

SECTION 27 40 00 – AUDIO-VIDEO SYSTEMS

PART 1 - GENERAL

1.1 REFERENCES

- A. General provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections.
- B. Architectural, Electrical, and Technology Drawings. Other systems drawings may apply. Division 26 Basic Electrical Materials and Methods sections apply to the work of this section.

1.2 SUBMITTALS

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.3 QUALITY ASSURANCE

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.5 SEQUENCING AND SCHEDULING

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.6 PROJECT SITE CONDITIONS

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.7 WARRANTY

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.8 SPECIFICATION RESPONSE

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

1.9 DEFINITIONS

- A. Refer to Section 27 05 00 for requirements that shall be fulfilled as part of this specification section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements provide products by the following:

1. Cables:

- a. Video Coax: (Conduit) 8281A Belden, or equal
- b. Video Coax: (Plenum) 88281 Belden, or equal
Audio: (Conduit) 8762 Belden, or equal
- c. Audio: (Plenum) 88761 Belden, or equal
- d. Speaker Cable: 9717 Belden or equal

2.2 APPROVED INSTALLERS/INTEGRATORS

A. Xcite Audiovisuals – 7167 S. Alton Way, Centennial, CO 80112 (720-771-1011) Contact: Brian Seid (brian@xciteav.com)

B. Ford AV – 4230 Carson Street, Denver, CO 80239 (720-374-2345) Contact: Eric Paulsen (paule@fordav.com)

C. AVI/SPL – 15700 Parkerhouse Road, Suite 200, Parker, CO 80134(303-792-3090) Contact: Howard Zucker (howard.zucker@avispl.com)

D. REORDER: AVISPL, XCITE, FORD AV.

PART 3 - EXECUTION

A. System Performance Requirements

1. General:

- a. The University Office of Information Technology – Department of Audiovisual and Video Conferencing has been assigned responsibility for providing audiovisual services to the University entities. This includes, but is not limited to audio systems, video systems, integrated audiovisual control systems, and audio/video distribution systems. This includes determining suitability of proposed uses, compliance with appropriate codes and standards, periodic removal and/or replacement of components and extensions or additions to distribution systems.
- b. The Department of Audiovisual and Video Conferencing will work with all the University entities to assist in the audiovisual design of classrooms, distance learning classrooms, lecture halls, control/monitoring rooms and conference rooms as needed for the University campus and shall be consulted extensively during the project design through the University Project Manager.

2. Procedures:

- a. To facilitate provisioning of audiovisual design services to the University entities, The University Facilities Projects will provide the Department of Audiovisual and Video Conferencing with preliminary floor plan drawings for all new building construction and/or major remodel projects.

- b. The Assistant Director of AV will act as a consultant between The University Facilities Planning and other interested parties for all projects involving AV or VC elements.
 - c. The preliminary floor plans provided to the Department of Audiovisual and Video Conferencing will be marked to show service locations and space requirements and will be returned to Facilities Planning for inclusion in final plans.
3. Classrooms and Lecture Halls:
- a. Each classroom and lecture hall shall include on the front wall/floor pocket a LAN / Telco “A / B” jack per campus IT standard. These network lines must be installed by or under the direction and control of The University Office of Information Technology. There shall be located directly adjacent to this “A/B” jack, a duplex power receptacle, and audiovisual input plate/s.
 - b. Each classroom and lecture hall will have a dedicated audiovisual input plate for connection of presenter computers and other audiovisual presentation sources as required. A dedicated audiovisual input plate shall be installed on the front wall of the room directly adjacent to a LAN / Telco jack and duplex receptacle. Additional audiovisual input locations may be required depending on the layout and specific needs of each classroom.
 - c. Each classroom and lecture hall shall include a ceiling-mounted projection screen or projection screen(s) depending on the size dimensions and viewing requirements of the audience. All projection screens shall be motorized electric models. Screen motors shall include integrated low-voltage control interfaces and low-voltage control wall switches for external/remote operation.
 - d. Each classroom and lecture hall shall include a ceiling-mounted LCD graphics projector or projector(s) depending on the size dimensions and viewing requirements of the audience. All projectors should be mechanically mounted to be center aligned with the projection screen. Mechanical, horizontal, and vertical lens shifts may be used to optimize the image. Digital keystone and pixel correction options are not acceptable options to overcome mechanical mounting alignment errors.
 - e. All ceiling projector accessories and equipment, such as HDBaseT receivers, video baluns, audio amplifiers, power supplies, etc. must be mounted and secured in an accessible above-ceiling plenum enclosure. Visible below-ceiling connections to the projector must be cleanly installed,
 - f. Sound reinforcement systems shall be built into all classrooms and lecture halls.
 - g. Each classroom and lecture hall shall include a pan/tilt/zoom camera location for the purposes of lecture capture and portable videoconference integration.
 - h. Each typical classroom and lecture hall shall include an audiovisual system control panel.
 - i. Classroom and lecture hall lighting zones should be arranged to be dimmable and/or on/off controllable from the front of the room to the rear of the room.
 - j. University classrooms and lecture halls will typically include a small teaching stand, or a small-to-medium multimedia podium, to function as a teaching station, equipment rack, equipment storage, etc. depending on need. The podium teaching station and related equipment are almost always the primary AV source in the classroom and must be built to accommodate the user and the classroom environment.

