

Maintaining Neighborhood Character



Angle of Bulk Plane Explained

- The following slides illustrate how an angle of bulk plane might be applied to single family detached dwelling construction.
- As currently proposed, an angle of bulk plane would be applicable to all new single family detached dwellings and to additions of existing single family detached dwellings.

Analysis Methods

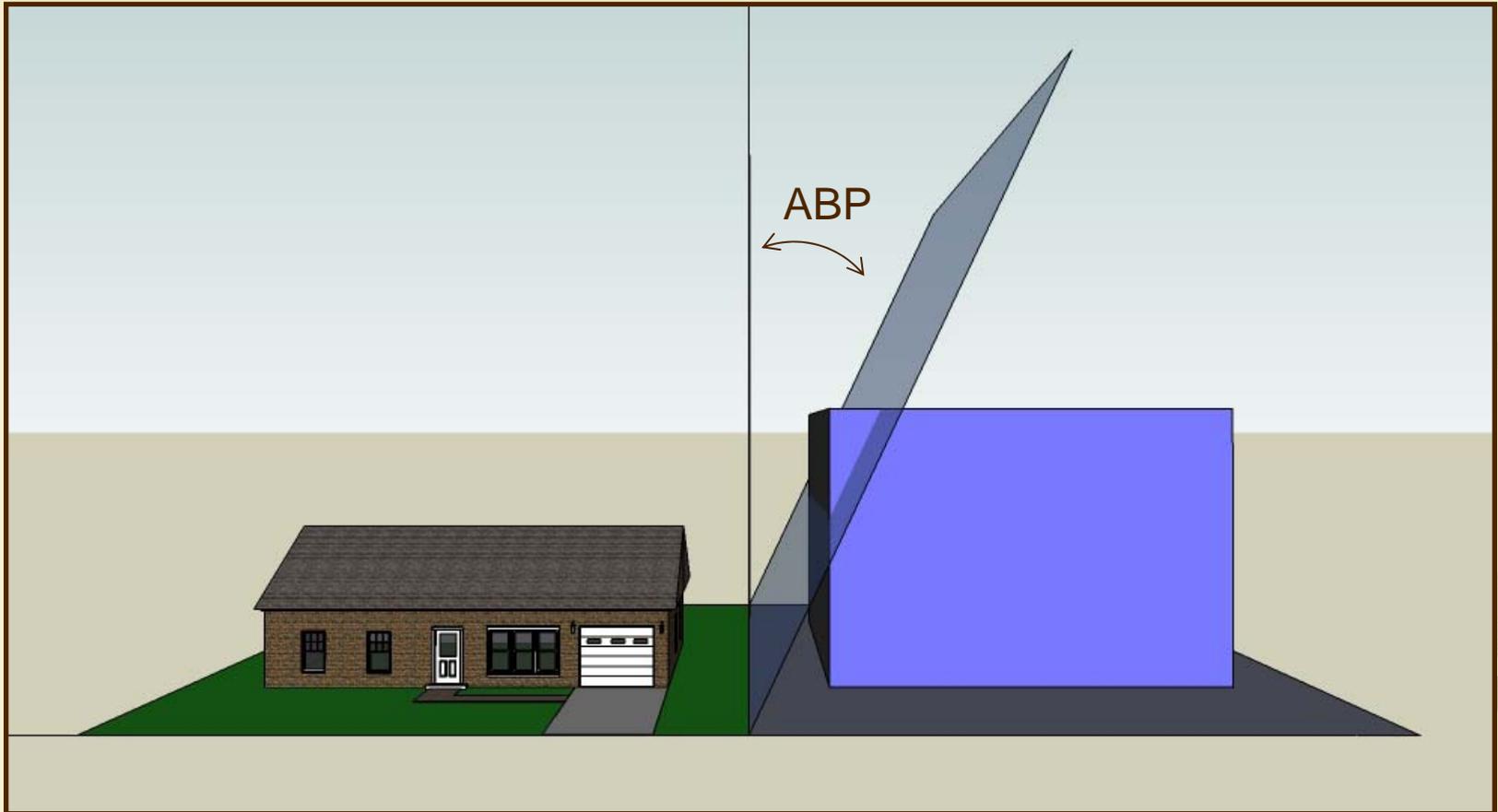
- Staff has attempted to demonstrate the efficacy of using an angle of bulk plane by working through a series of approaches. Iterative steps were taken to consider multiple angle of bulk plane options in an analysis process that included both two and three dimensional illustrative drawings.
- The three dimensional model will give a real life representation of how Angle of Bulk Plane methodology can be applied to a 3-D environment.

Analysis Methods Cont'd

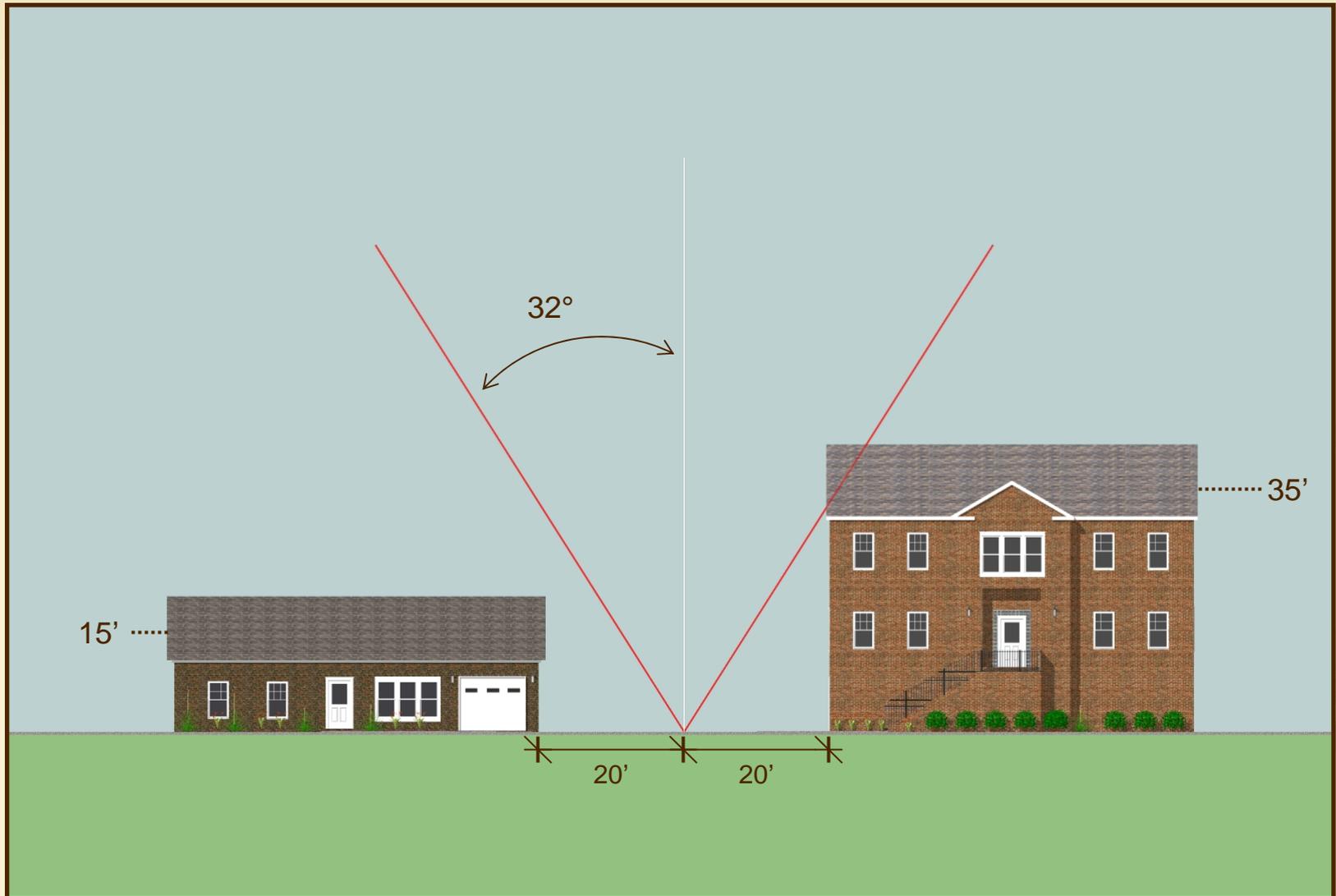
- Staff's current recommendation is derived from progressive thinking that started with a bulk plane projected from grade level. Our original set of bulk plane angles were designed to allow a second-story 'pop-up' to be added to an existing one-story structure as illustrated in the following 2-D slides. All of the site specific 3-D drawings that are presented later in this slide program are dimensionally accurate & geo-rectified.

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

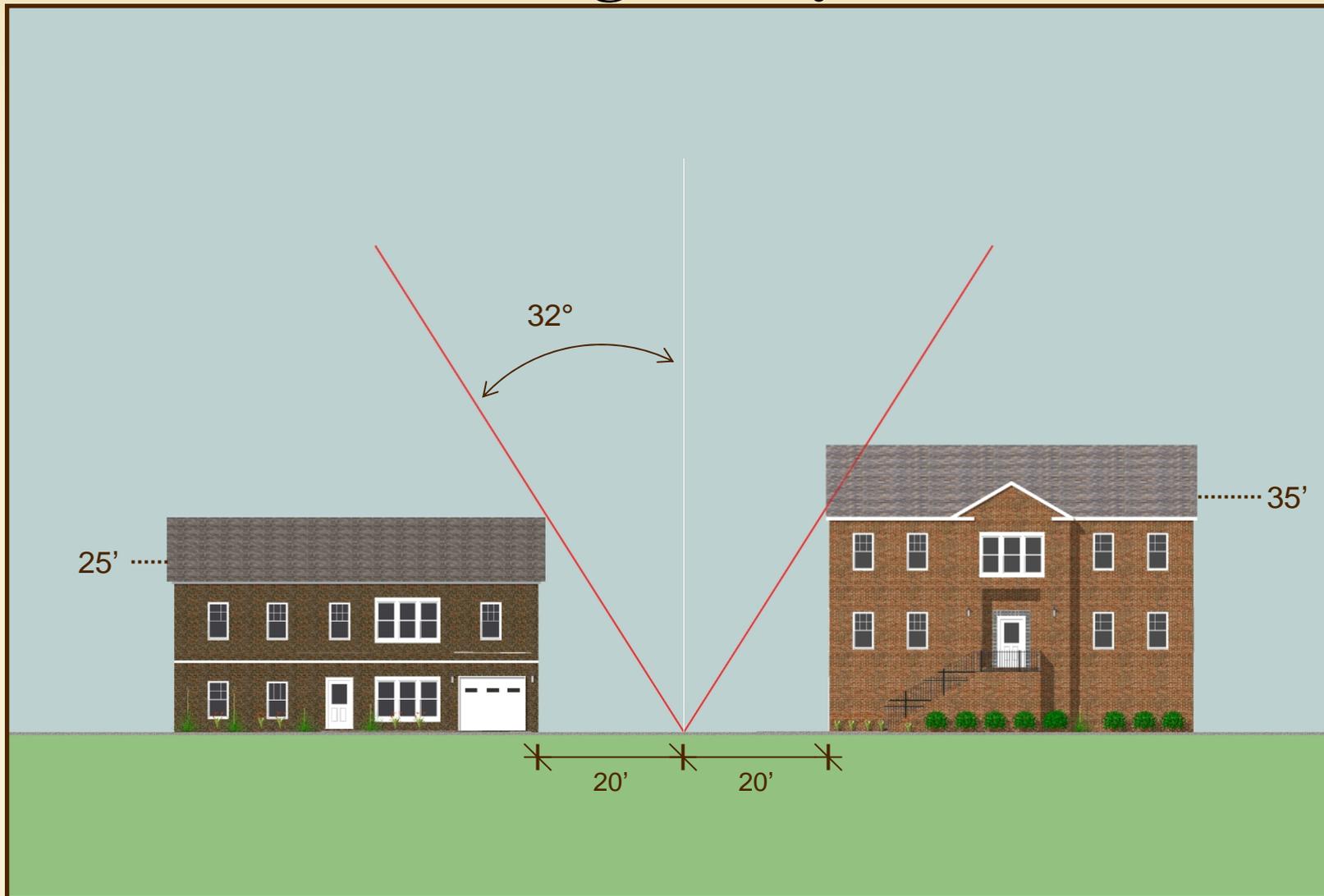
Angle of Bulk Plane: an inclined plane drawn at a specific angle from vertical that contributes to the delineation of maximum permitted bulk that can be constructed on a lot



