

Using the Calculate Menu to Do Unit Cost Take-offs, Step-by-step

The calculate menu can provide take-off quality lists given that you supply archiCAD with the base information. While there are 3 ways to introduce this data into ArchiCAD objects, we will discuss the most universal option... Properties by Criteria.

Our tutorial will take you through a simple example of assigning data to and retrieving it from a simple wall. The concepts will, however, be applicable to all the construction elements—roofs, slabs, floors, columns, beams—in your Virtual Building.

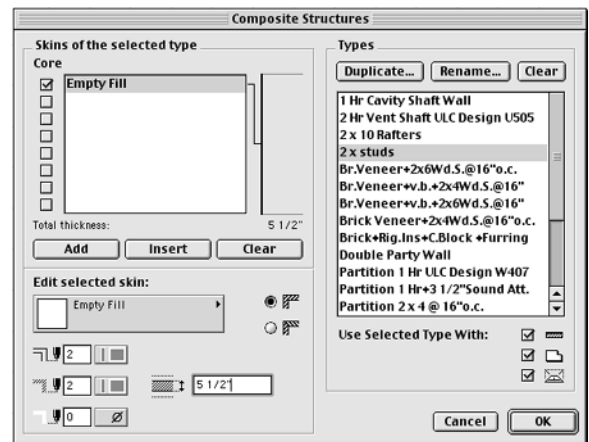
*The essence of this exercise is that you will uniquely identify a wall type and assign properties to it based on its unique qualities. This method allows you to create the most universal type of take off, based on **unit costs**, e.g.: costs per lineal foot, square feet/yards, cubic feet/yards, and by the numbers of items.*

The example we will use is how to count 2 x studs in a framed wall, based on the one stud per foot rule of thumb.

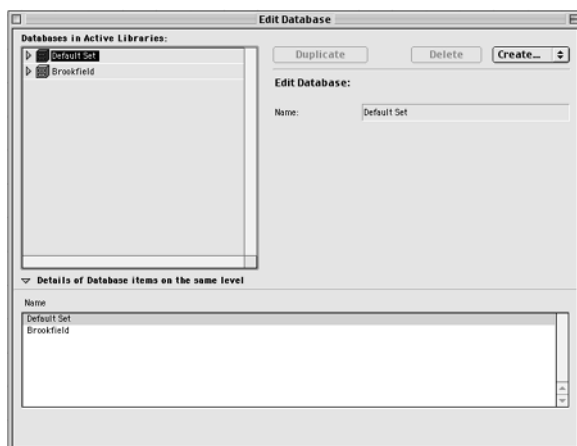
1. From the Options Menu, select “Composites” and set up a structure by duplicating an existing structure, call it “2 x 6 ext. stud wall” and use “Empty Fill” as your “skin.” Make it 5 1/2 inches thick. (See Figure 1)

Create Your own Company Database

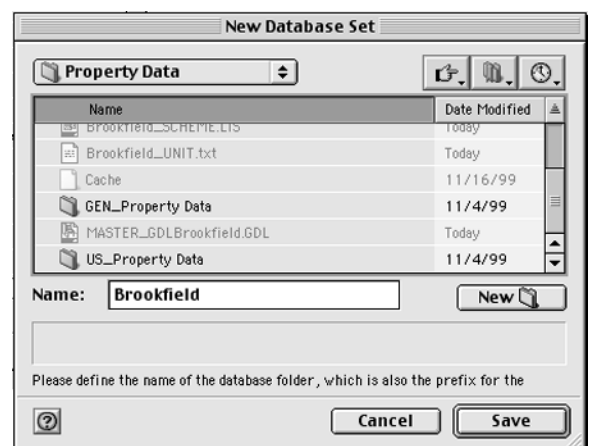
2. Pull down “Edit Database” from the Calculate Menu. (See Figure 2)
3. Create a New Database by clicking on the “Default Set” database and pressing the “Create...” pop-out button and choose “Database.” A warning box comes up and asks: “Do you want to create a new Database?” Press “Create.”
4. Name the Database (use your company name) and save it into the Property Data Folder in your loaded ArchiCAD Library 65. (See Figure 3)



(Figure 1)

