

AUDIOVISUAL SYSTEM

PART 1 - GENERAL

1.1 FUNCTIONAL DESCRIPTION

A. General Description:

1. The new Santa Rosa Junior College Petaluma Library shall provide a number of spaces featuring audiovisual capability. This specification defines the equipment and installation requirements for spaces that have been previously wired and terminated. This specification defines the scope of work and materials for audiovisual and media production systems. The following spaces are included in this scope of work:
 - a. Duplication Head-End
 - b. Post Production Rooms #1 & #2
 - c. Media Viewing Rooms #1, #2, #3, & #4
 - d. Viewing Carrels/Media Services Access Desk
 - e. Library Conference Room
 - f. Library Activity Center
2. The majority of the infrastructure wiring between facility equipment locations has already been installed and terminated with a previous scope of work. This includes wiring between interconnected audiovisual rooms to the Duplication Head-End, with terminated receptacle plates and patch bays provided. Wiring to receptacle plates within a space has also been provided, such as the wiring between the millwork equipment rack location and the table receptacle plate locations within the Media Viewing Rooms. As-built wiring is noted on the audiovisual functional diagrams, and full infrastructure as-built conditions are also provided in a separate set of as-built drawings. Equipment racks have also been provided in the Duplication Head-End and the Media Services Access Desk supporting the Viewing Carrels.
3. Coordination will be required with several College Furnished systems for complete integration. This includes a number of College Furnished Mac Pro computers, and several PC computers for specific device control applications as identified in the drawings and specifications. Some equipment will be College Provided for AV Contractor installation. Requirements for College Provided equipment are identified further in Part 2 of this specification, and on the functional diagrams.
4. The Audiovisual Contractor will work with the Design Consultant and SRJC College's Representatives to develop an appropriate control system graphical user interface for all control systems. The graphical user interface will be developed prior to the installation of the equipment on-site. The graphical user interface development process will also specifically define all control system button requirements, button labels, preset configuration "macros," and the level of touch

panel help instructions required. Refer to the basic requirements outlined in Part 3 of this specification.

5. College Provided Control System: A control system is provided for Library Activity Center, with hardware and software provided by the College. All control system wiring will be connected from devices to be controlled, and terminated at the designated rackmount control CPU location by the AV Contractor as part of this scope of work. Coordination is required with the College's Technical Representative to ensure that control system wiring has been correctly provided and terminated to an appropriate length.

- B. Duplication Head-End (710A): Equipment racks with power distribution devices and terminated patch bays have been installed with a previous scope of work. The fully installed systems included with this scope of work will support tape duplication from a variety of installed sources, with signal conversion, analysis, and enhancement. The Duplication Head-End will also provide audio/video distribution throughout the Library. This will include audio, video, intercom, sync, and other facility-wide signals.

- C. Post Production Rooms #1 and #2 (713 & 714): These spaces will support off-line video and audio production featuring computer based non-linear editing systems with two-channel audio monitoring. Edit system furniture is to be provided by the AV Contractor.

- D. Media Viewing Rooms #1 - #4 (715, 736, 739, 740): These spaces will be used for viewing of various installed media sources, with a flat panel monitor and 5.1 channel surround-sound audio system. All rooms will feature a touchpanel-based control system. Media Viewing Room #1 will also include two cameras and a microphone for recording, with a split screen image processor. Media Viewing Room #2 will include a videoconferencing system, including the codec, camera, and table microphone.

- E. Library Conference (726): The Library Conference room will be used for computer-based presentations with a ceiling-mount video projector, and will include a videoconferencing system with a touchpanel-based control system interface.

- F. Media Viewing and Viewing Services (Viewing Carrels, 700/701): The Viewing Carrels will allow students to individually view video tapes/discs that are remotely loaded at the Viewing Services Access Desk. Each student station will be equipped with a College Furnished computer CPU and LCD monitor. A small receptacle plate with an IR button controller, and a pair of headphone jacks are provided at each station.

- G. Library Activity Center: The Library Activity Center will be used for presentations from computer or video sources, and features an installed video projector ceiling-lift. A College Furnished video projector will be installed by the AV Contractor. A College Furnished and Installed IP-based control system will be provided.

1.1 DUPLICATION HEAD-END SYSTEM DESCRIPTION

A. General Description:

1. The Duplication Head-End equipment racks with power distribution devices and terminated patch bays have been installed with a previous scope of work. Several adjacent equipment racks are already populated with College Furnished broadband RF and data equipment.
2. The fully installed systems included with this scope of work will support duplication from a variety of installed sources, with signal conversion, analysis, and enhancement. The Duplication Head-End will also provide audio/video distribution throughout the Library. This will include audio, video, intercom, sync, and other facility-wide signals.

B. Duplication System:

1. Audio/Video Sources: The Duplication System will include a variety of modern and legacy source formats as duplication master sources. All sources are controlled via a touchpanel based control system, with minor exceptions specifically noted. All duplication source routing will be in a composite video and analog stereo audio format to duplication decks.
2. The following duplication sources are to be installed:
 - a. DVCPRO HD player, with patchable master recording capability in both analog and HD-SDI formats. This will be a mastering and archival player.
 - b. DVCAM player, capable of both DVCAM and DV tape format playback.
 - c. Hi-8/8mm Player. This will be a portable style player, mounted on a slide-out shelf, and will require manual playback control.
 - d. One (1) DVD/SVHS player will be provided, that is also capable of use as a CD sources.
 - e. Two (2) ATSC/QAM/CATV tuners will be provided.
 - f. Two (2) HD capable DSS receivers will installed as future sources, with room left on the matrix switcher and patchbays specifically for their future integration.
 - g. One CD-R Master Recorder will be provided as a duplication source, with patchable inputs for recording.
 - h. One Cassette Player will be provided as a duplication source, with patchable inputs for recording.
 - i. One (1) AM/FM tuner will be provided, with a rooftop antenna FM extension.
 - j. Several automated DVD/CD duplicators will also be installed, with College Furnished host PC control CPUs.
3. Recording Signal Path
 - a. The recording destinations will consist of two groups of five (5) recorders. The first group will consist entirely of DVD-R recorders, while the second bank will include three (3) DVD-R recorders and tow (2) DVD-R/SVHS recorders. The control system interface will provide control of players and

- recording groups to provide any combination of five or ten simultaneous DVD recordings, with the SVHS as optional record destinations.
- b. Recording can occur as a single group or as separate recordings as required. Routing and recording assignment is freely controllable from the control system touchpanel interface, with patch and manual control as required for special simultaneous recording situations.
 - c. The recording groups will share a multi-input LCD monitor with integral loudspeaker for record signal path monitoring. The monitor will feature dual 7" displays and will simultaneously show all video signals through an integral multi-image processor, with the ability to select a single post-record deck video feed as a full screen image.
 - d. The same input LCD and audio monitor panel can be used to selectively listen to a stereo post-record deck audio signal.
 - e. A BARS/black/audio tone generator is provided for tape lead-in signal calibration, to be routable to a single group of duplication decks, or all decks depending on the number of copies required.
 - f. Any image can also be viewed on a large high-quality LCD monitor with a dedicated stereo audio loudspeaker panel, with a rasterized waveform/vectorscope overlay for signal analysis and verification. This monitor can be used in parallel with the duplication source monitor to actively view video and audio signal correction effects, with routing controlled through the touch panel interface.
4. Duplication Source Audio and Video Signal Enhancement
- a. The audio signal path will optionally pass through a stereo graphic equalizer followed by a stereo compressor/limiter for signal recording level optimization, via matrix switcher routing. The devices will provide additional audio processing capability for audio requiring extra attention prior to duplication, and may be bypassed or freely patched for different system usage.
 - b. The video signal path includes similar signal optimization capability. A time-base corrector (TBC)/processor amplifier is provided with additional controls for signal transcoding, color correction, and other video processing capabilities for signal enhancement prior to duplication. The TBC can be routed into the duplication path, or patched for other signal enhancement uses.

C. Head-End Signal Routing and Conversion:

1. The Duplication Head-End will provide facility-wide audiovisual distribution and routing. An extensive cable infrastructure is in place from the previous scope of work, and will be used through a combination of active matrix routing and patch to receive and distribute signals throughout the building.
2. Matrix Switchers:
 - a. Several remotely controlled matrix switchers are provided, including a large composite video/stereo audio matrix switcher with break-away signal switching, an HD/SD-SDI multi-rate digital matrix switcher, and a VGA/component video matrix switch.

