

Maintaining Neighborhood Character

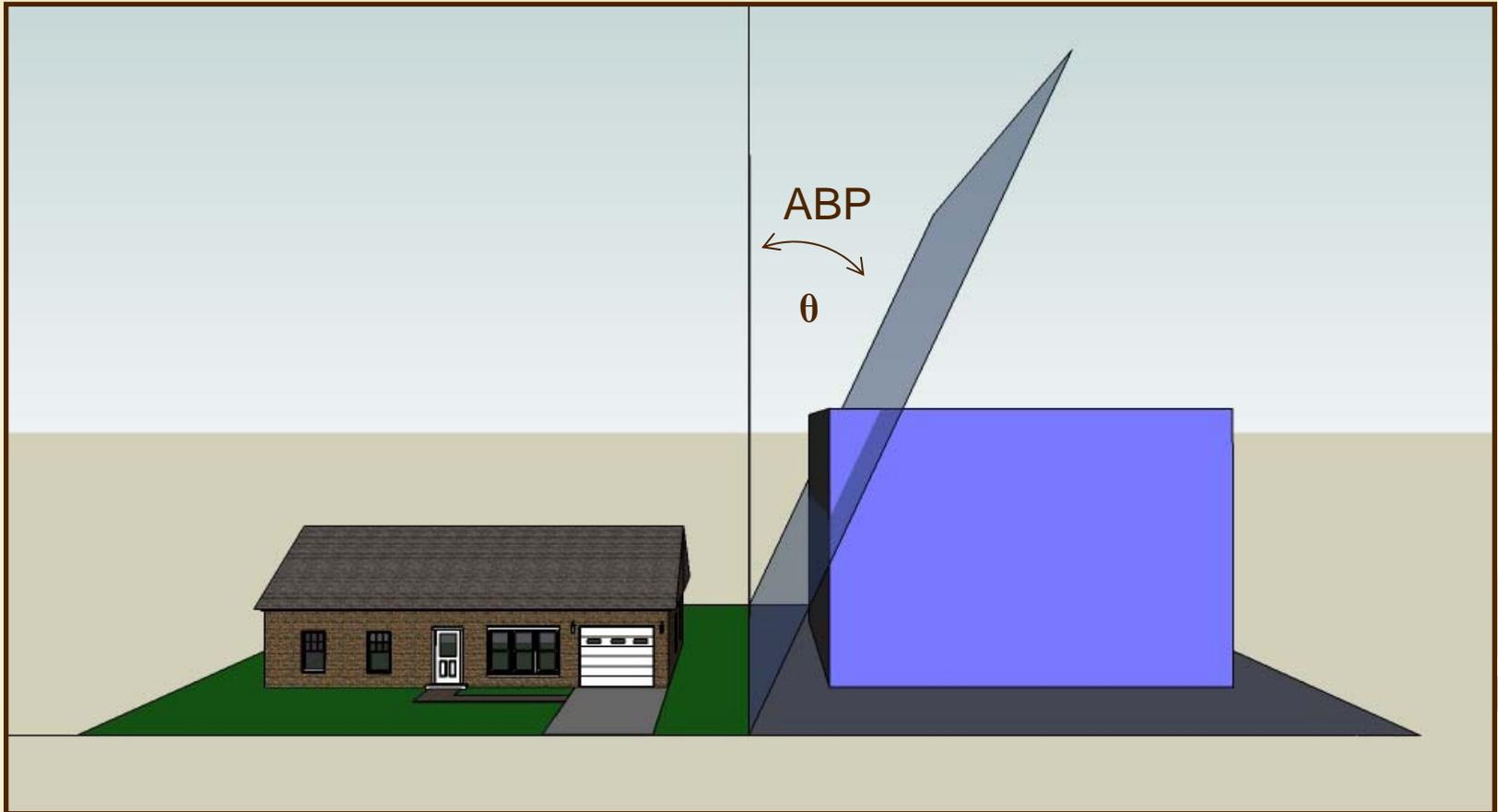


Presentation Overview

- The following slides illustrate how an angle of bulk plane could be applied to single family detached dwelling construction.
- As currently proposed, an angle of bulk plane would be applicable to new single family detached dwellings and to additions of existing single family detached dwellings.
- Staff's proposal couples an angle of bulk plane approach with a stipulation of how the lesser of existing or final grade is used in measuring residential building height.

What is an Angle of Bulk Plane and what does it do?

Angle of Bulk Plane: an inclined plane drawn at a specific angle from vertical that contributes to the delineation of maximum permitted bulk that can be constructed on a lot



Analysis Methods

- Staff has attempted to demonstrate the efficacy of using an angle of bulk plane by working through multiple bulk plane options in an analysis process that included both two and three dimensional illustrative drawings.
- Three dimensional models are designed to provide a realistic representation of how an Angle of Bulk Plane can impact a 3-D environment.

Analysis Methods Cont'd

- Staff's angle of bulk plane recommendations are derived from an iterative process that started with a bulk plane projected from a grade level position.
- Some of our first 2-D drawings suggested that a bulk plane taken from grade was less effective than one taken at an elevated position.
- Our original set of bulk plane angles were designed to allow a second-story 'pop-up' to be added to an existing one-story structure.

RANGE OF POSSIBLE BULK PLANE ANGLES

MIN. YD./ DISTRICT	8 FEET/ R-5 & R-8			10 FEET/ R-4			12 FEET/ R-3			15 FEET/ R-2			20 FEET/ R-C, R-E, R-1		
Bulk Plane Angle @ 5' above grade	17°	22° 	27°	22°	27° 	32°	26°	31° 	36°	32°	37° 	42°	40°	45° 	50°
Height of structure at bulk plane intersection	31'	25'	21'	30'	25'	21'	30'	25'	22'	29'	25'	22'	29'	25'	22'



Staff Recommendation – provides uniform 25' height intersection in all districts

WHY USE 3-D Drawings?

- Our initial 2-D drawings were inadequate in conveying images that would allow us to better understand bulk plane effects.
- Using actual topographic and architectural data in a 3-D drawing model is the most practical method of evaluating a range of bulk plane approaches in real environments.