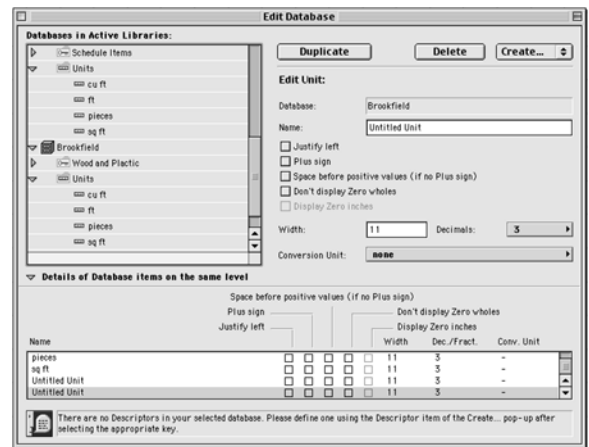


(Figure 2)



(Figure 3)

5. Select the new Database you just created.
6. Display all the contents from the Default Database and one of the folders will be called units. Display the contents of “Units” and you will see several units of measure already set up. Let’s borrow these by shift/clicking to select them and Control/drag (Windows) or Option/drag (Macintosh) them one by one into your “Units” folder and this will copy them.
7. Press the “Create” pop-out menu and choose “Unit.”
(See Figure 4)
8. Select your new company’s database, press the Create... button and pull down “Key.” A key is simply a way to create a header for organizing items grouped logically.
9. In the “Code” field, change to “006” (the CSI Division for wood items) and in the “Name” field, type “Wood and Plastic.”



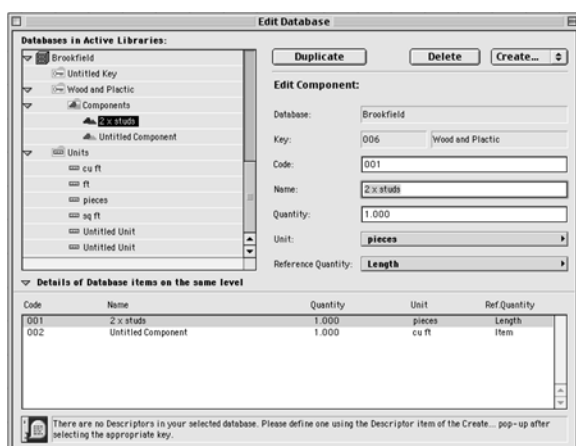
(Figure 4)

Create Components

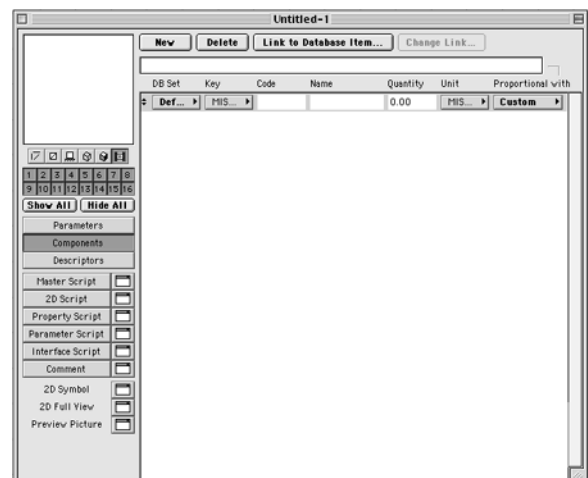
10. Select the “Wood and Plastic” you just created (at the bottom of the window) and press the “Create...” pop-out button and choose “Component.” (See Figure 5)
11. In the “Code” field type in your unique code ID number for this item ... in the “Name” field type: “2 x studs” ... in the Quantity field type: “1” ... from the “Unit” pop-up menu choose Pieces ... in the Reference quantity choose “length.”
12. Close the Edit Database window and press “Yes” to Save Changes.

Create Property Object

13. Pull down “New Properties” form the Calculate



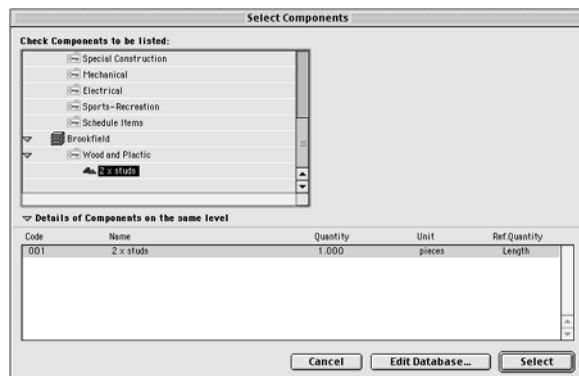
(Figure 5)



