



BRETFORD'S GUIDE TO  
SUCCESSFULLY PLANNING A  
VIDEO CONFERENCING ROOM

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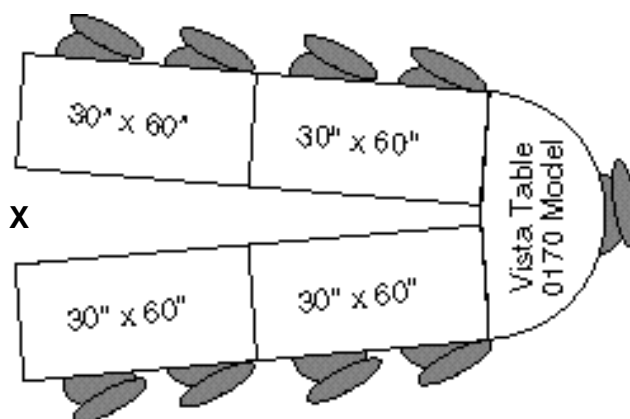
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## CAMERA TEMPLATE DIRECTIONS

Enclosed is a 1/4" scaled template for you to use on floor plans that say 1/4"=1'-0".

### Directions for Use:

- 1) Place the template over the example to the right to accurately distance the camera and cart away from the table.
- 2) Make sure every participant is included within the camera's viewing angle.
- 3) By using the Template and the example, you should conclude that the distance from the camera to the "X" varies with the angle of the camera.  
For example: 48° = 9'-0", 66° = 6'-0", 75° = 5'-0"
- 4) If the camera must be further than 7 feet away, we suggest using two cameras or a wider angle camera lens.



Check with the manufacturer of your videoconference system to obtain the camera angle it captures when it is fully zoomed out.

- Most cameras can capture a 48.8 degree angle when completely zoomed out. Other cameras have the capacity to capture up to 66 degrees which means less space between the users and the camera. In some cases, an adaptable wide-angle lens can be purchased to capture 75 degrees.
- As the camera angle increases, the size of your VC room can decrease.
- In the beginning of a videoconference, it is best to get everyone in the picture, but if the camera is too far away, people's faces will be too small to read.

## TIPS ON DECOR



### WHAT SIZE ROOM SHOULD I USE?

- A few general rules remain constant when planning any size room. There are specific color schemes, lighting, furniture, and acoustics that are standards for videoconferencing.
- When getting started, your primary focus should be the number of people that will be participating in the videoconferences. The number of people will dictate what size the room should be, what kind of furniture you should use, and the type of system that is required.

### WHAT IS THE BEST ROOM SHAPE?

- For smaller meetings, a square room is acceptable.
- For meetings with four or more people, a rectangular room is best.

### WHERE IS THE BEST LOCATION FOR AN ENTRANCE TO THE ROOM?

- Two entrances to the room are ideal so participants are able to enter the room and sit down without walking in front of the camera.
- The entrances should be on the camera wall or the walls perpendicular to the camera. They should be closest to the camera wall as possible.
- The wall behind the participants should not have any doors or windows.

### HOW DO I CONTROL THE ACOUSTICS?

- Pay close attention to the ventilation system in the room. Does it create a lot of noise that could muffle the participants' voices? If the vent is directly over the microphone, the sound will amplify like a hurricane. Try placing a cover over the vent that re-directs the airflow a different direction rather than straight down.
- Does the room have a lot of exposed wood or high ceilings? Pad as much in the room as possible to prevent echoed or amplified voices in a large room. Upholstery on chairs, carpet on the floor, and ceiling tile will absorb most of the reverberations in the room.
- The VC Room should be in a remote area that is away from the cafeteria or other gathering places in the office. It is also a good idea to place a red light or a sign outside the room to forewarn others that a conference is in process.

### DOES COLOR HAVE AN EFFECT ON VIDEOCONFERENCES? YES!

- The best choice for wall paint color is a light blue or light gray. Bretford recommends Benjamin Moore paint numbers 1627, 829, 996, and HC-169. The worst wall color to use is white. White creates too much of a contrast and can literally erase the faces of participants with dark skin tones from the camera's view.
- A light to medium colored conference table will reflect light upward and make shadows disappear from the user's faces. Do not use a white or black laminate or other high intensity colors that could reflect too much light and wash-out the participant's faces. Also keep in mind that the pattern on the laminate should be camera-friendly. Bretford recommends the following laminate colors by Wilson Art from Bretford's finish card Featherstone, Pebble, Pewter, Sea Breeze, Bronze Legacy, Grey Tigris, Saffron Tigris, Fusion Maple, Wild Cherry. If you plan to use a veneer conference table Natural Cherry, Medium Cherry, and Natural Maple are excellent choices.
- Avoid patterns that are large or repeated on furniture, walls, or clothing.
- The room does not have to be monochromatic, but just keep it simple.

### SHOULD I ACCESSORIZE THE ROOM?

- Logos can be placed behind the users as long as they do not reflect or detract from the participants.
- Artwork or plants are okay as long as they are not on the table or in the camera's view.
- Additional wall clocks are an excellent idea to hang in the room to display alternate time zones.

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### WHAT KIND OF FURNITURE IS IDEAL FOR VIDEOCONFERENCING?

- Use tables that taper to allow the camera to see all of the participant's faces. Tables should also have modesty panels and provide access to power and data.
- Chairs should be padded and comfortable. They should not rock or roll. Wheels squeak when they roll, and the rocking motion provides a distracting activity for camera-shy users.
- Carts or cabinetry for the video equipment should provide power, cord management, and rear access to fix technical difficulties. A cart should also lock and have wheels to stow it in the corner when not in use.

### WHAT KIND OF LIGHTING IS RECOMMENDED?

- The room should have indirect fluorescent lighting.
- The light should shine upwards and reflect evenly off of the ceiling. Lights that shine down create shadows on the participant's faces.
- If there are windows in the room, make sure to use light-blocking shades. Hunter Douglas Light-Lines or Levelor's Mark One mini-blinds are recommended because they provide the best light control. You will be amazed to compare the room with and without sunlight. If sun light is shining directly into the camera, the participants will look like silhouettes.

## VIDEOCONFERENCING EQUIPMENT REQUIRED

### CAMERAS

You will require one to three cameras.

- The first camera is to focus on the participant's faces.
- The second camera provides an alternate view of the participants. If it is not possible to get everyone in the view of one camera, have one camera on each side of the room. A button on your remote control will alternate views.
- A document camera is used to transfer images of documents or 3D objects that the participants want to display to the other group in their presentation.

When planning a VC Room, the most important factor is where the camera is placed.

