



Development Advisory - 40
March 21, 2018

Single Family Lot Grading Requirement

The City of Chesapeake has policies that distribute the responsibility for lot grading between the developer and the builder. In short, the developer is responsible for providing rough grading and a lot grading plan. The builder is responsible for performing the finished grading, in accordance with the approved subdivision plan, prior to issuance of the CO. Our office has had several issues recently that has resulted in the City needing to make adjustments to the Public Facilities Manual (PFM) in order to ensure new property owners have adequate lot grading. The policy adjustments are intended to address the situations described within this Development Advisory.

Revised Documents (Attached):

1. Rough Lot Grading Certifications – effective for certifications submitted on or after April 1, 2018.
2. Final Lot Grading Certifications – effective for building permits issued on or after April 1, 2018.
3. PFM Chapter 5, Section 5.8 Lot Grading – effective for plans submitted on or after April 1, 2018.
4. PFM Appendix 27-Single Family Detached Lot Grading Policy – effective for plans submitted on or after April 1, 2018.
5. Residential Site Plan General Notes - effective for plans submitted on or after April 1, 2018.

Issues Addressed with these Policy Adjustments:

1. Issue - Surveyors are submitting residential site plans that are not in accordance with the approved lot grading plan, but are indicating the site plan is in accordance with the latest subdivision construction plan.

Solution - The approved lot grading plan can be changed, but it must be submitted as a requested change for review in advance of construction, either as a subdivision plan revision or a requested deviation at the time of residential site plan review. Development and Permits Engineering must review any proposed lot grading modifications.

Policy changed – Appendix 27, Single Family Detached Lot Grading Policy – added the following, “In the event the City determines a surveyor and / or company submits an individual single family site plan that erroneously indicates the lot grading is in accordance with the latest subdivision construction plan; the City will require all future plans to be reviewed by the Engineering Division to ensure compliance.” (Currently an engineering review is not performed for most individual single family site plans if the surveyor states the design is in accordance with the approved subdivision plan.)

2. Issue - Garage finished floors and houses constructed at elevations inconsistent with the building code and lot grading policies. This resulted in inadequate grades/profiles on driveways.

Solution - Builders are required to meet the minimum site drainage requirements of the building code which notes the grade shall fall a minimum of six inches within the first 10 feet from the building. Additionally, impervious surfaces require a minimum ¼ inch per foot (2%) slope away from the structure. For driveways, the slope is exclusive of the lip at the garage doorway. The elevation of the foundation/finished floor level is also of concern. Per the building code, the floor level, in respect to the street gutter or point of inlet of a drainage device, is required to be a minimum of 12 inches plus 6 inches curb height plus ¼ inch per foot above the street gutter or point of inlet. This is often too close to determine

visually during the foundation or framing inspection. As such it's important the surveyor accommodates the above noted requirements in the submitted individual single family site plan. Please note, if the inspector cannot confirm adequate grading, a survey and a proposed driveway profile may be required by the Building Official or designee.

Policy changed – PFM section 5.8 has been amended to include minimum floor elevation standards and grading requirements. Building Permit Application / Construction Plan General Notes must include the City's Residential Site Plan General Notes (attached).

3. Issue - Builders are submitting lot grading certifications indicating the lot is graded in accordance with the individual single family site plan, when it is not in compliance or they are being submitted prior to the grading being performed or completed.

Solution - The City must do everything we can to ensure adequate lot grading conforms to the building code and PFM. The City currently relies on a lot grading certification process to minimize inspection costs and delays to issuance of the certificate of occupancy. If it is determined a builder has inaccurately certified lot grading, the City will require a licensed surveyor to provide the final lot grading certification for future applications for a time period to be determined by the Director of Development & Permits. It is possible to improve the previously approved lot grading plan, but the revision must be approved.

Policy changed – Final Lot Grading Certification Form has been modified to require the builder / surveyor to confirm specific grading elements in accordance with the approved site plan and Residential Site Plan general notes (attached).