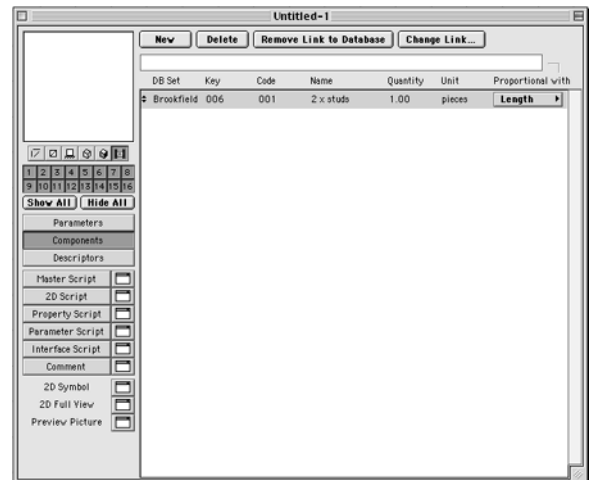
(Figure 6)

Menu. (See Figure 6)

14. Press the “New” button in the upper left corner of the window.
15. Choose “Link Database Item.”
16. From you new database, open the component you created earlier called “2 x studs” and press “Select.” (See Figure 7)
17. In the upper right-hand corner of the window, under “Proportional with” press the pop-out button and choose “Length.” (See Figure 8)



(Figure 7)

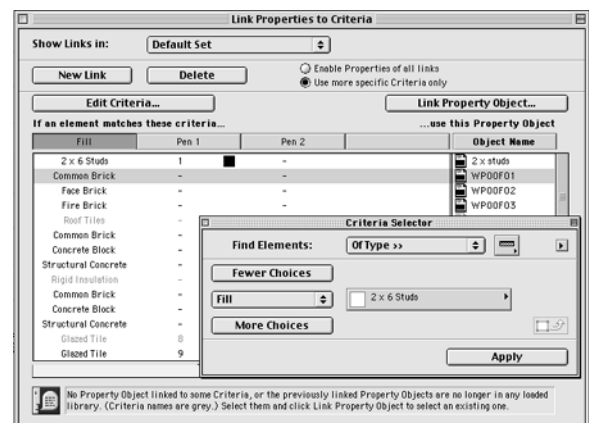


(Figure 8)

18. Close window and press “Yes” to Save Changes.
19. Name this *property object* “2 x studs.GPS”

Link Properties to Criteria

20. From the Calculate Menu, pull down “Link Properties to Criteria...”
21. To the right of the “Show links in:” press the pop-out button and chose your company’s database. Then press the “New Link” button.
22. Click the “Edit Criteria” button. In the Criteria Selector window, Find elements should say: “Of Type >>>” and choose Walls from the pop-up menu. Then set the middle pop-up menu to “Fill” and choose “2 x 6 ext. stud wall” from the fill types pop-up menu and press Apply. (However is you want more criteria, click on more choices and establish additional criteria like pen weights, materials, etc.) (See Figure 9)
23. Press the “Link Property Object...” button and select “2 x studs” from the scrollable list of Property Elements. Then press “Link.”



(Figure 9)

24. Close the Link Properties to Criteria window and press “Yes” to Save Changes. You have now linked the property object that will count studs per linear feet of wall to the new wall type (or Composite Structure) we established at the beginning of the exercise called “2 x 6 ext. stud wall.”
25. Double-click on the Wall Tool and change the settings to draw the 2 x 6 stud wall by selecting the “2 x 6 ext. stud wall” pattern from the Floor Plan & Sectional Attributes pop-up menu.
26. Before leaving the Wall Settings dialog box, click on the big Listing Attributes button and make sure the Link Properties: “By Criteria” box is checked. In the Matching Properties window it should now say “2 x studs.” Press “OK.” Double-clicking on the Property Object in this box brings up a display of the components and descriptors in this object.
27. From the Options Menu, go to the Preferences>Calculation Units section and change “Length Unit” to decimal feet, “Area Unit” to square feet and “Volume Unit” to cubic feet. This is important, otherwise the system will calculate one stud per inch.
28. Now draw your walls.
29. From the Calculate Menu, pull down “List Components” and “Basic” and voila, you now see how many studs are in your walls.
30. To add drywall on the interior of your stud wall and stucco to the exterior and get them to calculate, go back to Step 1 and graphically add the stucco and drywall to your 2 x 6 ext. stud wall Composite. Then go to Step 10 and create a stucco and a drywall component, each calculated by square feet.
31. This same process can be used to generate unit cost totals for:
 - squares of roofing material
 - square foot of sheathing
 - square feet of flooring
 - cubic yards of concrete
 - linear feet of footing
 - linear feet of double top plate
 - linear feet of sole plate
 - number of trusses, etc.