- At the beginning of a meeting, it is nice to see an overall view of the participants. Make sure that the camera is too close to the table to capture everyone. Use the template provided on page one.
- Place the camera between 36" and 60" above the floor.
- At 36" high your participants will be seen at eye level, but their feet will also be in the picture. Make sure you choose a table with a modesty panel if you are placing the camera at this level.
- Place the camera directly on top or in front of the Monitor. If the camera is too far away from the monitor the participants will seem as if they are not making eye contact with the alternate party.
- If the camera is over 60" high, it will spotlight the follically-challenged users.
- If someone is standing up to make a presentation, adjust the camera height to their height. It is also a good idea to mark the floor with tape to emphasize the boundary of the camera's view. This will prevent a mobile speaker from accidentally walking out of the picture.



### MICROPHONES



There are many choices to be made concerning sound transmission. Many video systems have built-in microphones that track where a voice is coming from 12 to 15 feet diameter and directs the camera to capture the current speaker. This also eliminates the need for tabletop microphones and the use of a remote control during a conference.

The best type of microphone to purchase is a boundary microphone. It is able to pick up voices from 14 feet away. It can also be daisy-chained from one microphone to another. Only 1-2 are necessary for your entire group.

When a participant is standing up to give a presentation, use a lapel microphone.

- Ask your video conference dealer or sound contractor which solution is best for your facility.

### SINGLE OR DUAL MONITORS

You will require one or two monitors. The first monitor is to display the participants you will be conferencing with or to display documents or 3D objects they want to share with you. The optional second monitor is to display your own picture. As vain as this may seem, it is very useful to show who the camera is spotlighting. Most monitors have Picture in Picture (PIP) to display both groups. Groups larger than four people will not be able to see the PIP box so an alternate monitor is recommended.

- When a group of 2-5 people will be meeting, use a 27"-32" monitor.
- For a group of 6 to 12 people, use a 32-37" monitor.
- When a group of 13-20 will be meeting, use two 37"-45" monitors.
- When a group of 21 or more will be meeting, use two projection screens with Data Projector ceiling mounts.
- You must purchase a monitor, not a TV. Remember, monitor screens are measured diagonally on the glass portion only.
- Offer an additional monitor or screen whenever a document camera, DVD, VCR, Data projector, white board, or other display equipment will be used.



### ISDN LINES (INTEGRATED SERVICES DIGITAL NETWORK)

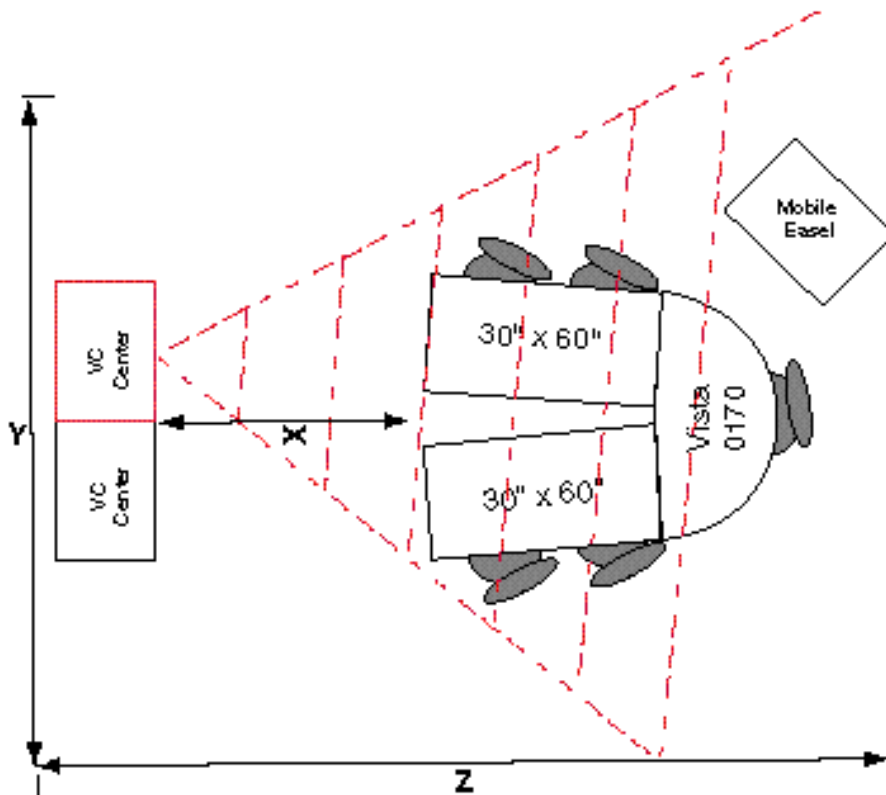
ISDN lines can be installed and maintained by the local telephone company.

- In each ISDN line there are two channels.
- Your videoconferencing system will require one to four ISDN lines. If only one line is ordered, the user's voices and movements could be choppy. If you have ever watched a Kung Fu movie that was translated to English, you know what one line videoconferencing is like. With the addition of each line, the picture and transmission will become smoother.



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# SMALL VIDEOCONFERENCE ROOMS



## VISTA CONFIGURATION FOR 5

- The latest table configuration for video conferencing is shaped like the letter "V" to provide excellent sight lines for all participants. The taper is more extreme and allows the room to be re-configured for other activities.
- We have used one 66° camera and two monitors.
- One monitor displays the alternate party. The other monitor can display the meeting agenda or proposal from the alternate party's document camera. The second monitor can also display what the camera sees at this location so they can view themselves while conferencing. As vain as this may seem, it is nice to know who the camera is spotlighting and what image you are projecting to the other party.
- The starter unit VC Center houses the video system. The other VC Center houses a VCR and scan converter with the additional monitor.
- Use 3 standard microphones or one PowerMic on the head table.

## ROOM DIMENSIONS

- Y = 14'-9", Z = 18'-9"
- Camera distance: X = 5'-10"

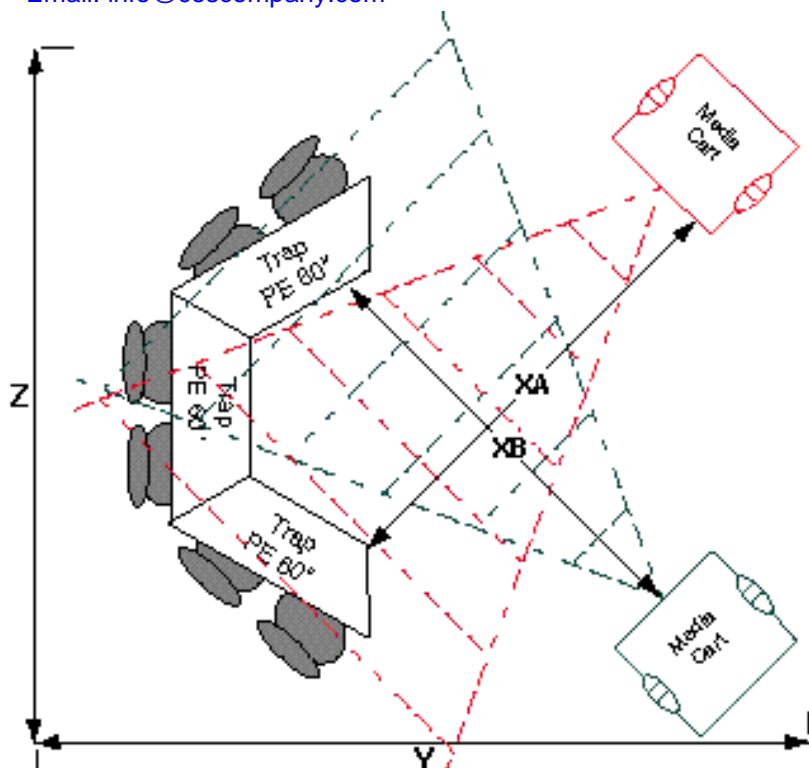
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## TRAPEZOID CONFIGURATION FOR 6

