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Project: 116.05

Alberts Development  
P.O. Box 10545  
Eugene, OR 97440

Subject: Geotechnical requirements for Individual Building Lots  
Mountaingate Subdivision phase IIIa, lots 1-43  
Springfield, Oregon  
Revision 1

## PURPOSE AND SCOPE

As requested, K & A Engineering, Inc. is providing additional recommendations for the development of individual residential lots for the subject new subdivision. These recommendations are supplemental to those presented in our original geotechnical report dated April 15, 2004 which were made for overall development of this subdivision including earthwork, drainage, and stability for roads and utilities.

The purpose of this document is to provide additional criteria for geotechnical evaluation and recommendations for the design and construction of individual single-family residences on individual lots of this phase of the subdivision.

## RECOMMENDED ADDITIONAL GEOTECHNICAL INVESTIGATION

### Levels of Geotechnical Investigation

To be consistent with criteria established for phases I and II of the Mountaingate subdivision, we are identifying two levels of geotechnical recommendations, Level I and II, that we recommend be implemented for individual lots on this phase. Level I criteria is the least restrictive based on a lower level of risk, and level II criteria is reserved for those lots that may present a higher level of risk from development from the standpoint of stability, drainage, or foundation support.

### Level I Geotechnical Investigation

#### *General Recommendations*

Level I geotechnical investigation is reserved for those building lots where ground surface and subsurface conditions are generally known to consist of competent soil or bedrock and having natural slopes that are not significantly steep and do not present issues with long-term slope stability.

For Level I lots, a site-specific geotechnical investigation is not required for submission of plans for permit review. Foundations for these lots are expected to consist of conventional construction, including cast-in-place

concrete spread footings and conventionally framed structures, supported by limited select granular fills if required, and having low cut heights outside of the foundation pad.

We recommend Level I status for lots 72-77, 109-111, 81, 83, 87, 88, 92-96, and 98.

#### *Building Plans for Level I Lots*

We recommend that permit applications for construction of new single-family residences include specific proposed details including:

1. A general site plan showing the location of the proposed construction (foundations, pavements, landscaping or grading retaining walls) with existing topography and final grade topography,
2. One or more typical cross sections of the site showing the house elevation and foundation system and other proposed features (e.g. landscape retaining walls) relative to street grade and grades of adjacent lots,
3. Drawings or narratives (as appropriate) detailing the proposed design criteria and design for foundations (including allowable bearing capacity and lateral earth pressures), details for concrete slabs-on-grade, proposed foundation and crawlspace drainage systems, design of pervious pavements if required, and methods, grades, and locations of subsurface and roof drainage disposal systems.
4. Clarification that no foundations (for Level I) sites will be supported by native or non-native fine-grained soil fills. Use of silty fills will require a level II analysis. Use of select granular fills should be restricted to depths less than or equal to 3-feet.
5. A certification that cuts into native ground, outside of the foundation pad, will not exceed 4-feet. Cuts greater than 4-feet require a level II geotechnical evaluation. Note that cuts for basement retaining walls, located within the foundation pad, do not require Level II analysis, provided that drainage, bearing capacity, and lateral earth pressure criteria is submitted as per these requirements (number 3 above).

#### *Field Verification – Level I Lots*

We recommend that a geotechnical engineer review these lots during excavation to verify suitable conditions for the proposed foundation and to make on-site recommendations for foundation drainage and preparation of the foundation pad. As a minimum, the geotechnical engineer should provide:

1. An examination of foundation soils during excavation to verify design criteria assumptions and to make recommendations for modifications to the foundation pad preparations, if necessary, including depth of excavation, placement of select granular fill, and additional drainage,
2. Verify that site work does not adversely impact adjacent lots, utilities, and street improvements, and
3. Note any special, unexpected, or latent conditions that would require a level II investigation.

Upon successful completion of the foundation pad construction and sitework, the geotechnical engineer should submit recommendations, in writing, for acceptance of the foundation pad construction and sitework, by the local building official. Completion of a form and affidavit, similar to those for phases I and II, would be a suitable substitute for a written report by the geotechnical engineer.