R-1 District: 32° ABP

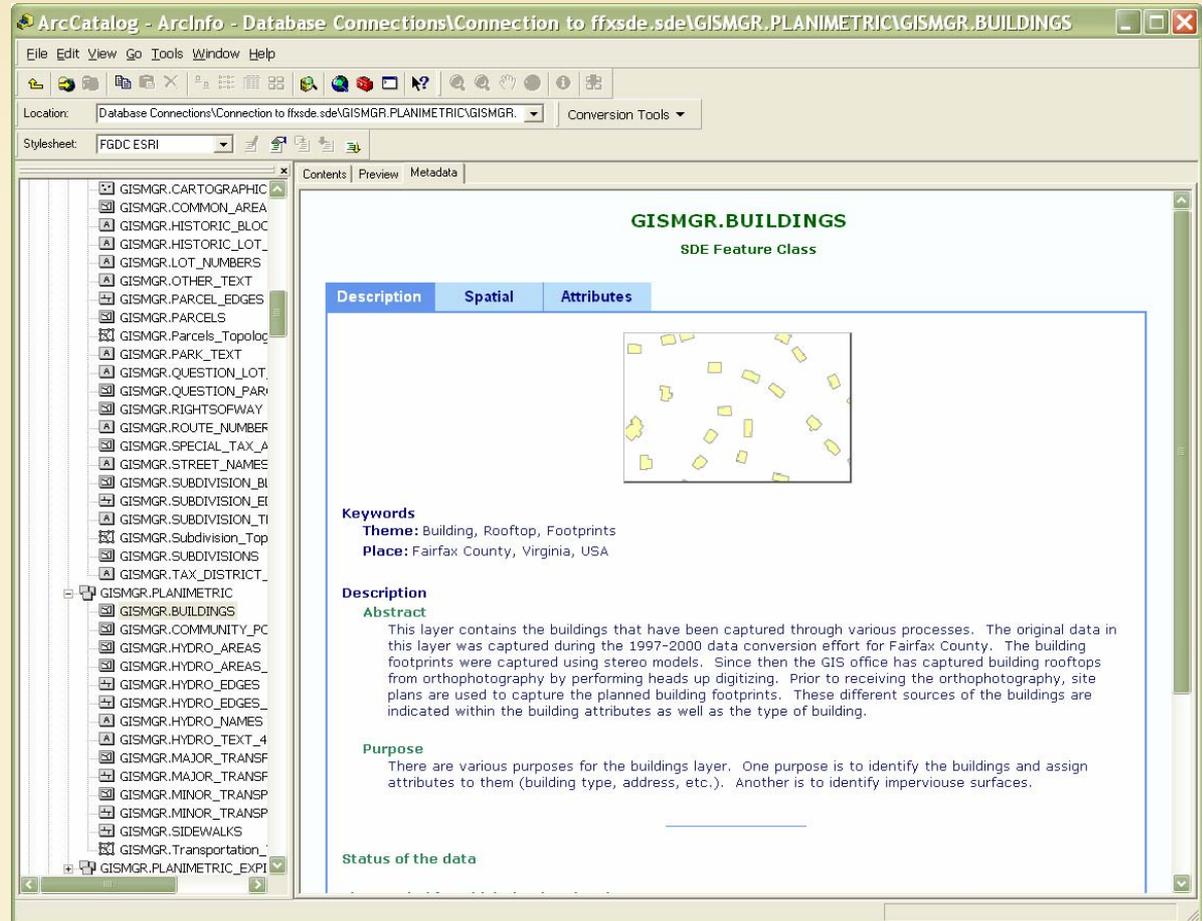


R-1 District: 32° ABP Allows 2nd Story Pop-up on Existing 1 Story House

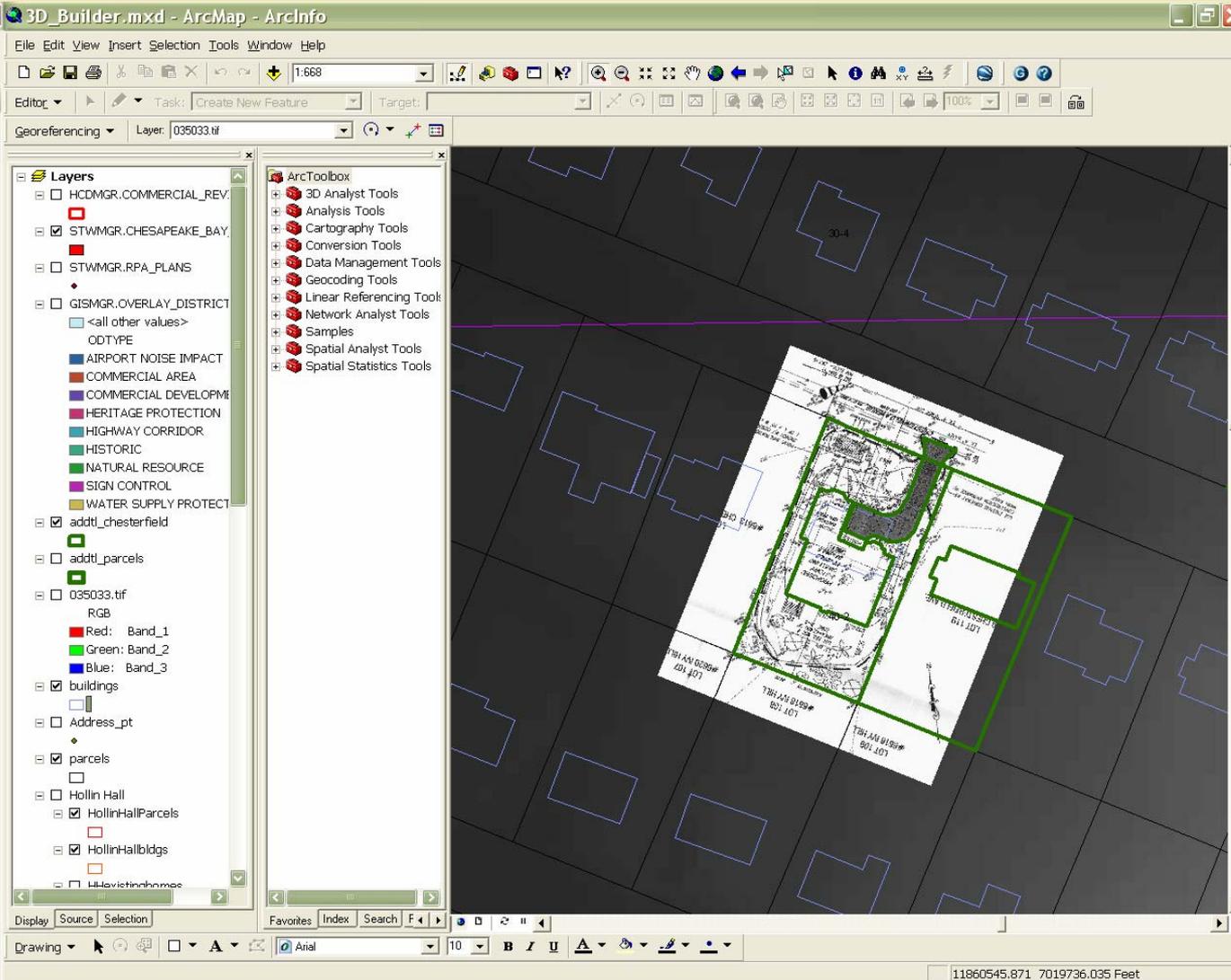


Data Used in Models

- GIS Parcel Data
- GIS Planimetric Data
- Fairfax County Oblique Imagery
- Fairfax County Digital Elevation Model and Google Earth Terrain Model
- Fairfax County Digital Orthophotography
- Digitized Grading Plans When Available



Geo-Rectification



The grading plan was scanned and geo-rectified to the parcel layer. Then the building footprint was digitized from the grading plan.