- Ten years ago, this was the prime configuration of tables to use for video conferencing.
- We have used two 48° cameras and two monitors. One 48° camera would not fit everyone in the picture. The users can switch the camera views from input #1 to input #2 with the remote control to capture a different participant speaking.
- One monitor should display the alternate party. The second monitor should display what the camera sees at this location due to multiple camera views. It can also display documents.
- Use 3 standard or one Boundry microphone at the head table. A voice-activated camera is not recommended when using two camera views.

## ROOM DIMENSIONS

- Y = 17'-0", Z = 15'-3"
- Camera distance: XA & XB = 10'-0"

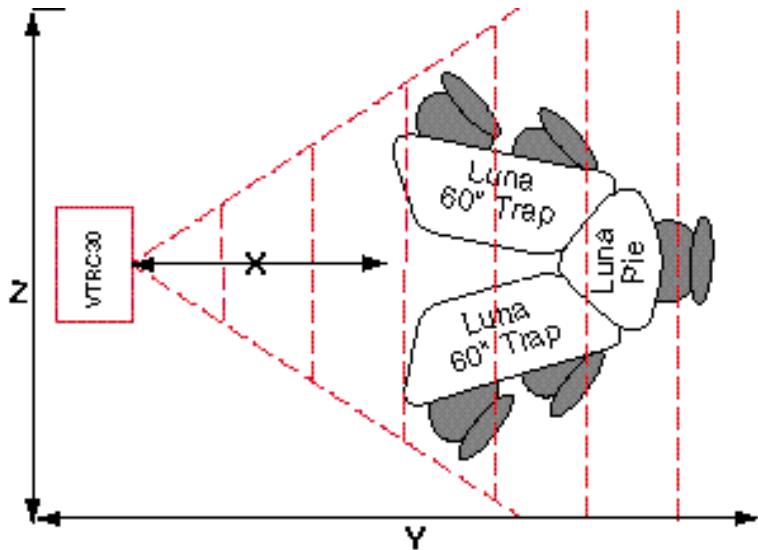
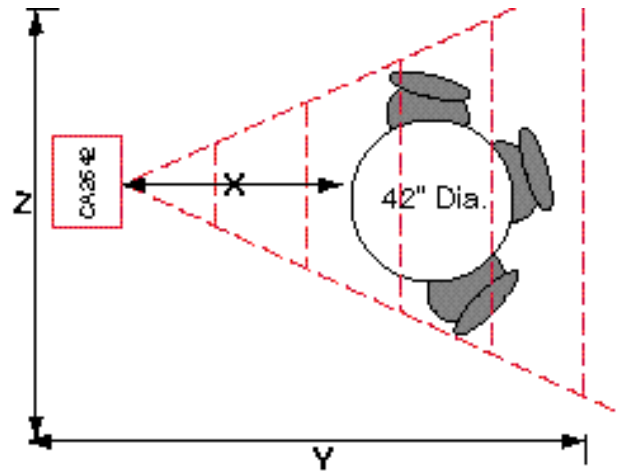


## ROUND TABLE CONFIGURATION

- The round table is perfect for small video conferences.
- Make sure to place the camera higher to avoid broadcasting the view under the table.
- A camera with a 48° viewing angle will work well.
- The CA2642 Cart will adjust up to 42" high. The Cart will hold one small monitor, and the camera can sit on top. It also has a locking cabinet and wheels.

## ROOM DIMENSIONS

- Y = 12'-0", Z = 9'-5"
- Camera distance: X = 5'-0"



## THE LUNA FOR 5 PEOPLE

- Luna Pie Scooters can join to trapezoids to make the perfect V-shape for video conferencing. Additional trapezoids cannot be added on.
- The VTRC30 can be custom finished to match your Luna™ Tables. It houses a 27" monitor and locks for security.
- We used one 66° camera video system with one monitor.

## ROOM DIMENSIONS

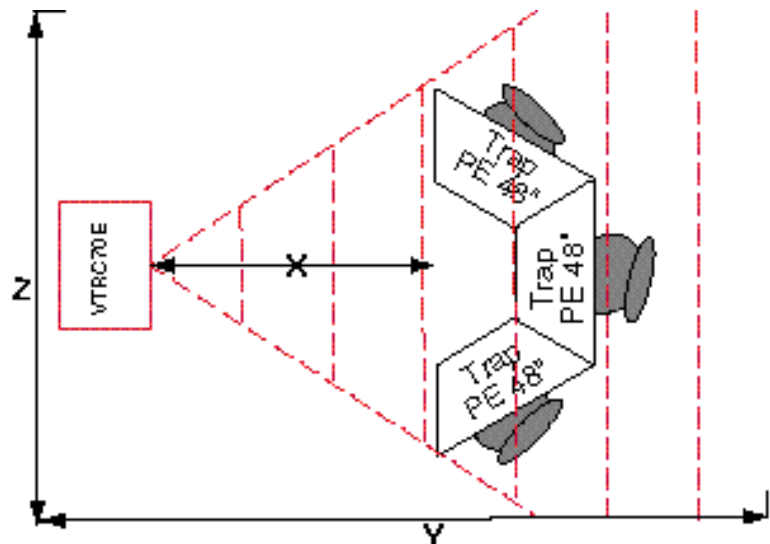
- Y = 16'-0", Z = 11'-0"
- Camera distance: X = 5'-10"

## THE TRAPEZOID CONFIGURATION FOR 3

- With smaller trapezoids and less people, we are able to capture everyone in a 66° angle.
- With only one monitor, this group can easily see the party they are conferencing with. If that party would like to show them a document, they will temporarily not be able to see the participants faces while the document is being presented.