4. Issue - Minimum design requirements do not provide sufficient grades for some grading schemes, especially type B. Landscapers are left to make engineering judgment about grading and swales. This has resulted in inadequate slopes and drainage deficiencies.

Solution - Residential site plans need to provide sufficient detail to ensure adequate drainage, especially type B.

- A. Policy changed – PFM, Section 5.8 - Lot Grading, requirements have been modified to require additional design grades. Furthermore, type B lot grading for R-15 and smaller lots will require enhanced grading design to ensure 1% minimum positive slope is provided from any point on the lot (most remote point) to the lot outfall or collection point. Driveways that drain away from the right-of-way will require a profile to ensure the garage is not subject to flooding. Lot grading for lots larger than R-15 shall adhere to subsection 5.8.H.

Cooperation from the building and development community will help to prevent future drainage and flooding problems to homeowners.

It is the city's goal to enhance the certification process in a way that requires individual responsibility for compliance as opposed to increased plan review and inspections. The City will attempt to address isolated issues with surveyors / builders on an individual basis in an effort to minimize the need for increased regulation and oversight for the entire industry.

Should you have any questions or comments contact Jay Tate at 757-382-6263 or at jtate@cityofchesapeake.net



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FINAL LOT GRADING CERTIFICATION

Prior to the release of a Certificate of Occupancy, the City of Chesapeake requires either a Licensed Surveyor or the Builder/Owner to execute the following certification:

Certification of lot grading for building permit # _____

For Address _____

The signee below has conducted the appropriate survey to certify the following minimum standards have been met: (initial each box)

- The lot grading has been established to within 0.1' of the grades shown in the approved site plan and the lot grading provides a minimum positive slope of 1.0% for the lot.
- Minimum fall of six inches within the first 10 feet from the building for pervious surfaces (lawns, landscaping, etc.), in accordance with IRC R401.3.
- Minimum fall of 2% slope away from the building on all non-covered impervious surfaces (excluding landings at exit doors, and covered porches).
- The garage floor and building finished floor meet or exceed the individual single family site plan specified grades.-

Deficiencies found within the first year of the C.O. issuance must be corrected by the builder within 60 days of notification. In the event the builder fails to correct the deficiencies, the City reserves the right to withhold additional permits, inspections, or C.O.'s until the lot grading is corrected.

By signing below, I acknowledge that if this certification is found to be inaccurate, the City may discontinue the allowance for Builder/Owner certification and impose the requirement that future certifications must be from a Licensed Surveyor.

Signature of Land Surveyor

Licensed Surveyor
or Notary Stamp:

Signature, Builder/Owner (Notarize below)