3-D Drawing Construction

- Data that was used to construct our 3-D models included:
 - GIS parcel and planimetric data
 - Oblique imagery
 - Fairfax County digital elevation models
 - Google Earth terrain models
- Site-specific drawings used in this presentation utilize grading plans that have been geo-rectified to the parcel layer and reflect actual building footprints

Mount Vernon Location



Image Comparison



Digital Photograph

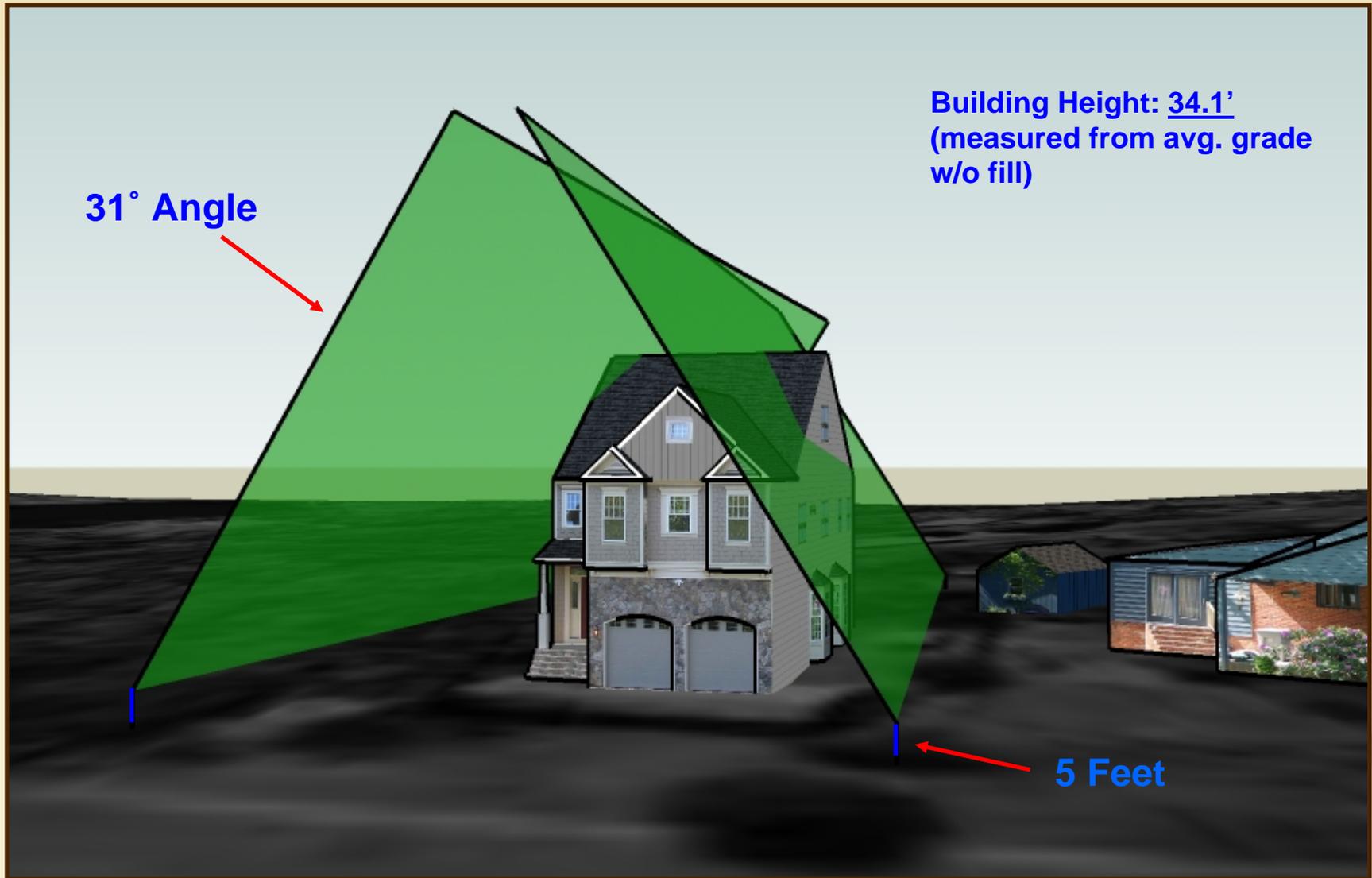
3 Dimensional Model



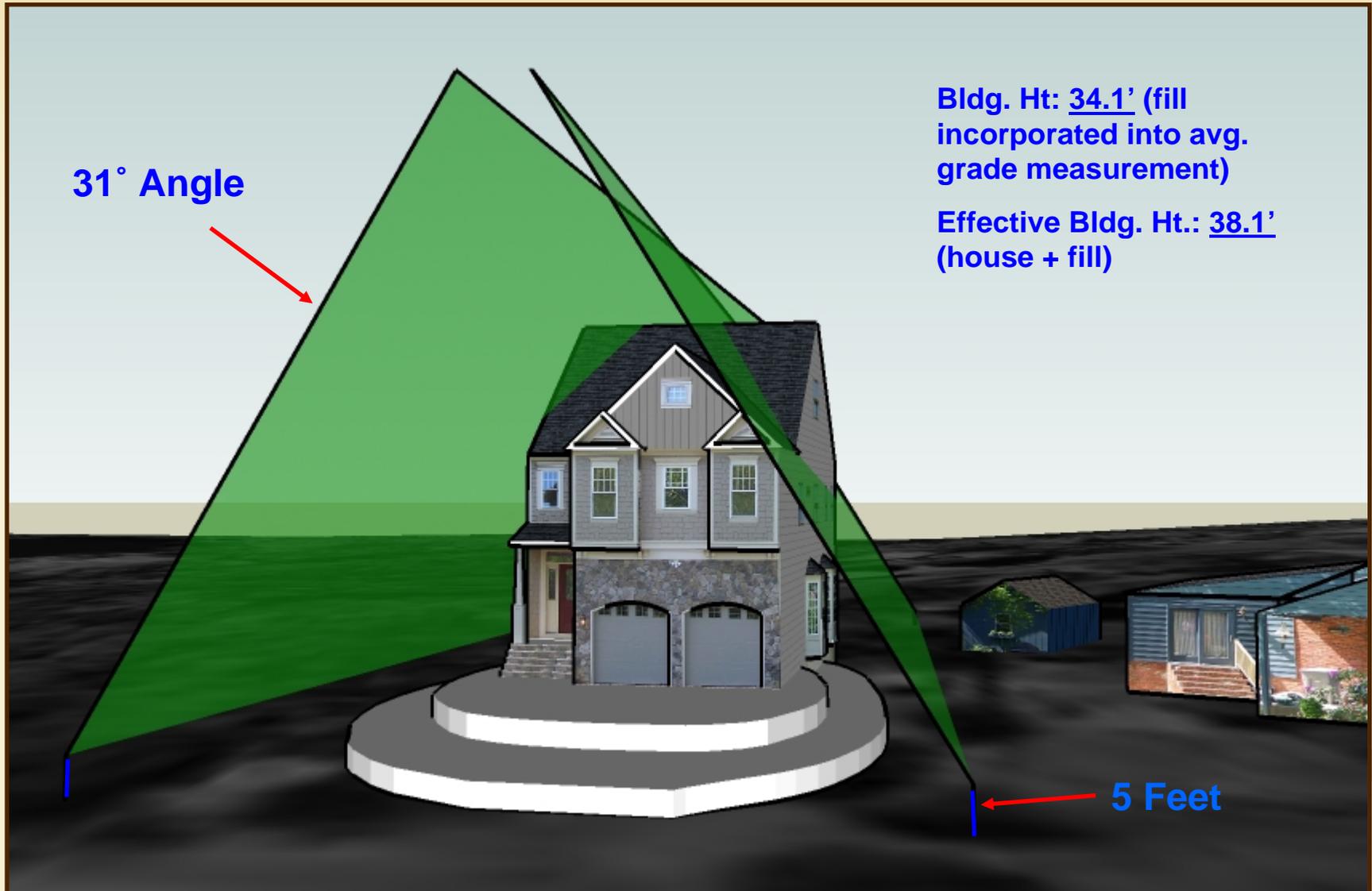
Mount Vernon Animation



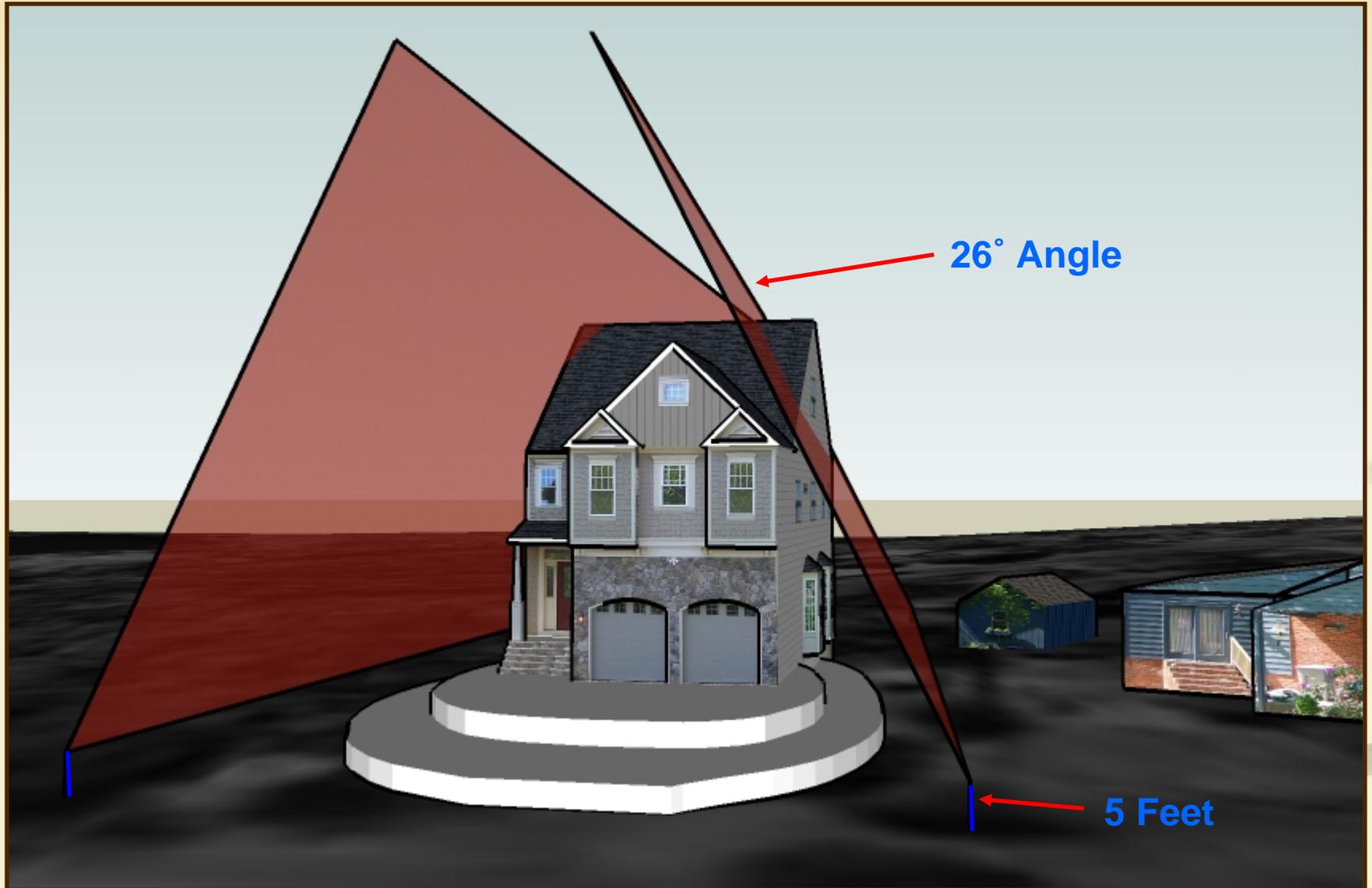
31° Bulk Plane Angle at 5 Feet Above Side Lot Line (House Depicted at Pre-Development Grade)