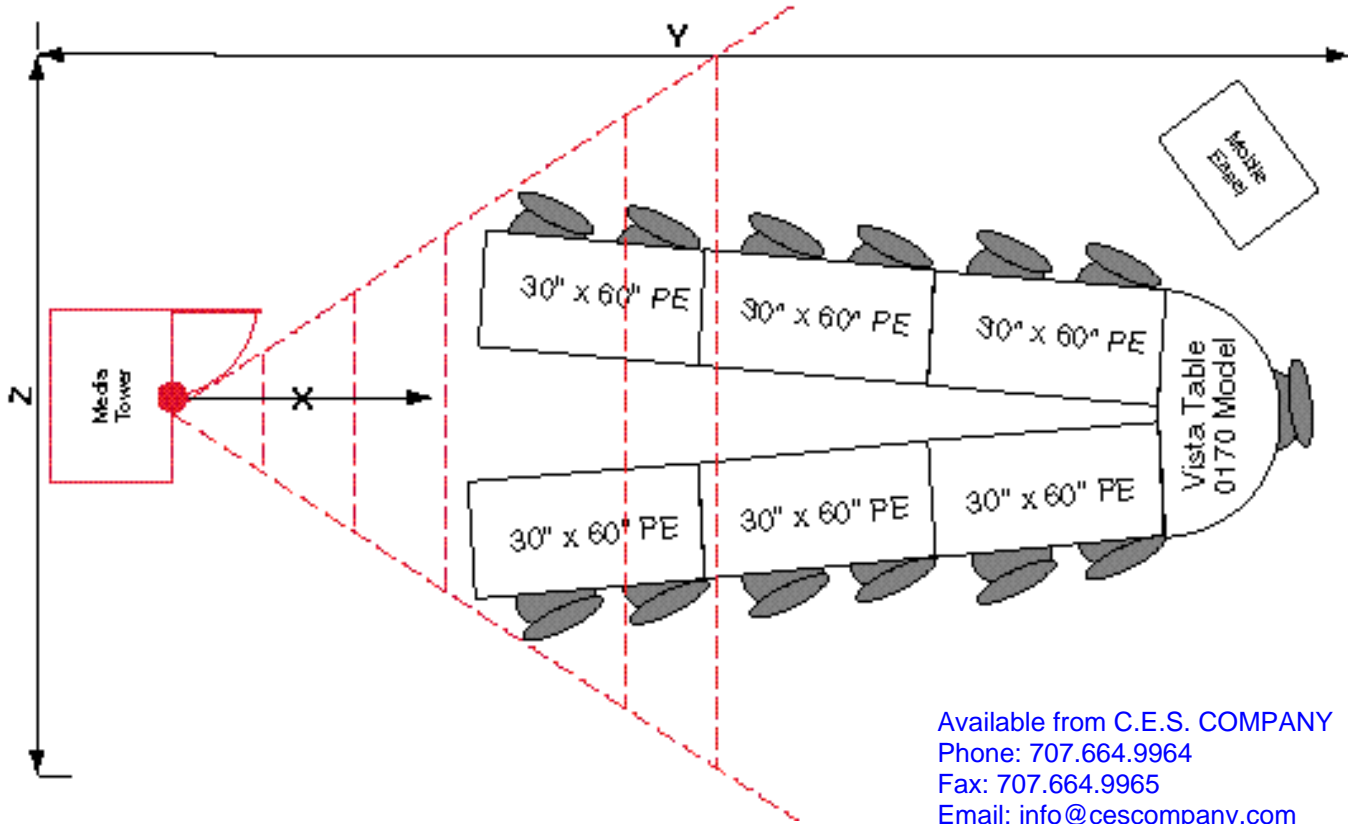
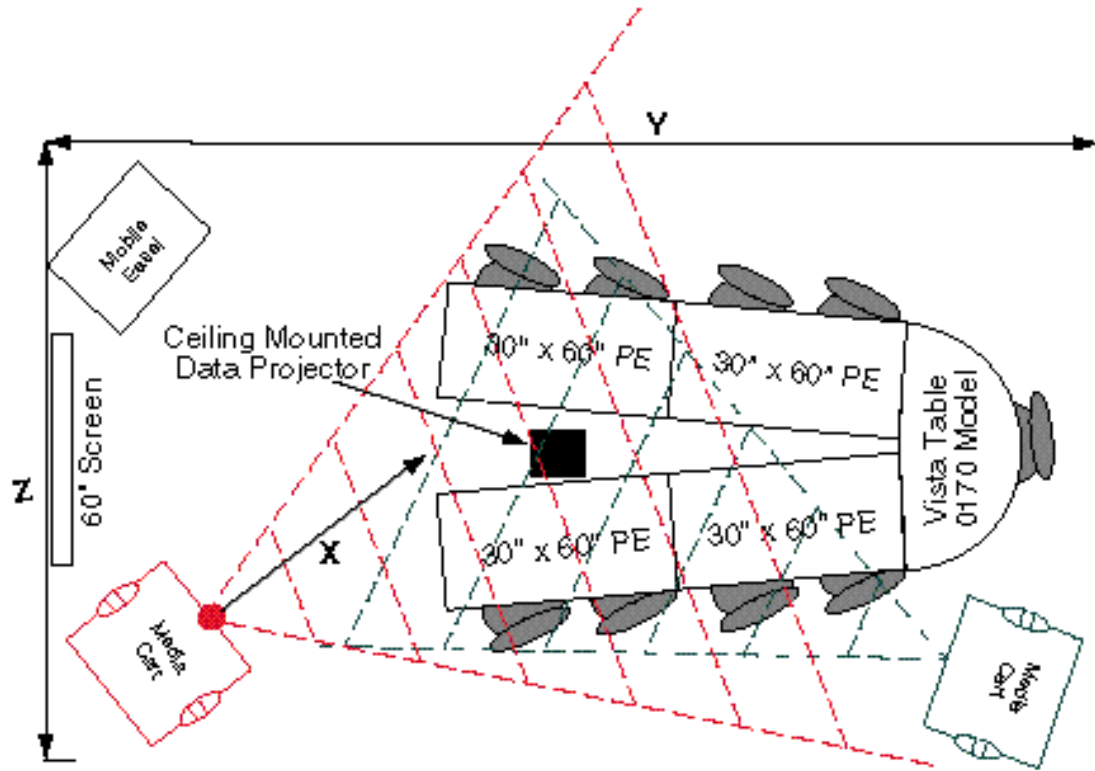
## ROOM DIMENSIONS

- Y = 16'-0", Z = 12'-0"
- Camera distance: X = 6'-5"



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# LARGE VIDEOCONFERENCE ROOMS



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## VISTA CONFIGURATION FOR 9 (shown left top)

- This room was designed for corporate training or distance learning.
- The camera angle at the front of the room is 66° to capture most of the participant's faces. The camera in the back is 48.8°. It projects over the back of the participant's heads to view the instructor at the front.
- The instructor can lecture, write notes on the white board, or project a PowerPoint presentation or video onto the screen. When a student/trainee asks a question the instructor can switch cameras to spotlight the student.

