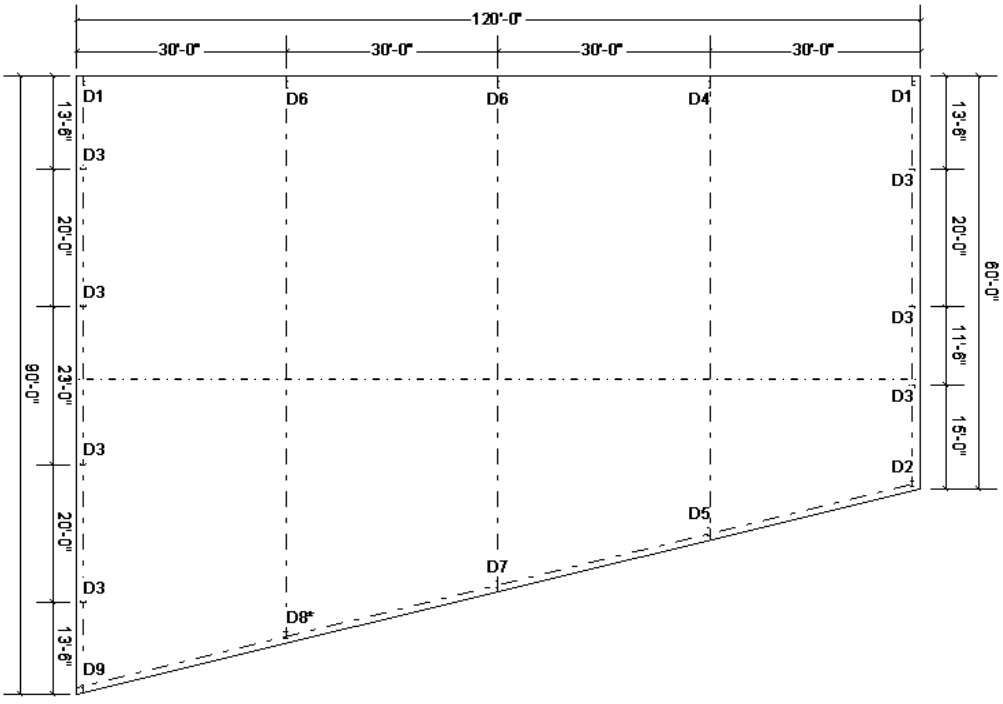
The Focus of this Lesson is:

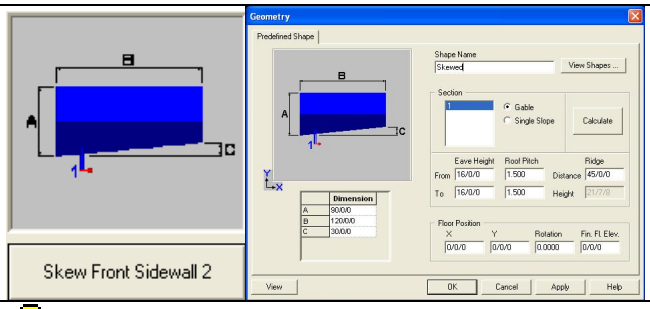
- Proper input of Skewed Sidewall Buildings
- How to support the purlins that run into the skewed wall
- Inserting more than one partial span frame on one frame line

Lesson Comments:
Skewed sidewall buildings require support beams along the skewed wall to support purlins that do not end on a frame line. The beams along the skew must be input correctly for them to price and detail. An alternate method is to manually price the beams and insert the price in the additional pricing area. A calculator that has trigonometry functions may be used to calculate the angle of the support beams.