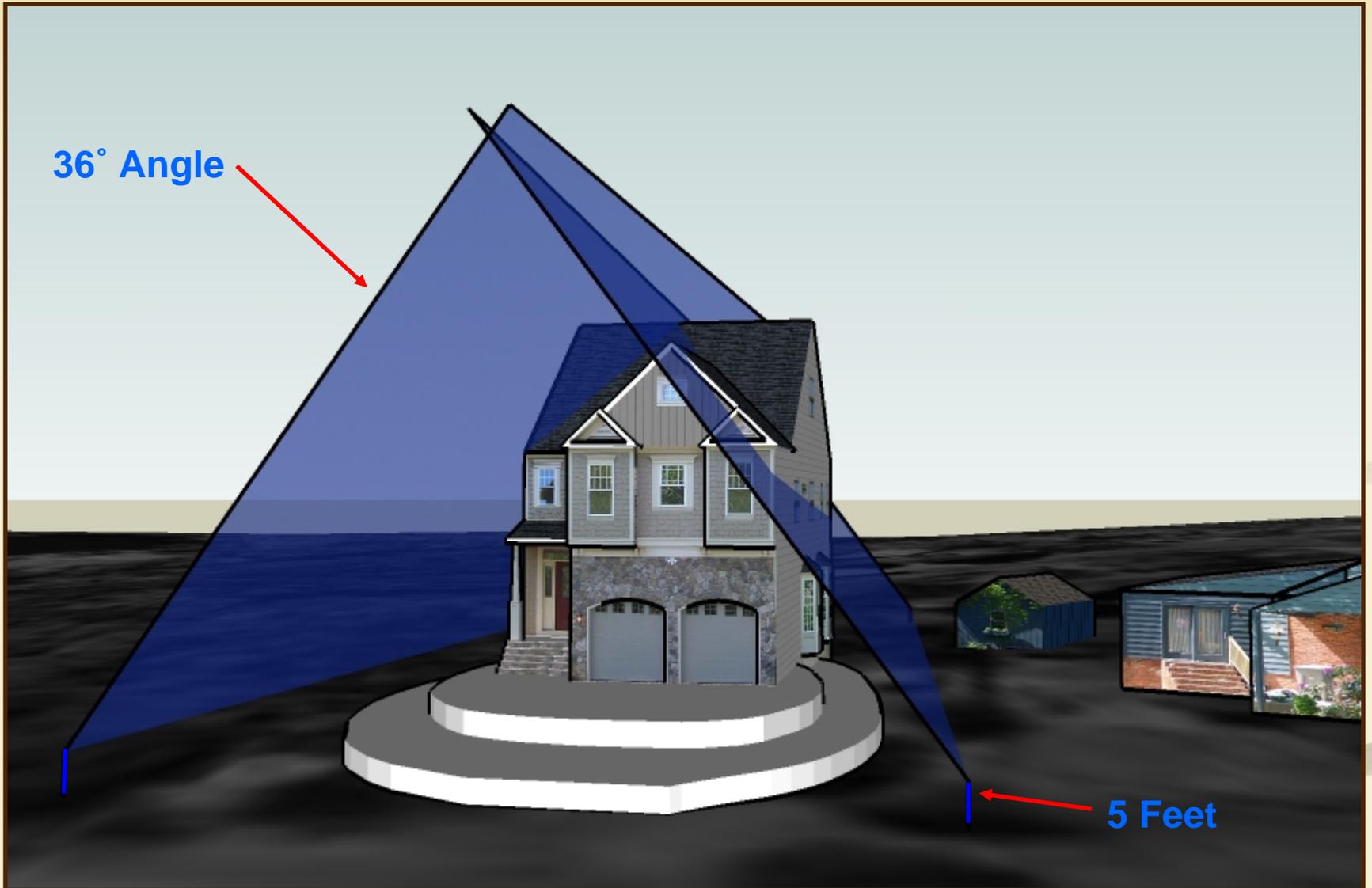
31° Bulk Plane Angle at 5 Feet Above Side Lot Line (post-development grade, fill added)