### ROOM DIMENSIONS

- Y = 23'-3", Z = 13'-6"
- Camera distance: 6'-0"

## VISTA CONFIGURATION FOR 13 (shown left bottom)

(shown left bottom)

- Having the camera centered allows everyone to participate. In the example at the top left, the camera was off center because the participants were merely an audience.
- Most cameras will be able to zoom in to view notes on an easel/white board from this distance.
- We used a 75° angle camera. The 48.8° would not work well in this situation.

### ROOM DIMENSIONS

- Y = 29'-0", Z = 16'-0"
- Camera distance: 5'-9"

## VISTA CONFIGURATION FOR 17 (shown on this page)

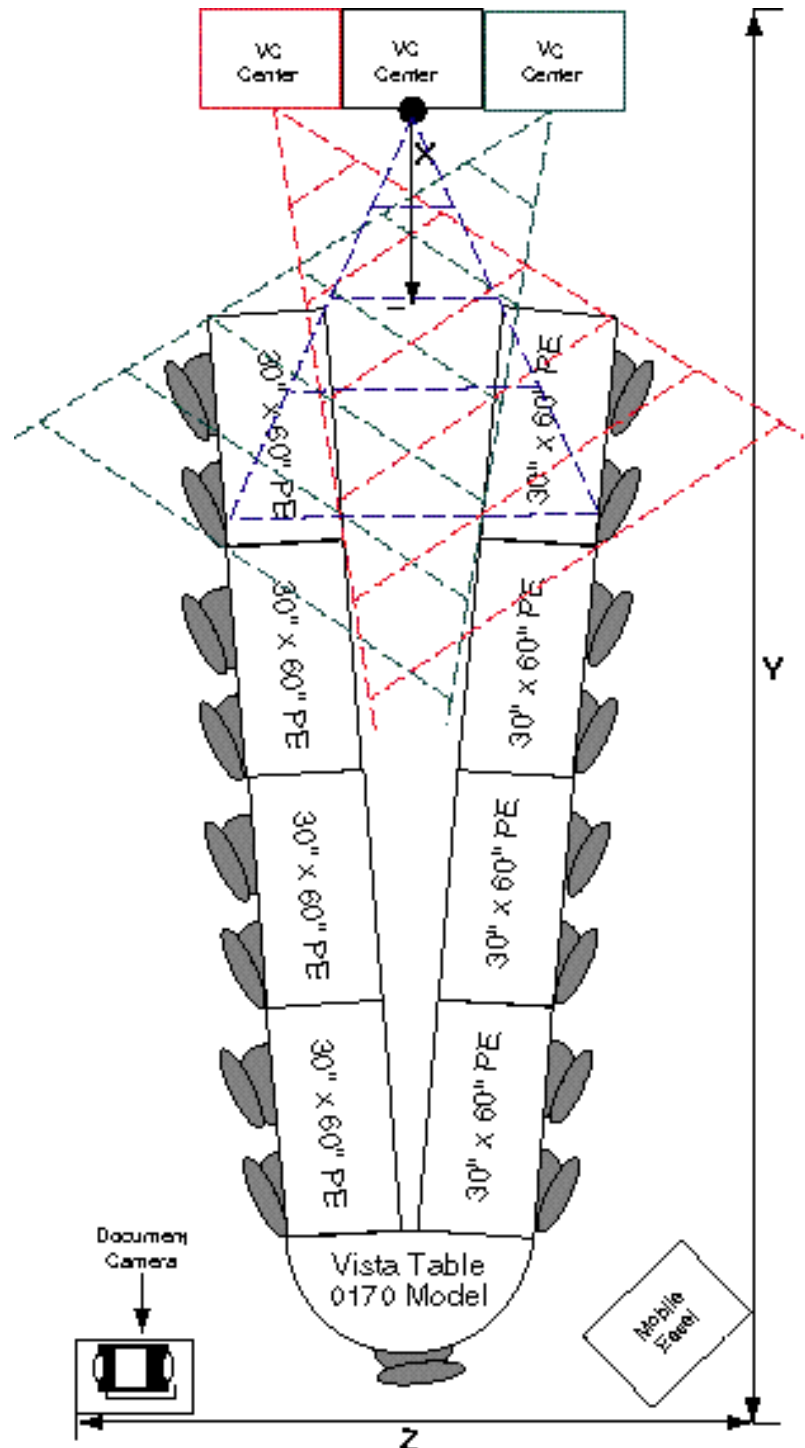
(shown on this page)

- This is the best configuration available for such a large group. It provides excellent sight lines and flexibility to re-configure the room for other tasks. If you have a room that is wider on the Z axis, the larger Vista PXM 1600 can be used for even better sightlines.
- We have used three 48.8° cameras and three monitors. Your A/V Specialist should be able to splice the view from 3 cameras onto one monitor. In essence you have a wide-angle view of everyone involved without switching inputs or preset views on cameras. You may have to just zoom in and out once in a while.
- One monitor displays the alternate party. The second monitor should display what the camera sees at this location due to multiple camera views. The third monitor is able to display documents from the document camera at this location or from the alternate location.
- Additional monitors on TV mounts along the side walls may be necessary since the person at the head table is 28 feet away from the monitor.
- Use one microphone per two people. Bretford's PowerTrak™ is useful in this situation to conceal the 9 wires that typically would be trailing down the center of the tables.