- b. All switchers will be initially configured to provide preset configurations.
 - c. All switchers will also be controllable for individual crosspoint assignment.
 - d. The control system also supports user-configurable macro storage of large routing assignments that become commonly used configurations.
 3. Master Reference Signal Generation and Distribution:
 - a. A master sync generator will be provided. The generator will include reference and synchronization signals for all analog and digital signals required.
 - b. Reference signals include: traditional analogue sync, tri-level sync required for HD-SDI capable devices, analog audio tone, NTSC patterns and black, and HDTV patterns and black.
 4. Conversion Processing:
 - a. A video transcoder is provided with fully patched inputs and outputs, and will support conversion to and from analog and digital video formats.
 - b. A high-resolution bi-directional scan converter is also provided, with unique cross-conversion capabilities between RGBHV (VGA), DVI-D, analog video, and HD/SD-SDI. The processor will be controllable through the touchpanel system for basic preset recall, and is linked to all three matrix switchers for recallable conversion path setups. Advanced settings will be accessed via a College Provided computer host, with the manufacturer's control software application.
 - c. Another dedicated component analog/stereo audio to HD-SDI converter is provided to support HD recording and signal distribution.
 5. Campus INET System: A fiber optic transmitter and receiver pair is provided to support the use of the campus INET system for transmission of composite video and stereo audio signals.
 6. Patchbays:
 - a. Audio and video patchbays are provided for flexible signal connections between devices and the existing cable infrastructure.
 - b. Several existing patchbays include terminated facility infrastructure lines for audio, video, and general AV baseband UTP. Additional patchpoints and normalled-through terminations are required, as indicated in the Duplication Audio and Video functional diagrams.
 - c. Several UTP transmitter and receiver pairs are also patchable to facility-wide tie-lines, with connections to and from the appropriate format of matrix switchers.
- D. RF Distribution Systems:
 1. RF Distribution: RF distribution from the College Furnished CATV system drop is also to be provided with this scope of work to the DVD/SVHS tuners, and the ATSC/QAM/NTSC tuners.

E. Facility-Wide Intercom:

1. A two-channel intercom system is provided. The power supply/two-buss intercom master station will be located in the Duplication Head-End equipment rack.
2. Two-channel intercom receptacles for belt-pack use are located at the Post Production rooms, and tied to future production locations.
3. A complement of plug-in belt packs and headsets are provided with the base-bid for system testing and to meet basic production needs.

F. Videoconference Codec:

1. A multi-site videoconferencing codec will be provided within the Duplication equipment rack, with necessary audio and video inputs and outputs brought to patch, or routable through one or more matrix switchers.
 - a. The codec will provide connections to up to three simultaneous sites via IP connections.
 - b. Videoconferencing will take place only in high-resolution graphic formats, per the College conferencing input standard.
 - c. Two DVI-A (VGA) input and outputs are provided to and from the videoconferencing codec. A composite video input and output, and stereo audio input and output are also provided as normalised patch connections to the matrix switchers for flexible use.
 - d. All videoconferencing codec control will be provided directly via the manufacturer remote, and is Not in Contract.

G. Control System:

1. A dedicated hardware microprocessor-based remote control system is included to simplify the control of all possible audio and video devices, and to provide advanced administrative control to support special application and event requirements.
2. One large 12” rackmount touchpanel will be the primary control system interface for all duplication and routing controls.
3. Basic control functionality will include:
 - a. Selection of duplication sources for dubbing to one or more banks of recording decks.
 - b. Transparent routing through the matrix switcher to provide one signal enhancement device in the duplication path, with one or more simultaneous recording deck groups used for dubbing.
 - c. Routing of any source to the primary rasterized waveform/vectorscope and monitor.
 - d. Selection of tape lead-in calibration signals prior to the primary duplication recording
 - e. Transport controls for all installed players and recorders.

- f. Transport control and channel selection for a bank of twelve (12) Owner Furnished and installed tuners, which are part of the channelized SRJC TV distribution system.
4. Advanced control functionality includes:
 - a. Detailed access to full matrix switcher crosspoint routing individually for the video/stereo audio matrix switcher, HD/SD-SDI matrix switcher, and the VGA/Component matrix switcher.
 - b. Recall of common Duplication Head-End preset configurations.
 - c. Conversion processor control, including the selection of multiple conversion resolutions for signal outputs.
 - d. Other SRJC College's Representative capabilities defined during the development of the graphical user interface and base system functionality.
5. User creation of custom macro commands, which may be linked to a new button, is an important feature available to the College's Technical Operators. This feature provides for control system "preset recall" reconfiguration without the need for custom control system programming, and is part of the control system manufacturer's available interface module applications.

1.2 POST PRODUCTION ROOM #1 & #2 SYSTEM DESCRIPTION

- A. The system described below is typical for both Post Production Rooms #1 and #2. Supply identical systems for both rooms, with additional capability in Post Production Room #2 as specifically noted below.
 1. Editing System Computer:
 - a. A new Apple Mac Pro Desktop computer will be provided with Final Cut Studio 2. The computer and software will be College Provided and installed.
 - b. The latest software drivers are to be installed to support both Sony Vegas and Apple Final Cut Pro for all hardware interfaces.
 - c. A College Furnished 30" monitor with a DVI connection to the computer will be provided. A VESA mount adapter plate will be College Furnished, to be installed on an AV Contractor furnished compatible articulating LCD monitor arm.
 2. Video/Audio Computer Interface: A rackmounted multi-format real-time converter will be provided with high-bandwidth PCI Express connection to the computer. This device will be installed and tested by the AV Contractor in cooperation with the Santa Rosa Junior College Technical Representative. The interface will provide analog and digital input and output conversion, up to full HD resolution on HD-SDI cable connections.
 3. Video Editing Controller: A dedicated video editing controller is to be provided, and includes eight motorized faders for audio control. The controller will include a USB connection to the computer, and supports most popular video applications natively.

4. Audio Monitoring: A pair of active left and right loudspeakers will provide high-quality audio monitoring, with connections directly to the video/audio computer interface. The system will be an active 2.1 channel system with a subwoofer for low-frequency support.
 5. Production Video Monitoring: A 24” LCD monitor will be provided for accurate color production monitoring in both analog (composite video), and digital (HDMI) formats. Initial LCD color calibration is to be provided, for both the analog and HDMI source inputs.
 6. Sources: A mini-DV/DDVD-R/HDD player/recorder and will be provided with fully patched inputs and outputs for editing transfers, including a Firewire connection directly to the Mac Pro Desktop computer.
 7. Patchbay:
 - a. A modular audio and video patchbay chassis system is provided for flexible signal connections between devices and the video/audio computer interface, and the existing cable infrastructure. Submit patchbay arrangement and labeling scheme for approval prior to configuring.
 8. Intercom: A belt pack and headset will be provided for connection to the available intercom infrastructure terminations.
 9. Post Product Edit Station Furniture:
 - a. A 91” wide edit desk with a full width monitor bridge and caster kit is to be provided and installed by the AV Contractor. Coordinate finish preferences with the College’s Representative.
 - b. A half-height millwork equipment rack with 14RU capacity in a matching millwork finish will also be provided for rackmount equipment installation.
 - c. An under-the-work surface computer CPU holder is to be provided and installed. Coordinate with the College’s Representative for the preferred computer CPU mounting location in each room based on the room furniture orientation.
 - d. A slide-out keyboard tray is also to be installed.
- B. The Post Production Room #2 system is identical to that of Post Production Rooms #1, with the additional features noted below:
1. Surround Audio Computer Interface: In addition to the features provided with Post Production Room #1, an additional firewire-based audio computer interface is provided with a full set of 5.1 outputs for surround-sound audio monitoring and mixing.
 2. Audio Monitoring:
 - a. A set of left, center, and right channel playback loudspeakers will be provided for specific channel monitoring, located across the edit desk monitor bridge.
 - b. A floor-standing subwoofer will be included for low-frequency channel monitoring.

- c. Separate left and right channel surround loudspeakers will be provided at the back of the room, mounted high on the wall, with wiring passed through the ceiling tile. Coordinate with the College's Representative for the acceptable wiring solution.
- d. A 5-channel amplifier is provided for the passive set of monitoring loudspeakers used in Post Production #2.

1.3 MEDIA VIEWING ROOM SYSTEM DESCRIPTION

- A. Media Viewing Rooms (715, 736, 739, 740): The systems to be installed will closely adhere to the installation format of the rooms installed at the Santa Rosa Junior College Doyle Library project. The description below is typical of all four rooms, with additional capabilities for Media Viewing Rooms #1 and #2 as specifically noted below.
- B. Audio System:
 1. An audio-follow-video source switcher is provided, with stereo audio support for both installed and portable sources.
 2. A surround-sound processor is also provided to support surround-sound DVD playback sources material.
 3. A set of left and right channel playback loudspeakers will be provided within a College Furnished piece of millwork, located above the flat panel display. The center channel loudspeaker will be located below the display on a rackmount shelf. Provide a custom grill-cloth wrapped rackmount panel to conceal the center-channel loudspeaker.
 4. A ceiling-mounted subwoofer will be provided to support left and right channel extended low-frequency audio, and will provide audio support for the surround-sound low-frequency effects channel.
 5. Separate left and right channel surround loudspeakers will be provided at the back of the room, mounted high on the wall, with wiring passed through the ceiling tile.
- C. Video System:
 1. A 46" flat panel monitor is to be provided within the College Furnished millwork. The monitor will be securely mounted on a stand within the millwork. The flat panel monitor will support a variety of input source formats, including both computer and video sources, including HDTV resolutions.
 2. All video and computer input sources will be scaled to a single high-resolution display output to match the resolution of the LCD flat panel monitor. A separate HDMI input with HDCP will also be provided to the display.

D. Presentation Sources:

1. A combination DVD/SVHS player will be provided, with CATV tuning capability for distributed campus RF channels. A closed captioning decoder will be provided at the player output.
2. A mini-DV player will also be provided within the millwork-mounted equipment rack.
3. A floorbox panel for portable computer source input with audio, and composite video with left/right audio exists at the table with cable to the millwork equipment location for termination.
4. A rackmount input panel with an HDMI input is provided for portable HD consumer sources. The input will pass through the surround-sound processor to the display, and will bypass the scaler input path.