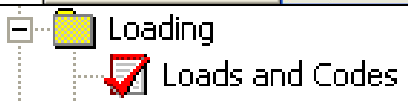
1. Building Input

Pre Defined Shape = Skewed Front Sidewall 2
Width = 90'-0" at Left Endwall
Width = 60'-0" at the Right Endwall
Length = 120'-0"along the back sidewall.
Eave height = 16'-0" with a 1.5:12 pitch, centered on Left Endwall.
Post and Beam Endwall Frames
Rigid frame interior Frames
Standard Outset girt conditions
30'-0" Bays



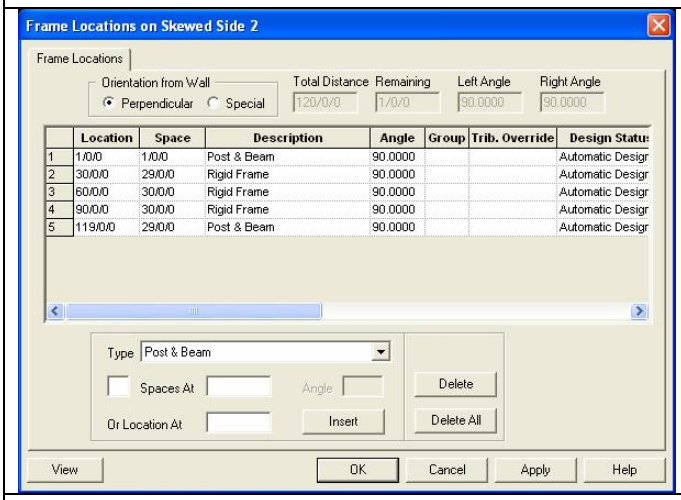


1) Input new *pre-defined* shape as described above.



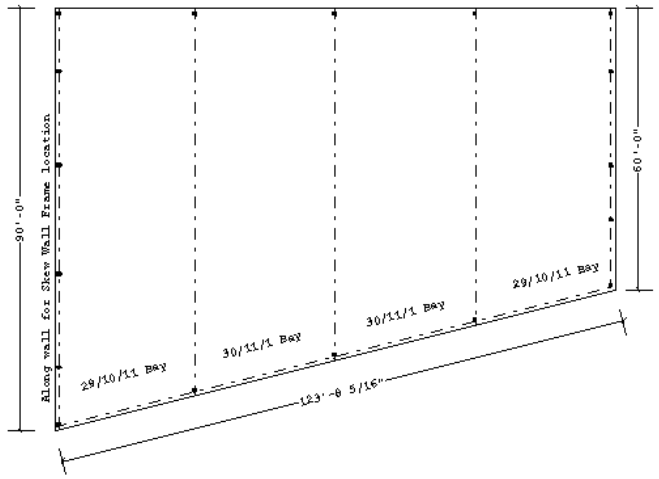
2) Loads and Codes

- Be sure to check the loads and codes folder for input values that may not be *accurate* for your area.
- For this lesson we do not need to modify anything beyond your default settings.



3) Frame Locations

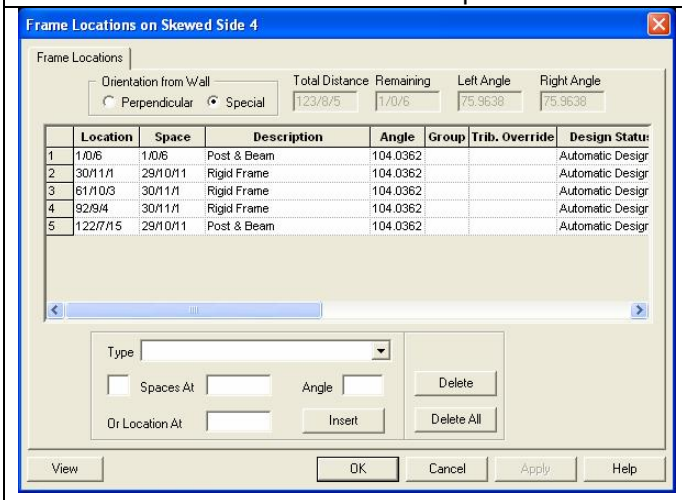
- The primary frames for this building can be located along *Wall 2* because this is a straight wall that we can input the centerline of frame locations along without calculating an angle.
- The frames are *post and beam* endwalls and *rigid* frame interior frames.