### ROOM DIMENSIONS

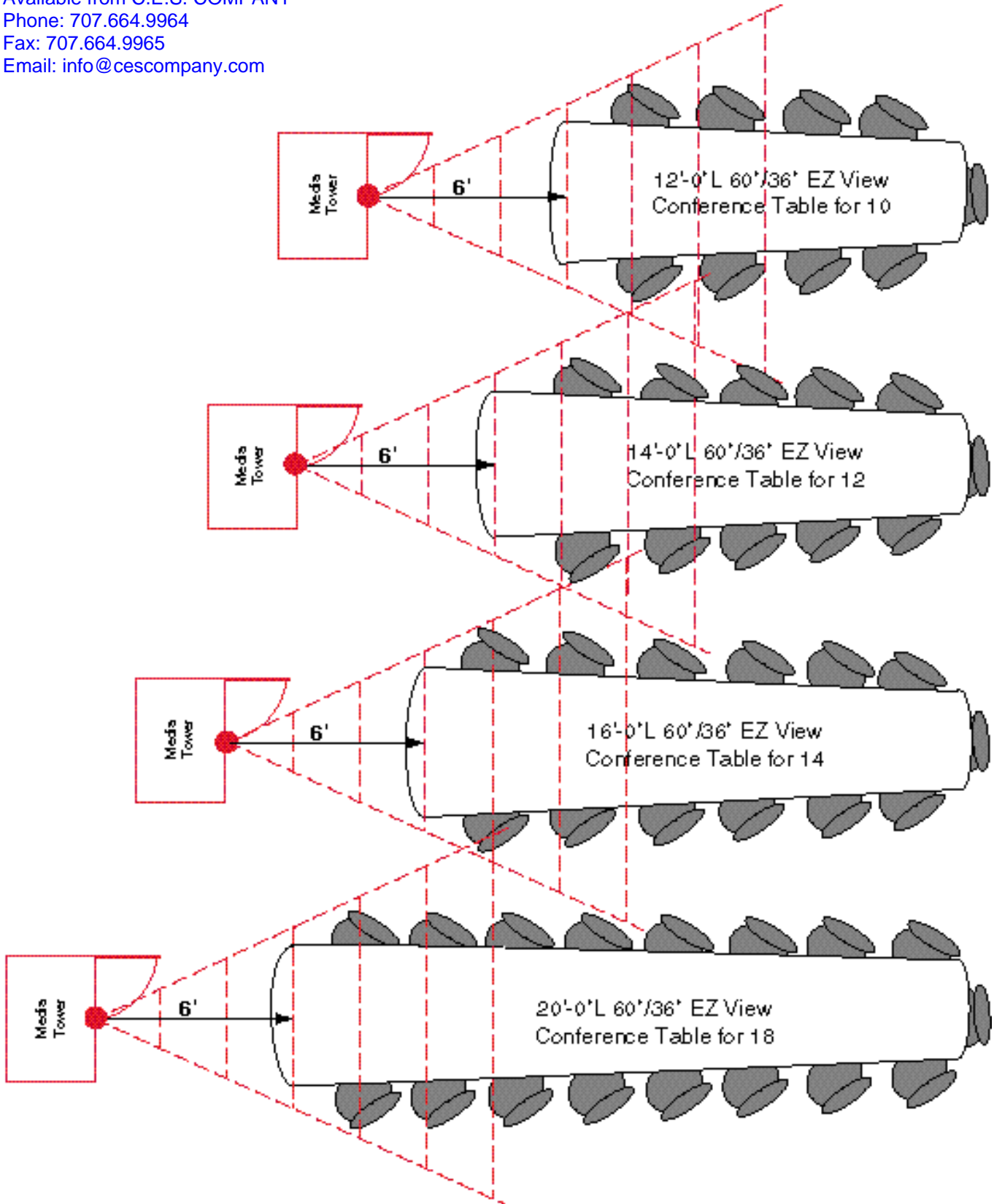
- Y = 31'-0", Z = 15'-0"
- Camera distance: X = 4'-6"

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# LARGE VIDEOCONFERENCE ROOMS

## CONFERENCE TABLES 8' - 20'

- On the 8'-0" and 10'-0" conference table, we used the Bretford's 48/36" EZ View Conference table to provide a slight taper and offer clear sight lines to all participants. For table sizes 12'-0" and over, we recommend the Bretford 60"/36" Super EZ View Conference table which provides the maximum amount of taper for larger groups.
- Due to the narrow attributes of most conference tables, a camera with a 48° angle best captures this configuration.
- Use one microphone per 4 people, or one Boundry microphone for tables up to 168" long. For 192" to 240" long tables, piggyback two Boundry microphones. Bretford's powered conference tables have a trough to conceal all of these wires and route them to the floor.

## ROOM DIMENSIONS

- As a minimum, the width of the room should be 13 feet. Add more space if the room requires additional equipment.

## CAMERA DISTANCE

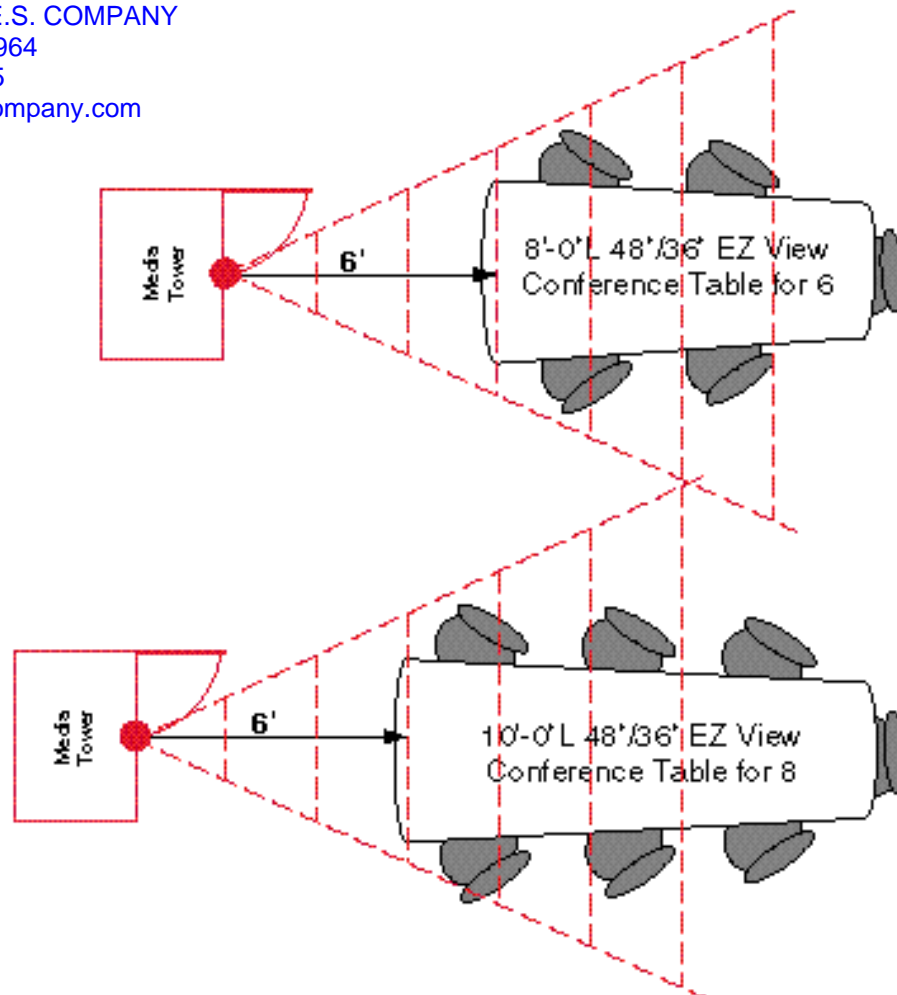
- 6'-0" will capture a 48" wide table.
- If you have a wider table, use your template to determine the distance between the camera and the table. You may also consider using a wider camera angle instead of increasing the length of the room since the person at the head of the table is already far away from viewing the monitor.