26° Bulk Plane Angle at 5 Feet Above Side Lot Line



36° Bulk Plane Angle at 5 Feet Above Side Lot Line



McLean Location



Image Comparison



Digital Photograph

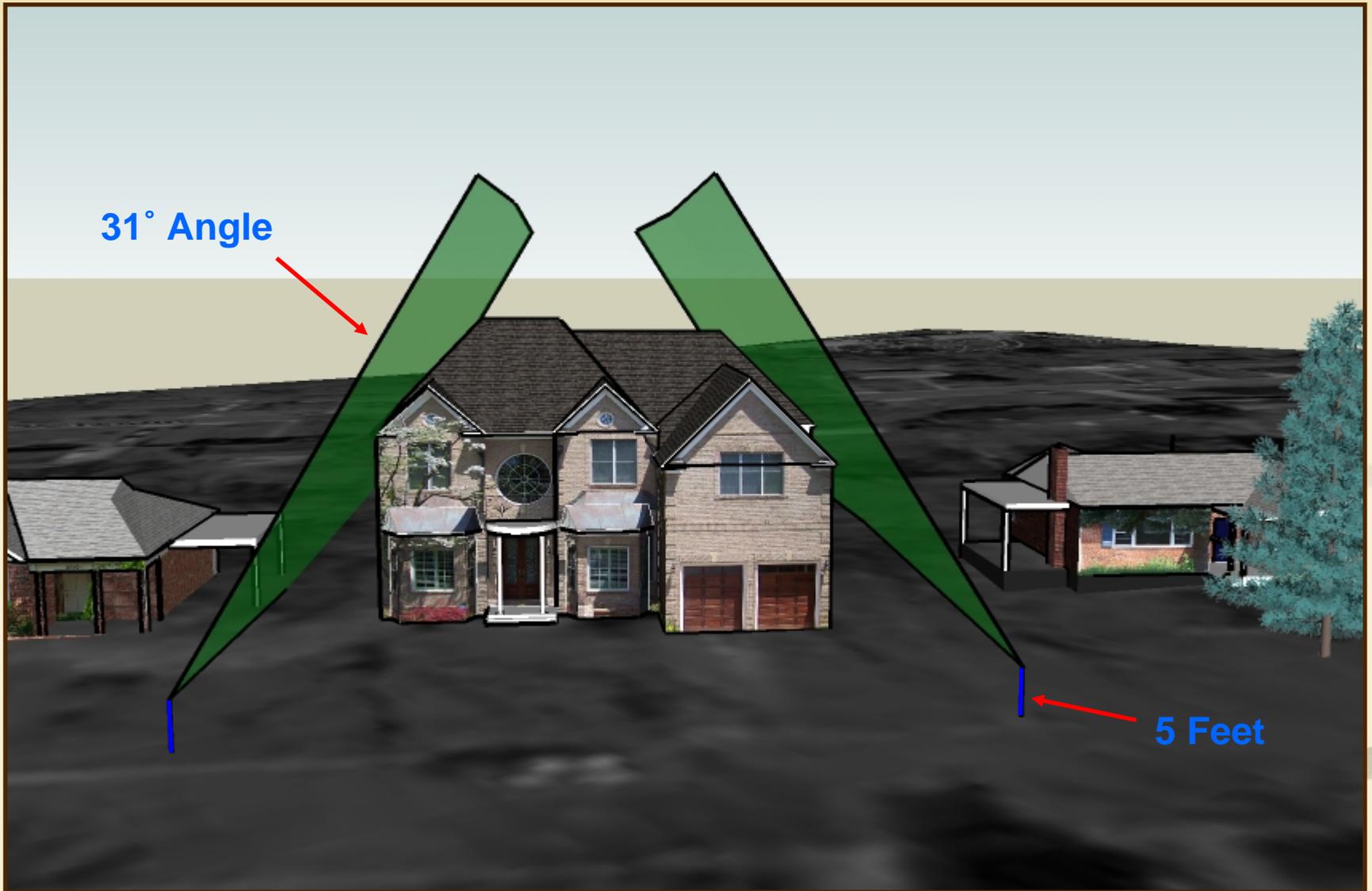
3 Dimensional Model



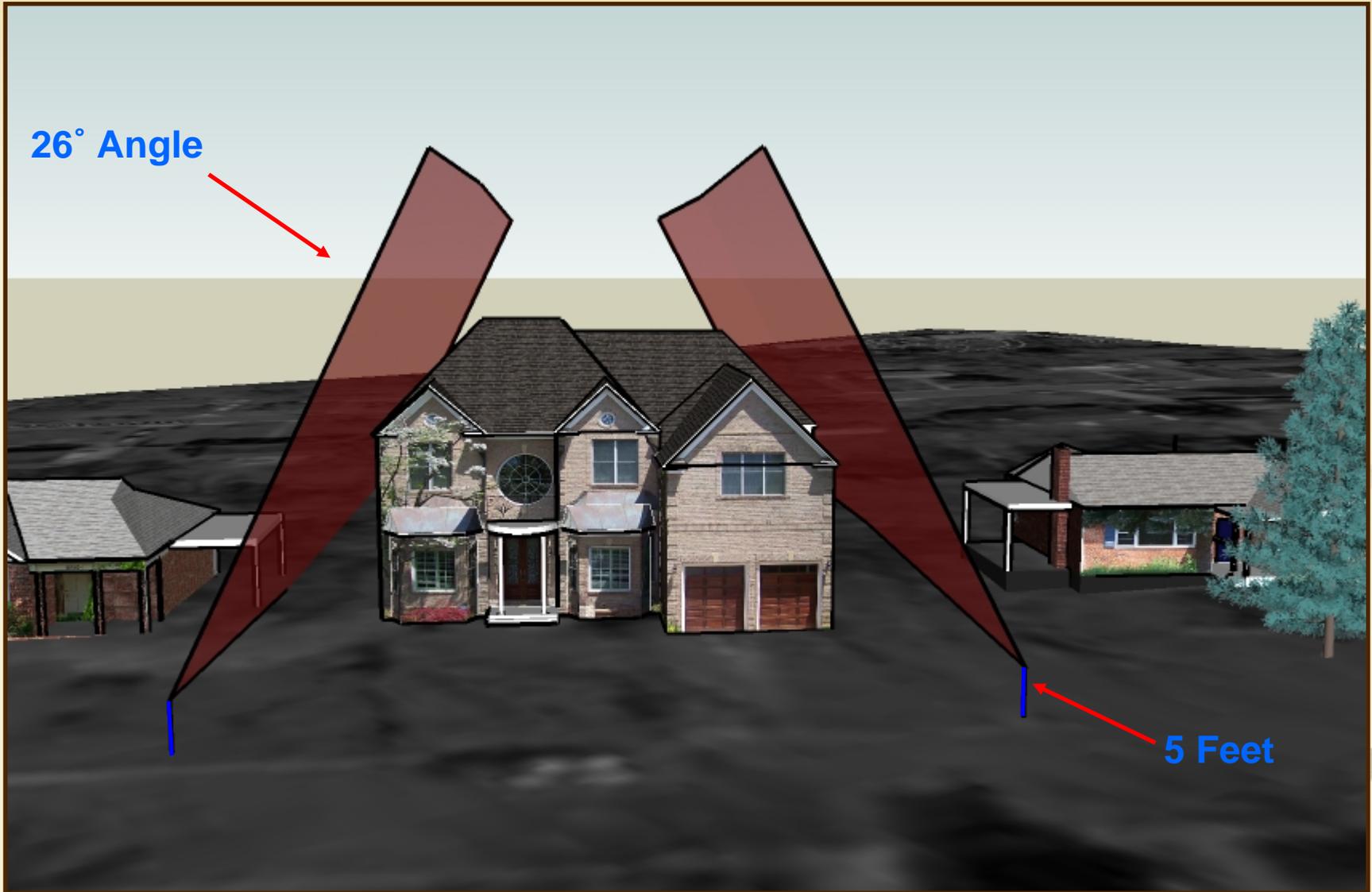
McLean Animation