Mount Vernon Location



Image Comparison



Digital Photograph

3 Dimensional Model

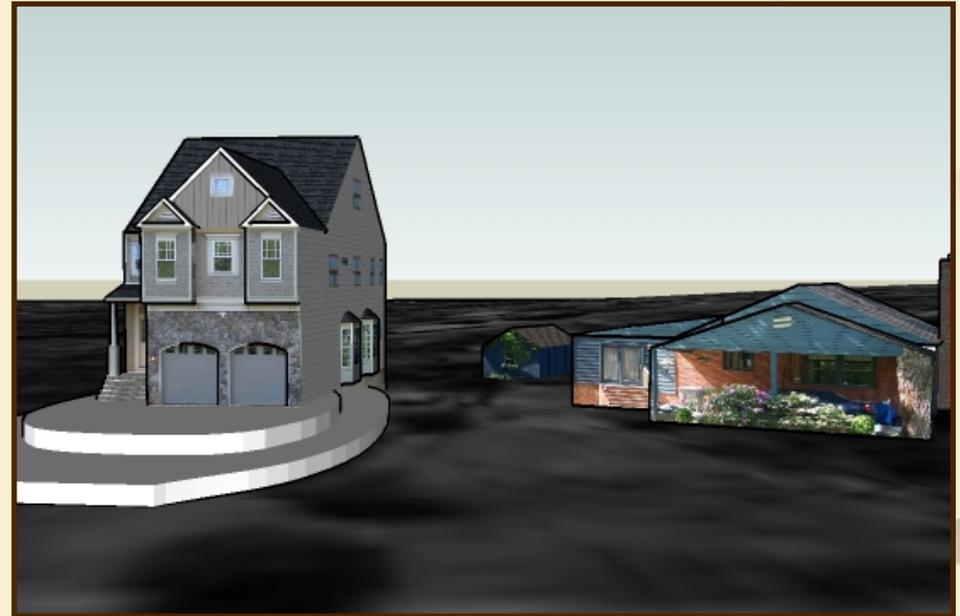


Image Comparison

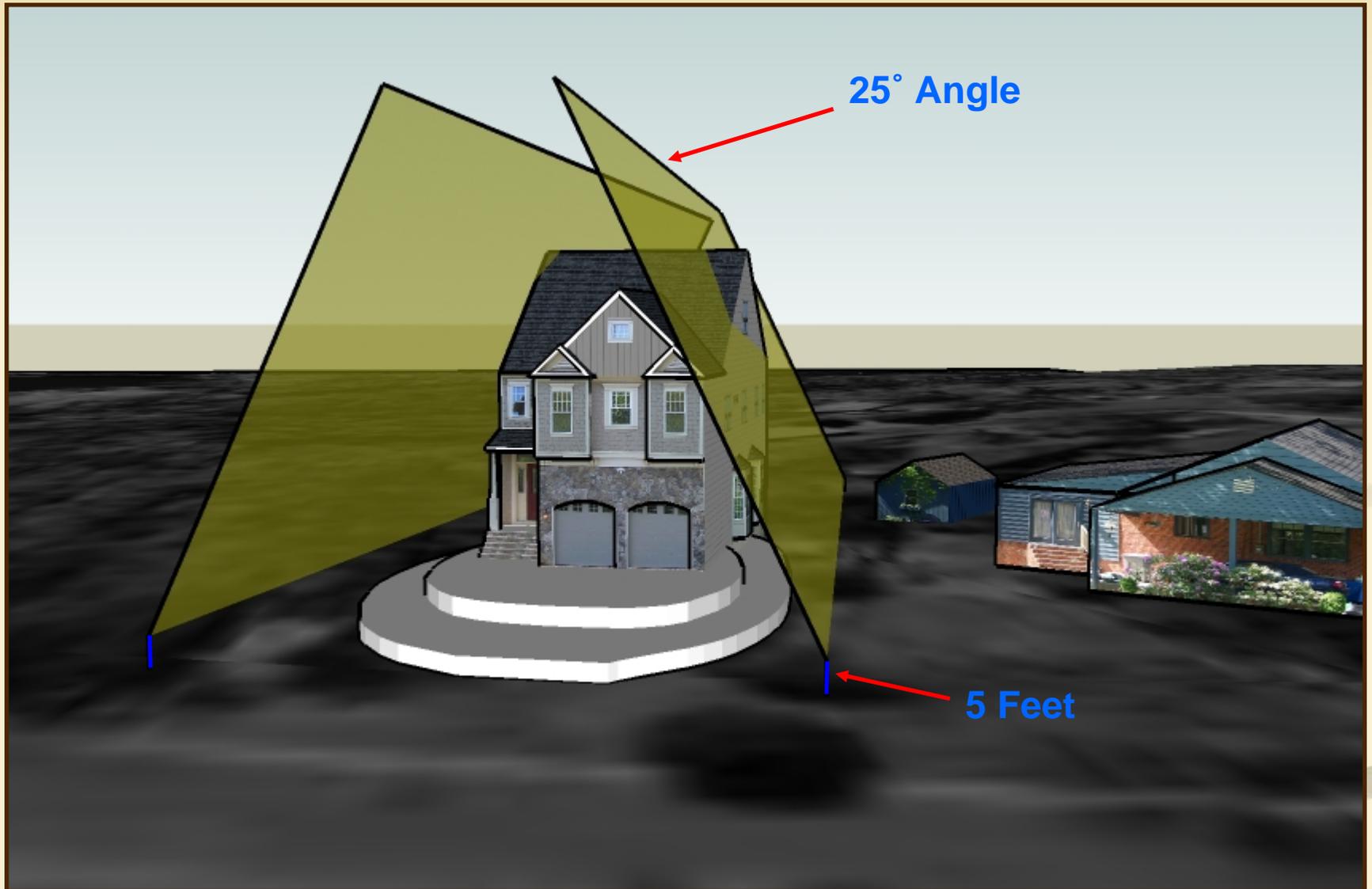


Digital Photograph

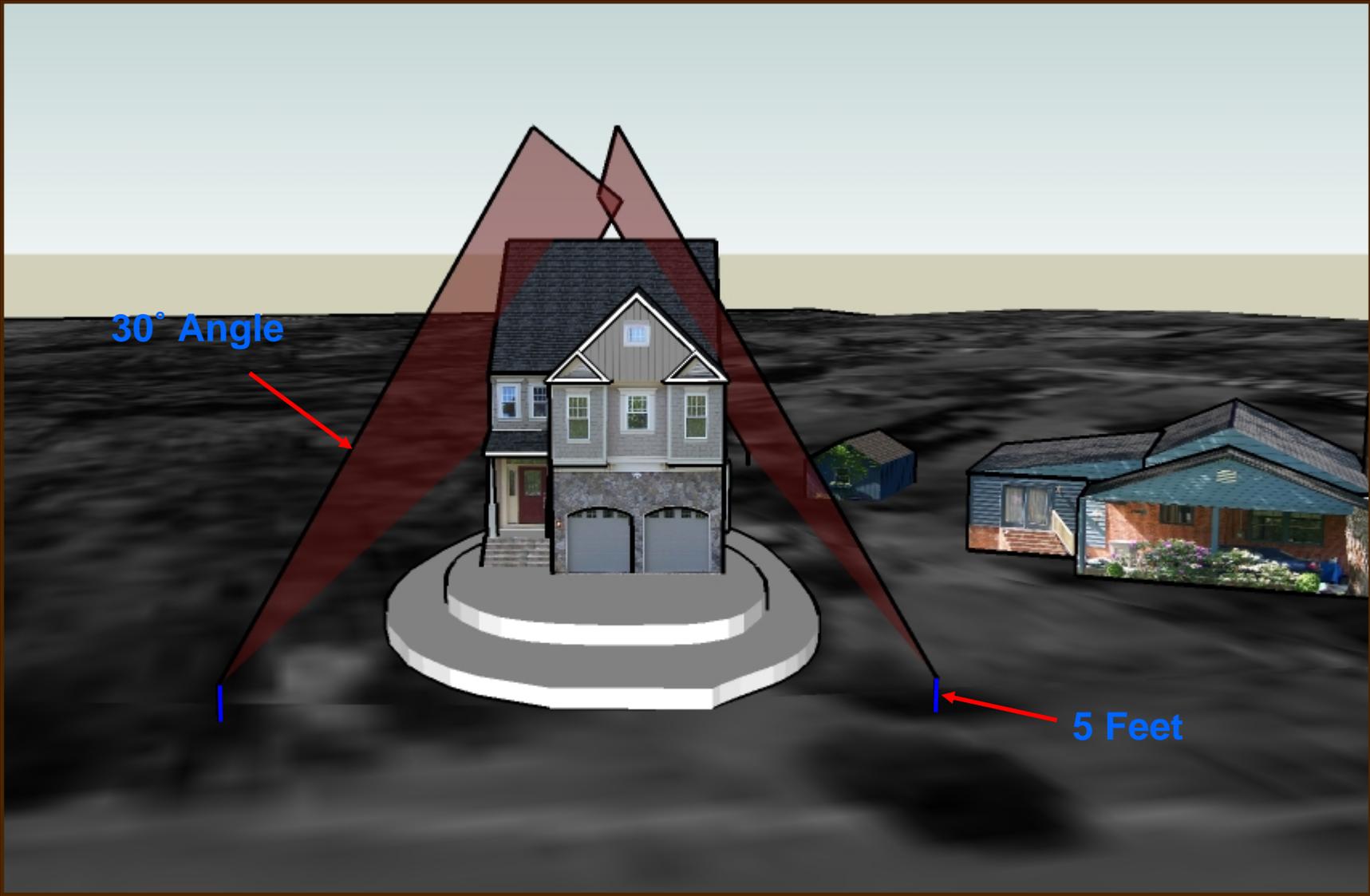
3 Dimensional Model



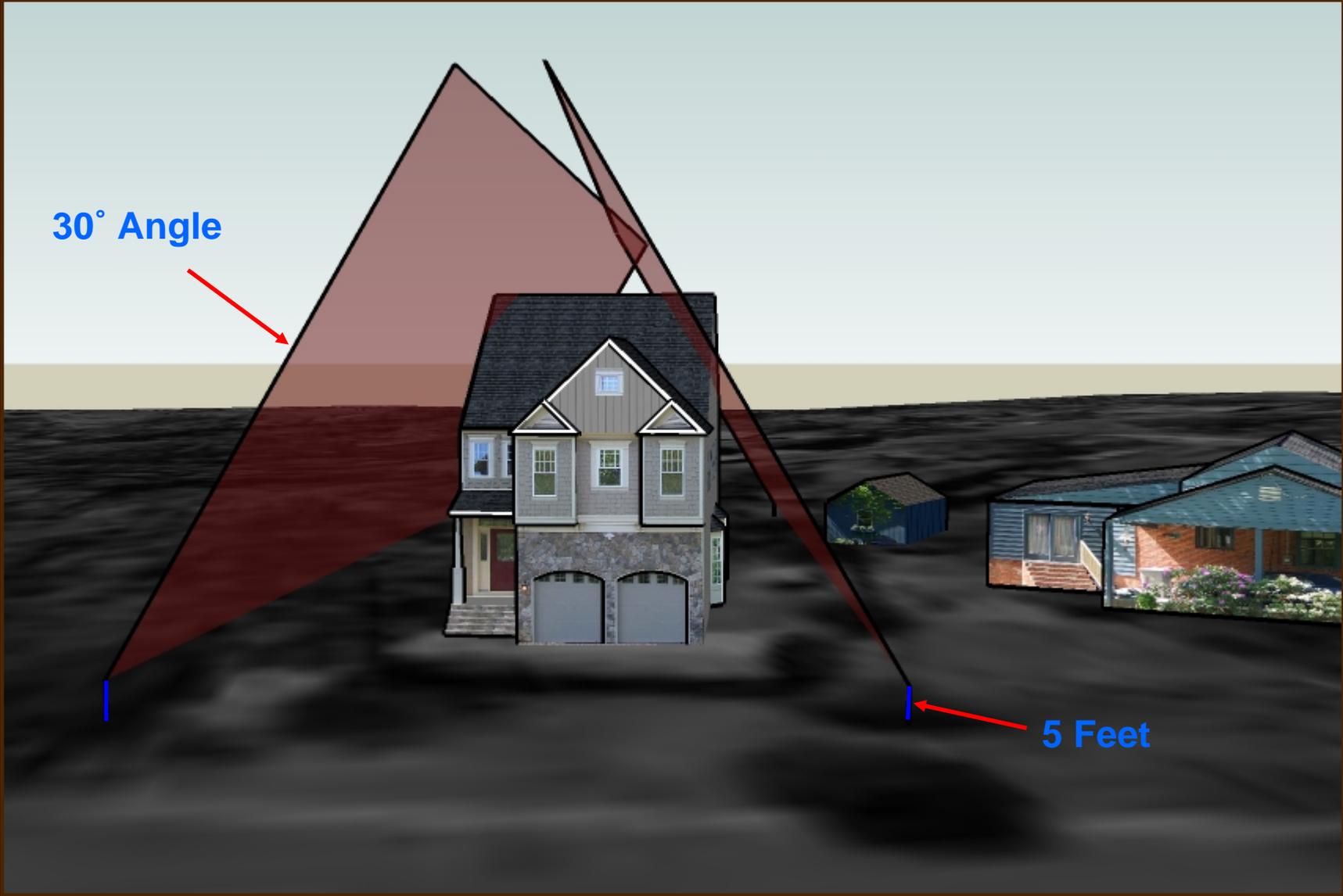
25° Bulk Plane Angle at 5 Feet Above Side Lot Line



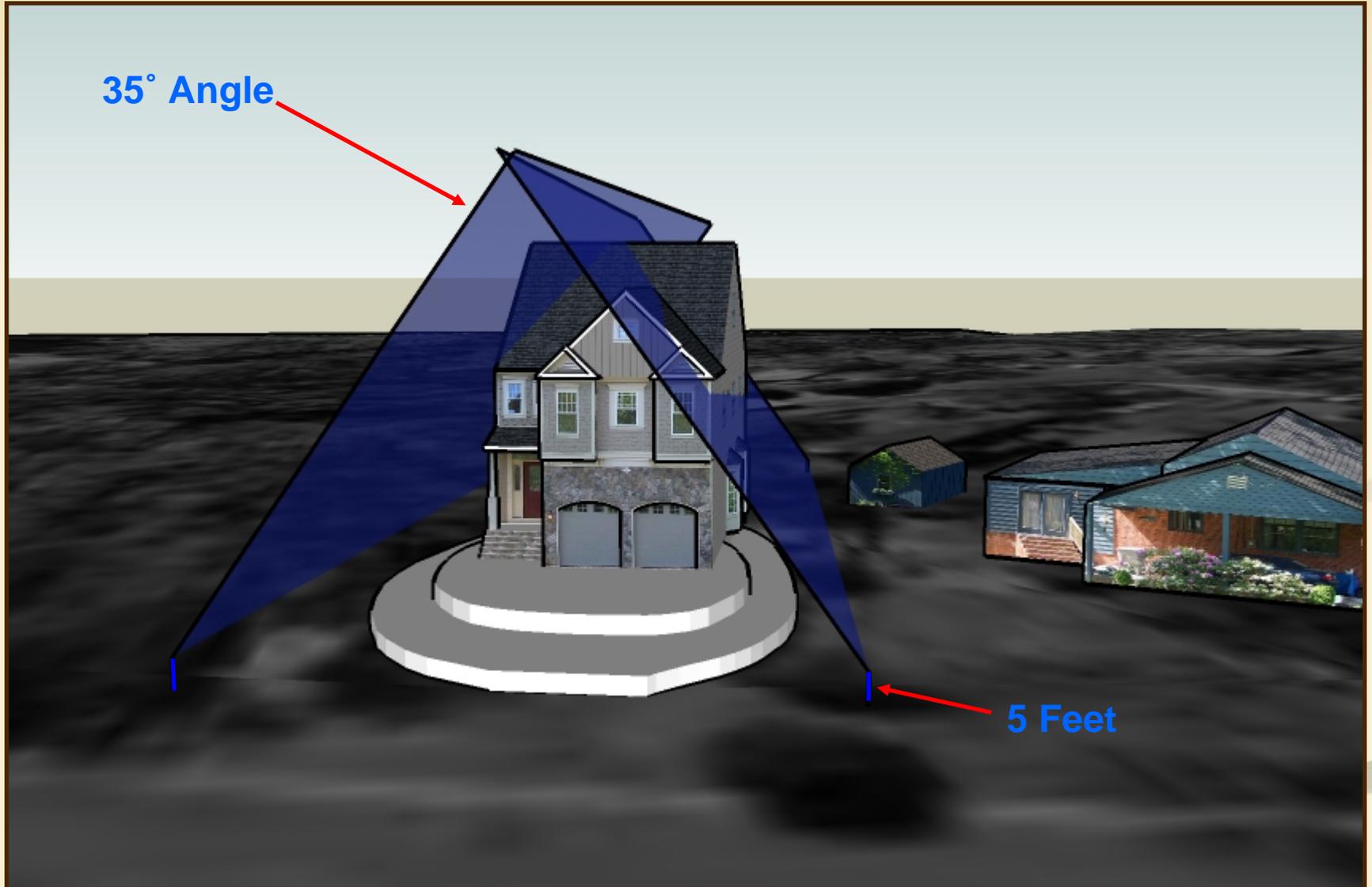
30° Bulk Plane Angle at 5 Feet Above Side Lot Line, Post-Grade



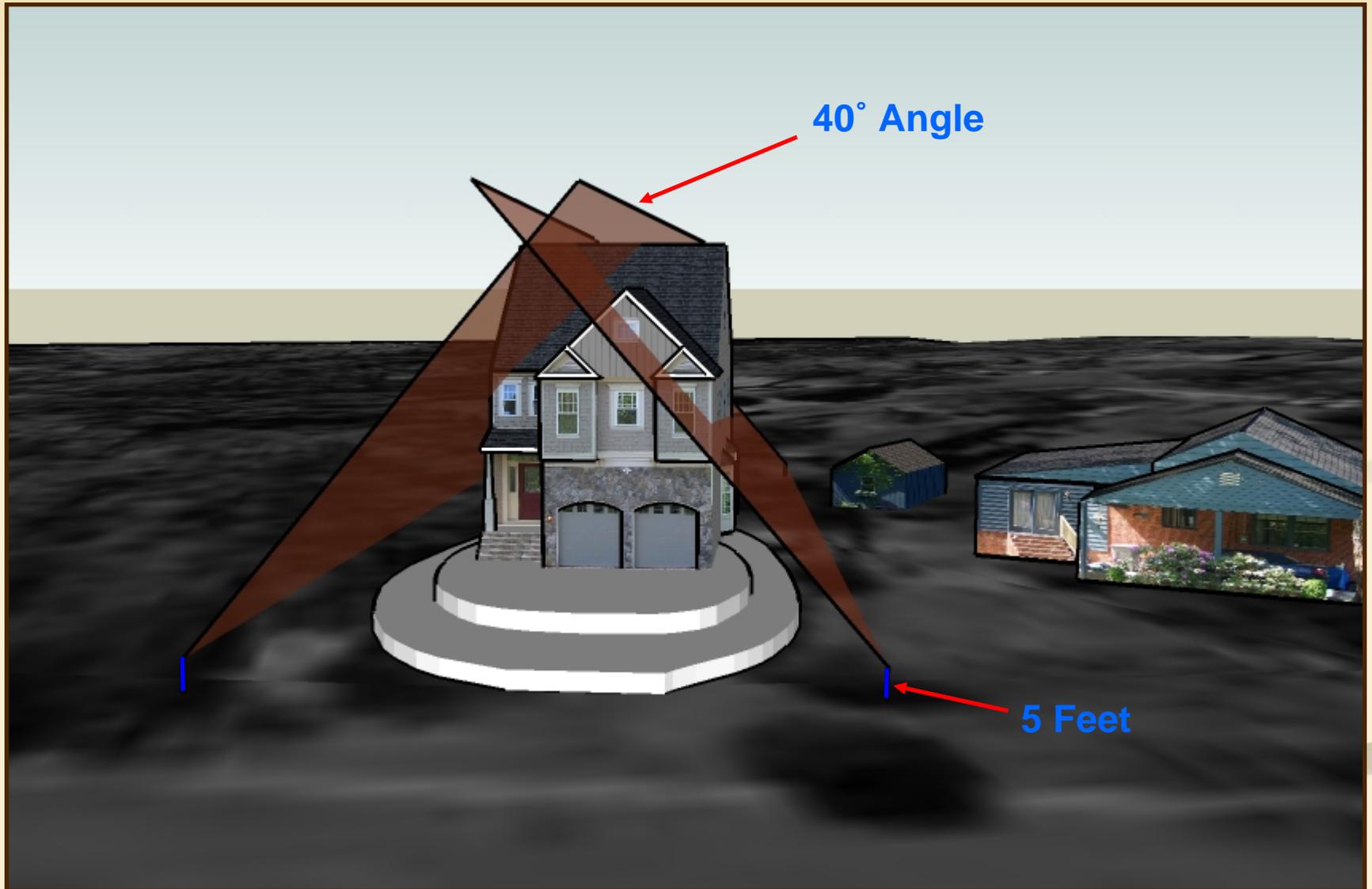
30° Bulk Plane Angle at 5 Feet Above Side Lot Line, Pre-Grade