State of Virginia
City of _____, to wit:
The foregoing instrument bearing date

_____, 20____
was acknowledged before me this ____ day
of _____, 20____
By: _____

Notary Public

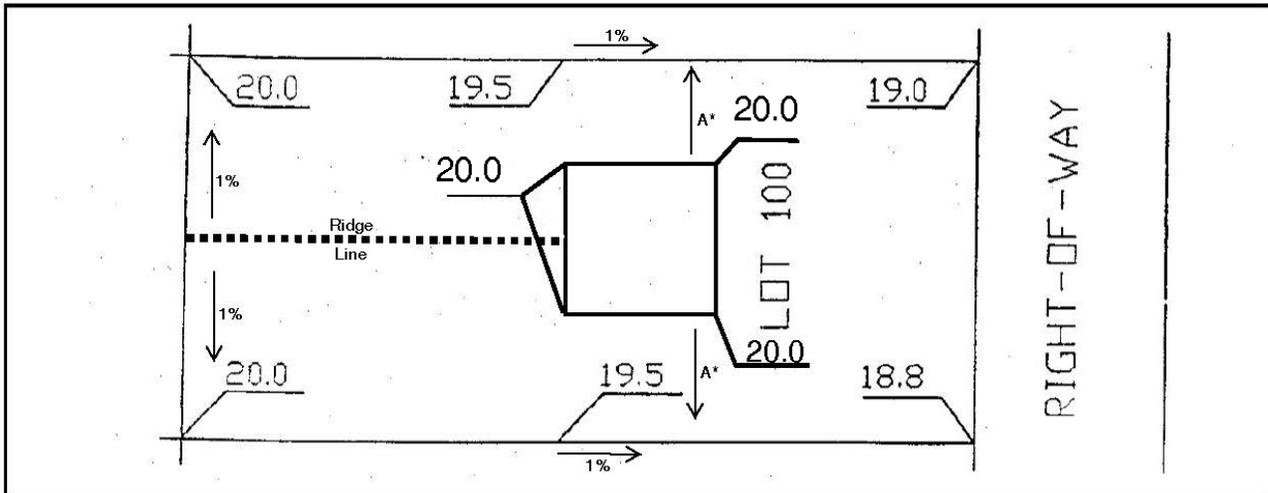
My commission expires: _____

Effective for all permits issued after April 1, 2018

5.8

LOT GRADING

- A. A subdivided lot must be self-sufficient with respect to drainage and not dependent on the maintenance of the adjoining property owner. Any drainage improvement that is required to drain more than one lot shall be constructed or bonded prior to the recordation of the corresponding subdivision plat.
- B. All interior lots within new subdivisions shall be TYPE A drainage (no rear yard drainage facilities) with a minimum acceptable slope of 1%. If the 1% minimum slope is proven to be impracticable for those proposed lots adjacent to an existing subdivision or adjacent to property that is not part of the subdivision, a minimum acceptable slope not less than 0.5% shall be provided.
- C. Private drainage swales can only be used to drain a single lot. Private drainage is defined as runoff from private property only and no public right of way runoff. Each lot shall drain directly into a public system or shall be designed to drain into a private piped system contained within a recorded private drainage easement. Maintenance of private systems shall be the responsibility of the adjacent property owners. The City will consider a variance for the use of paved private swales when conditions warrant. Said swales shall not be located on a common property line and private drainage easements will be required.
- D. Construction plans shall provide sufficient grades, ridge lines and directional arrows to define the proposed drainage pattern of the entire lot. **A minimum of ten proposed lot grades shall be provided; four at the corners; two at the side yard midpoints; and four at the building envelope corners. (See 5.8 M.2 & M.3.) Note Type A, B, or AB lot drainage for each lot on the plans.**
- E. **Type B lot grading for R-15 and smaller lots will require enhanced grading design to ensure 1% minimum positive slope is provided from any point on the lot (most remote point) to the lot outfall or collection point. Driveways that drain away from the right-of-way will require a profile to ensure the garage is not subject to flooding. Lot grading for lots larger than R-15 shall adhere to subsection 5.8.H.**
- F. **The finished floor of slab-on-grade homes or homes with crawl spaces, must be elevated above the flow line of the street, gutter or point of inlet of a drainage device a minimum of 12 inches plus 6 inches curb height plus a ¼ inch per foot as measured from the edge of the structure to the street curb per Section R403.1.7.3 of the International Residential Code.**
- G. **The minimum garage finished floor and driveway slope must be elevated above the street curb flow line (or point of inlet of a drainage device) per IRC section R403.1.7.3 and PFM volume I Chapter 5 as follows:**
 - 1. **Flow line to right-of-way – 6 inches plus ¼ inch per foot (Generally 8-1/2 inches total)**
 - 2. **First 10' from garage – ¼" per foot (exclusive of garage lip).**
 - 3. **Driveway slope – 1% minimum for portion of driveway not addressed in #1 & 2 above.**



NOTES: 1. Typical type "A" lot grading shown

2. A* - requires 6" fall in 1st 10', 1% thereafter
3. "AB" Lot grading locates ridge line at the house
4. "B" Lot grading requires enhanced grading design

