must be designed and constructed per the NCDENR Best Management Practices Manual, April 1999, Section 4.0.

Storm Water Volume and Peak Controls

Any separate, defined drainage area within a project that will have greater than 24% built-upon area is to have best management practices (BMPs) to control the entire runoff volume for the 1-year, 24-hour. The runoff volume drawdown time for the BMPs shall be a minimum of 24 hours, but not more than 120 hours. The peak runoff rates should be controlled with BMPs to match the predevelopment runoff rates for the 10-year and 25-year, 6-hr storms <u>or</u> perform a downstream analysis to determine whether peak control is needed, and if so, for what level of storm frequency.

Storm water runoff from the development shall be transported from the site by vegetated conveyances to the maximum extent practicable.

Storm Water Quantity Control

The petitioner shall tie-in to the existing storm water system(s). The petitioner shall have the receiving drainage system(s) analyzed to ensure that it will not be taken out of standard due to the development. If it is found that development will cause the storm drainage system(s) to be taken out of standard, the petitioner shall provide alternate methods to prevent this from occurring.

Storm Water Quality Treatment

For projects with defined watersheds greater than 24% built-upon area, construct water quality best management practices (BMPs) to achieve 85% Total Suspended Solid (TSS) removal for the entire post-development runoff volume for the runoff generated from the first 1-inch of rainfall, BMPs must be designed and constructed in accordance with the N.C. Department of Environment and Natural Resources (NCDENR) Best Management Practices Manual, April 1999, Section 4.0 (Design Standards shall be met according to the City of Charlotte Best Management Practices Manual, when available). Use of Low Impact Development (LID) techniques is optional.

Volume and Peak Control

For projects with defined watersheds greater than 24% built-upon area, control the entire volume for the 1-year, 24-hour storm. Runoff volume drawdown time shall be a minimum of 24 hours, but not more than 120 hours.

For residential projects with greater than 24% BUA, control the peak to match the predevelopment runoff rates for the 10-year and 25-year, 6-hour storms or perform a downstream analysis to determine whether peak control is needed, and if so, for what level of storm frequency.

For commercial projects with greater than 24% BUA, control the peak to match the predevelopment runoff rates for the 10-yr, 6-hr storm <u>and</u> perform a downstream flood analysis to determine whether additional peak control is needed and if so, for what level of storm frequency, <u>or</u> if a downstream analysis is not performed, control the peak for the 10-yr and 25-yr, 6-hour storms.

For commercial projects with less than or equal to 24% BUA, but greater than one acre of disturbed area, control the peak to match the predevelopment runoff rates for the 2 and 10-yr, 6-hr storm.

Stream Buffers

The S.W.I.M. Stream Buffer requirements apply described in the City of Charlotte_Zoning Ordinance, Chapter 12. In addition, intermittent and perennial streams within the project boundary shall be delineated by a certified professional using U.S. Army Corps of Engineers and N.C. Division of Water Quality methodology and shall be shown in the site plan submittal along with all buffer areas.

All perennial and intermittent streams draining less than 50 acres shall have a minimum 30-foot vegetated buffer including a 10-foot zone adjacent to the bank. Disturbance of the buffer is allowed; however, any disturbed area must be re-vegetated and disturbance of the 10-foot zone adjacent to the bank shall require stream bank stabilization using bioengineering techniques as specified in the Design Manual

All streams draining greater than or equal to 50 acres and less than 300 acres shall have a 35-foot buffer with two (2) zones, including stream side and upland. Streams draining greater than or equal to 300 acres and less than 640 acres shall have a 50-foot buffer with three (3) zones, including stream side, managed use and upland.

Streams draining greater than or equal to 640 acres shall have a 100-foot buffer, plus 50% of the area of the flood fringe beyond 100 feet. This buffer shall consist of three (3) zones, including stream side, managed use and upland.

All buffers shall be measured from the top of the bank on both sides of the stream. The uses allowed in the different buffer zones as described in the S.W.I.M. Stream Buffer requirements in the Zoning Ordinance, Chapter 12, as well as the other provisions of the S.W.I.M. ordinance shall apply (except buffer widths).

Additional Notes:

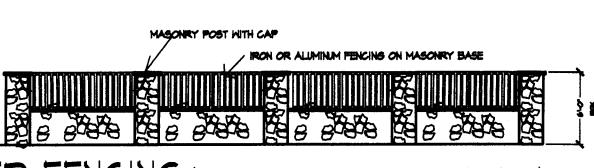
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The following agencies must be contacted prior to construction regarding wetland and water quality permits:

Section 401 Permit NCDEHNR – Raleigh Office (919) 733-1786
Section 404 Permit US Army Corps of Engineers (704) 271-4854

ADDITIONAL NOTES

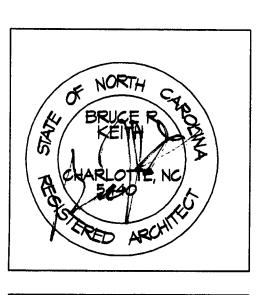
1/8"=1'-0"



PROPOSED FENCING (OPTIONAL-LOCATION TO BE DETERMINED)

CONCEPTUAL FRONT ELEVATION

1/8"=1'-0"





SHO MH GOM

4108 SHARON COMMONS LANE
CHARLOTTE, NC
28210
(104) 904-2421
(104)-556-0028
FAX (104) 556-0062
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THE PROPERTY OF BRUCE KEITH AND SHALL
BE RETURNED UPON REGLEST
UNAUTHORIZED DUPLICATION IS ILLEGAL

PETITION #2007-05 FOR PUBLIC HEARING ELEVATION & NOTES DECEMBER 15, 2006

PLOT SCALE=1/8"=1"