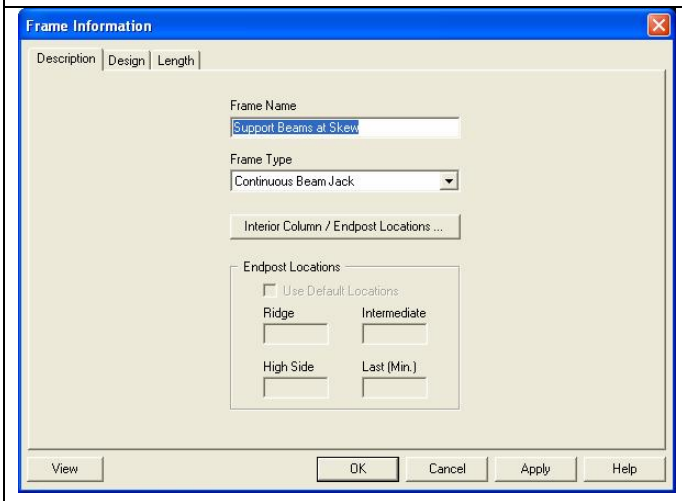
4) Frames Along Skew

- To *support* the purlins that do not end on a frame line along the skewed sidewall we can *input support beams*.
- Using the frame schedule you can insert *new frame descriptions* for the support beams.
- VPCommand allows the User to locate more than *one rafter* per frame line; so all four skew rafters can be added to the *same* frame description.

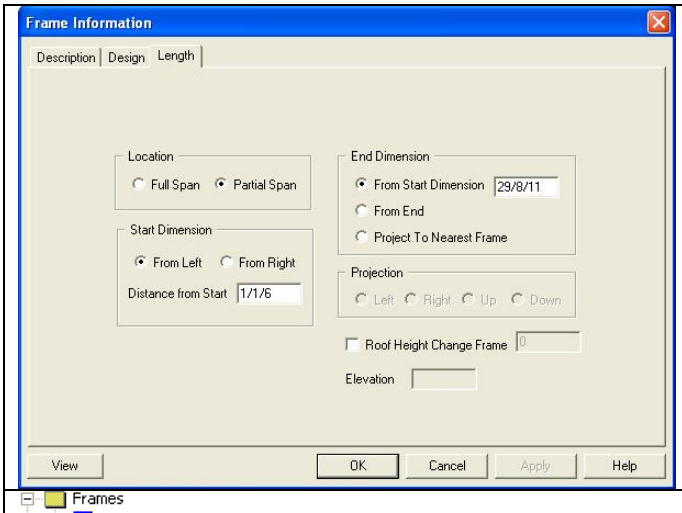
5) On the next few pages we will create and *locate* support beams along Wall 1.
   - The "Right Angle" on the upper right of the locations screen will show the Angle of wall 4.
   - The frames will be located parallel to the skewed wall.



