



## III.A.6 SHADOW STUDY – STEP-BY-STEP INSTRUCTIONS

(Updated October 5, 2004)

Step 1: Depending on which day of the year is used for shadow study (June 21 or December 21) and time of day (2 hours before sunrise, noon, or 2 hours before sunset), determine the direction of shadow lines in degrees (i.e., on December 21, 2 hours after sunrise, the shadow line is 321.3 degrees from the North arrow). See Diagram 1 below to determine angles.

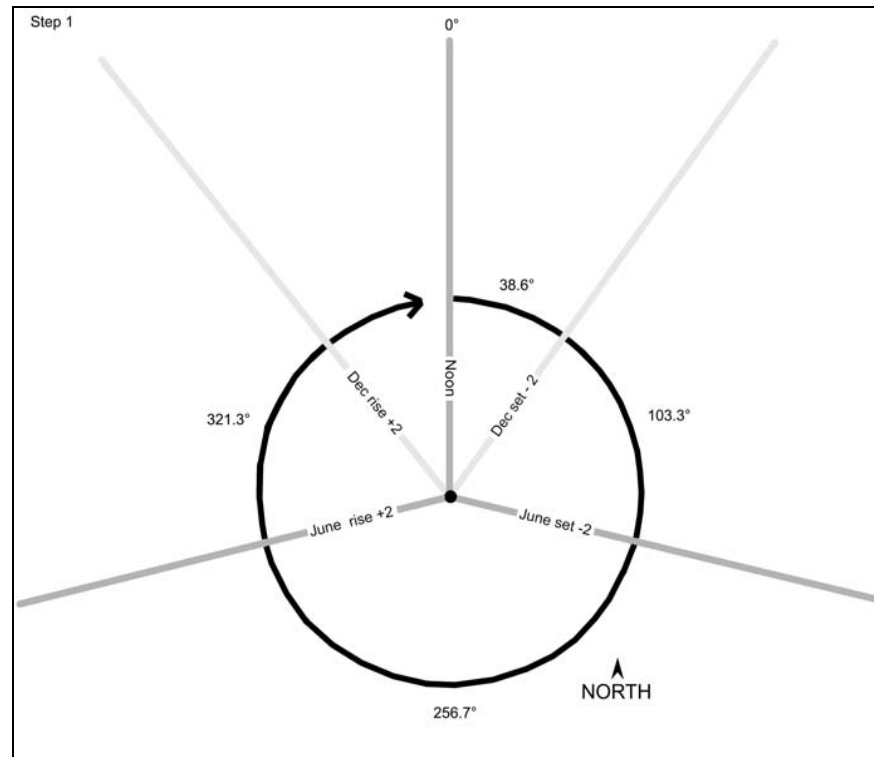


Diagram 1

Step 2: Draw building walls as posts and draw shadow lines using the degrees from North arrow in Step 1. The length of the shadow is determined by using the corresponding Multiplier from Chart 1 and the height of each wall post. Multiply the height of each post by the corresponding 1/tan number according to the chart.