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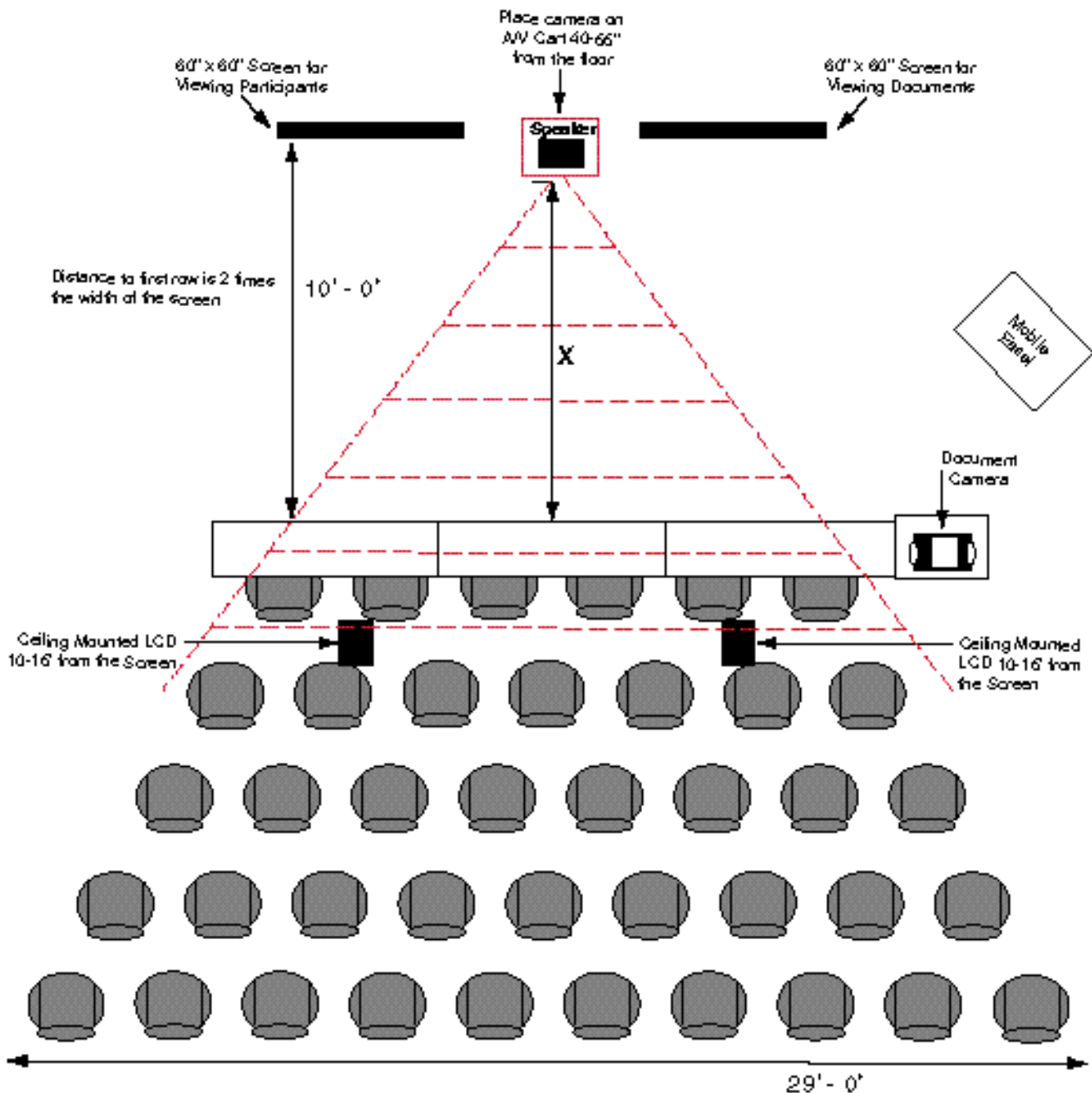
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# LECTURE VIDEOCONFERENCE ROOMS



## CONFERENCE FOR 40 PEOPLE

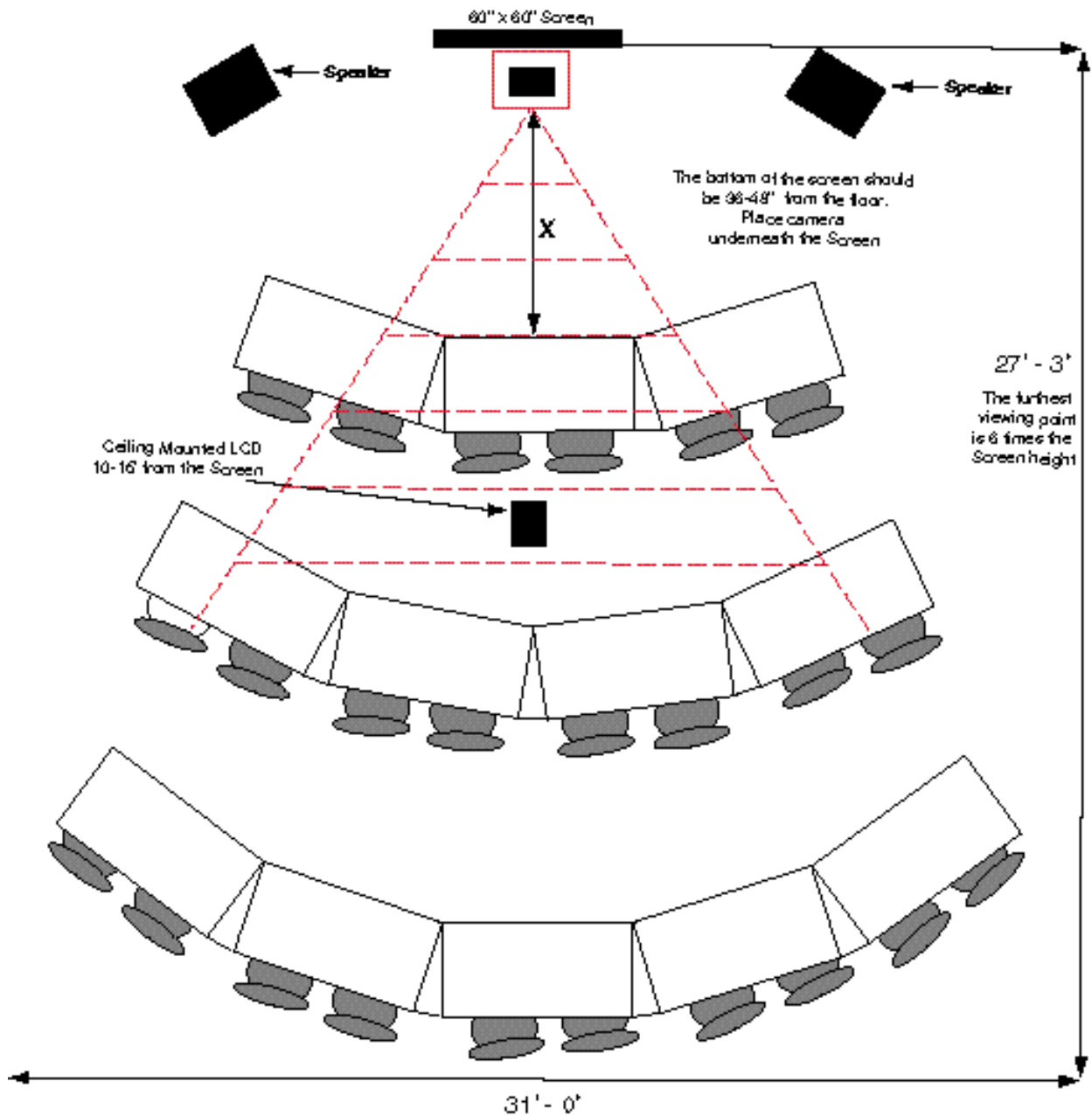
- This room can be used for corporate training, shareholder's meetings, distance learning and much more.
- We have used one 75° camera and two projection screens with ceiling-mounted LCD projectors.
- One person would act like a talkshow host and transport a wireless microphone to each participant with a question. The camera would zoom in on each participant with the use of a remote control or automatic voice tracking.
- The three tables are in front to provide modesty panels for the group.