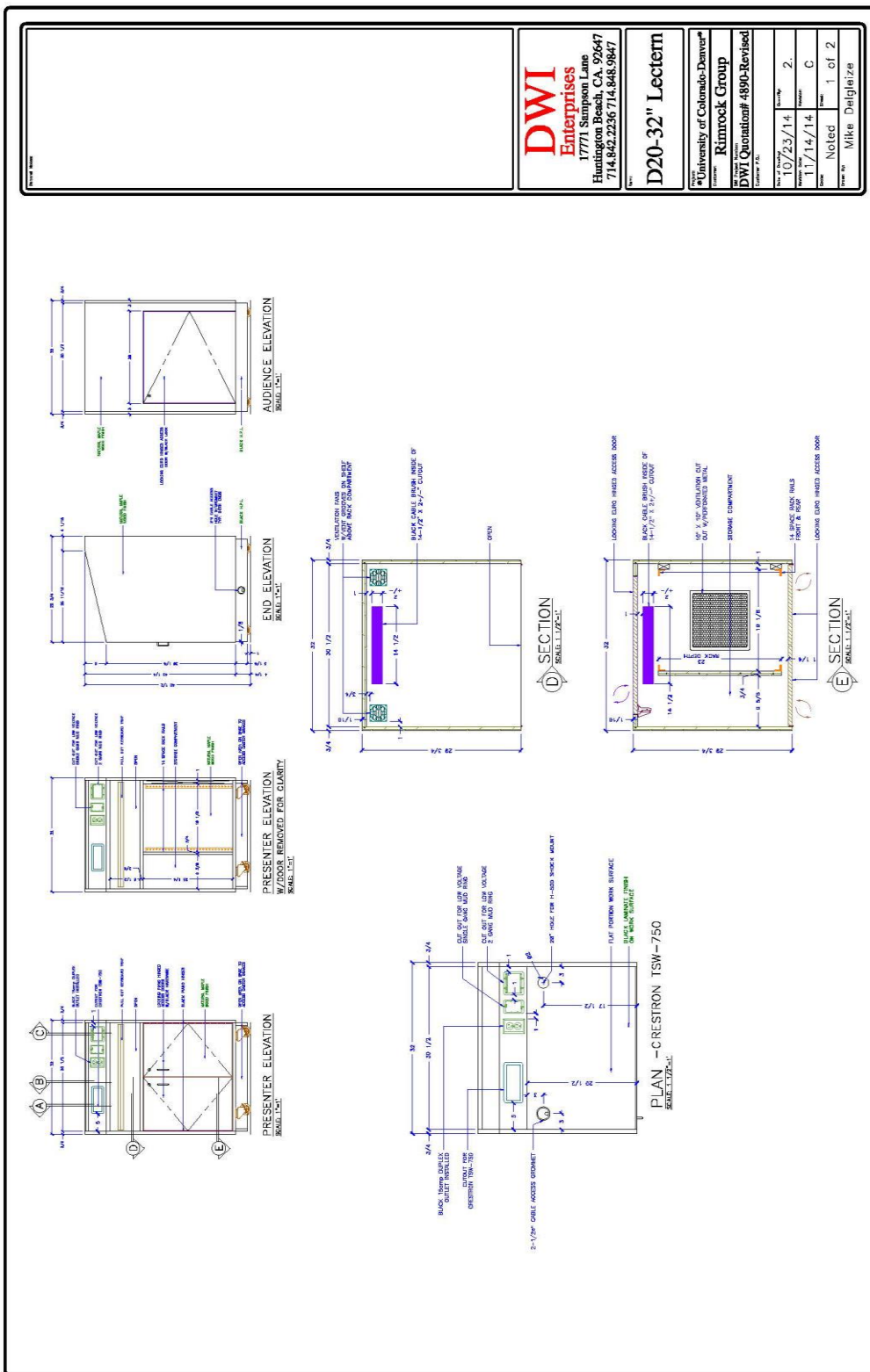
- k. All classrooms must be hybrid learning spaces. This includes full audio and visual components for both in-person and virtual learning.
4. Lecture Halls: THIS SECTION MERGED WITH THE CLASSROOM SECTION, SAME NEEDS.
5. Conference Rooms:
 - a. Each conference room/lecture hall shall include on the front wall, a LAN / Telco “A / B” jack per campus IT standard. These network lines must be installed by or under the direction and control of the CU Denver Office of Information Technology.
 - b. Each conference room/lecture hall will have a dedicated audiovisual input plate for connection of presenter computers and other audiovisual presentation sources as required. A dedicated audiovisual input plate shall be installed on the front wall of the room directly adjacent to the LAN / Telco jack and duplex receptacle.
 - c. Conference room/lecture hall with large central conference tables will typically include an audiovisual floor box, which shall be located directly underneath the table pedestal location. The audiovisual floor box will include knockouts and conduit pathways for dedicated network “A/B,” audio/video cabling, and AC power cabling. A similar layout would be used for other floor box locations as required under the conference table as needed.
 - d. All conference room/lecture hall include one or two direct-view televisions depending on the size and need in the room.
 - e. All direct-view television displays are to be securely wall-mounted using The University's standard mounting hardware.
 - f. Sound reinforcement systems shall be built into all conference rooms/lecture halls. Ceiling microphones are typically utilized for small conference rooms with videoconference capability.
 - g. Each conference room/lecture hall that requires a podium will include an audiovisual floor box, which shall be located directly underneath the podium location. Each conference room/lecture hall that includes a central conference table will include one or more floor boxes located directly under the conference table location. The audiovisual floor box will include knockouts and conduit pathways for dedicated network “A/B,” audio/video cabling, and AC power cabling.
 - h. Each conference room/lecture hall may include one or more pan/tilt/zoom camera locations for the purposes of video capture and/or videoconference integration. The secondary camera shall typically be located on the back wall or ceiling with an unobstructed view of the presenter.
 - i. Conference room/lecture hall lighting zones should be arranged to be dimmable and/or on/off controllable from the front of the room to the rear of the room. Specifically, the first row of conference room lighting shall be on a separate lighting zone so that excessive light does not degrade the quality of the video display systems typically located on the front wall of the conference room. Any pendant lighting and/or suspended lighting fixtures must not interfere with the projection system, which is typically centered with the room center. Light switches, dimmer controls, etc. shall typically be mounted at standard switch height in close proximity behind the presenter’s desk/podium and shall be directly adjacent to the low voltage screen control switch and system control panel.
6. Digital Signage:

Digital signage hardware/software information systems may be used to offer CU Anschutz and Denver classroom scheduling, current events, etc. information to faculty, staff, and students. Typical signage locations include high-traffic, high-visibility areas such as reception areas,

elevator lobbies, foyers, and corridors. A typical signage location shall include a wall-mounted LCD television with a built-in or associated signage player. The signage player shall accept signage content information via the building network. All signage screens are typically passive, non-interactive models. Interactive kiosk displays may be required for special applications under the direction of CU Anschutz Office of Information Technology.

- a. Each digital signage location shall include behind the television monitor, a recessed AV enclosure, with a LAN / Telco “A / B” jack installed inside the enclosure per campus IT standard. These network lines must be installed by or under the direction and control of the Office of Information Technology.
- b. All direct-view televisions shall be widescreen 16:9, aspect ratio with a minimum 1080p native video resolution. Infrastructure for this location includes an un-switched, recessed AV enclosure, to be located in the wall directly behind the television location at 55” AFF to the device center. (1) 1.25” EMT conduit will extend from the recessed AV enclosure to above the ceiling in an accessible location. (1) .75” EMT conduit shall also be provided and installed to extend from the recessed AV enclosure to above the ceiling in an accessible location for the LAN / Telco “A/B” jacks. See TV wall box specifications below. Acceptable television models include, but are not limited to:
 - 1) Sharp - most recent model
 - a) 55” or larger
 - 2) Sony - most recent model
 - a) 55” or larger
 - 3) Panasonic TH-55CQ2 or most recent model
 - a) 55” or larger
- c. All direct-view television displays are to be securely wall-mounted using University standard mounting hardware and be compliant with all current ADA requirements.
- d. All digital signage television locations must include a deep, recessed, wall enclosure for electrical infrastructure, data infrastructure, and AV devices. The recessed wall enclosure should be adequately sized for the project.

2.Example Lectern Configurations – Medium Podium (Illustration Ex. 2)



USER REWATE FNME

Part 2 Continued