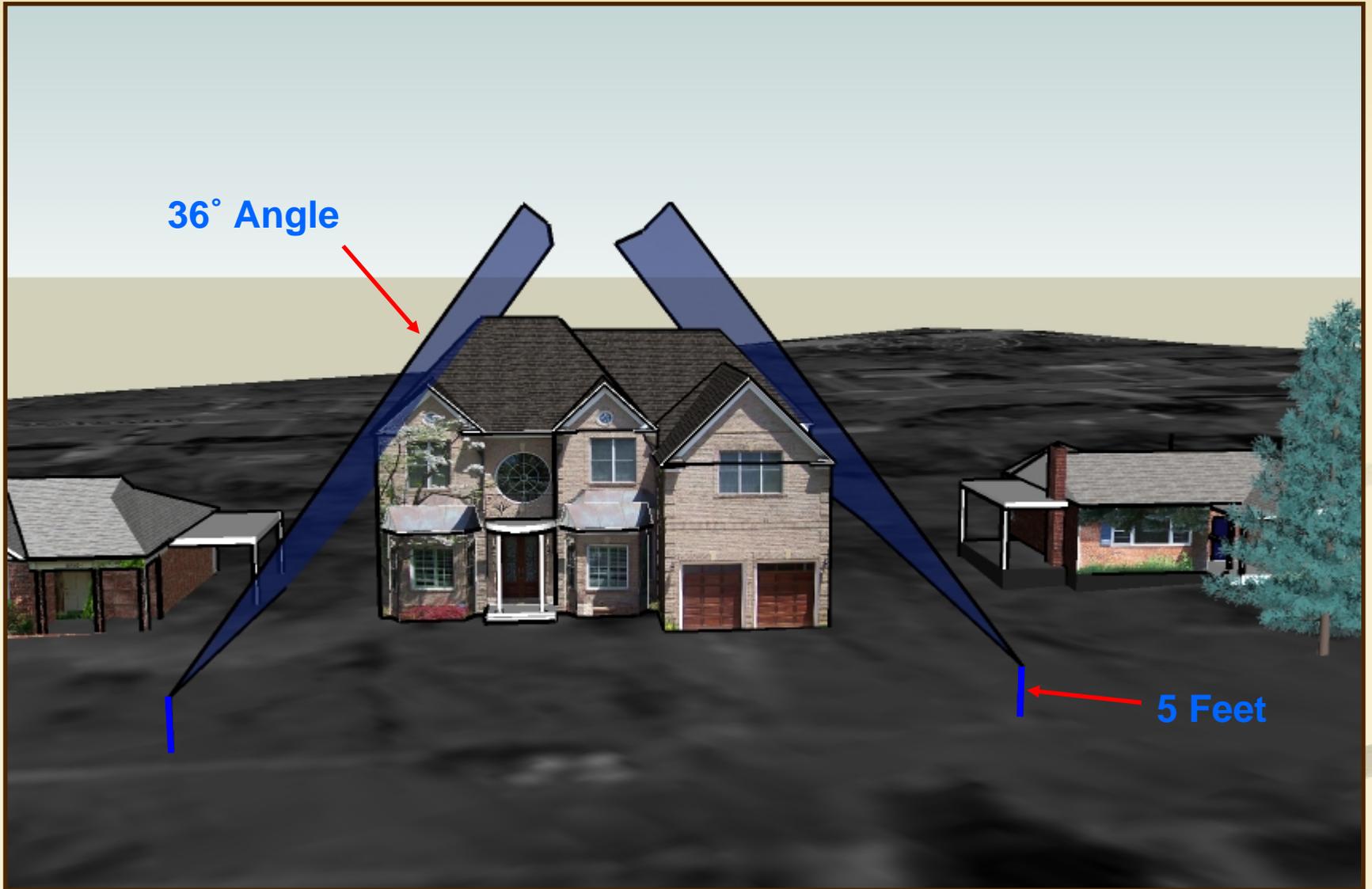
31° Angle at 5 Feet Above Side Lot Line



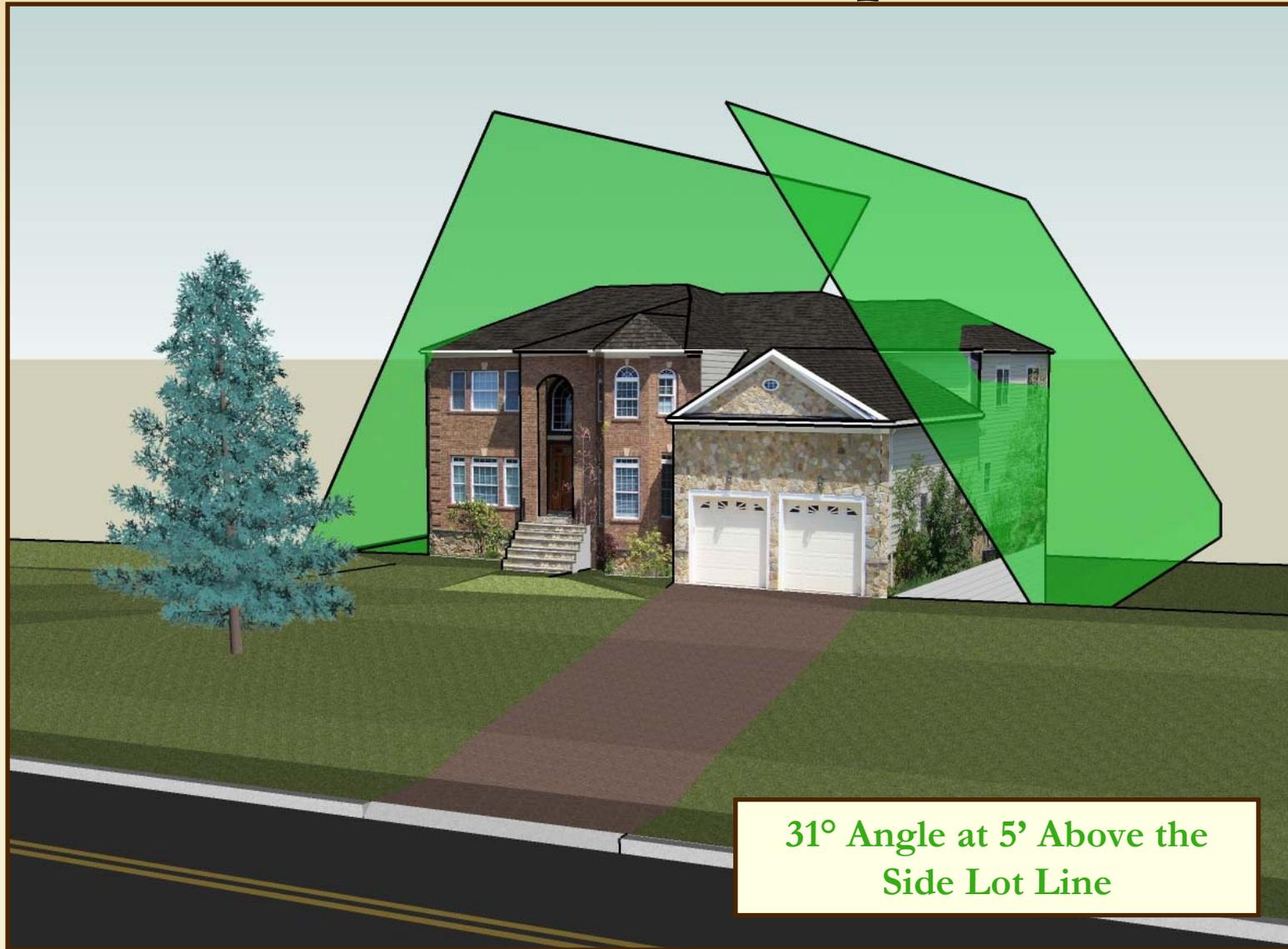
26° Angle at 5 Feet Above Side Lot Line



36° Angle at 5 Feet Above Side Lot Line

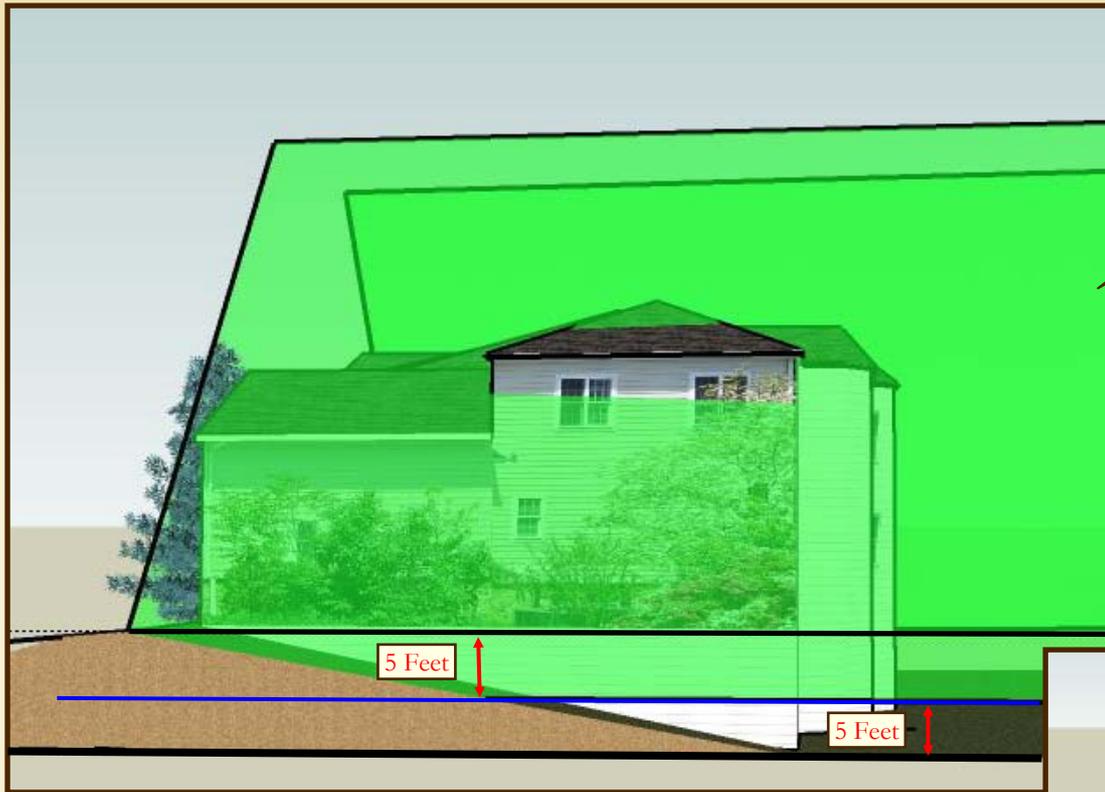


Walkout Example