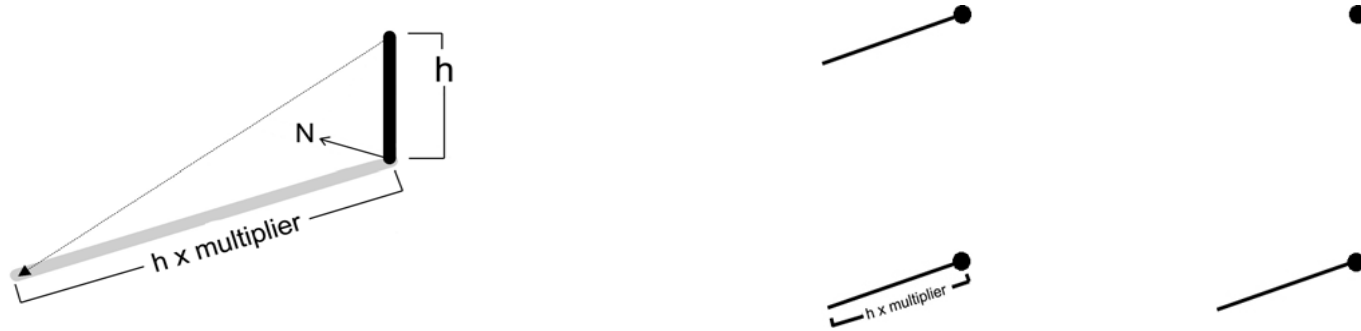
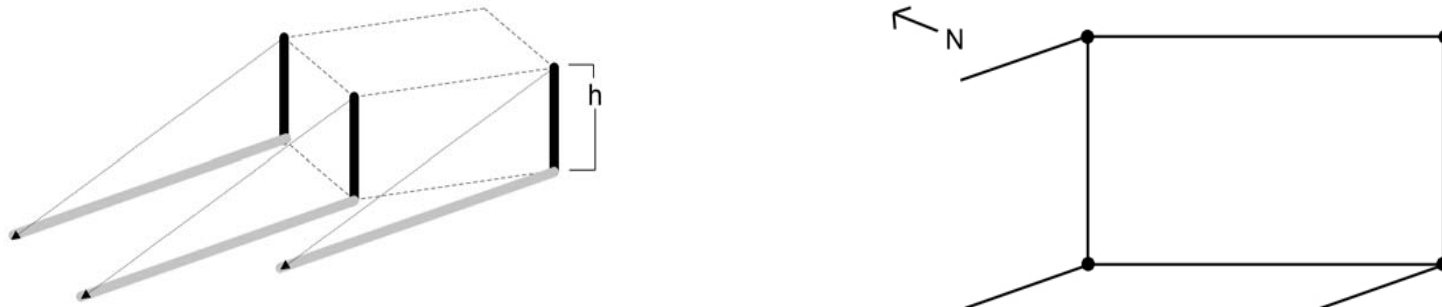
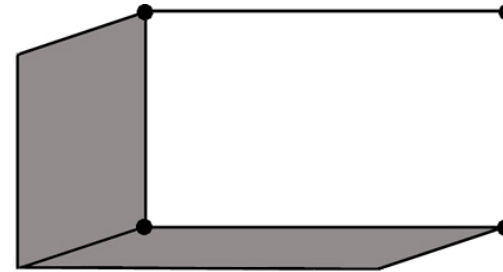
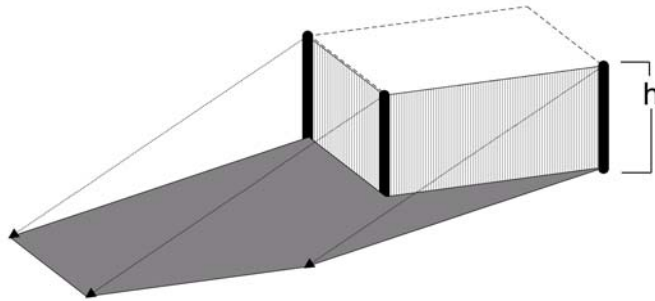


Chart 1	Multiplier	
	June 21	Dec. 21
2 hours after sunrise	2.49	3.10
Noon	0.26	1.83
2 hours before sunset	2.49	3.10

Step 3: Draw all building walls, using posts as guidelines. All shadow lines are parallel to one another, and each posts' length is determined by its height multiplied by the corresponding multiplier number.

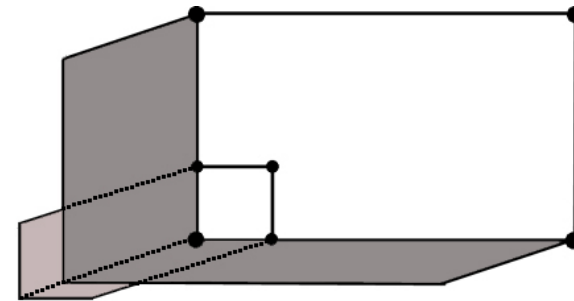
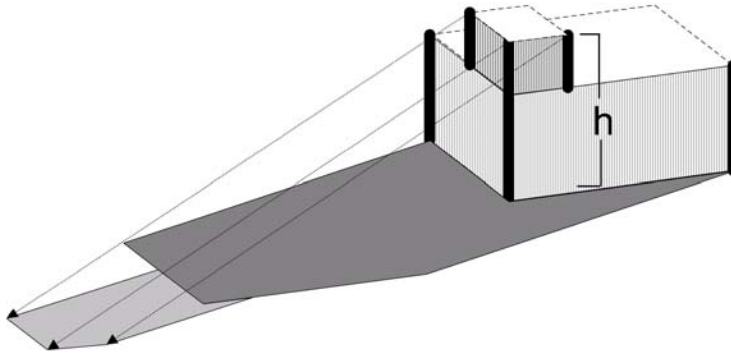


Step 4: Connect all shadows as shown to create a darkened shadow.