E. Control System:

1. A control system will be provided with a simple user interface for access to all necessary room controls for day-to-day operation. A table-top wired 7" menu driven LCD touchpanel will be provided for control of all Media Viewing room audiovisual devices. Controls will include:
 - a. Turning the system on and off.
 - b. Volume control.
 - c. Control of all playback sources, including the DVD/SVHS combination player with CATV tuning, and the mini-DV player. The closed-caption decoder can also be turned on or off.
 - d. Selection of installed sources, or computer and video sources with audio for display.
2. Provide meeting time with the Owner's Technical Representatives for touchpanel pre-design coordination. Touchpanel pages are to be submitted for review and approval prior to on-site installation.

F. Equipment Racks and Mounting Hardware:

1. The equipment will be located within the College Furnished millwork on equipment rack rails.
2. A second short desktop style equipment rack will be mounted within the accessible side of the millwork cabinet, and will house several devices to restrict front-panel access and adjustment.
3. Active fan cooling is to be provided within the Media Viewing Room millwork, with a linear strip thermally controlled fan included for initial consideration. Coordinate with the College Technical Representative for a final fan solution that fits within the College Furnished millwork design.

G. Media Viewing Room #1 (715, with Communications Recording):

1. Media Viewing Room #1 will include additional devices to support a two camera recording system.
2. Two pan/tilt/zoom and a ceiling-mounted shotgun microphone will be used to record two parties at either side of the table. A composite video image split screen combiner will combine the camera images onto one screen for recording.
3. A mini-DV/DVD-R/HDD recorder/player will be provided instead of the other mini-DV player model used in the other Media Viewing Room locations. The recorder will provide additional format capability with the DVD-R format, and hard-disk buffering for more reliable recording. The mini-DV player will also be used for normal Media Viewing playback use.
4. The recording player and both pan/tilt/zoom cameras will be operated via the control system touchpanel, with the LCD flat panel monitor used for camera monitoring during recording if necessary.

H. Media Viewing Room #2 (736, with Videoconferencing System):

1. Media Viewing Room #2 will include additional devices to support a College-standard videoconference configuration. A videoconferencing system codec will be provided within the equipment rack, with connections to all necessary audio and video inputs and outputs. Videoconferencing calls will be connected via high-bandwidth IP connection.
2. Collaborative document sharing will also be provided, with a presentation input selectable as an input source to the codec for display. The high-resolution output from the codec will be used for all codec video and collaborative graphics display, with picture-in-picture used as required. Additional audio and VGA DA's are provided to integrate the videoconferencing system into the same Media Viewing system for consistency.
3. Videoconference Camera: A high-resolution pan/tilt/zoom capable videoconference camera will be provided, with the camera mounted on a rackmount shelf offset to the side of the center channel audio loudspeaker. Note that the grill cloth covered panel should include a cutout opening for the camera lens field of view, while still providing a more discrete and secure center-channel loudspeaker cover.
4. Videoconference Microphone: A portable wired microphone will be provided for use at the table. A new XLR connector and microphone line is to be punched into the existing floorbox receptacle plate, or a new plate is to be fabricated to support the additional connection if required. A single microphone will be used at the table for audio, with the center channel loudspeaker used for videoconference audio.
5. Control of the videoconference codec is to be provided, per the College standard for touchpanel codec control.

1.4 LIBRARY CONFERENCE SYSTEM DESCRIPTION

- A. The Library Conference Room system will be used for computer-based presentations, and will function as a College standard videoconferencing space. Note that available infrastructure pathways will need to be field verified, and that the room includes a raised access floor system.
- B. Audio System:
 - 1. An audio-follow-video source switcher is provided, with stereo audio support for both installed and portable sources.
 - 2. A pair of left and right channel playback loudspeakers will be mounted below the finish ceiling to either side of the motorized projection screen, with wiring passed through the ceiling tile.
- C. Video System:
 - 1. A motorized projection screen has been installed in the space. A College Furnished projector will be installed by the AV Contractor with this scope of work, and used for presentations and videoconferencing. Note that the projector structural attachment and post are installed, and will require an approved attachment to be supplied and installed by the AV Contractor.
 - 2. All video and computer inputs will be scaled to a single high-resolution display output to match the resolution of the LCD projector.
- D. Presentation Sources:
 - 1. No installed playback sources are provided within the space.
 - 2. A floorbox panel for portable computer source input with audio, and composite video with left/right audio exists at the table with cable to the millwork equipment location for termination.
- E. Videoconferencing System:
 - 1. The Library Conference Room will include devices to support a College-standard videoconference configuration. A videoconferencing system codec will be provided within the equipment rack, with connections to all necessary audio and video inputs and outputs. Videoconferencing calls will be connected via high-bandwidth IP connection.
 - 2. Collaborative document sharing will also be provided, with a presentation input selectable as an input source to the codec for display. The high-resolution output from the codec will be used for all codec video and collaborative graphics display, with picture-in-picture used as required.

3. Videoconference Camera: A high-resolution pan/tilt/zoom capable videoconference camera will be provided, with the camera mounted on top of a millwork equipment rack.
4. Videoconference Microphone: A portable wired microphone for use at the table will be provided. A new XLR connector and microphone line is to be punched into the existing floorbox receptacle plate, or a new plate is to be fabricated to support the additional connection if required. A single microphone will be used at the table for audio, with the center channel loudspeaker used for videoconference audio.

F. Control System:

1. A control system will be provided with a simple user interface for access to all necessary room controls for day-to-day operation. A table-top wired 7” menu driven LCD touchpanel will be provided for control of all Media Viewing room audiovisual devices. Controls will include:
 - a. Turning the system on and off.
 - b. Volume control.
 - c. Control of the videoconference codec, per the College standard for touchpanel codec control.
 - d. Selection computer and video sources with audio for display.
 - e. Motorized projection screen control.
2. Provide meeting time with the Owner’s Technical Representatives for touchpanel pre-design coordination. Touchpanel pages are to be submitted for review and approval prior to on-site installation.

G. Equipment Racks and Mounting Hardware:

1. Half-Height Furniture Equipment Rack: A millwork equipment rack is to be supplied by the AV Contractor for equipment rack mounting, with finish coordination to match architectural furniture building standards.
2. Video Projector: The structural pipe attachments and pipe extension poles are provided for the ceiling-mount video projector. Specific device mounting hardware for pipe attachment is to be provided as required.

1.5 VIEWING CARRELS SYSTEM DESCRIPTION

- A. The Viewing Carrels allow students to individually view DVD and SVHS tape sources. A total of eleven (21) Viewing Carrel systems will be installed with this scope of work.
1. Each Viewing Carrel station will be equipped with a personal computer with video capture card and viewing software, and an LCD monitor (By Others).
 2. Thirteen (13) combination DVD/SVHS players and eight (8) DVD players will be installed within the Media Services Access Desk equipment racks, with one installed player dedicated to each of the Viewing Carrels. Not that the eight (8) DVD only players will supply the group of eight (8) Viewing Carrels, with the

DVD/SVHS players serving the remaining groups of seven (7) and six (6) Viewing Carrel locations.

3. RF distribution from the College Furnished SRJC TV system drop is also to be provided with this scope of work to all thirteen (13) new and existing tuners.
4. At each Viewing Carrel, a small button control panel will be hard-wired back to each dedicated DVD/SVHS combination player or DVD player located within the Media Services Access Desk for remote transport control.
5. A receptacle plate with headphone jacks and the button panel control will be flush-mounted into the surface of the Viewing Carrel desk, with a shallow backbox.
Millwork routing for the Viewing Carrel control receptacle plates is to be provided by the AV Contractor, or subcontracted as required as part of this scope of work.
6. Note that a total of nine (9) Viewing Carrel systems already have infrastructure cable installed, while twelve (12) Viewing Carrel systems will require the infrastructure wire to be provided and installed as part of this scope of work. Field verification is required to confirm which Viewing Carrels have cable installed.
7. The equipment racks are existing, and were installed with a previous scope of work.

1.6 LIBRARY ACTIVITY CENTER 721 SYSTEM DESCRIPTION

- A. The Library Activity Center will be used for presentations and events. The room includes and existing motorized projection screen and ceiling soffit-mounted video projector lift, with both playback and speech reinforcement audio support. An installed wall-mount equipment rack and portable cart will each house system components, as indicated on the functional drawing. Owner Furnished equipment, and in some cases Owner Installed equipment will be a part of the complete system.
- B. Audio Systems:
 1. This room will have a DSP based audio system to support the various room uses. The audio system will not typically require any user adjustment, other than simple volume control through the control system. The DSP Audio Matrix Mixer will combine audio sources, provide loudspeaker equalization, dynamic feedback equalization for the wireless microphone, and volume control.
 2. Playback/Speech Reinforcement Loudspeakers: Soffit-mounted left and right playback loudspeakers will provide audio for all portable and installed playback sources, and light speech reinforcement for the space. Loudspeaker wiring has been installed with a previous scope of work. The final mounting solution will be coordinated with the existing conditions.

3. Wireless Microphone: One wireless microphone system will be provided for presenter mobility, with both handheld and lavalier belt-pack style transmitters. The wireless microphone will provide in-room speech reinforcement.
4. An audio-follow-video source switcher is provided, with stereo audio support for both installed and portable sources.