House is Located at Minimum Side Yard of 12' ; Building Height is Approx. 32';
Elev. Change Within Building Footprint from front to back is 10'

Walkout Example Cont'd



Side Profile

Rear Profile

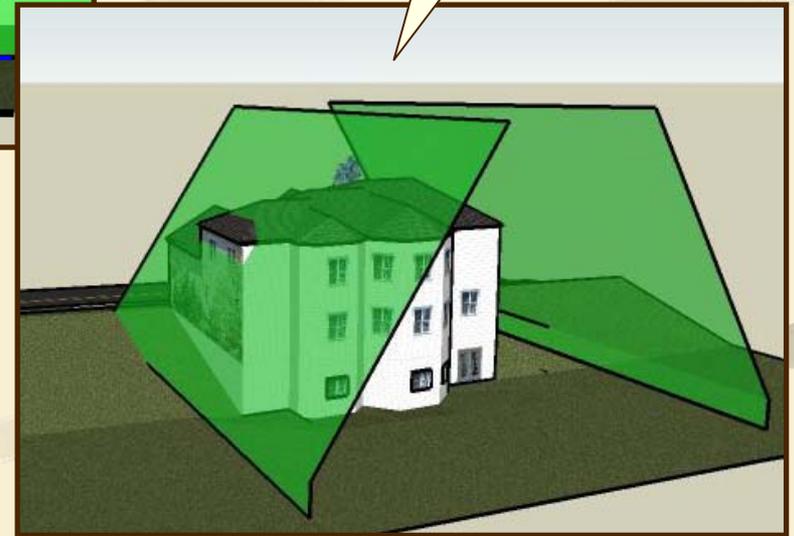
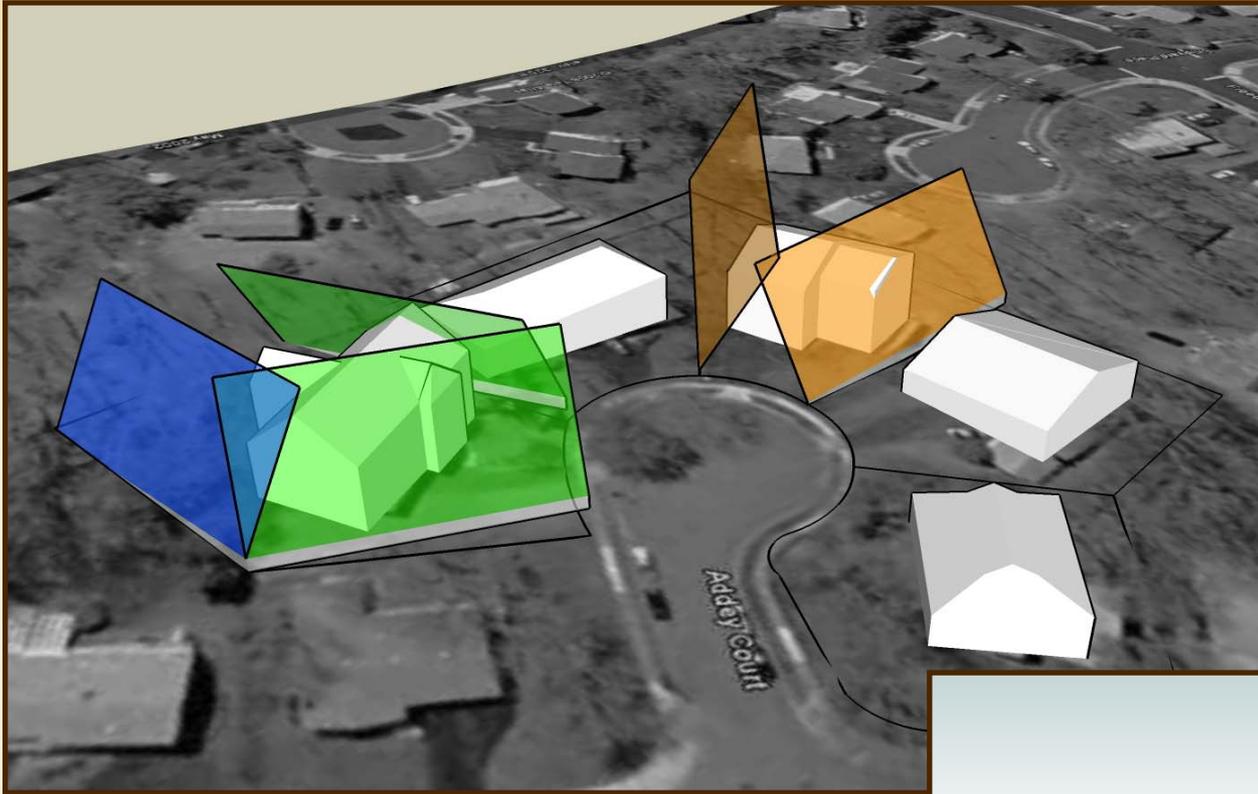
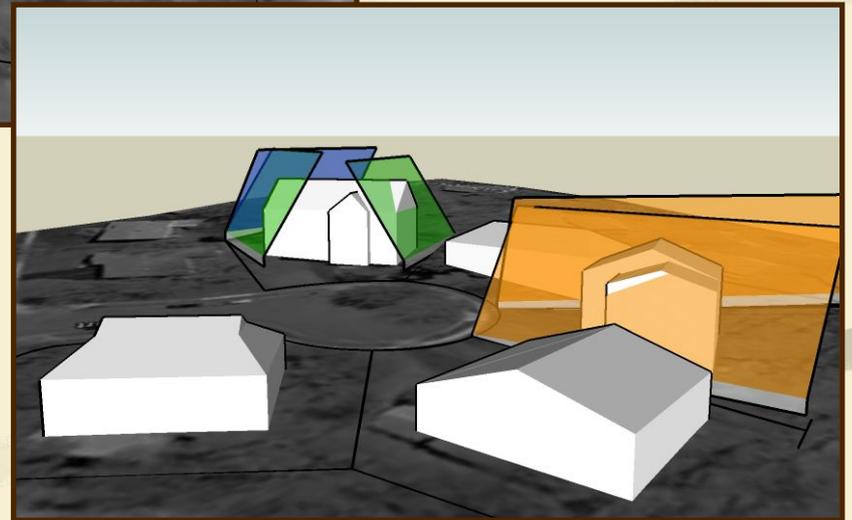