- H. Sufficient lot grading shall be provided for lots in the Rural Overlay District & estate type lots to ensure acceptable lot drainage 100' around the principle structure.
- I. The limits of lot grading which requires considerable fill (greater than 1.0 ft.) shall be clearly delineated (shaded, cross-hatched, etc.) on the subdivision development plan and is the responsibility of the developer. For sites with more than 1 foot of fill, certification by a professional engineer or duly qualified individual registered in Virginia shall be submitted to the Building Official to sufficiently indicate appropriate construction techniques, inspections and geotechnical testing occurred to assure the suitability of the soils and foundation designs for each lot to support the home in accordance with the Virginia Uniform Statewide Building Code. The certification shall be submitted with the building permit application along with the required construction documents prior to permit issuance.
- J. The potential for bank erosion shall be minimized by grading lot away from detention facilities. Significant runoff shall drain to the road or storm drainage collection systems. Lots shall generally highpoint at the lake top of the bank.
- K. Subdivision development plans that propose overland flow onto adjacent offsite property is generally unacceptable. Consideration will be given for existing grading conditions.
- L. Commercial/Industrial subdivision plans shall provide lot grading to facilitate drainage until final development of individual parcels.

M. Single Family Detached Lot Grading Policy

1. Construction plans for all new subdivisions will show proposed lot grades to the nearest 0.1'.
2. A Rough lot Grading Certification prepared by an engineer or land surveyor shall be submitted to the Department of Development & Permits prior to plat recordation certifying that lot grades are within 0.4' of proposed grades and a minimum positive slope of 0.25% exist in the direction indicated in the approved subdivision plan. Additional fill needed for the four building pad corner grades are not required for Rough Grading certification. Certification may be waived by the City in cases where approved drainage plans showing existing grades meet the criteria.
3. Individual single family site plan showing lot grading must be submitted with the building permit application. This plan must be in accordance with the drainage plan approved by the **Development & Permits**. **In the event that previously approved drainage plan does not exist, plan shall be prepared in accordance with the lot grading standards established in the Public Facilities Manual Volume I. In the event the City determines a surveyor and/or company submits a site plan that erroneously indicates the lot grading is in accordance with the latest subdivision construction plan, the City will require the single family site plan be reviewed by the Engineering Division to ensure compliance.**
4. Lots shall be graded to within 0.1' of the final grade prior to issuance of a Certificate of Occupancy (C.O.). In addition, a minimum grade of 1.0% minimum slope must be provided. A Final Lot Grading Certification is required from a Certified Land Surveyor (CLS) or the Builder confirming this lot grading prior to Issuance of a C.O. Temporary C.O.'s may be issued under extenuating circumstances. Certification from said Builder will be accepted only if there have not been previous inaccuracies in Lot Grading submittals, as determined by the Department of Development & Permits. If it is determined a builder has inaccurately certified lot grading, the City will require a licensed surveyor to provide the Final Lot Grading Certification for future applications for a time period to be determined by the Director. It is possible to improve the previously approved lot grading plan, but the revision must be approved by the Engineering Division.
5. Deficiencies found within the first year of the C.O. issuance must be corrected by the builder within 60 days of notification. In the event the builder fails to correct deficiencies, the City reserves the right to withhold additional permits, inspections, or C.O.'s until the lot grading is corrected. The Department Director may grant exceptions or accept surety on a case by case basis under extenuating circumstances.
6. If upon investigation the City determines that the new homeowner or adjacent homeowners have negatively affected drainage shown on approved drainage plan(s), then the builder shall not be responsible for remedial action.

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March 2018

Residential Site Plan General Notes

General Notes:

- Impervious Surfaces-** Patios, walk ways and driveways that are within 10 feet of the building foundation shall be sloped a minimum of 2% or ¼ inch per foot away from the building per Section R401.3 of the International Residential Code. Covered porches, landing and stoops may be reasonably level but must still provide enough of a slope to allow drainage and not exceed a 2% slope.
Exception- Impervious Surfaces for structures designed to be accessible may submit a request for a Code Modification with a design to show the drainage meets the intent of the code.
- Finish Grade Height-** Due to the high water table in this area, the height of the grade in the crawl space must be equal to or greater than the exterior grade elevation unless an *approved* drainage system is provided as per Section 408.6 of the International Residential Code.

Effective for all permits issued after April 1, 2018

*"The City of Chesapeake adheres to the principles of equal employment opportunity.
This policy extends to all programs and services supported by the City."*