C. Video and Display Systems:

1. Front Projection Screen (Existing): A motorized front projection screen is provided, with a low-voltage control interface for control system integration (By College).
2. Ceiling Soffit-Mount Motorized Projector Lift (Existing): A motorized projector lift is provided, with a low-voltage control interface for control system integration (By College).
3. LCD Video Projector: A College Furnished projector will be installed by the AV Contractor with this scope of work. Note that an approved attachment is to be supplied and installed by the AV Contractor for coupling to the motorized lift.
4. All computer graphics and video sources will be pre-switched and scaled at the system switcher, with a single connection to the projector for all display sources.
5. LCD Telestration Monitor: A College Furnished LCD Telestration Tablet Monitor is provided to monitor the OFE Computer CPU, and will provide telestration capability for the OFE Computer CPU via software control (By Others).
6. A VGA switcher and distribution amplifier is included at the portable presentation cart for OFE computer source selection.
7. A closed-captioning video decoder is provided to support closed captioning text display on the video projector.
8. A VGA to UTP converter pair are used to extend the scaled presentation source output from the floorbox connection to the video projector location. Note that a new terminated UTP cable run may be required to the video projector location, and is assumed to not currently be installed.

D. Source Devices:

1. A combination DVD/VHS player will be provided within the portable presentation cart. The DVD/VHS player will also loop through a closed-captioning video decoder to support closed captioning text display on the video projector.
2. A pre-terminated video/left/right audio cable is to be provided for use at the portable cart.

E. Control System:

1. A College Provided and Installed IP-based control system will be supplied as part of the full system solution. The AV Contractor is to supply pre-terminated control cables for all devices to be controlled, and collected within the equipment racks at the appropriate location where the College Furnished control devices will be installed. Coordinate with the College Technical Representative.

F. Equipment Racks and Mounting Hardware:

1. Wall-Mount Equipment Rack: A wall-mounted equipment rack will be located within the adjacent Storage Room 723 at the conduit collection location, and will house local audio, and control system equipment.
2. Portable Equipment Cart (College Furnished): A portable millwork equipment cart will be College Furnished for equipment installation. Coordinate with the College Technical Representative for schedule, and receipt of the millwork for equipment installation.

1.7 ADD-ALTERNATE SYSTEM DESCRIPTION

A. Duplication:

1. 24-Channel LED Audio Monitor (dupe confidence monitor): An LED monitor is included for Add-Alternate bid consideration. If included, stereo LED displays are to be paralleled from each of the 12 Input Audio/Video Dual 7" Confidence Monitor inputs. This will provide visual confidence monitoring for the audio output from each duplication deck.
2. Two additional years of the Tandberg Management Suite (TMS) System, as well as the Tandberg Customer Core Service associated with the Duplication Head-End codec are to be included for Add-Alternate consideration.
3. HD Camcorder Kit: An HD Camcorder kit with accessories is included for Add-Alternate consideration, on a per kit basis.

B. Media Viewing Room #2 (736):

1. Two additional years of the Tandberg Customer Core Service associated with the Media Viewing #2 codec are to be included for Add-Alternate consideration.

C. Library Conference Room (726):

1. Two additional years of the Tandberg Customer Core Service associated with the Media Viewing #2 codec are to be included for Add-Alternate consideration.

1.8 SCOPE OF WORK

- A. Refer to this specification and AV drawings for included work.

- B. Refer to attached as-built system functional drawings PCD for complete existing wiring infrastructure, receptacle plate, and patchbay conditions.

1.9 AUDIOVISUAL CONTRACTOR RESPONSIBILITY

- A. Furnish and install a complete and functioning audiovisual system including cabling, receptacle plates, loudspeakers, and electronic devices. Provide and install all components including the necessary equipment, interconnections, transducers, labor, and services required to meet specifications herein and as indicated on the drawings. Any item listed in the specification or shown on the drawings is to be included as part of this scope of work.
- B. Control System Graphical Interface and Template Designs:
 - 1. Coordinate with SRJC College’s Representatives and the Design Consultant for specific graphical control interface requirements. This includes specific functional requirements for all devices, touch panel look and feel, page hierarchy, and other control interface design parameters. The control interface design includes all touchpanel and computer interfaces throughout the project.
 - 2. Provide on-site meetings as required to define the control system touch panel design prior to any on-site installation. Control system and template page layout concepts are to be defined during the construction phases of the project prior to any AV on-site work in order to provide adequate time to develop touch panel interfaces.
 - 3. A more advanced touchpanel graphical user interface is in use at the Santa Rosa Junior College Doyle Library Duplication Head-end, and provides much of the same functionality. The control system interface design and code can be provided by the College to the winning AV Integrator as a basis for the new Duplication Head-end touchpanel design.
- C. Notify the College’s Representative in writing of any conduit, wire raceways, back boxes, and AC power receptacles that are not shown on the electrical drawings that are required for this work.
- D. Verify site conditions including dimensions, clearances, conduit sizes, and routing. Coordinate the exact location of the equipment with conceptual location plan drawings and field conditions.
- E. Verify that 120-volt AC power has been supplied near each equipment rack location. Provide connection in flex conduit from nearby AC power to equipment racks, where AC power receptacles are not located within the equipment rack enclosure. Provide and install all AC power receptacles within the equipment racks. Provide low-voltage turn-on controllers and switched outlets to activate and distribute AC power within the equipment racks.

- F. Notify the College’s Representative in writing prior to AV installation of any penetrations at walls, ceilings and floors required for the installation of audiovisual equipment and cabling.
- G. Retain at Audiovisual Contractor’s cost, a licensed structural engineer to design and document all mounting and suspension systems and details for audiovisual system components including, but not limited to, loudspeakers, equipment racks, projectors, plasma monitors, etc. Coordinate with project structural engineer for attachment points and methods.
- H. Conduct preliminary testing and adjustment. Submit documentation required by this specification. Participate in approval testing for acceptance. Perform final adjustments as required to meet specifications.
- I. Deliver bound “as-built” system documentation. Transfer all warranties and equipment guarantees and provide a written description of system operation to the College at the time of acceptance of the work by the College. Provide system operation training as specified in Section 3.05.
- J. Provide, at no additional cost, maintenance and repair services for twelve (12) months following acceptance of the system.
- K. Provide as-built drawings of all systems and modifications to the base building on 24" x 36" bond, and CAD files on CD-ROM, or storage format preferred by the College. Provide touchpanel and control system source code, DSP system configuration files, and all system initial configuration preset files to the College. Store file copies on site in the system documentation binders in disk sleeves. All files should also be stored on the main network server, in a folder designated by the College’s IT Representative.
- L. Inventory Spreadsheet:
 - 1. SRJC will furnish the Contractor with adhesive SRJC-numbered inventory tags. Contractor shall affix these tags to Contractor-provided equipment and shall provide SRJC Media Services with an Excel spreadsheet containing the following fields (provide hardcopy and electronic file):
 - a. SRJC fixed asset tag number (tags provided By College on request)
 - b. Equipment description
 - c. Equipment location
 - d. Equipment manufacturer and model number
 - e. Equipment serial number
 - f. Value (*College replacement cost, non-OFE equipment only*)
 - 2. Provide inventory data for the following items:
 - a. Flat panel monitors
 - b. Instructor table display
 - c. Room Loudspeakers
 - d. Matrix Switchers and System Switchers
 - e. Audio amplifiers
 - f. VGA switchers

- g. Distribution amplifiers
- h. DVD/VHS Combination Players, DVCAM Players, and VHS VCRs
- i. Closed Caption Decoders
- j. Surround-Sound Processors
- k. DSP Audio Processors
- l. Control System Portable Touchpanels

3. Computers, all cables, and related connectors do not require inventory.

1.10 QUALITY ASSURANCE

- A. All materials must be newly manufactured current production models and conform with all applicable codes and the relevant standards listed below:
 - 1. American National Standards Institute (ANSI)
 - 2. Electronic Industries Association (EIA)
 - 3. Institute of Electrical and Electronic Engineers (IEEE)
 - 4. Underwriters Laboratories (UL)
- B. Coordination: The Audiovisual Contractor will coordinate all other trades in scheduling work. The Audiovisual Contractor is responsible for coordination of and compensation for any work or subcontractor work including but not limited to: structural engineering, electrical, finish carpentry, metal work, drywall, and HVAC.
- C. Experience: The Audiovisual Contractor will specialize in the installation of audiovisual professional/commercial and broadcast systems. Installers and engineers must individually have a minimum of five years of documented experience in the field of audiovisual system installation.
 - 1. The AV Contractor must be an approved vendor, or subcontract to an approved vendor for all installed components. The AV Contractor must be a trained and authorized dealer for the following major system components, or subcontract the device supply AND installation to an approved vendor:
 - a. Facility-Wide Control System (AMX)
 - b. DSP Audio Processor (Biamp)
 - c. Facility-Wide Computer/Video/Audio Switching and Distribution Devices (Extron)
 - d. Facility-Wide Videoconferencing Systems (Tandberg)
 - e. Facility-Wide Intercom Systems (Clear-Com, or approved equal)
 - 2. The company must also have specific experience with the configuration, wiring, termination, and distribution of signals typically associated with digital high-definition broadcast systems. The signals and system types include:
 - a. All analogue and digital video signals, including HD/SD-SDI SMPTE259M and SMPTE292M standard signals
 - b. Broadcast Sync Generation and Distribution (Blackburst and Tri-Level)

- c. Waveform/Vectorscope and Test Signal Systems
- d. Post-Production Edit Suite Systems (Digital Video and Audio)
- e. Production Intercom

D. Supervision:

- 1. The Audiovisual Contractor will designate a single supervisor to oversee the installation work for the duration of the project to ensure that the system is installed in accordance with the specification and drawings.
- 2. The supervisor will maintain adequate staff and be responsible for installing and testing the system on schedule.
- 3. The supervisor will have at least five years of documented, recent, and similar project experience.