Diagram depicts a 31° Angle of Bulk Plane with a 10 feet elevation change from front to back within building footprint. Base of plane is established according to the average grade within the building segment of the lot.

Examples of Multiple/Angled Side Lot Lines



Lots may contain more than two side lots lines/ houses can be aligned at oblique angles to side lot lines.



DO THE PROPOSED ANGLE OF BULK PLANE REGULATIONS APPLY TO ALL BUILDING FEATURES?

- Bulk plane regulations would apply to almost all building features; **Chimneys, Accessibility Improvements, Alternative Energy Devices and Satellite Dishes** are the only building features that would be allowed to penetrate a bulk plane.
- Other building features that are currently allowed to exceed building height or extend into minimum required yards, such as **cornices, canopies, sills, bay windows and carports**, would not be excluded from bulk plane restrictions.

POSSIBLE MODIFICATION OF ANGLE OF BULK PLANE REQUIREMENTS

■ BZA Special Permit Approval

- The BZA shall determine that the proposed development will:
 - Be harmonious with the surrounding neighborhood in terms of location, height, bulk and surrounding structures, topography and existing vegetation; and
 - Not adversely impact the use and/or enjoyment of adjacent properties with regard to noise, light, air, safety, erosion and stormwater runoff.

BZA Special Permit Modifications Cont.

- The BZA may consider the modification of angle of bulk plane requirements on lots that met lot size requirements in effect when the lot was recorded but do not meet the current lot area, lot width or shape factor requirements.
- Special Permit consideration may be given to lots that contain unique characteristics, such as:
 - Irregular shape;
 - Environmental features such as steep slopes, floodplains, Resource Protection Areas, significant vegetation, and/or historic resources;
 - Limited well and septic drainfield location options; and
 - Restrictive easements.

BZA Special Permit Modifications Cont.

- Special Permit consideration could be given to lots that contain an **existing dwelling** on the effective date of the amendment and modification of the angle of bulk plane is necessary to accommodate **an addition** to the dwelling. The following would be factors in any such consideration:
 - Layout of the existing structure;
 - Availability of alternative locations; and
 - Lot shape and associated yard designations.

Possible Grandfather Provisions

The following items could be grandfathered from the Angle of Bulk Plane requirements:

- Properties located in P Districts.
- All special permit, special exception, and non-P district proffered rezoning applications and amendments thereto that set forth yards and/or building heights for single family detached dwelling units, when accepted prior to the effective date of the amendment.
- Building and grading plans submitted on or before the effective date of the amendment, provided such plans are:
 - approved within 12 mo. of return of initial submission to applicant/agent;
 - plan or permit remains valid;
 - building permit for the structure(s) shown on the approved plan is issued;
 - the structure is constructed in accordance with approved building permit

Engineering and Surveying Costs Associated with New Infill Residential Construction

- **Currently, a site feasibility survey can be performed at a cost of less than \$200.**
 - Items in feasibility study (building envelope determination) include:
 - Review of Deed Book records from County records
 - Retrieval of on-line plat
 - Building envelope is then determined using lot dimensions and minimum required yards (setbacks)

- **Under the proposed regulations the cost of a feasibility study may increase to nearly \$4,000.**
 - Estimated cost of additional items:
 - Preliminary Lot Grading Study: \$600
 - Boundary Survey & Topographic Survey: \$1,500 to \$3,000
 - Bulk Plane Analysis: \$700 to \$1,000 (if architectural plans are available)
 - Cost would significantly increase if multiple iterations (or SE/SP) are necessary

Cost Analysis Continued

■ Bulk Plane Depiction on Grading Plan

- Critical cross sections for each bulk plane would have to be displayed on a grading plan using accurate building profile drawings.
- \$1,500 (incl. \$ spent for ABP analysis during feasibility study) for 2 bulk plane sections; this cost would increase if additional bulk plane sections are required (lots containing greater than 2 side lot lines).

- Approx. \$2,000 in architectural cost for coordination w/civil eng. of bldg. sections/roof design

■ Compliance Verification

- Field survey of key points on the house coupled with finished lot grade
- Cross-sectional analysis would be performed similar to that described in feasibility study: estimated cost for compliance verification is \$400 - \$700.

ZONING ORDINANCE AMENDMENT MEETING/PUBLIC HEARING SCHEDULE

- **September 22, 2008** – Board of Supervisors’ Authorization to Advertise Public Hearings
- **September 24, 2008** – Planning Commission’s Policy and Procedures Meeting
- **October 22, 2008** – Planning Commission’s Public Hearing
- **November 17, 2008** – Board of Supervisors’ Public Hearing