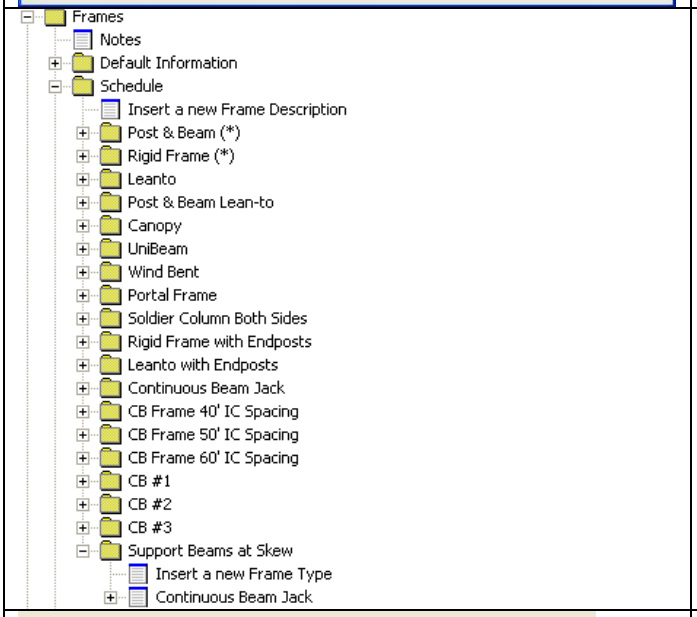
6) *Before* creating the skewed beams in the schedule, you need to calculate the *length* and *locations* of the beams needed.
   - By going to *Frames/ Locations/Skewed/Wall 4*, you can see the locations of the main frames by clicking on the "*Special*" orientation from wall radio button.
   - Because these are the distances between the main frames, parallel to Wall 4, you can use them as a *shortcut* to figuring beam length.
   - The *Skew Support beams* will be designed as *simple span* beams, thus you need to stop them from touching adjacent skew beams.
   - In this example, we will stop each beam *1" short of the centerline* of the main frames (2" total).



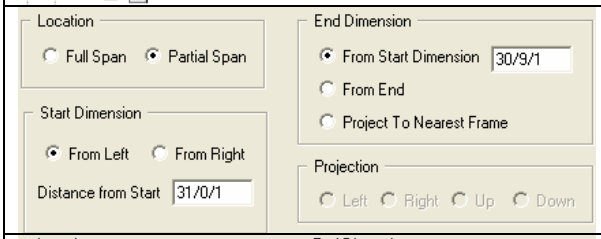
7) Now that you know *the exact length* of the support beams along the skew (remember to subtract 1" from each end of the beam) , we will create *one frame* in the schedule that contains (4) *partial length* beams.
   - You must input the *frame description* in the schedule before it will be available to *locate* in Frames/Locations.
   - Go to the *Frames /Schedule* and double click on '*Insert* a new Frame Description'.
   - For this lesson, name your frame *Support Beams at Skew*.
   - Use the *Continuous Beam Jack* frame type.
   - It is set up to be used as a rafter only.



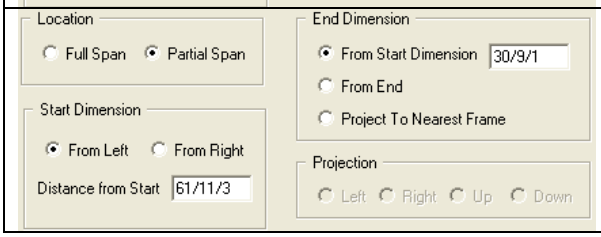
8) The support beam *length* shown here is for the beam in the *first bay* from the along wall (Wall 1). All dimensions were calculated along the skewed wall.
   - The *Start* Dimension for Bay 1 is 1/1/6. This is the same as the first location given on the Frame Location screen plus 1".
   - The *End* Dimension will equal the space from previous frame on slope *minus* 2" when you choose "*From* Start Dimension."
   - Apply, OK, and refresh the tree (F5).



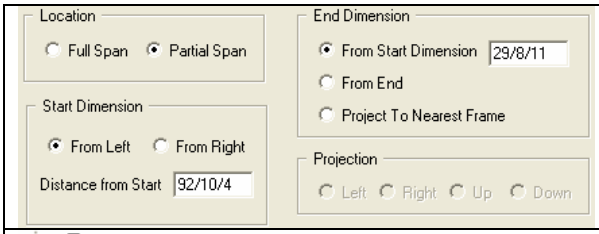
9) The Frame Type of "*Support Beams at Skew*" has been created, and the *first* partial length beam has been defined.
   - Add the consecutive beams by double clicking *Insert a new Frame Type* within the "Support Beams at Skew" folder.
   - All skewed beam "Lengths" are shown on the following page.
   - Remember, *ALL* skewed beams are in the *SAME* folder.