E. Should the Audiovisual Contractor at any time discover a discrepancy between this Specification and the project documents, with respect to significant variance between location, violation of code requirements, or any other discrepancies, the Audiovisual Contractor will notify the College for clarification and will not proceed with the work affected until this clarification has been made.

F. The Audiovisual Contractor will promptly notify the College in writing of any difficulties that may prevent proper coordination or time of completion of this work. Failure to do so will constitute acceptance of construction site and indicate that the site is suitable in all ways for this work, except for defects that may develop in work of others after commencement of system installation.

G. The College reserves the right to make use of the system prior to the completion of the punch list. Temporary use of the equipment will not constitute an acceptance of the system or any part. The College will not pay additional cost to the Audiovisual Contractor and the commencement of the warranty period will not begin for the system or any device prior to the completion of the punch list and final acceptance of the system by the College.

H. Codes: AV Contractor will comply with all applicable laws, regulations and codes.

I. Dealership: Contractor will be a dealer for all devices provided and installed and shall offer full factory warranty on all products.

1.11 SUBMITTALS

A. Comply with submittal provisions of Colleges Specification - Submittals.

B. Bid Submittals: Submit the following qualification documents:

- 1. Firm description.
- 2. List of related projects. Related project list to include project name and location, description of project, contract amount, reference name and telephone number.

One of the related projects must have been completed within the last twelve (12) months.

3. Resumes of project supervisor documenting related experience. Project supervisor must have completed at least one (1) installation in the past twelve (12) months.
4. Names and scope of work for any subcontractors whose work would be part of this contract, including relevant past project experience.
5. Clearly describe any deviations from and exceptions to the specifications or drawings.
6. For the Base Bid, provide an equipment list including all major devices, separated by room or area as indicated in the Part 1 system descriptions. The bid shall not be considered complete without this list.
7. For the Add-Alternate bids, provide an equipment list including all devices for the following individual systems (Refer to specification section 2.8 for detailed equipment model numbers, and specific camcorder kit equipment):
 - a. Duplication Head-End:
 - i. 24-Channel LED Audio Monitor.
 - ii. TMS Additional 25 System License (additional 2 year duration).
 - iii. Tandberg Customer Core Service (Duplication Codec, additional 2 year service).
 - iv. HD Camcorder Kit.
 - b. Media Viewing Room #2 (736):
 - i. Tandberg Customer Core Service (Duplication Codec, additional 2 year service)
 - c. Library Conference Room (726):
 - i. Tandberg Customer Core Service (Duplication Codec, additional 2 year service)
8. Along with the quoted price, provide a factor for additive changes and delete changes. The add change factor should include the product, installation, engineering, tax and shipping. Delete change factor should include listed devices, installation, tax, return shipping and verified restocking charges. No change in scope will be considered without line item documentation. This will also provide a basis for product changes necessitated by product advancement between the time of the writing of this specification, and the final integration.
9. Provide an option price for maintenance contract extensions on an annual basis beyond the first twelve (12) month warranty period.

C. Construction Submittals:

1. Submit complete equipment list by manufacturer, model number, and type, including quantities to be supplied. Include all accessories, options and functional components.

2. Submit shop drawings for each building space included in this specification with the following drawings (as required by specific system):
 - a. Point-to-point functional wiring diagrams for all audio, video, control, and related signal system wiring diagrams. Must be connector pin-specific. Re-used Audiovisual Consultant design drawings with wire run numbers added are not acceptable for field construction use, with some devices and connections noted “typical” for quantity designations and not shown with pin-specific wiring connections.
 - b. All receptacle plates and panels, including rackmount panels with labeling shown for engraving.
 - c. Patch panel layouts with labels. Note that existing patchpanel drawings are to be redrawn to include all newly added patchpoints, and normalled through terminations to existing infrastructure lines. All existing patchbays, receptacle plates, and installed systems are not meant to be replicated with this as-built document package.
 - d. Equipment rack elevations.
 - e. AC line power distribution plan.
 - f. Mounting and suspension systems and details for audio system components requiring structural approval including, but not limited to: loudspeakers, ceiling-mount projectors, wall-mount flat panels, etc.
 3. Control System Graphical Interface Design and Template Documentation:
 - a. Submit control system touchpanel pages and button panel engraved or keycap labeling (May be submitted via software or screen prints).
 - b. Control system touchpanel interface design will occur over the course of several meetings for full design development and approval.
 - c. Submit initial touchpanel layouts and revisions as required to reach initial design approval prior to the development of full control system source code.
 4. Submit shop drawings of any proposed design changes for approval prior to fabrication. Shop drawings will be submitted to the College’s Representative for review and approval prior to fabrication and installation. Make submittals at least fifteen (15) working days prior to scheduled fabrication. Note on the submittal the dates of scheduled fabrication.
 5. Submit samples of engraved labels, cable marking system, and receptacle plate/panel etching.
- D. Acceptance Test Submittals: Prior to requesting the completion of the acceptance tests, submit Preliminary Test Report including all information as specified in Section 3.8.
- 1.12 PERMITS AND INSURANCE
- A. Permits: Obtain any necessary permits for the execution of this work in conformance with applicable union regulations, local, State and Federal codes and regulations.
 - B. Insurance: Provide evidence of insurance for the full value of equipment and material located on site. Insurance will cover all losses until the work is formally accepted. Maintain additional liability insurance to protect the supplier and/or College against

damage claims for personal injury, including death, which may arise during the performance of this work.

1.13 GUARANTEES AND WARRANTIES

- A. Transfer all manufacturers' warranties to the College at the time of acceptance.
- B. Guarantee all installation work to be free of faulty workmanship. Guarantee all components and workmanship to be free from defects for a period of twelve (12) months from the final date of acceptance, including electronic devices.
- C. Guarantee the replacement of faulty materials and workmanship within seventy-two (72) hours of notification at no cost to the College if failure occurs during warranty period.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials listed herein represent specific minimum levels of performance and function. These levels of performance and function are as published by the listed manufacturers. All material submitted shall be as listed, or shall be substitutions that meet or improve upon the performance and functional characteristics of the listed material. Receptacle plates and connector types are shown on the audiovisual drawings. Where conflicts exist within the specification or between the specification and the drawings contact the Design Consultant for clarification. Refer to the functional diagrams for additional information.

2.2 DUPLICATION HEAD-END SYSTEM EQUIPMENT

- A. Duplication Head-End (710A) System Equipment
 - 1. Audio/Video Switching and Distribution Devices
 - a. Composite Video/Stereo Audio Matrix Switcher (24x24): Extron MAV Plus 2424 AV #60-472-01 (Quantity 1)
 - b. HD-SDI/SD-SDI Matrix Switcher (16x16): Extron HDXP Plus 1616 #60-807-01 (Quantity 1)
 - c. VGA/Component Video Matrix Switcher (12x12) Extron MVX 1212 VGA A #60-858-01 (Quantity 1)
 - d. Analog Video/HD/SD-SDI/VGA/DVI Bidirectional Converter (Dual Channel): TVone C2-7210 (Quantity 1)
 - e. Rasterized Waveform/Vectorscope (HD/SD-SDI, analogue):
 - i. Rasterized Waveform/Vectorscope: Tektronix WVR7020 (Quantity 1)
 - ii. Rasterized Waveform/Vectorscope Composite Video/Audio Input Bundle: Tektronix WVR7020BAS (Quantity 1)
 - iii. Rasterized Waveform/Vectorscope Audio Breakout Cable: Tektronix WVR702062
 - f. Test Signal Generator (Analog/HD-SDI, power supply): Ensemble Designs BrightEye 55 with BEPS (Quantity 1)