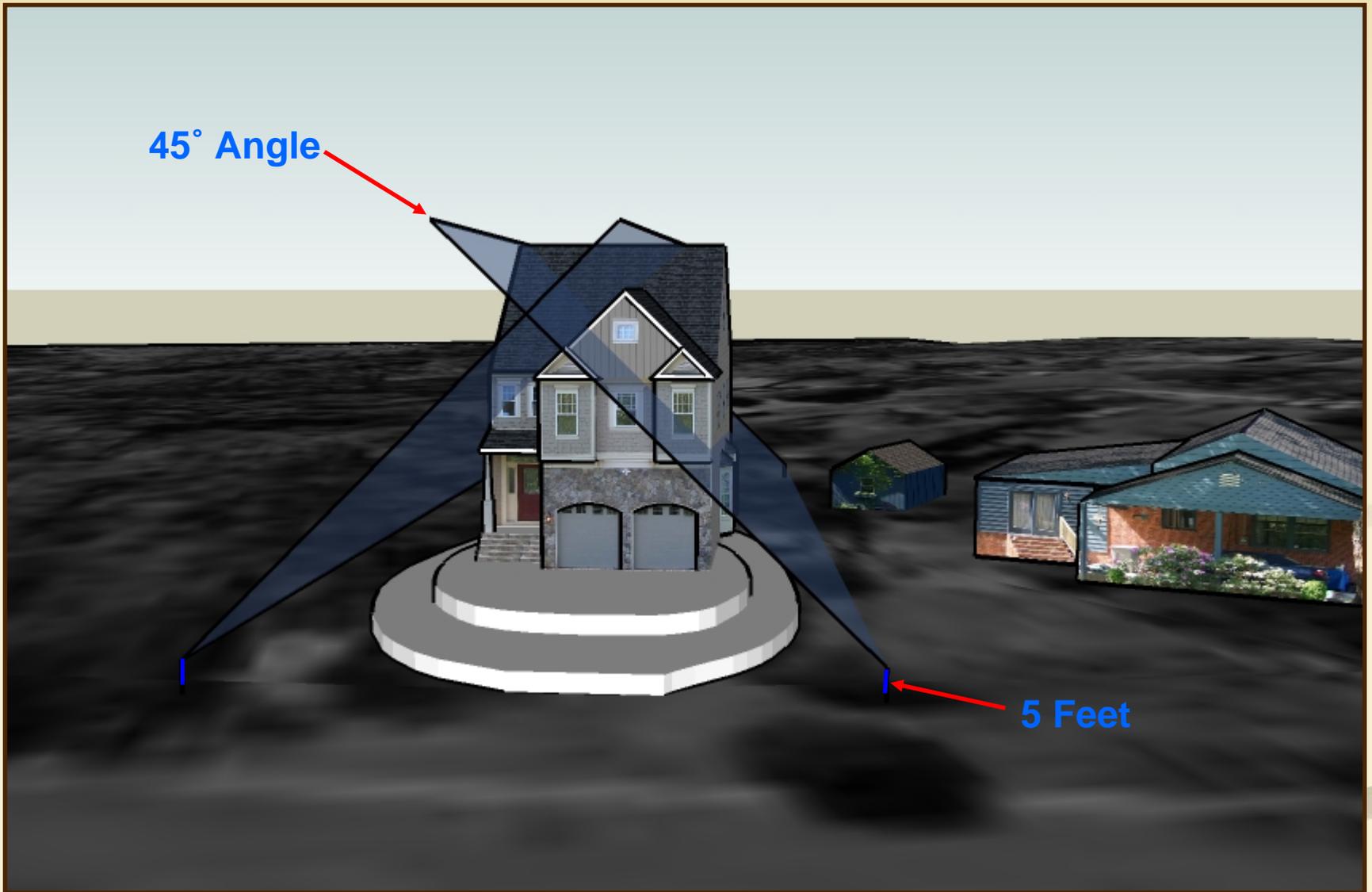
35° Bulk Plane Angle at 5 Feet Above Side Lot Line



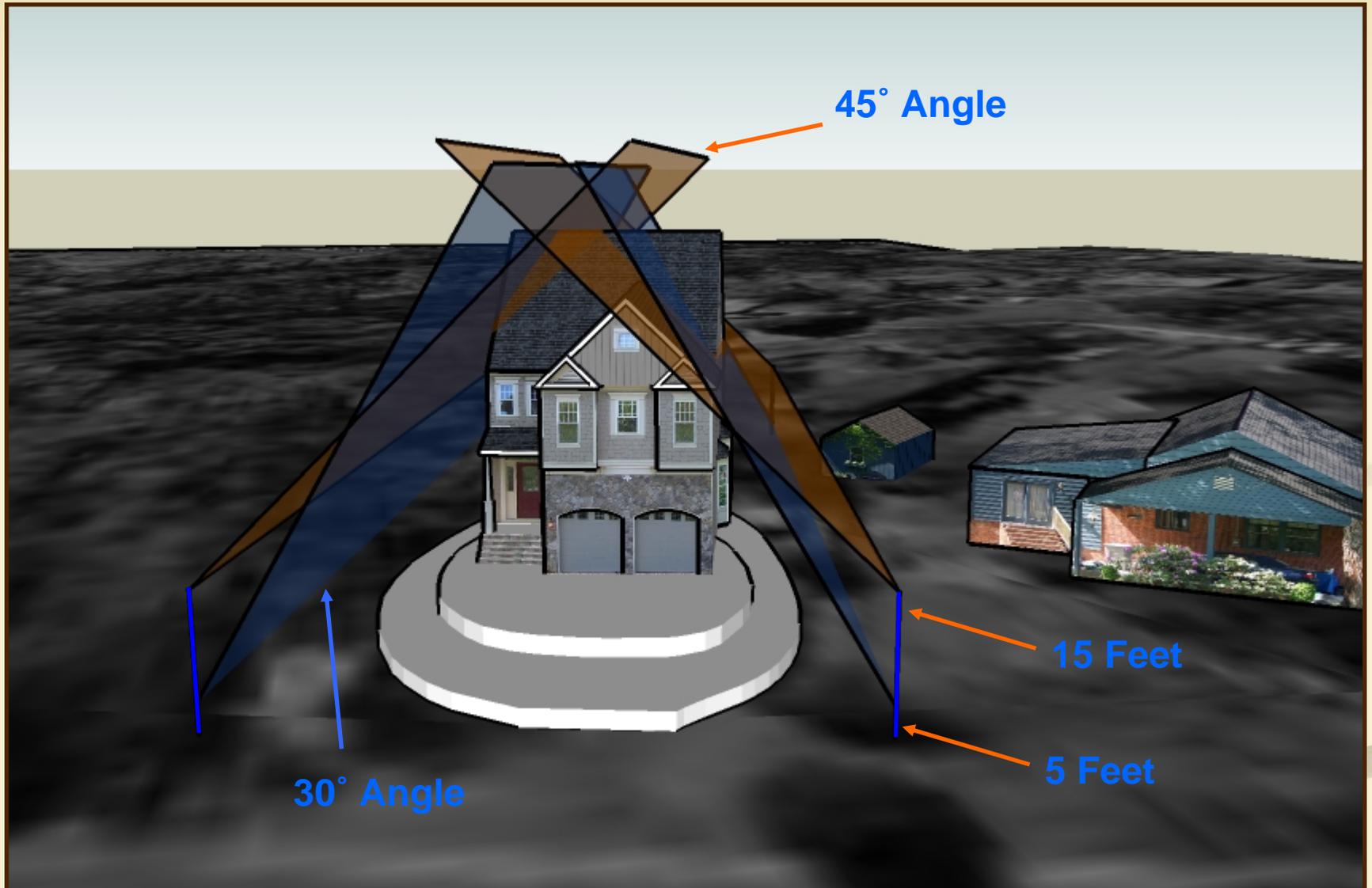
40° Bulk Plane Angle at 5 Feet Above Side Lot Line



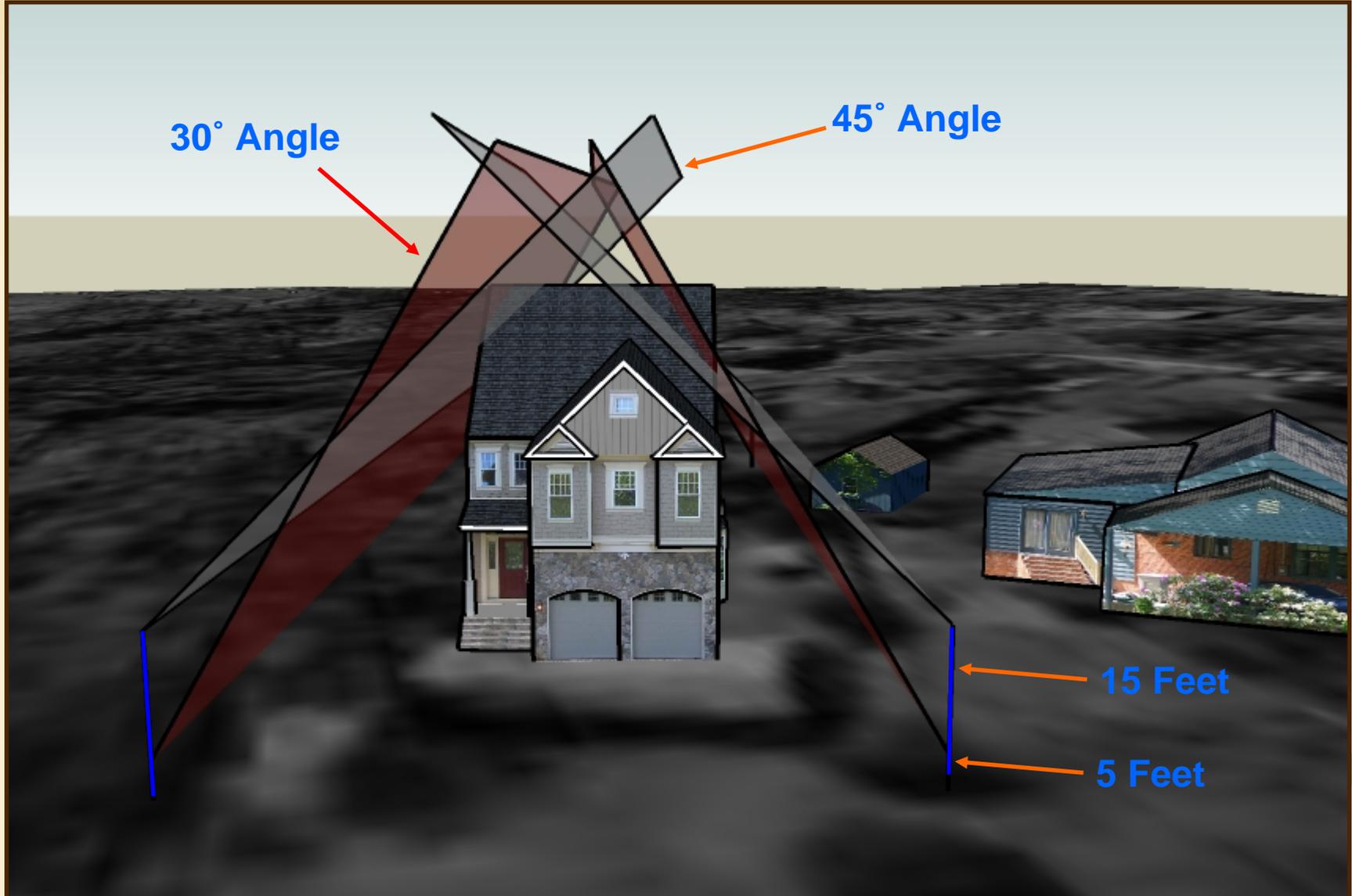
45° Bulk Plane Angle at 5 Feet Above Side Lot Line



Comparison of the 45° Angle at 15 Feet and 30° Angle at 5 Feet Above Side Lot Line, Post-Grade



Comparison of the 45° Angle at 15 Feet and 30° Angle at 5 Feet Above Side Lot Line, Pre-Grade