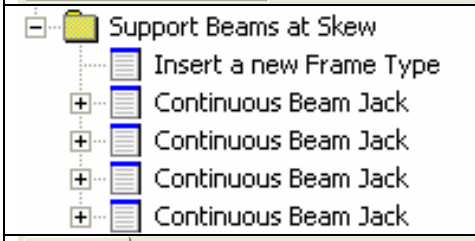
10) Follow the process above for defining the *frame type* and *length* for the next *three* beams you need to add.
   - You *do not* need to change the *frame type name*; it will hold the original.
   - The *second* beam dimensions are shown here.



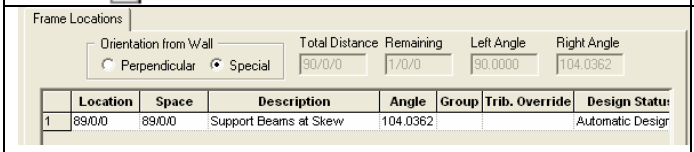
11) The *third* beam dimensions are shown here.



12) The *fourth* beam dimensions are shown here.

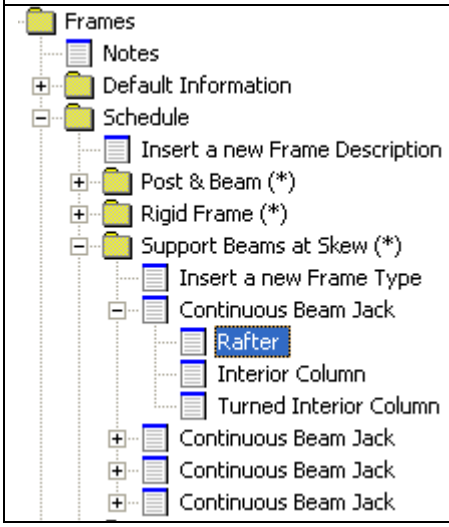


13) The Tree showing *ALL* skewed beams in the *SAME* folder



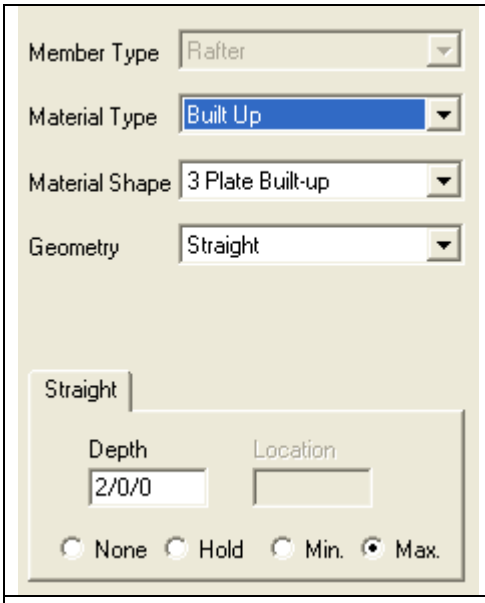
14) Locate the *Skewed Beams* in the Building:

- To insert the newly created skew beams parallel to Wall 4, go to *Frames / Locations / <shape> / Wall 1*.
- Because this frame must go in at an angle, you must select the "*Special*" orientation radio button.
- Wall 1 is 90' wide. We want the beams located 1' from Wall 4, so insert (1) "*Support Beams at Skew*" frame located at 89' with an *angle* of 104.0362.
- You can get this angle from the *Frame Locations* screen, in the "*Right Angle*" field.



15) Modify *Rafter* Members

- Once you have the new frame description created in the *frame schedule*, open up the new folder and you can *modify* the rafter portion to be straight.
- This is not a required step, but if *special clearance* requirements, or *size* requirements are needed then you may also want to hold a certain minimum or maximum depth.
- Modify the members as required.
- For this example, make the rafters *straight* 2'-0" *maximum* depth.
- Remember that the rafters can be *different* depths if required.

	• For this example, make the rafters *straight* 2'-0" *maximum* depth. • Remember that the rafters can be *different* depths if required.
	16) Run any reports or drawings as required