- g. Master Genlock Generator (6 output, 1kHz tone): Kramer SG-6005 (Quantity 1)
 - h. Black/Bars/Tone Generator (Duplication, with logo store): Burst Electronics BURST-BG7-TONEB (Quantity 1)
 - i. Video/Stereo Audio DA (6 Output, with EQ): Extron DA 6AV EQ (Quantity 1)
 - j. Tri-Level Sync DA (4 Output): Ensemble Designs BrightEye 41 with BEPS (Quantity 1)
 - k. Video Processor/TBC/Video Converter: SP-11D (Quantity 1)
 - l. Analog Component HD/Analog Audio to HD-SDI Converter: Aja HD10AVA (Quantity 1)
 - m. Stereo Compressor/Limiter: Drawmer DL241XLR (Quantity 1)
 - n. Stereo Graphic EQ/Compressor/Limiter: BSS Opal FCS-966 (Quantity 1)
 - o. Computer/Stereo Audio Universal UTP Transmitter: Magenta Research Multiview UTx #4003212-03 (Quantity 2)
 - p. Computer/Stereo Audio Universal UTP Receiver: Magenta Research Multiview AK500 #4003299-01 (Quantity 2)
 - q. Composite Video/Stereo Audio Universal UTP Transmitter: Extron MTP T AV (Quantity 2)
 - r. Composite Video/Stereo Audio Universal UTP Receiver: Extron MTP R AV (Quantity 2)
 - s. Campus INET Fiber Optic Transmitters and Receivers:
 - i. Fiber Optic Transmitter/Receiver Cardcage (with power supply): GE Security 515R1 (Quantity 1)
 - ii. Fiber Optic Transmitter Card: GE Security S768DAVT-RST1 (Quantity 1)
 - iii. Fiber Optic Receiver Card: GE Security S768DAVR-RST1 (Quantity 1)
 - t. Audio Patchbay (2x48x2RU): AVP (Quantity 4, **College Furnished and Installed Equipment**)
 - u. Video Patchbay (2x24x2RU): AVP (Quantity 4, **College Furnished and Installed Equipment**)
 - v. RJ45 Patch Panel (Baseband UTP infrastructure patch): 24 port (Quantity 2, **College Furnished and Installed Equipment**)
2. Intercom System Devices
- a. Intercom 2-Channel Main Station/Power Supply): Clear-Com MS702 (Quantity 1)
 - b. Intercom Station Gooseneck Microphone: Clear-Com GM-18 (Quantity 1)
 - c. Intercom Beltpack Receiver (single channel): Clear-Com RS-601 (Quantity 1)
 - d. Intercom Headset (with Microphone): Clear-Com CC-260 (Quantity 1)
3. Duplication Source and Recording Devices
- a. DVCPRO HD Recorder (with rackmount): Panasonic AJ-HD1400 w/RAK-95-250 (Quantity 1)
 - b. DVCAM/DV Player/Recorder: Sony DSR-45A w/RMMDSR20S rackslide kit (Quantity 1)

- c. Hi-8/8mm Player (portable, on rackmount shelf):
 - i. Hi-8/8mm Player: Sony GV-D200 (Quantity 1)
 - ii. Slide-Out Rackmount Shelf: Middle-Atlantic #SS (Quantity 1)
 - d. DVD/SVHS Player (RS232 control): JVC SR-MV55US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - e. Universal ATSC/QAM/NTSC Tuner (RS232 control): Contemporary Research 232-ATSC (Quantity 2)
 - f. Universal ATSC/QAM/NTSC Tuner Rackmount: Contemporary Research RK2-HD (Quantity 1)
 - g. DVD-R/HDD Recorder (Looping RS232 Control): BCD Associates DVD-1150HDD (Quantity 8)
 - h. DVD-R/SVHS Dual Deck Recorder (RS232 Control): JVC SR-MV55US w/Middle-Atlantic RSH-Series rackmount (Quantity 2)
 - i. Cassette Player (dual well, RS232 control): Tascam 322 (Quantity 1)
 - j. CD Master Recorder (RS232 control): Tascam CD-RW901SL (Quantity 1)
 - k. AM/FM Tuner: Tascam TU-690 (Quantity 1)
 - l. DVD/CD Duplication System:
 - i. DVD/CD Duplicator Host CPU: Per College Standard, to be confirmed (Quantity 2, **College Furnished and Installed Equipment**)
 - ii. Rackmount Hardware: Middle-Atlantic VSA-2744 (Quantity 2)
 - iii. Rackmount Slide-out Keyboard Shelf: Middle-Atlantic RM-KB (Quantity 1)
 - iv. DVD/CD Rackmount Duplicator (2 Drives): Primera Bravo XRP DVD/CD w/rackmount kit (Quantity 1)
 - v. Blu-Ray DVD/CD Rackmount Duplicator (1 Drive): Primera Bravo XR-Blu w/rackmount kit (Quantity 1)
 - vi. DVD/CD Duplicator Host CPU KVM Switch: BlackBox ServSwitch 4 Port USB KVM #KV814A, or compatible equal (Quantity 1)
4. Audio & Video Monitoring Devices
- a. 12 Input Dual 7" Preview/Record Monitor (multiplexor with touchscreen select): Panoramadv (Wohler) Touch-It Plus (Quantity 1)
 - b. 20" Multi-Format LCD Monitor (136x768, HD-SDI/VGA/Video): Marshall Electronics V-R201P-AFHD (Quantity 1)
 - c. Stereo Audio Monitor Loudspeaker Panel (Analog): Wohler AMP-1A (Quantity 1)
 - d. 17" Duplicator Host LCD Monitor (1280x1024, DVI Input): EclipseRackmount.com MP-17DV (Quantity 1)
5. Videoconferencing Devices
- a. Videoconference Codec (768 ISDN/1.5 Mbps IP): Tandberg Codec 6000 MXP (Quantity 1)
 - b. TMS Additional 25 System License (3 year duration): Tandberg #113612S25 (Quantity of 1, for 3 years)
 - c. Tandberg Customer Core Service (Duplication Codec, 3 year service): Tandberg #113612S25 (Quantity of 1, for 3 years)

- d. Videoconference Codec Dual Stream Graphic Option: Tandberg Natural Presenter Package #113828NPP (Quantity 1)
 - e. Videoconference Codec High Bandwidth Option (to 6Mbps IP): Tandberg 3 Mbps option #1138563 (Quantity 1)
 - f. Videoconference Codec Multisite Conferencing Option: Tandberg MultiSite Option #113828MS (Quantity 1)
6. RF Devices
- a. Wideband Splitter (1x8): Blonder Tongue SCVS-8 (Quantity 1)
7. Control System Devices
- a. Master Control System CPU: AMX NI-4100 (Quantity 1)
 - b. Master Control System CPU 256MB Ram Upgrade: AMX NXA-CFNI256M (Quantity 1)
 - c. 12-Slot Expansion Cardframe: AMX NXF (Quantity 1)
 - d. Expansion Hub Card: AMX NXC-HE (Quantity 1)
 - e. Dual Port RS232 Card: AMX NXC-COM2 (Quantity 4)
 - f. 4-Port IR Card: AMX NXC-IRS4 (Quantity 2)
 - g. Control System Device/Buss Power Supply: AMX PSN6.5 (Quantity 2)
 - h. Power Supply Rackmount: AMX AC-RK (Quantity 1)
 - i. Control System Buss Strip: AMX ABS (Quantity 1)
 - j. Control CPU Cable Support Bracket: AMX CSB (Quantity 1)
 - k. Rackmount 12” Primary Control Touchpanel: AMX NXD-1200V w/NXA-RK12 (Quantity 1)
 - l. IR Emitters: AMX CC-IRC (Quantity 15, includes two provided with AMX NI-4100 CPU)
 - m. RS232 Cables/Control Buss Splitters: Supply compatible manufacturer hardware for control communication and distribution as required.
 - n. Custom Control System Programming: To be provided by Audiovisual Contractor, or qualified subcontractor.
8. Equipment Racks and Mounting Hardware
- a. Console Equipment Rack: Middle-Atlantic WRK-44-32 Series (Quantity 6, **College Furnished and Installed Equipment**)
 - b. Rackmount Power Sequencer: Surge-X SX2120SEQ (Quantity 4, **College Furnished and Installed Equipment**)
 - c. Console Rack Power Distribution Strips: Middle-Atlantic PD-1220C-NS (Quantity 12, **College Furnished and Installed Equipment**)

2.3 POST PRODUCTION ROOM SYSTEM EQUIPMENT

A. Post Production Room #1 (713):

- 1. Non-Linear Editing System Devices
 - a. Non-Linear Editing Computer (Dual Mac/PC Bootable):
 - i. Apple Mac Pro 2.8GHz (Quantity 1, **College Furnished and Installed Equipment**)
 - ii. Mac Video Editing Software: Final Cut Studio 2 (Quantity 1, **College Furnished and Installed Equipment**)

- b. Digital/Analog Audio/Video Computer Interface: Blackmagic Design Multibrige Pro (Quantity 1)
 - c. Video/Audio Editing Controller (with wristguard, USB control option): JL Cooper MCS-3800W, w/USB Control Insert (Quantity 1)
2. Audio Devices
 - a. Left/Right/Subwoofer Active 2.1 Loudspeaker System: Blue Sky MediaDesk 2.1 (Quantity 1)
 - b. Intercom Beltpack: Clear-Com RS-601 (Quantity 1)
 - c. Intercom Headset: Clear-Com CC-95 (Quantity 1)
 3. Audio and Video Patchbay:
 - a. Modular Audio/Video Patchbay System: AVP AM-DBS2-L-AMN75/AM-B-FN-E03 (Quantity 1)
 4. Source Devices
 - a. MiniDV/DVD-R/HDD Combination Player/Recorder: JVC SR-DVM700US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 5. Display Devices
 - a. 30" LCD Flat Panel Monitor: Apple 30" Cinema Display, with VESA adapter bracket (Quantity 1, **College Furnished and Installed Equipment**)
 - b. Apple Cinema Display Articulating Monitor Arm: Innovative Office Products iLift model #7517-1500 (Quantity 1)
 - c. 24" Color Production LCD Monitor (1920x1080): eCinema Systems FX24 with VESA Stand option (Quantity 1)
 6. Equipment Rack and Mounting Hardware
 - a. Edit Desk Furniture:
 - i. 91" Edit Desk with Overbridge: Martin & Zeigler CF91 w/Caster Kit (Quantity 1)
 - ii. Edit Equipment Rack (14RU with laminate top): Martin & Zeigler ER-14-32-1-Lam (Quantity 1)
 - iii. Articulating Under-Millwork CPU Mount: Martin & Zeigler APT-1 CPU Holder (Quantity 1)
 - iv. Slide-Out Keyboard Tray: Martin & Zeigler Key 4 Keyboard Tray (Quantity 1)
 - b. Equipment Rack/Desk Power Distribution: Furman PL-Pro D II (Quantity 1)
 - c. Power Distribution Strips: Middle-Atlantic (Quantity as required)
 - d. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.02 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.