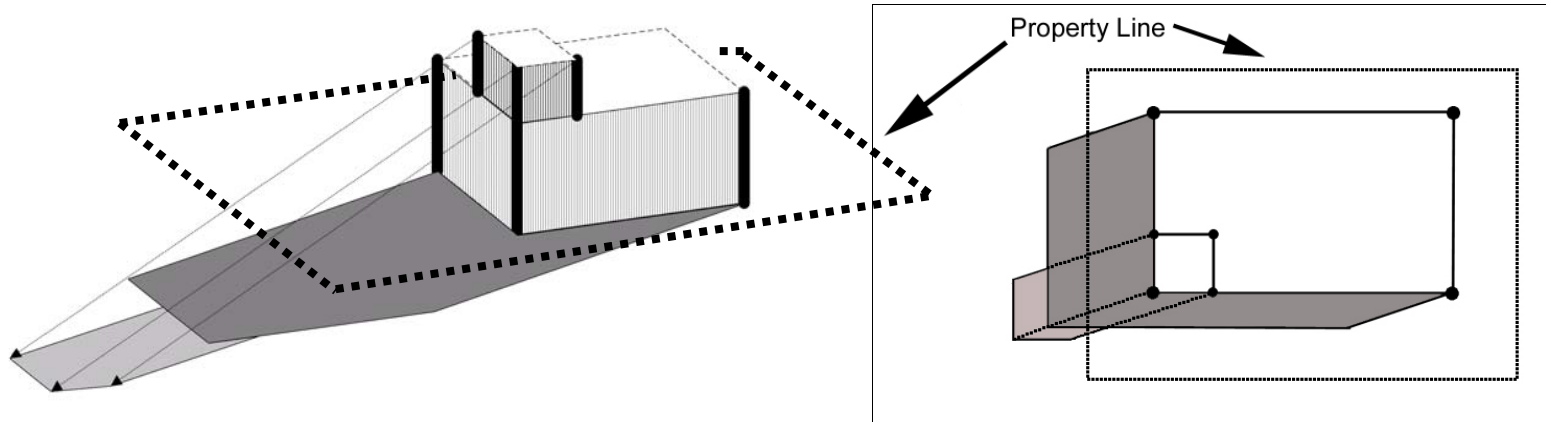


Step 5: All existing and new shadows should be drawn and differentiated in order to see a new project's impact on existing shading conditions.

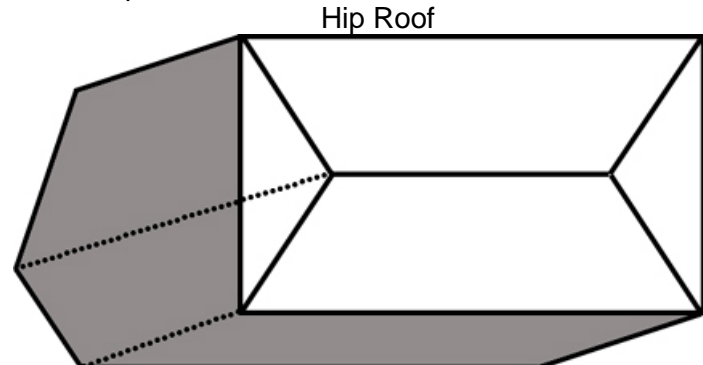
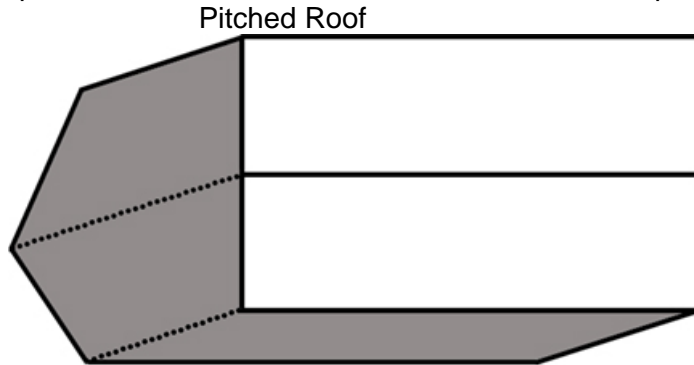
Step 6: Varying heights are calculated similarly.



Step 7: Add building footprints on any surrounding properties that are affected by the existing and/or new shadows. If a shadow hits a habitable building, indicate where there are windows on the walls affected and if possible, the use of those rooms.



Step 8: Unique architectural features should follow the same procedures. Some examples are as follows:



## TIPS ON PREPARING SHADOW STUDIES

1. Compare existing shadow to new shadow on same sheet
2. Show all structures that the shadows hit.
3. Show all buildings within property lines.
4. Indicate in writing that all buildings being shadowed are shown on the diagram.
5. If shadow hits the wall of an adjacent structure show or describe where existing shadow hits the wall in relation to existing windows on that structure.
6. If there is new or increased shadowing on a wall, show or describe where the new or increased shadowing will hit the wall in relation to the windows on that wall. Indicate the use of the windows (garage, bedroom, bathroom, living room, etc.), if known.
7. Indicate if new shadow will shade windows that weren't shaded before. Again, indicate the use of the new windows that will be shadowed.