## Level II Geotechnical Investigation

### *General Recommendations*

We recommend a more developed geotechnical investigation for lots where surface or subsurface conditions present steep slopes, higher-than-normal groundwater levels, poor subgrade soils, cut slopes exceeding 4-feet, or construction on native or imported fine-grained soil fills. Additionally, some of the building lots present unique challenges in access and foundation construction due to steep and high road cut and fill slopes. These lots we have also recommended for level II geotechnical investigation.

We recommend Level II status for lots 78-80, 82, 84-86, 89-91, 97, 99-108, and 112-114.

### *Level II Lot Categories*

Level II geotechnical investigation can be made for groups of lots having similar identified existing or potential geotechnical hazards. Thus, a thorough and detailed investigation can be made for building sites, the cost of which can be shared by owners of lots having similar hazards. Table 1 groups lots of Level II status by similar existing or potential geotechnical hazards.

Lot Group	Existing Geotechnical Hazard
112-114	These lots are in a known area of poor surface and subsurface drainage. Standing water on the natural, undeveloped ground surface is common. There appears to be an excessive amount of surface runoff from the south slope. Expect poorly drained, highly plastic and highly expansive silty soils. The issue is stability of foundations on weak, saturated, or expansive soils. Expect that deeper foundation excavations or special foundation systems may be necessary to provide adequate foundation support, including granular fill, drains, and final grading.
105-108, 82, 91	Expect steep natural slopes with high, steep cut slopes from the paved street grade.
101-104	Expect steep, natural slopes. The issue is overall slope stability of natural slopes and in zones of expected high cuts and fills. Some of these lots may have competent, hard bedrock near the ground surface, in which case they may be downgraded to level I status.
78-80, 84-86, 97, 99, 100	Expect relatively high, steep fill slope from the paved street grade to the natural ground surface. The issue is providing adequate access to the home site while preserving fill slope stability. Foundations should not be supported by road fill soils.

### *Building Plans for Level II Lots*

We recommend that, in addition to the recommended submission elements for Level I lots, a site specific geotechnical report be submitted that makes specific evaluations and recommendations regarding cut slopes, fills, steep slopes, poor soils, and drainage issues.

Level II geotechnical reports should include the following:

1. A summary of the site investigation and existing conditions for that lot which may or may not include subsurface test pits or borings or soil testing. Note that the need for and number and location of subsurface test pits, borings, or subsurface testing is left to the judgment of the geotechnical engineer. However the documentation should demonstrate a reasonable basis for the recommendations made,

2. The identification of geotechnical hazards specific to the building lot and proposed structure that exist or could be caused by the proposed development, and
3. Recommendations to mitigate existing or created hazards including, but not limited to, slope movement, drainage, expansive soils, cuts and fills, retaining walls, and access from the street to the home site.

The geotechnical report for lots 112-114 should include specific recommendations for the design of grading, subsurface drains, and surface drains to collect surface water and subsurface groundwater.

The geotechnical report for all Level II lots, in addition to recommendations for foundation drainage, make recommendations for grading and other drainage systems to manage surface runoff and minimize the risk of overly soft or wet soil conditions behind and around the structures.

*Field Verification – Level II Lots*

We recommend that a geotechnical engineer review these lots during excavation to verify site surface and subsurface conditions reported in the Level II report, and to verify that the measures recommended in the report are implemented. The geotechnical engineer should also make additional on-site recommendations to address actual conditions exposed during foundation pad construction.

Upon successful completion of the foundation pad construction and sitework, the geotechnical engineer should submit recommendations, in writing, for acceptance of the foundation pad construction and sitework, by the local building official. Completion of a form and affidavit, similar to those for phases I and II, would be a suitable substitute for a written report by the geotechnical engineer. This report should specifically comment on the performance of recommendations made in the level II geotechnical report.

Thank you for the opportunity to be of service. Please call me if you have any questions.

Sincerely,



Michael Remboldt, P.E.  
K & A Engineering, Inc.