- B. Post Production Room #2 (714):
1. Non-Linear Editing System Devices
 - a. Non-Linear Editing Computer (Dual Mac/PC Bootable):
 - i. Apple Mac Pro 2.8GHz (Quantity 1, **College Furnished and Installed Equipment**)
 - ii. Mac Video Editing Software: Final Cut Studio 2 (Quantity 1, **College Furnished and Installed Equipment**)
 - b. Digital/Analog Audio/Video Computer Interface: Blackmagic Design Multibrige Pro (Quantity 1)
 - c. Audio Interface (6-Channel 5.1): RME Fireface 400 (Quantity 1)
 - d. Video/Audio Editing Controller (with wristguard, USB control option): JL Cooper MCS-3800W, w/USB Control Insert (Quantity 1)
 2. Audio Devices
 - a. Surround-Sound Monitor Loudspeakers (Passive): Tannoy Precision 6 (Quantity 5)
 - b. Surround-Sound Subwoofer (Active): Tannoy TS12 (Quantity 1)
 - c. Multi-Channel Amplifier: Sherwood Newcastle A-965, with Middle-Atlantic heavy-duty rackmount shelf (Quantity 1)
 - d. Intercom Beltpack: Clear-Com RS-601 (Quantity 1)
 - e. Intercom Headset: Clear-Com CC-95 (Quantity 1)
 3. Audio and Video Patchbay:
 - a. Modular Audio/Video Patchbay System: AVP AM-DBS2-L-AMN75/AM-B-FN-E03 (Quantity 1)
 4. Source Devices
 - a. MiniDV/DVD-R/HDD Combination Player/Recorder: JVC SR-DVM700US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 5. Display Devices
 - a. 30" LCD Flat Panel Monitor: Apple 30" Cinema Display, with VESA adapter bracket (Quantity 1, **College Furnished and Installed Equipment**)
 - b. Apple Cinema Display Articulating Monitor Arm: Innovative Office Products iLift model #7517-1500 (Quantity 1)
 - c. 24" Color Production LCD Monitor (1920x1080): eCinema Systems FX24 with VESA Stand option (Quantity 1)
 6. Equipment Rack and Mounting Hardware
 - a. Edit Desk Furniture:
 - i. 91" Edit Desk with Overbridge: Martin & Zeigler CF91 w/Caster Kit (Quantity 1)
 - ii. Edit Equipment Rack (14RU with laminate top): Martin & Zeigler ER-14-32-1-Lam (Quantity 1)
 - iii. Articulating Under-Millwork CPU Mount: Martin & Zeigler APT-1 CPU Holder (Quantity 1)
 - iv. Slide-Out Keyboard Tray: Martin & Zeigler Key 4 Keyboard Tray (Quantity 1)

- b. Equipment Rack/Desk Power Distribution: Furman PL-Pro D II (Quantity 1)
- c. Power Distribution Strips: Middle-Atlantic (Quantity as required)
- d. Playback Left/Right Surround Loudspeaker Wall-Mount: (Quantity 2)
 - i. Provide rated rigid adjustable hardware. Omnimount, or equal. Coordinate as required for specific mounting method.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.
- e. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.02 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.

2.4 MEDIA VIEWING SYSTEM EQUIPMENT

A. Media Viewing Room #1 (715, Recording Enabled):

- 1. Audio Devices
 - a. Microphone Preamp: Extron MLP 101 (Quantity 1)
 - b. Ceiling Microphone: AKG HM 1000 w/CK 47 (Quantity 1)
 - c. Surround Sound System Processor/Amplifier (RS232 Control): Denon AVR-988P (Quantity 1)
 - d. Ceiling Loudspeaker Power Amplifier: Biamp CPA130 (Quantity 1)
 - e. Surround-Sound Loudspeakers: EAW SMS5W (Quantity 5)
 - f. Ceiling Subwoofer Loudspeaker: Toa HB-1 (Quantity 1)
- 2. Video Devices
 - a. Video/Audio System Switcher/Scaler: Extron IN1508 (Quantity 1)
 - b. Composite Video Image Split Screen Combiner: MicroImage Video Systems PXD510E w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
- 3. Source Devices
 - a. DVD/SVHS Combination Player: JVC Pro SR-MV45US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - b. MiniDV/DVD-R/HDD Recorder/Player: JVC SR-DVM700US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - c. Pan/Tilt/Zoom Camera: Sony EVI-D70 (Quantity 2)
- 4. Display Devices
 - a. 46" LCD Flat Panel Monitor (1920x1080, RS232 Control): NEC Multeos M46-AV (Quantity 1)
- 5. Control Devices
 - a. Master Control System CPU: AMX NI-3100 (Quantity 1)
 - b. Control System Device/Buss Power Supply: AMX PSN6.5 (Quantity 1)
 - c. Power Supply Rackmount: AMX AC-RK (Quantity 1)
 - d. Control System Buss Strip: AMX ABS (Quantity 1)

- e. Control CPU Cable Support Bracket: AMX CSB (Quantity 1)
 - f. Table Top 7” Control Touchpanel: AMX NXT-CV7 (Quantity 1)
 - g. IR Emitters: AMX CC-IRC (Quantity 2, includes two provided with AMX NI-3100 CPU)
 - h. RS232 Cables/Control Buss Splitters: Supply compatible manufacturer hardware for control communication and distribution as required.
 - i. Custom Control System Programming: To be provided by Audiovisual Contractor, or qualified subcontractor.
6. Equipment Racks and Mounting Hardware
- a. Equipment Rackrail: Middle-Atlantic RR27 (Quantity 1 pair, cut to fit millwork opening)
 - b. Side 8RU Angled Equipment Rack: Middle-Atlantic DR-8 (Quantity 1)
 - c. Equipment Rack Power Sequencer: Furman PS-PRO II (Quantity 1)
 - d. Equipment Rack Power Distribution: Middle-Atlantic PD-815SC (Quantity 2)
 - e. Flat Panel Monitor Mount: Chief PSS-2000 Series (Quantity 1)
 - f. Playback Left/Right Surround Loudspeaker Wall-Mount: (Quantity 2)
 - i. Provide rated rigid adjustable hardware. Omnimount, or equal. Coordinate as required for specific mounting method.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.
 - g. Center Channel Loudspeaker Rackmount Shelf: Middle-Atlantic RSH4 Series (Quantity 1)
 - h. Center Channel Loudspeaker Rackmount Grill-Cloth Covered Panel: Middle-Atlantic/Custom (Quantity 1)
 - i. Active Millwork Fan: Active Thermal Management Coolstick 18” **Pending College Technical Representative Approval** (Quantity 1)
 - j. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.01 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.
- B. Media Viewing Room #2 (736, Videoconferencing Enabled):
- 1. Audio Devices
 - a. Surround Sound System Processor/Amplifier (RS232 Control): Denon AVR-988P (Quantity 1)
 - b. Ceiling Loudspeaker Power Amplifier: Biamp CPA130 (Quantity 1)
 - c. Surround-Sound Loudspeakers: EAW SMS5W (Quantity 5)
 - d. Ceiling Subwoofer Loudspeaker: Toa HB-1 (Quantity 1)
 - e. Audio DA (stereo, 1x2): Extron MDA 3A (Quantity 1)
 - 2. Video Devices
 - a. Video/Audio System Switcher/Scaler: Extron IN1508 (Quantity 1)
 - b. VGA DA (1x2): Extron P/2 DA2xi (Quantity 1)

3. Source Devices
 - a. DVD/SVHS Combination Player: JVC Pro SR-MV45US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - b. Mini DV Player: JVC BR-DV3000U w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
4. Display Devices
 - a. 46" LCD Flat Panel Monitor (1920x1080, RS232 Control): NEC Multeos M46-AV (Quantity 1)
5. Videoconferencing Devices
 - a. Codec System Package (Includes codec, camera, microphone, accessories): Tandberg Codec 3000 MXP Integrator Package (Quantity 1)
 - b. Tandberg Customer Core Service (Duplication Codec, 3 year service): Tandberg #113612S25 (Quantity of 1, for 3 years)
 - c. Dual Stream/Graphic Collaboration Option: Tandberg Natural Presenter Package #113855NPP (Quantity 1)
 - d. High-Bandwidth Option: Tandberg 2Mbps option #1138592 (Quantity 1)
 - e. Camera Rackmount Shelf: Middle-Atlantic, as required (Quantity 1). Note that the shelf that accommodates the center channel loudspeaker will also be used to hold the Tandberg HD Camera, offset to one side.
6. Control Devices
 - a. Master Control System CPU: AMX NI-3100 (Quantity 1)
 - b. Control System Device/Buss Power Supply: AMX PSN6.5 (Quantity 1)
 - c. Power Supply Rackmount: AMX AC-RK (Quantity 1)
 - d. Control System Buss Strip: AMX ABS (Quantity 1)
 - e. Control CPU Cable Support Bracket: AMX CSB (Quantity 1)
 - f. Table Top 7" Control Touchpanel: AMX NXT-CV7 (Quantity 1)
 - g. IR Emitters: AMX CC-IRC (Quantity 2, includes two provided with AMX NI-3100 CPU)
 - h. RS232 Cables/Control Buss Splitters: Supply compatible manufacturer hardware for control communication and distribution as required.
 - i. Custom Control System Programming: To be provided by Audiovisual Contractor, or qualified subcontractor.
7. Equipment Racks and Mounting Hardware
 - a. Equipment Rackrail: Middle-Atlantic RR27 (Quantity 1 pair, cut to fit millwork opening)
 - b. Side 8RU Angled Equipment Rack: Middle-Atlantic DR-8 (Quantity 1)
 - c. Equipment Rack Power Sequencer: Furman PS-PRO II (Quantity 1)
 - d. Equipment Rack Power Distribution: Middle-Atlantic PD-815SC (Quantity 2)
 - e. Flat Panel Monitor Mount: Chief PSS-2000 Series (Quantity 1)
 - f. Playback Left/Right Surround Loudspeaker Wall-Mount: (Quantity 2)
 - i. Provide rated rigid adjustable hardware. Omnimount, or equal. Coordinate as required for specific mounting method.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.

