

APPENDIX 3D(iv)

Conference Room Design Standards

Interior Acoustics

Appropriate acoustical conditions are necessary to make the room functional for presentations and video conferencing. It is critical that ambient noise such as HVAC, ballast noise, etc. be controlled and that appropriate acoustical treatment be installed to control reverberation, minimize reflections, flutter echo and other acoustical issues that impair the microphone pickup.

Avoid hard reflective wall or ceiling surfaces within 8' or 2500mm of lectern or table top microphones. The reflections from these surfaces will create audible artifacts or lower feedback thresholds and add absorption or diffusion materials if required for appropriate acoustical conditions. In rooms with any length or width dimension less than 15' or 5m, provide acoustical wall treatment between chair rail height and approximately 8' or 2500mm AFF, on two adjacent walls to eliminate flutter echo.

Ceiling assembly will meet the acoustic requirements as indicated in Appendix 3C [Sound Transmission Ratings].

Windows

Avoid including windows in conference rooms unless required to comply with another provision of these Design and Construction Specifications. If a window is required provide a window treatment that matches the interior look and feel of the space, while providing a high level of sound and light block. Typically, a heavyweight drape (>24 ounces) of heavy fullness (>6" fullness on >8" centers per fold) or blackout blinds will be required for these windows to make it possible to display video or use a video camera in this location. In all cases, the use of sheer draperies or standard vertical or horizontal blinds will be avoided, due to their inherent inefficiency in blocking sound and light, and the fine lines they create within the camera field of view.

Air Conditioning

All air-handling equipment (blowers, heat exchangers, solenoid valves, etc.) will be located outside the physical meeting room space. This will prevent the noise burden associated with such equipment from affecting the participants of any meetings held in the room. Location of air-handling equipment within the ceiling space of a conference room often renders that room unusable for video or audio-only conferencing. Air vents will be of open construction to eliminate "wind noise" while the system is running. These vents normally are specified as "low-velocity" diffusers. The number of air vents within the room will be sufficient to maintain a consistent temperature throughout the space. All HVAC ducts and diffusers will be oversized for the general application in the space, with minimum 2' diameter insulated flexible ducts and matching 2' noise dampening diffusers generally best. All ducts will be installed with gradual bends and curves rather than rigid 90-degree corners. This will minimize "thunder" sounds as the initial air pushes through the ductwork and into the room. Provide a thermostat to control this specific room system independently of the rest of the building, and that control will be located within the room. Important: Allow an additional 5,000 BTU of cooling capacity for a standard "roll-about" single monitor VC system with extended in-room peripherals (PC, document camera, scan converter, etc.) and a minimum of 10,000 BTU for a dual display multimedia presentation system with large screen displays. For the comfort of the participants, the room must accommodate these heat loads, plus the heat load of a room full of people, with minimal temperature rise.

Interior Design and Finishes

Wall colors within the field of view of the camera have a significant impact on the far-end perception of the room video quality. Certain colors are better suited to video rooms than others. The electronics and software of the videoconferencing room “builds” the images at the far-end from a gray/blue reference image. When there is a minimal difference between the room background and the reference image color, the codec has an easier time turning the image into numbers, with the result that the far-end will see a much higher quality video presentation. In general, light gray with just a touch of blue seems to work best. For rooms that have marginal lighting, slightly darker colors are quite useful.

Furniture

VC rooms should be slightly on the large side for the typical number of attendees. The placement of furniture should present a natural rapport with the videoconference system, but shouldn't preclude the local interaction of conference participants. Doorways used for access to the space usually should be within the view of one of the camera presets to prevent the perception from the far-end that people could come into their meeting unseen. Doorways should not, however, be in constant, direct view of the camera system, as this may cause unwanted distractions and movement of people in the picture field.

Any tables within the conference environment should have a light top surface. Glossy tops should be avoided, as should strong colors or any bold wood grain. If glossy or saturated color surfaces are unavoidable, then proper lighting can help reduce (but not necessarily eliminate) their ill effects. The best table surface color is a flat satin finish, in neutral gray. In cases where the worst possible surfaces are present, the proper surface color effect can be achieved by using a table covering, put in place only when the room is being used for videoconferencing. This will, create problems related to the use of access ports in the tables or movement of end-user items across the surface.

Room Lighting

The brightness of the lighting in a videoconference room plays an important role in determining the far-end view of the meeting. When there are low to moderate amounts of light, the distance of “in focus” objects (depth-of-field) usually is only 2' or 3' from nearest in-focus to furthest in-focus. With bright light the range of in-focus objects can more than double. Participants at the far-end will see more people in sharp focus, and the codec will have an easier time encoding the image. Bright standard direct fluorescent lighting has the undesirable side effect of being harsh for the local participants. In addition, the direct down lighting casts significant “drop shadows”. The result is undue stress among participants. The best plan for videoconferencing is to use indirect lighting for 80 to 85 percent of the light, and evenly distributed direct lighting for the remaining 15 to 20 percent. The indirect light will help minimize shadows on the faces of the participants, and make the room more comfortable for viewing the far-end on the TV monitor. The direct light can be used to create backlight separation between foreground and background objects or surfaces. There will be not less than 55fc (foot-candles) and ideally as much as 75fc of light (770lux) on the faces of the participants in the facial field as viewed by the camera in the conference space. The light must be completely even across the field of measure or view, and of one consistent color temperature. To best meet these requirements, indirect fluorescent lighting most often is recommended. This type of lighting works by using the upper walls and ceiling as diffuse reflectors for the light. The usual recommended color temperature for these is 3,000 to 3,800 degrees Kelvin. The regular lighting system will be zoned on separate circuits and controls, from the video lighting. Dimming is also required. If there is a significant quantity of outdoor light entering the room, the lamps will be more than 5,500 degrees Kelvin.

Hardware

The A/V equipment rack requires a suitable lockable storage room or lockable millwork within the room. The cameras require wall/ceiling positioning for appropriate image angles and complete visual coverage for all different educational usage scenarios. Specifically designated positions in the walls & ceilings are required to accommodate the cameras. The room front wall width will be adequate to accommodate two displays or projection screens in a side by side layout. For a typical seminar room, each screen of the two side-byside screens will require the width being equal to one fifth of the room depth (to the most distant viewer, typically the back row) in order to provide adequate legibility for all viewers. The nominal optimum horizontal viewing angle is +/-45 degrees from the centre-line to provide good legibility for the audience, including the most distant viewer & the front row. The vertical viewing angle will not exceed 30 degrees from any of the audience seating positions. This will require the front row to be located at least 1.5 times the display width from the front wall. The vertical viewing angle will not exceed 30 degrees from any of the audience seating positions. This will require the front row to be located at least 1.5 times the display width from the front wall. All component connections and power outlets will be easily accessible for participants while trying to eliminate cables being draped across walking pathways to prevent tripping hazards.