

## DIVISION 27 – COMMUNICATIONS

### SECTION 27 41 16.62 – Integrated Audio-Video Systems and Equipment for Auditoriums

THE STANDARDS FOR Minimum Technology Enhanced Classroom Design WILL APPLY TO LECTURE HALL CLASSROOMS WITH THE FOLLOWING ADDITIONS.

#### 1.01 Projection Screens, Large Lecture Halls Addition

- A. There may be a requirement for two projection screens or a larger single screen in large classrooms. ITS and the end user will determine this need.
- B. The distance from the screen to the projector will be determined by the size of the screen and the model of projector. The placement of quad electrical outlets and the data lines for the projector(s) will be determined after the screen size and placement has been established.
- C. The goal is to make the screen large enough so those in the back row can read the subject matter easily, but not so large as to overwhelm the closest viewer. Evaluate any barriers, and try to make sure that the lower part of the screen will be visible from all seats. Extra drop may be required to position the screen at a comfortable viewing level in a room with a high ceiling.
- D. Width of viewing area: maximum 30 degrees each side of screen vertical center (60 degree max). No seats more than 45 degrees off axis from center(s) of screen(s).

#### 1.02 Image Aspect Ratios

- A. ITS recommends Widescreen, 16:9, thereby screen height should equal or exceed  $1/3$  the distance from the screen to the optimum seat for watching video.
- B. For charts and data, as in a conference or lecture room, use  $1/4$  the distance.
- C. For complex graphics, use  $1/2$  the distance.

Width—Screen width is generally determined by the height of the screen and the projection formats to be used.

#### 1.03 Audio, Large Lecture Halls Addition

- A. Combination of point-source cabinet speakers on stereo amplifier and distributed ceiling speakers on monaural amplifier. Obtain minimum specifications from ITS, before design.
- B. Distributed speakers: Currently ITS specifies a monaural system using the JBL Model Control 24CT where each speaker should be spaced based on a minimum  $130^\circ$  conical coverage at a 10" ceiling, and the JBL Model Control 26C where each speaker should be spaced based on a minimum  $110^\circ$  conical coverage for ceiling heights greater than 10'. Speaker placement should be coordinated and approved by ITS.

(Quantity and type are dependent on room dimensions and layout, audio equipment & speaker manufacturer specifications).

- C. Program audio: Stereo w/2-3 point source speakers, program audio bussed to distributed speakers.
- D. Separate amplification, control & EQ for voice support audio & program audio.
- E. Point source cabinet speakers might be needed in large lecture halls. The contractor and architect should work with ITS to make provisions for the installation of these additional speakers in the front wall of these rooms.

#### **1.04 Multimedia and Other Hardware, Large Lecture Halls Addition**

- A. Technology hardware will be installed by ITS. However, the cost of these items will be estimated by ITS, included in the construction budget, purchased under state contract, and installed by ITS or under their supervision. ITS will provide a spreadsheet of items and cost estimates as required. Based on time lapse between initial cost estimate and selection of items and actual time of construction, ITS may alter equipment selection based on costs or features, or both.

#### **1.05 Lighting and control, Large Lecture Halls Addition**

- A. All control systems and lighting control systems will be coordinated with ITS.

#### **1.06 Attendance Tracking Card Readers**

- A. Attendance Tracking Card Readers will be coordinated with Access Services. A minimum of 5 scanners and 1 keypad will be installed at each entrance and exit to the auditorium.

#### **1.07 Network and Power Drops**

- A. A total of 3 network drops with a quad power outlet will be installed at the AV workstation.
- B. A total of 2 network drops with a quad power outlet will be installed near the center aisle or center area of auditorium (Exact location to be determined by ITS).
- C. A quad power outlet will be installed at lectern area (Exact location to be determined by ITS).

#### **1.08 University Cable TV Channel**

- A. Coax cable will be installed in the auditorium to provide cable channel and University cable TV access. Installation to be coordinated with the Production Studios and the local cable TV provider.