McLean Location



Image Comparison



Digital Photograph

3 Dimensional Model



Image Comparison

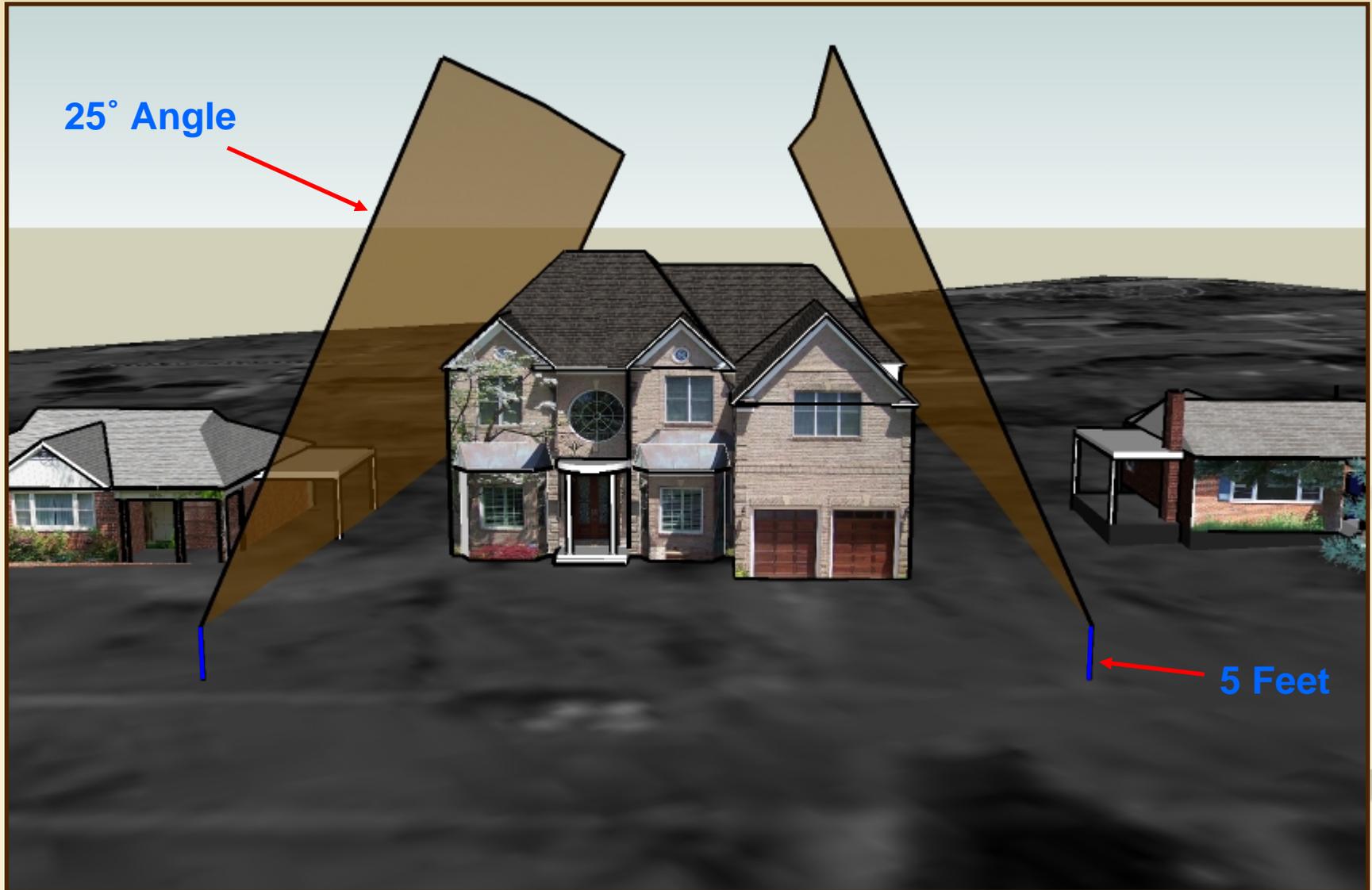


Digital Photograph

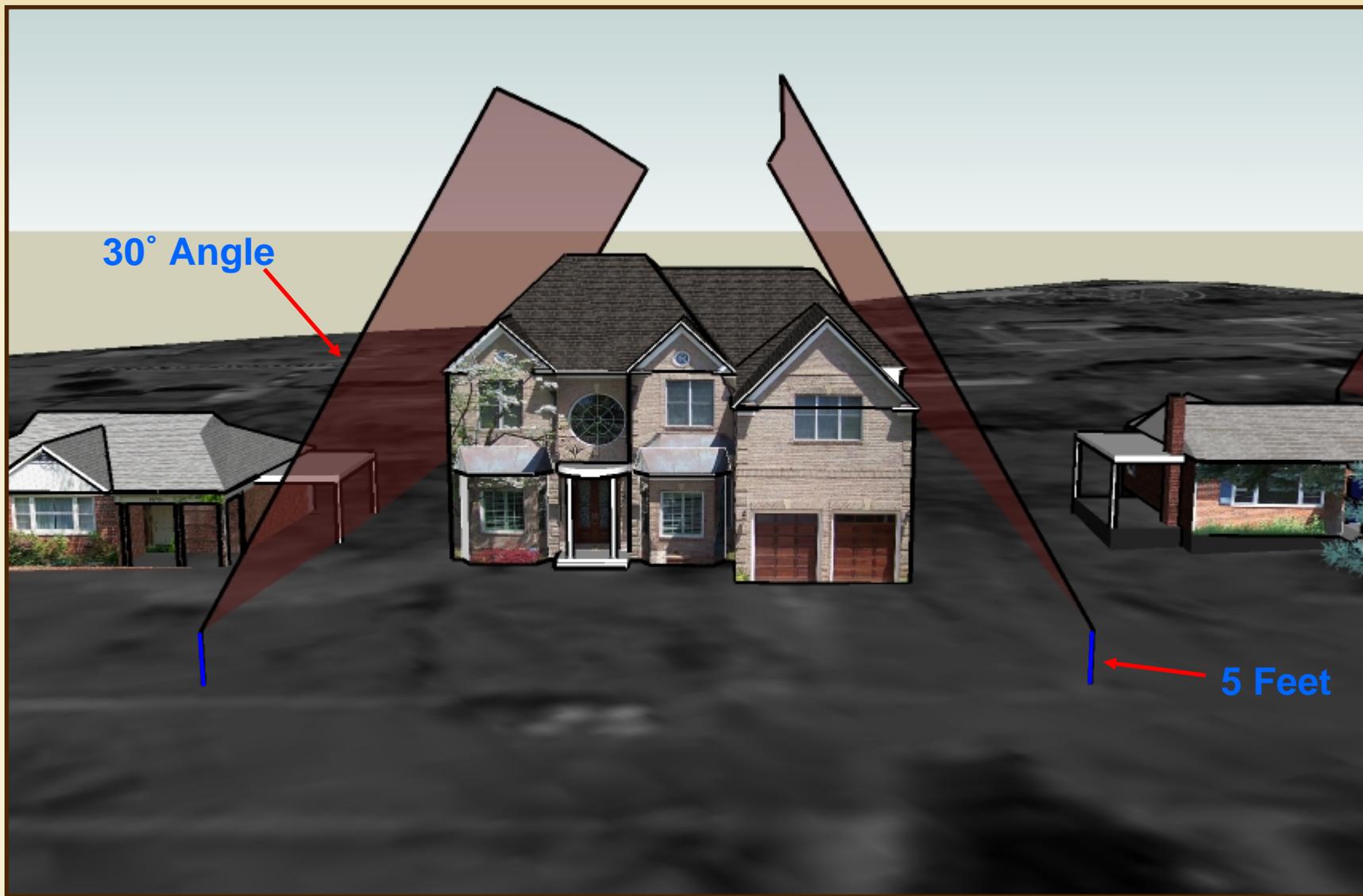
3 Dimensional Model



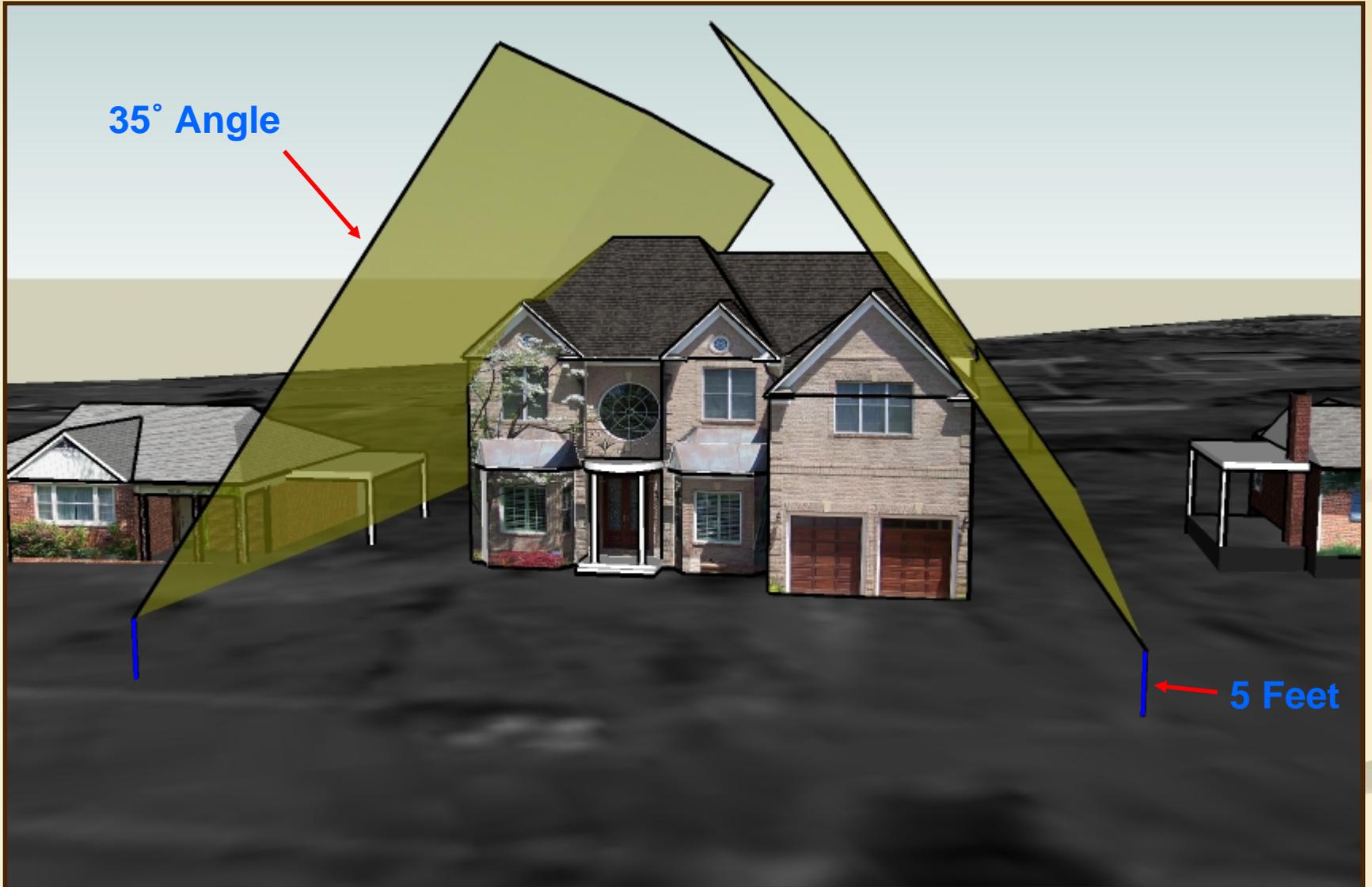