## ROOM DIMENSIONS

- 29'-0" x 26'-0"
- Camera distance: X = 9'-0"

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# LECTURE VIDEOCONFERENCE ROOMS



## CLASSROOM FOR 24 PEOPLE

- This floor plan is perfect for corporate training, distance learning, or meetings.
- One camera is sufficient for this configuration. It does not capture everyone at once, but the camera can sweep from left to right to identify the group.
- It is best to use a video system with a built-in microphone and a voice tracking feature. You could also use five Boundry mics that are piggybacked together.
- The tables provide writing surface, modesty panels, wire management, and power. Bretford's PowerHouse™ can supply power and data directly to the table tops if laptops are necessary.
- We have replaced the monitors with a screen and a ceiling-mounted data projector. The group will be able to see their trainer from a remote location, and he/she will be able to see them.
- The trainer's voice will be heard through the speakers at the front of the room. If you are only using one speaker, place it directly under the camera. If you have a pair of speakers, it is okay to separate the trainer's voice from their face, because it will be in stereo sound.

## ROOM DIMENSIONS

- 31'-0" x 27'-11"
- Camera distance: X = 6'-0"

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## QUICK REFERENCE GRID

PEOPLE	ROOM	SUGGESTED APPLICATIONS	VC SYSTEM	PERIPHERALS	MIC	FURNITURE
1-2	Workstation OR Desk	<ul style="list-style-type: none"> <li>Informal Meetings</li> <li>Interviews</li> <li>Research &amp; Development</li> </ul>	Personal PC Kit	<ul style="list-style-type: none"> <li>Usually none but a computer can transfer data files like a document camera</li> </ul>	1	<ul style="list-style-type: none"> <li>Trans Table w/ PowerTrak</li> <li>Techmark</li> <li>EC 1000</li> </ul>
2-3	12' x 9' Minimum	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>Interviews</li> <li>Progress Updates</li> </ul>	Compact / Group	<ul style="list-style-type: none"> <li>Laptop</li> </ul>	1	<ul style="list-style-type: none"> <li>Media Cart or BB Cart</li> <li>Round, Trap, or Rectangular Table</li> <li>Document Cart w/ Doc Camera</li> </ul>
3-5	11' x 16' Minimum	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>New Business Development</li> <li>Group Sales Meetings</li> <li>Product Demonstrations</li> </ul>	Group / Compact	<ul style="list-style-type: none"> <li>Document Camera</li> <li>VCR / DVD</li> <li>Scan Converter</li> </ul>	2-3	<ul style="list-style-type: none"> <li>Media Cart, Document Camera Cart</li> <li>Vista 0170 w/ 2 Trans Tables</li> <li>Luna Scooter Pte w/ 2 Luna Traps or 3 Trapezoid Tables</li> </ul>
6-8	15' x 17' Minimum	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>Branch Site Meetings</li> <li>Capabilities Demonstrations</li> </ul>	Group / Compact	<ul style="list-style-type: none"> <li>Document Camera</li> <li>VCR / DVD</li> <li>Scan Converter</li> </ul>	3-4 or 1 Boundary Mic	<ul style="list-style-type: none"> <li>Media Cart or Media Tower</li> <li>Vista 0170/1600 w/ 4 Trans Tables</li> <li>10' EZ View Conference Table</li> <li>Mobile Easel and BB Cart</li> </ul>
9-13 29' x 16' for 13•	14' x 27' for 15 or less 23' x 14' for 9	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>Presentations</li> <li>Vendor/Supplier Interviews</li> <li>Training / Distance Learning</li> <li>Scan Converter / VCR / DVD</li> </ul>	Group Performance	<ul style="list-style-type: none"> <li>Auxiliary Camera</li> <li>Dual Monitors</li> <li>Document Camera</li> <li>Whiteboard &amp; Aux Cam</li> </ul>	1-2 Boundary Mics	<ul style="list-style-type: none"> <li>Media Tower for one monitor</li> <li>Video Conf Center for 2 monitors</li> <li>14' EZ View Conference Table</li> <li>Vista 0170/1600 w/ 7 Trans Tables</li> </ul>
14-20	31' x 15' for 14 37' x 17' for 20 •	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>Shareholders Meetings</li> <li>Vendor/Supplier Interviews</li> <li>Training / Distance Learning</li> <li>Scan Converter / VCR / DVD</li> </ul>	Group Performance	<ul style="list-style-type: none"> <li>Auxiliary Camera</li> <li>Multiple Monitors</li> <li>Document Camera</li> <li>Whiteboard &amp; Aux Cam</li> </ul>	2 Boundary Mics	<ul style="list-style-type: none"> <li>Video Conf Center for 2 monitors</li> <li>Lectern &amp; Document Cart</li> <li>20' EZ View Conference Table</li> <li>Vista 0170/1600 w/10 Trans Tables</li> </ul>
20-40	Auditorium 31' x 28'	<ul style="list-style-type: none"> <li>General Business Meetings</li> <li>Shareholders Meetings</li> <li>Profit Sharing Meetings</li> <li>Training / Distance Learning</li> <li>Instructional Seminars</li> </ul>	Group Performance	<ul style="list-style-type: none"> <li>Projection Screen w/LCD</li> <li>Aux Cams (if needed)</li> <li>Document Cam / VCR / DVD</li> </ul>	3 Boundary Mics or 1 wireless Mic	<ul style="list-style-type: none"> <li>2-3 Screens and TV Mounts</li> <li>Document Cart &amp; Easel</li> <li>1 Trans Table per 2 people (or chairs only)</li> <li>Media Cart</li> </ul>