25° Angle at 5 Feet Above Side Lot Line



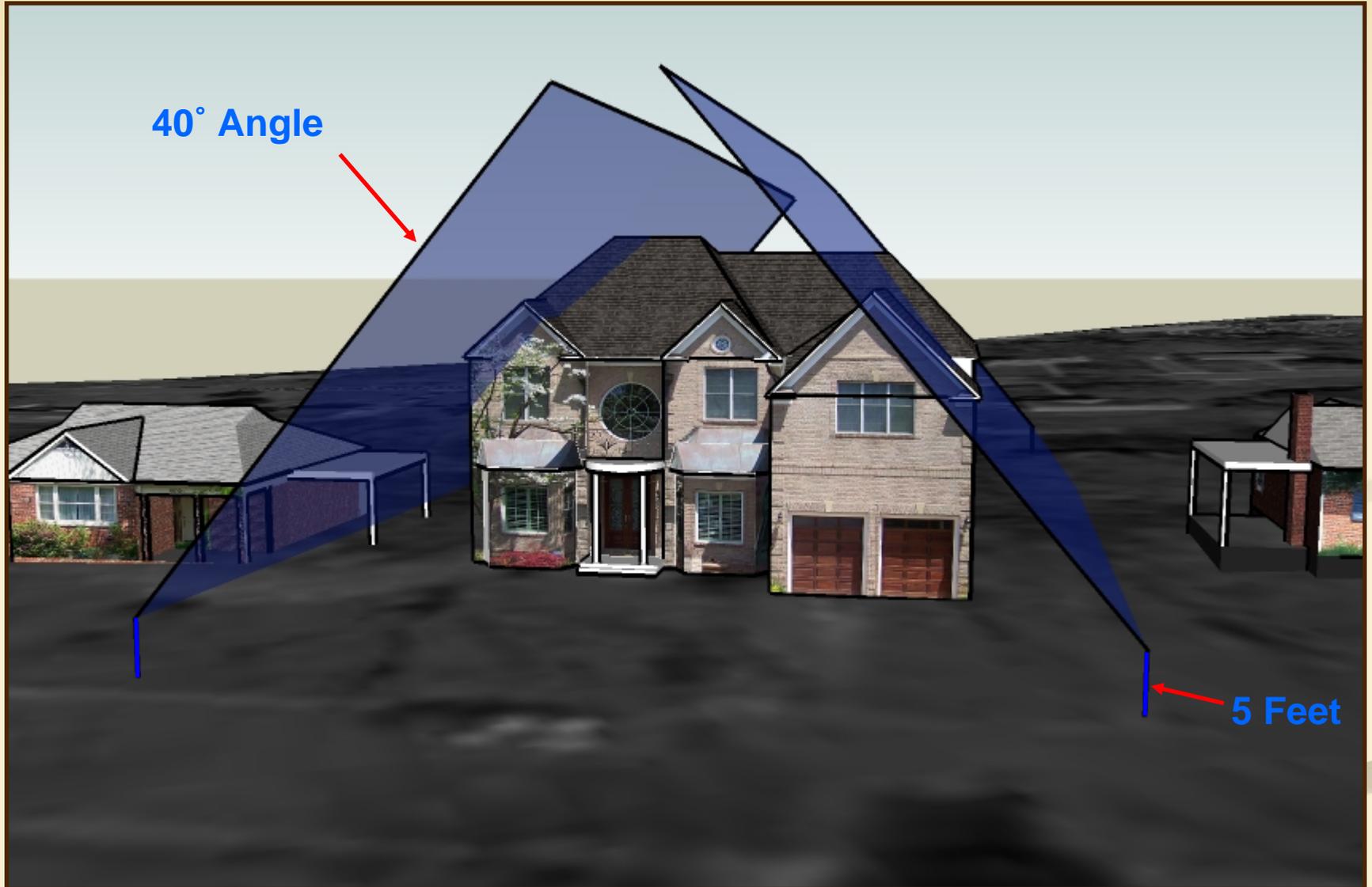
30° Angle at 5 Feet Above Side Lot Line



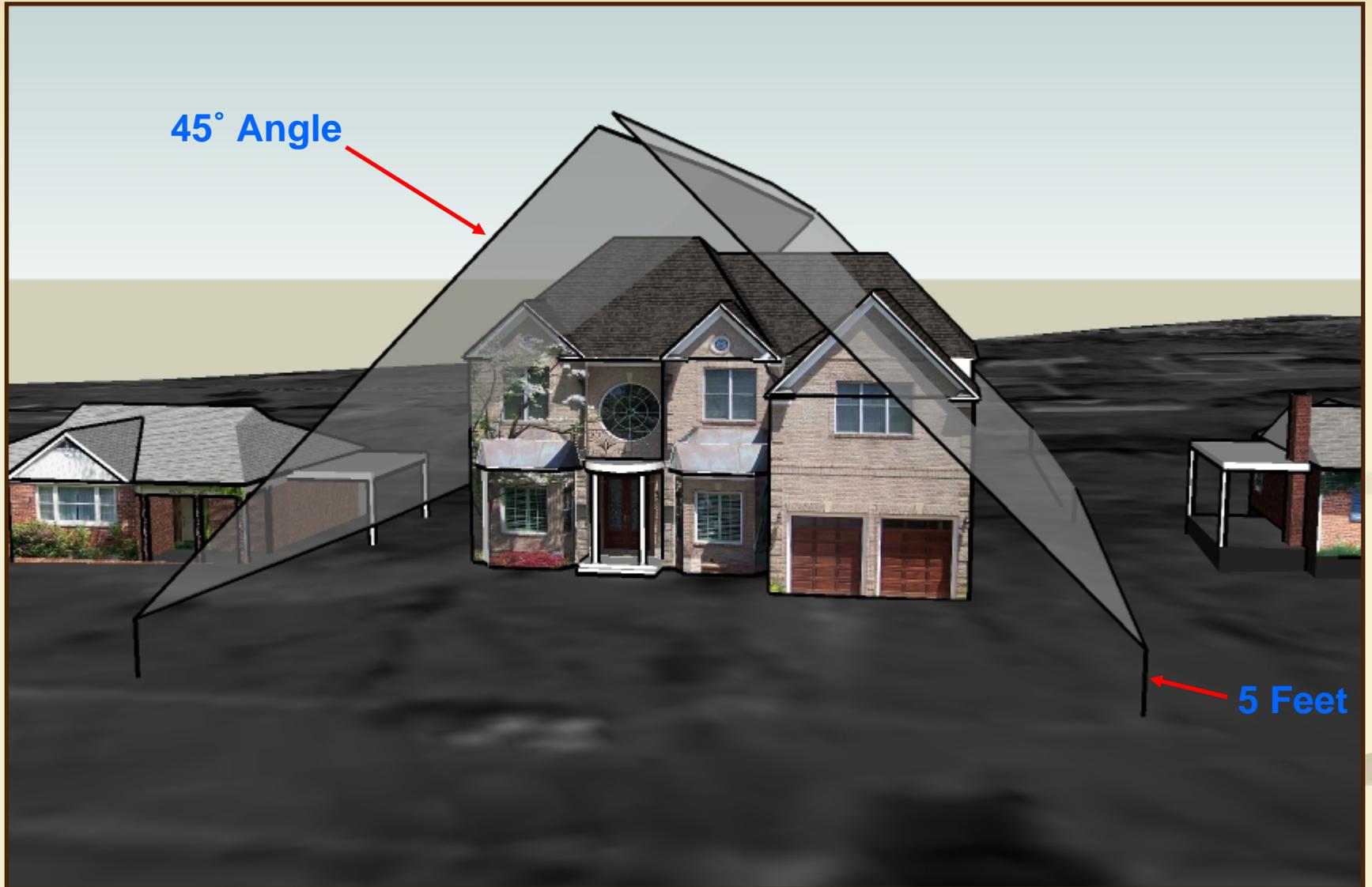
35° Angle at 5 Feet Above Side Lot Line



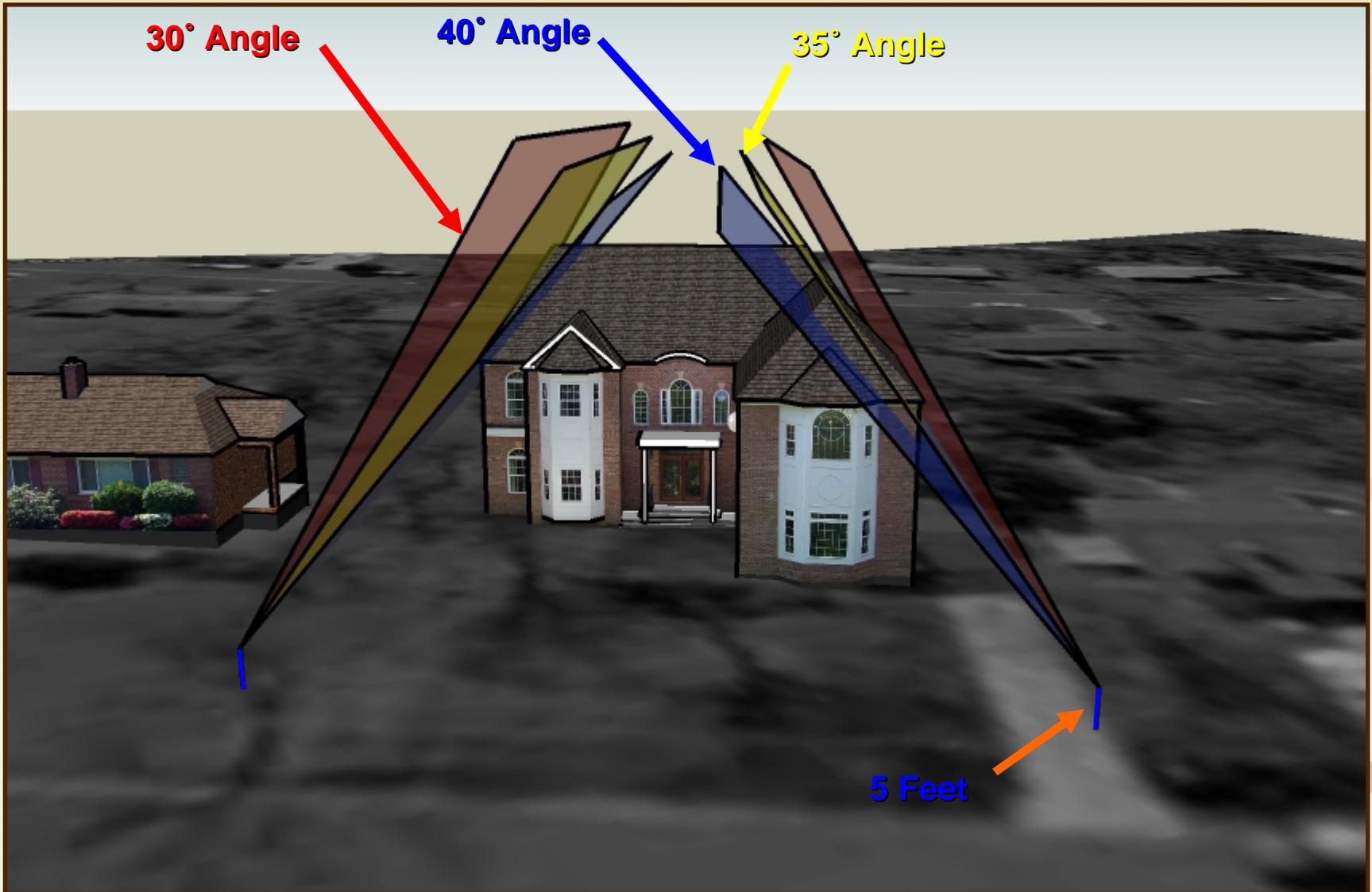
40 Degree Angle at 5 feet above side lot line



45 Degree Angle at 5 feet above side lot line



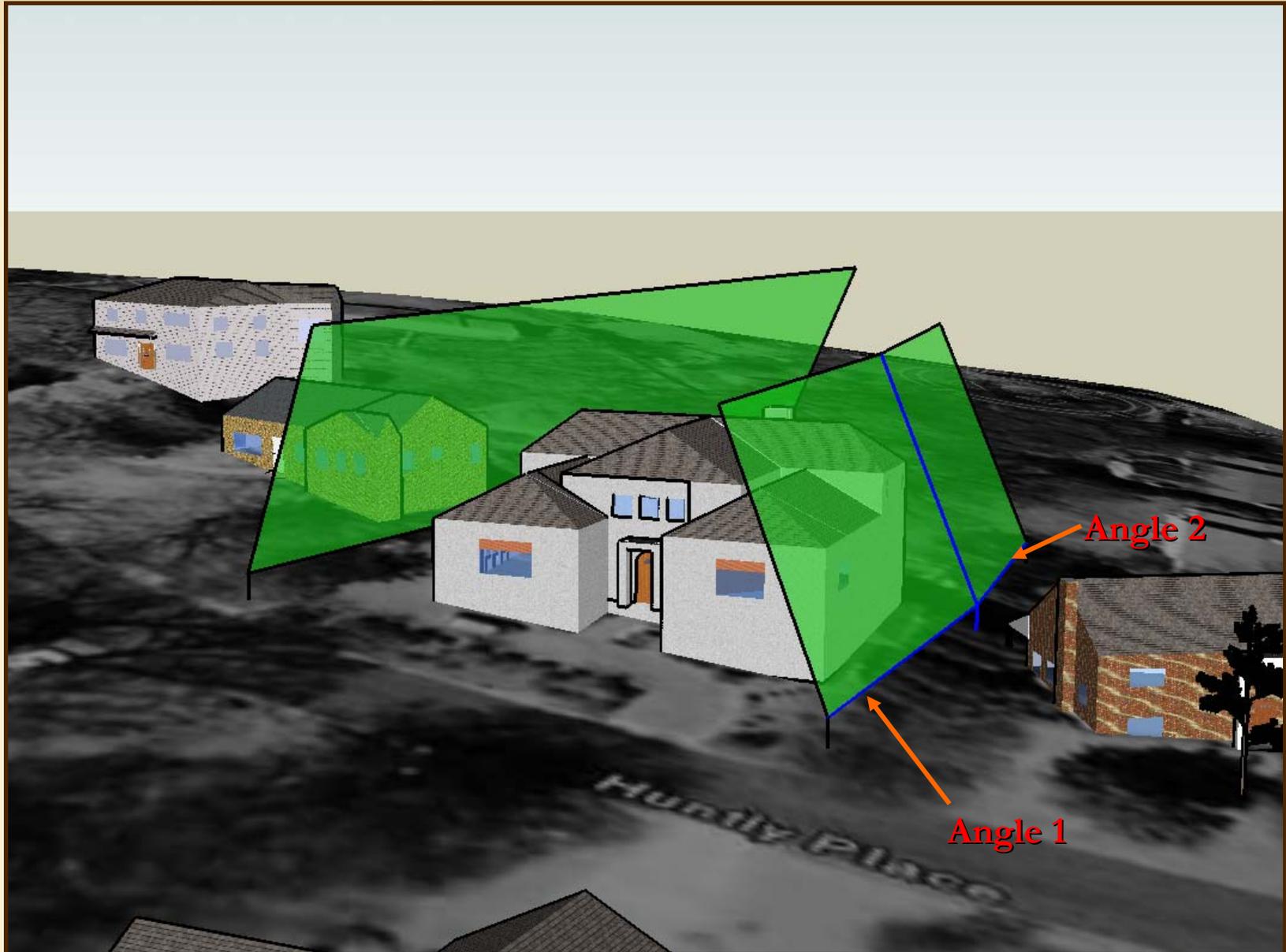
Comparing Angles



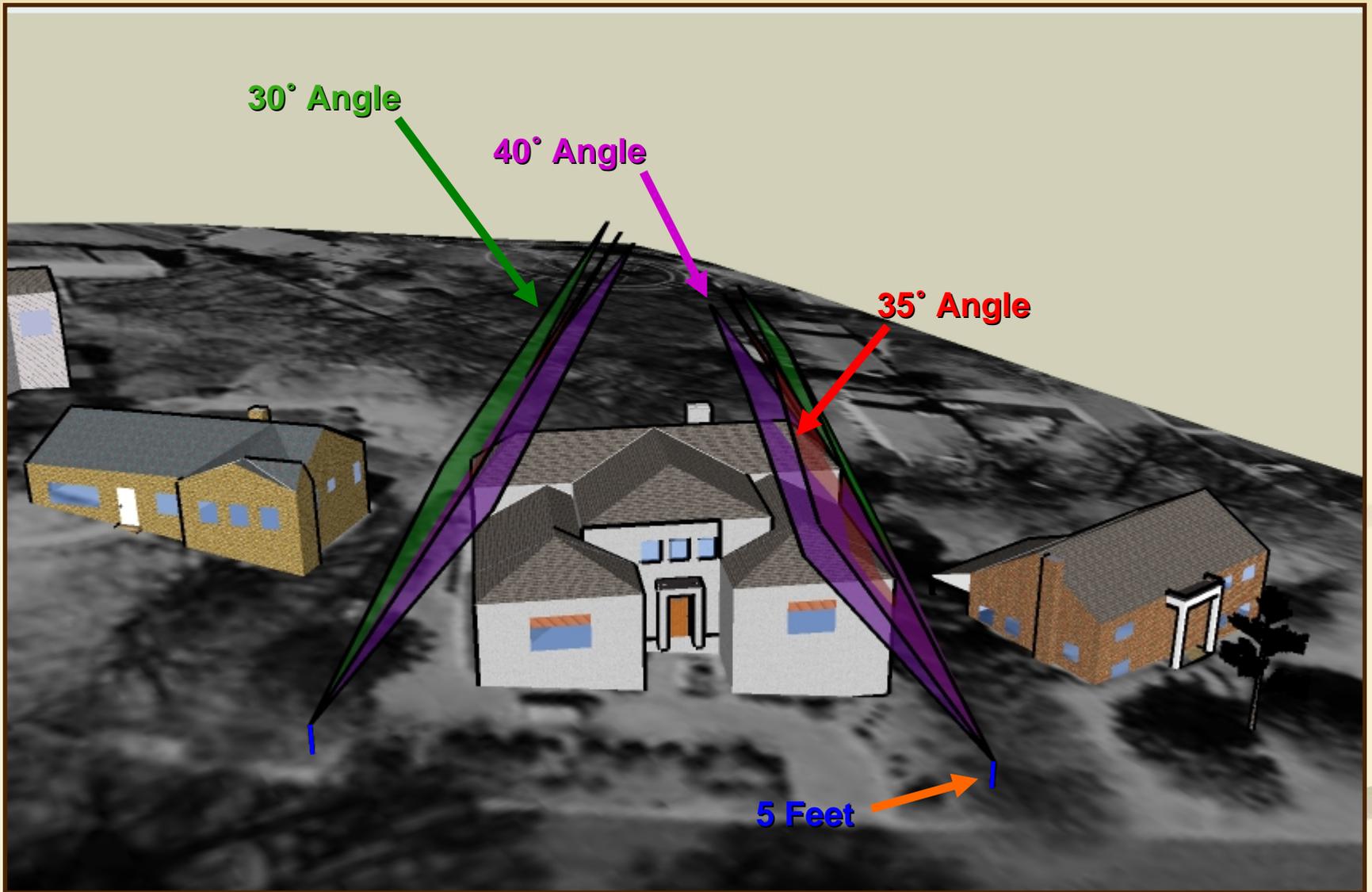
Located in the Alexandria Vicinity



30 Degree Angle at 5 feet above side lot line



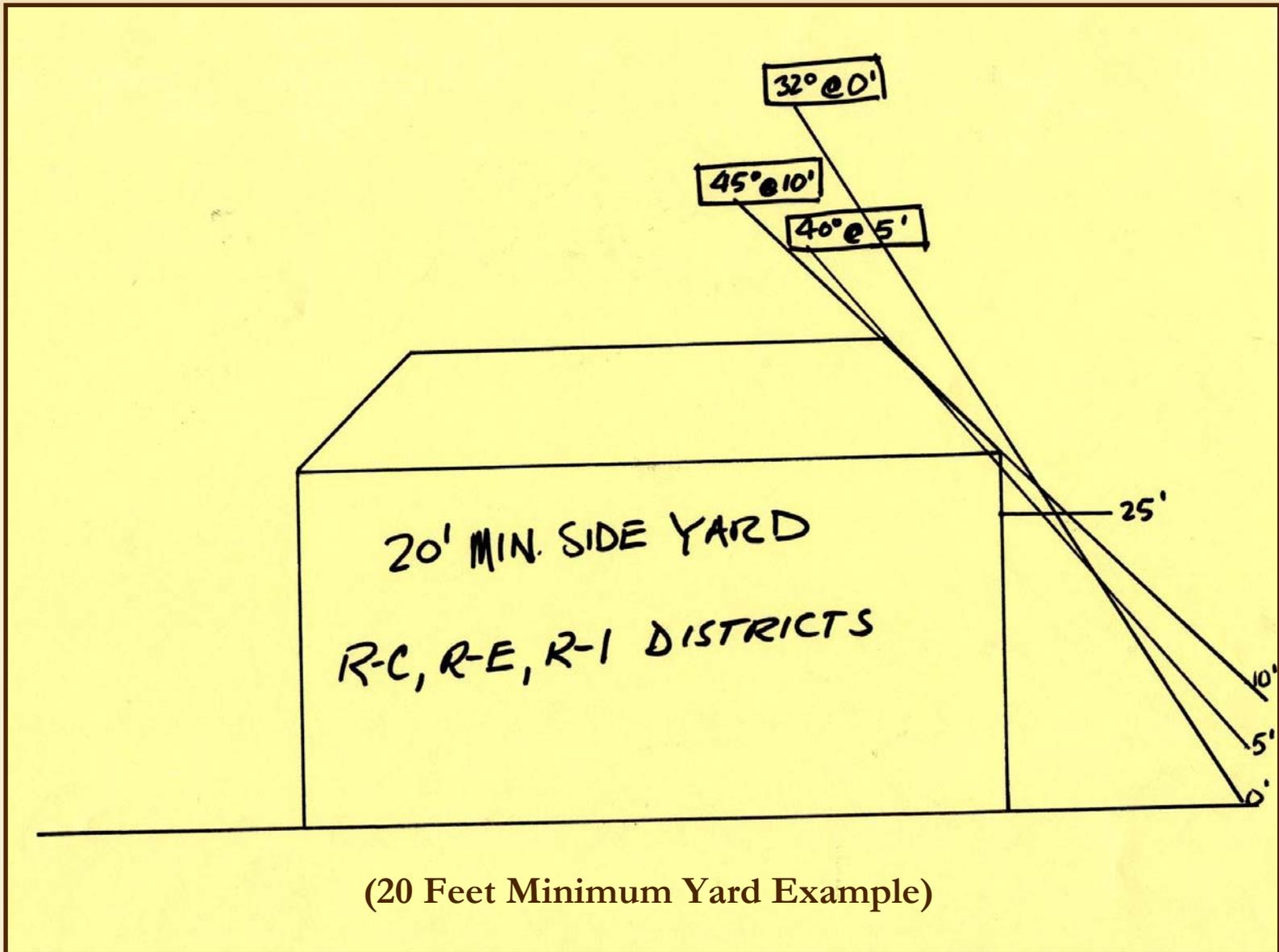
Comparing Angles



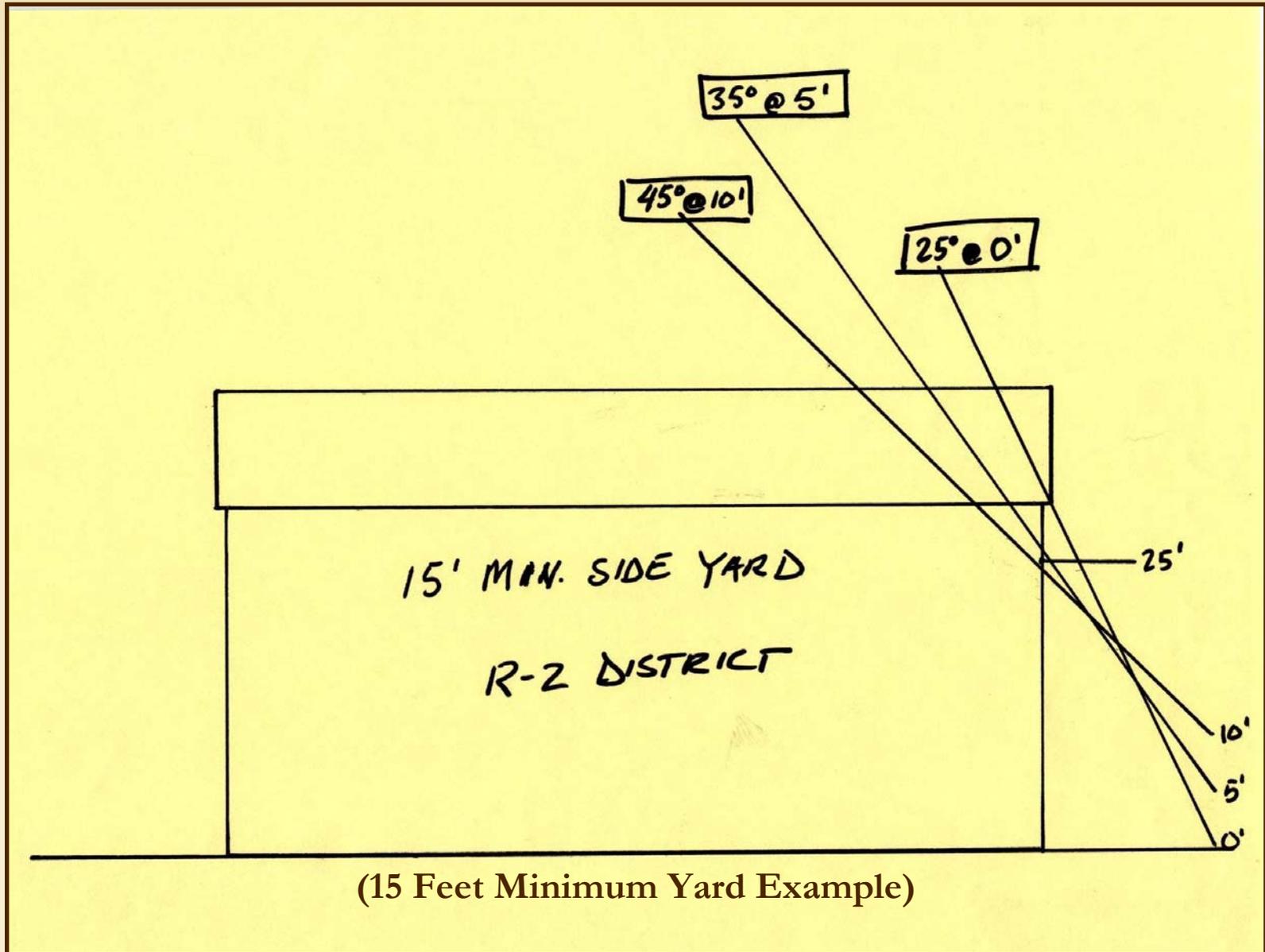
Proposed Angles According to Zoning District

Minimum Required Yard / Zoning District	8 feet / R-5 and R-8	10 feet / R-4	12 feet / R-3	15 feet / R-2	20 feet / R-C, R-E and R-1
Required Angle of Bulk Plane @ 5 feet above grade	20°	25°	30°	35°	40°
Height on Structure where ABP intersects	27'	27'	25'	27'	28'

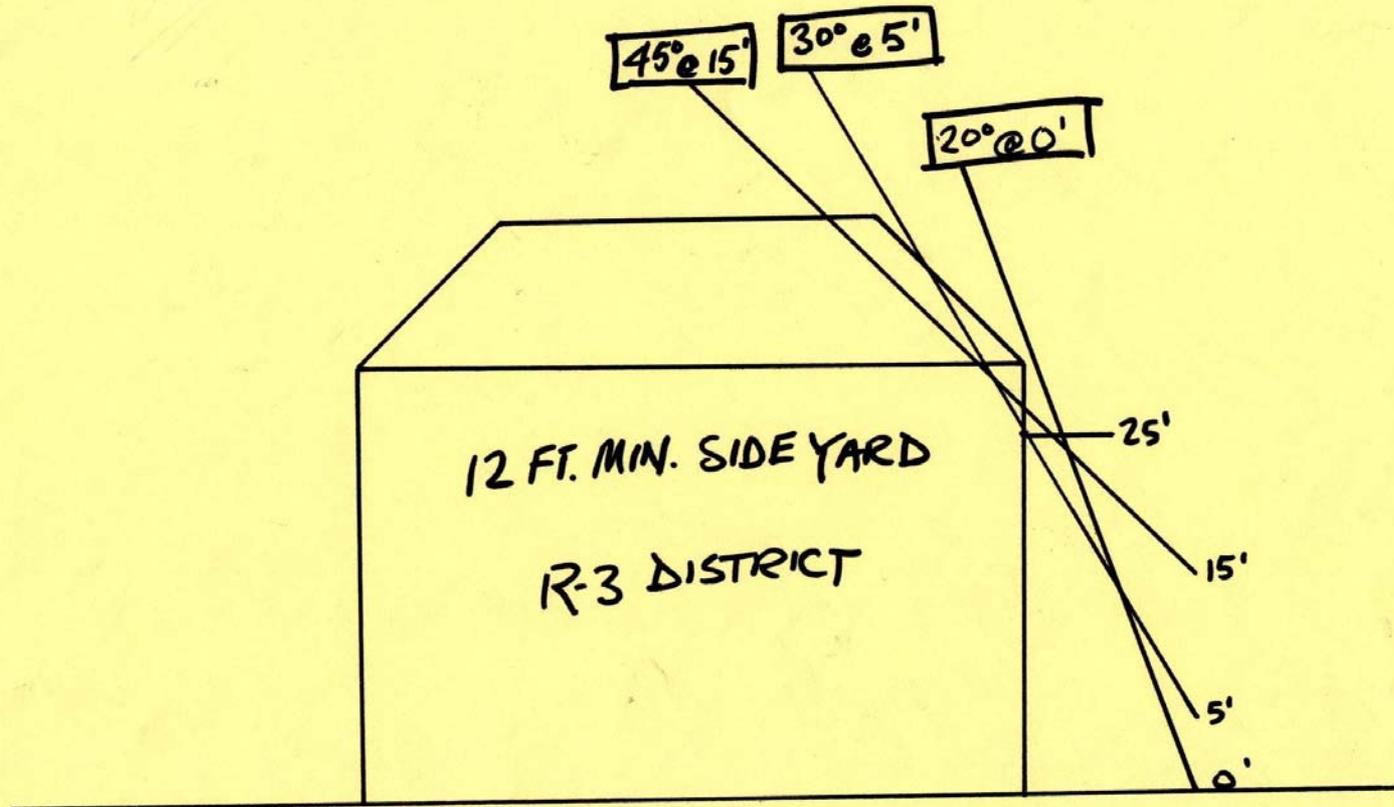
Comparative Impacts Using ABP's Taken From: (1) Grade
(2) 5 Feet Above Grade (3) 10 or 15 Feet Above Grade.



Comparative Impacts Using ABP's Taken From: (1) Grade
(2) 5 Feet Above Grade (3) 10 Feet Above Grade.

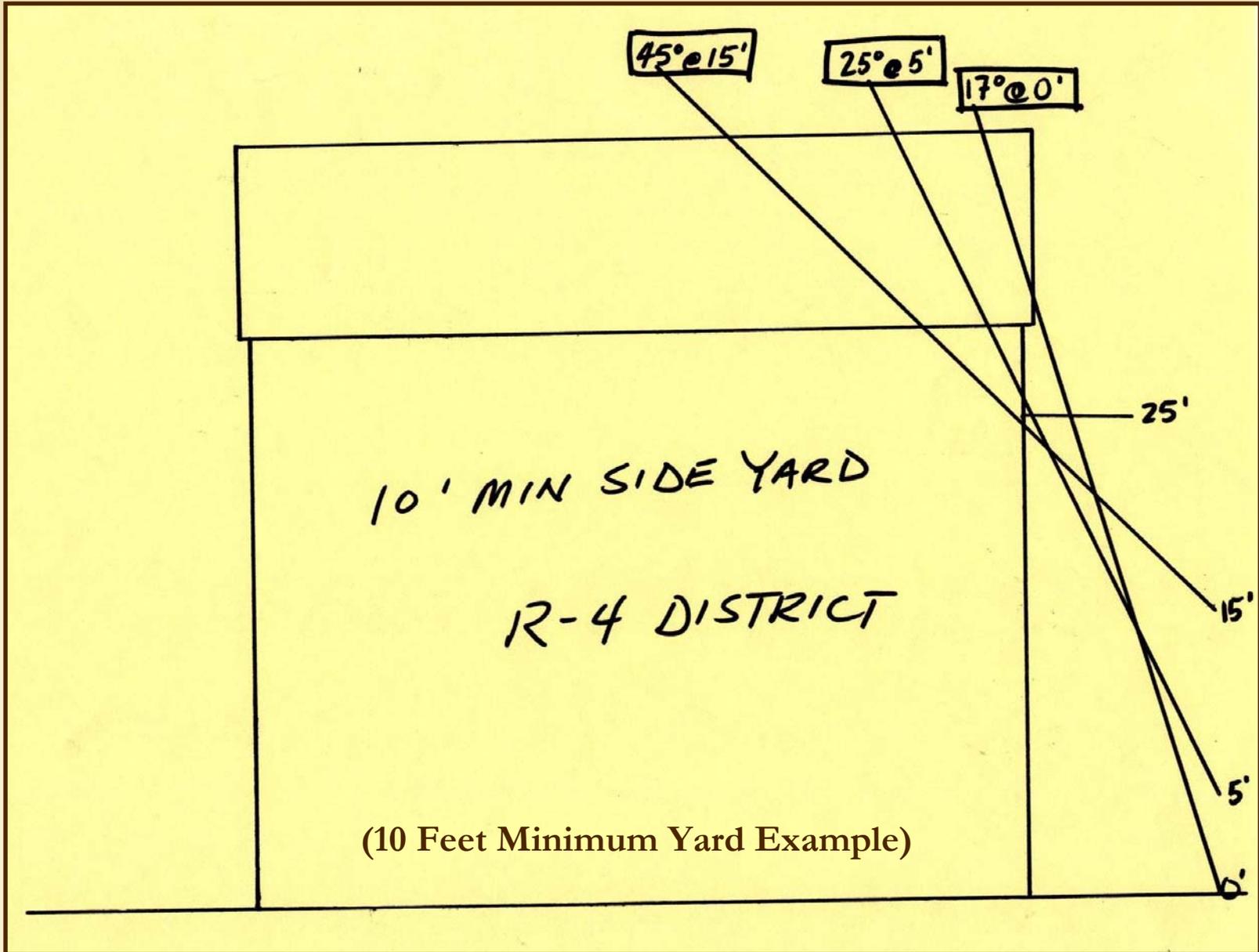


Comparative Impacts Using ABP's Taken From: (1) Grade
(2) 5 Feet Above Grade (3) 10 or 15 Feet Above Grade.

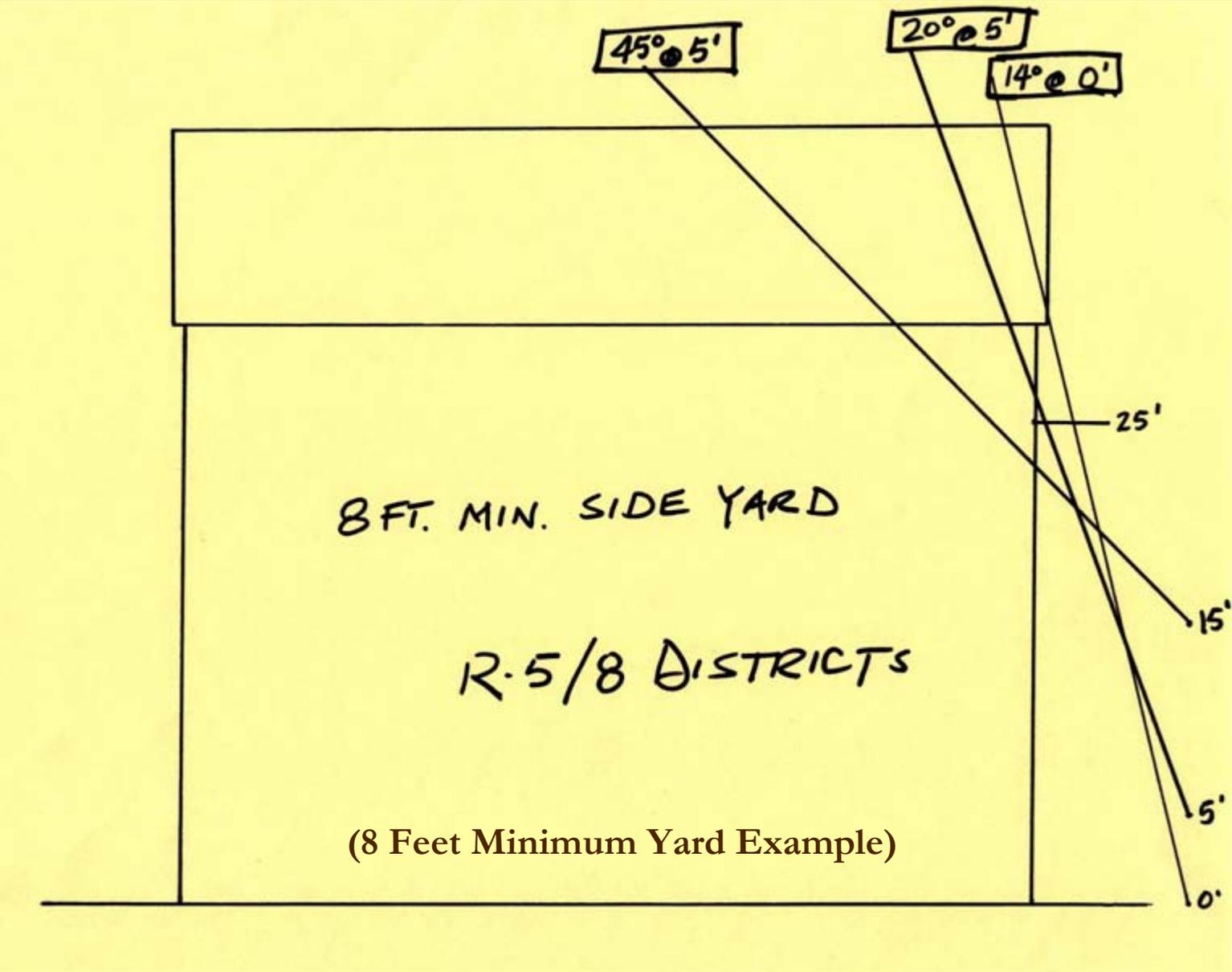


(12 Feet Minimum Yard Example)

Comparative Impacts Using ABP's Taken From: (1) Grade
(2) 5 Feet Above Grade (3) 10 or 15 Feet Above Grade.



Comparative Impacts Using ABP's Taken From: (1) Grade
(2) 5 Feet Above Grade (3) 10 or 15 Feet Above Grade.



CURRENT ZONING ORDINANCE REGULATIONS: PERMITTED EXTENSIONS INTO MINIMUM REQUIRED YARDS

- **2-412 Permitted Extensions Into Minimum Required Yards**

- The features set forth in the following paragraphs may extend into minimum required yards as specified.
- For lots in the PDH, PDC, PRC and PRM Districts, the minimum required yard shall be deemed to be one-half of the distance of the yard that has been established by the location of the principal structure on a lot. In other districts where minimum yard requirements are determined by a specified distance between buildings, the lot lines shall be established by a line located between the buildings drawn at the mid-point and perpendicular to the shortest line between them.
- 1. The following shall apply to any structure:
 - A. Cornices, canopies, awnings, eaves or other such similar features, all of which are at least ten (10) feet above finished ground level, may extend three (3) feet into any minimum required yard but not closer than two (2) feet to any lot line. This provision shall not apply to permanent canopies over gasoline pump islands which have supports located on the pump islands, provided that such canopies may extend into minimum required yards but shall not extend into any required transitional screening areas nor overhang travel lanes, service drives or sidewalks.
 - B. Sills, leaders, belt courses and other similar ornamental features may extend twelve (12) inches into any minimum required yard.
 - C. Open fire balconies, fire escapes, fire towers, uncovered stairs and stoops, air conditioners and heat pumps, none of which are more than ten (10) feet in width, may extend five (5) feet into any minimum required yard, but not closer than five (5) feet to any lot line.
 - D. Bay windows, oriels, and chimneys, none of which are more than ten (10) feet in width, may extend three (3) feet into any minimum required yard, but not closer than five (5) feet to any lot line.
 - E. Carports may extend five (5) feet into any minimum required side yard, but not closer than five (5) feet to any side lot line.
 - F. An accessibility improvement may extend into any minimum required yard.

PERMITTED EXTENSIONS CONT. (DECKS ATTACHED TO SINGLE FAMILY DETACHED DWELLINGS)

- A. Any open deck with no part of its floor higher than four (4) feet above finished ground level may extend into minimum required yards as follows:
 - (1) Front yard: 6 feet, but not closer than 14 feet to a front lot line and not closer than 5 feet to any side lot line
 - (2) Side yard: 5 feet, but not closer than 5 feet to any side lot line
 - (3) Rear yard: 20 feet, but not closer than 5 feet to any side or rear lot line

- B. Any open deck with any part of its floor higher than four (4) feet above finished ground level may extend into minimum required yards as follows:
 - (1) Front yard: No extension
 - (2) Side yard: No extension
 - (3) Rear yard: 12 feet, but not closer than 5 feet to any rear lot line and not closer than a distance equal to the minimum required side yard to the side lot line

- C. Any roofed deck with no part of its floor higher than four (4) feet above finished ground level may extend into minimum required yards as follows:
 - (1) Front yard: No extension
 - (2) Side yard: No extension
 - (3) Rear yard: 12 feet, but not closer than 5 feet to any rear lot line and not closer than a distance equal to the minimum required side yard to the side lot line

STRUCTURES EXCLUDED FROM MAXIMUM HEIGHT REGULATIONS

- **2-506 Structures Excluded From Maximum Height Regulations**
- 1. The height limitations of this Ordinance shall not apply to accessory structures or uses such as barns, silos, chimneys, spires, cupolas, gables, penthouses, scenery lofts, domes, flagpoles, purple martin birdhouses, flues, monuments, television antennas, water towers, water tanks, smokestacks, or other similar roof structures and mechanical appurtenances; provided, however:
 - A. No such structure when located on a building roof shall occupy an area greater than twenty-five (25) percent of the total roof area.
 - B. No such structure shall be used for any purpose other than a use incidental to the main use of the building.
 - C. Air-conditioning units on building roofs shall not be excluded from the maximum height regulations, unless the units are located in a penthouse or are completely screened on all four sides, such penthouse or screening to be an integral architectural design element of the building.
 - D. No such freestanding structure shall be located except in strict accordance with the provisions of Part 1 of Article 10.
- 2. A parapet wall, cornice or similar projection may exceed the height limit established for a given zoning district by not more than three (3) feet, but such projection shall not extend more than three (3) feet above the roof level of any building.

BUILDING FEATURES PROPOSED TO BE EXCLUDED FROM PROPOSED ANGLE OF BULK PLANE

- Chimneys
- Accessibility improvements, as defined in the Zoning Ordinance.

Under certain circumstances it may be appropriate to allow the Board of Zoning Appeals to approve a modification of the angle of bulk plane requirement subject to certain criteria

- The following are examples of circumstances that may warrant such an option:**

EXAMPLES OF WHEN A MODIFICATION OF ANGLE OF BULK PLANE REQUIREMENT MIGHT BE APPROPRIATE

- On lots that met lot size requirement in effect when created, but do not meet current lot size requirements. Such lots are deemed “buildable” and are subject to the current minimum yard requirements.
- On lots containing some unique characteristic, such as topography, shape, and/or environmental features that make it difficult to meet the angle of bulk plane requirement.

ANGLE OF BULK PLANE: POSSIBLE GRANDFATHER PROVISIONS

- The following shall be grandfathered from the angle of bulk plane requirements:
- A special exception, special permit, conceptual development plan, final development plan, development plan or proffered generalized development plan approved prior to the effective date of the amendment when height and/or yards are depicted.
- When a building permit is submitted prior to the effective date of the amendment and it is diligently prosecuted within 6 months.

How are the proposed angle of **BULK PLANE** and **GRADE ADJUSTMENT** regulations applied to internal subdivision lots vs. peripheral subdivision lots?

- The proposed adjustment to using the lower of the pre/post grade elevations for measuring building height would be applied only to those lots that abut existing single family lots that are residentially zoned or developed (peripheral lots).
- Proposed Angle of Bulk Plane would apply to all lots within a subdivision.