- g. Center Channel Loudspeaker Rackmount Shelf: Middle-Atlantic RSH4 Series (Quantity 1)
 - h. Center Channel Loudspeaker Rackmount Grill-Cloth Covered Panel: Middle-Atlantic/Custom (Quantity 1)
 - i. Active Millwork Fan: Active Thermal Management Coolstick 18” ***Pending College Technical Representative Approval*** (Quantity 1)
 - j. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.01 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.
- C. Media Viewing Room #3 & #4 (739 & 740): Device quantities listed below are typical of one room. Supply identical system equipment for Media Viewing Room #3 & #4.
- 1. Audio Devices
 - a. Surround Sound System Processor/Amplifier (RS232 Control): Denon AVR-988P (Quantity 1)
 - b. Ceiling Loudspeaker Power Amplifier: Biamp CPA130 (Quantity 1)
 - c. Surround-Sound Loudspeakers: EAW SMS5W (Quantity 5)
 - d. Ceiling Subwoofer Loudspeaker: Toa HB-1 (Quantity 1)
 - 2. Video Devices
 - a. Video/Audio System Switcher/Scaler: Extron IN1508 (Quantity 1)
 - 3. Source Devices
 - a. DVD/SVHS Combination Player: JVC Pro SR-MV45US w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - b. Mini DV Player: JVC BR-DV3000U w/Middle-Atlantic RSH-Series rackmount (Quantity 1)
 - 4. Display Devices
 - a. 46” LCD Flat Panel Monitor (1920x1080, RS232 Control): NEC Multeos M46-AV (Quantity 1)
 - 5. Control Devices
 - a. Master Control System CPU: AMX NI-3100 (Quantity 1)
 - b. Control System Device/Buss Power Supply: AMX PSN6.5 (Quantity 1)
 - c. Power Supply Rackmount: AMX AC-RK (Quantity 1)
 - d. Control System Buss Strip: AMX ABS (Quantity 1)
 - e. Control CPU Cable Support Bracket: AMX CSB (Quantity 1)
 - f. Table Top 7” Control Touchpanel: AMX NXT-CV7 (Quantity 1)
 - g. IR Emitters: AMX CC-IRC (Quantity 2, includes two provided with AMX NI-3100 CPU)
 - h. RS232 Cables/Control Buss Splitters: Supply compatible manufacturer hardware for control communication and distribution as required.
 - i. Custom Control System Programming: To be provided by Audiovisual Contractor, or qualified subcontractor.

6. Equipment Racks and Mounting Hardware
 - a. Equipment Rackrail: Middle-Atlantic RR27 (Quantity 1 pair, cut to fit millwork opening)
 - b. Side 8RU Angled Equipment Rack: Middle-Atlantic DR-8 (Quantity 1)
 - c. Equipment Rack Power Sequencer: Furman PS-PRO II (Quantity 1)
 - d. Equipment Rack Power Distribution: Middle-Atlantic PD-815SC (Quantity 2)
 - e. Flat Panel Monitor Mount: Chief PSS-2000 Series (Quantity 1)
 - f. Playback Left/Right Surround Loudspeaker Wall-Mount: (Quantity 2)
 - i. Provide rated rigid adjustable hardware. Omnimount, or equal. Coordinate as required for specific mounting method.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.
 - g. Center Channel Loudspeaker Rackmount Shelf: Middle-Atlantic RSH4 Series (Quantity 1)
 - h. Center Channel Loudspeaker Rackmount Grill-Cloth Covered Panel: Middle-Atlantic/Custom (Quantity 1)
 - i. Active Millwork Fan: Active Thermal Management Coolstick 18” **Pending College Technical Representative Approval** (Quantity 1)
 - j. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.01 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.

2.5 LIBRARY CONFERENCE SYSTEM EQUIPMENT

A. Library Conference (726):

1. Audio Devices
 - a. Wall-Mount Playback Loudspeaker: EAW SMS5W (Quantity 2)
 - b. Playback Loudspeaker Power Amplifier: Biamp CPA130 (Quantity 1)
 - c. Audio DA (stereo, 1x2): Extron MDA 3A (Quantity 1)
2. Video Devices
 - a. Video/Audio System Switcher/Scaler: Extron IN1508 (Quantity 1)
 - b. VGA DA (1x2): Extron P/2 DA2xi (Quantity 1)
3. Display Devices
 - a. Ceiling-Mount Video Projector (1024x768): Epson EMP-6100 (Quantity 1, **College Furnished Equipment**)
4. Videoconferencing Devices
 - a. Codec System Package (Includes codec, camera, microphone, accessories): Tandberg Codec 3000 MXP Integrator Package (Quantity 1)
 - b. Tandberg Customer Core Service (Duplication Codec, 3 year service): Tandberg #113612S25 (Quantity of 1, for 3 years)

- c. Dual Stream/Graphic Collaboration Option: Tandberg Natural Presenter Package #113855NPP (Quantity 1)
 - d. High-Bandwidth Option: Tandberg 2Mbps option #1138592 (Quantity 1)
5. Control Devices
- a. Master Control System CPU: AMX NI-3100 (Quantity 1)
 - b. Control System Device/Buss Power Supply: AMX PSN6.5 (Quantity 1)
 - c. Power Supply Rackmount: AMX AC-RK (Quantity 1)
 - d. Control System Buss Strip: AMX ABS (Quantity 1)
 - e. Control CPU Cable Support Bracket: AMX CSB (Quantity 1)
 - f. Table Top 7” Control Touchpanel: AMX NXT-CV7 (Quantity 1)
 - g. IR Emitters: AMX CC-IRC (Quantity 2, includes two provided with AMX NI-3100 CPU)
 - h. RS232 Cables/Control Buss Splitters: Supply compatible manufacturer hardware for control communication and distribution as required.
 - i. Custom Control System Programming: To be provided by Audiovisual Contractor, or qualified subcontractor.
6. Equipment Racks and Mounting Hardware
- a. Millwork Equipment Rack (16RU rollup door rack): HSA Inc. Rollrack 16RU (Quantity 1)
 - b. Equipment Rack Power Sequencer: Furman PS-PRO II (Quantity 1)
 - c. Equipment Rack Power Distribution: Middle-Atlantic PD-615C (Quantity 1)
 - d. Playback Left/Right Loudspeaker Wall-Mount: (Quantity 2)
 - i. Provide rated rigid adjustable hardware. Omnimount, or equal. Coordinate as required for specific mounting method.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.
 - e. Video Projector Ceiling Mount: (Quantity 1)
 - i. Projector Mount: Westbrook Engineering, Promount Type 1, with attachment hardware as required for final projector model selected at time of installation.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.
 - f. Active Millwork Fan: Active Thermal Management Coolstick 18” (Quantity 1)
 - g. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.01 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.

2.6 MEDIA VIEWING AND VIEWING SERVICES SYSTEM EQUIPMENT

- A. Media Viewing (Viewing Carrels) and Viewing Services System Equipment (700/701): Refer to functional diagrams for additional information. Note that the equipment quantities listed below are typical for all Viewing Carrel systems.

1. Source Devices
 - a. DVD/VCR Combination Player: JVC SR-MV45US w/Middle-Atlantic RSH-Series rackmount (Quantity 13)
 - b. DVD/CD Player: Tascam DV-D01U (Quantity 8)
 - c. SRJC TV RF Distribution Devices:
 - i. Broadband Distribution Amplifier (35dB, 1Ghz Bandwidth): Blonder Tongue MUVB-35 (Quantity 1)
 - ii. Wideband Splitter (1x3): Blonder Tongue SCVS-3 (Quantity 1)
 - iii. Wideband Splitter (1x8): Blonder Tongue SCVS-8 (Quantity 2)
2. Display Devices
 - a. LCD Displays (Quantity 21, **College Furnished and Installed Equipment**)
3. Control System Devices
 - a. Remote IR Transport Control System:
 - i. Button Controller: SP Controls SPC-3TM (Quantity 21)
 - ii. Transport Control Multi-Output Power Supply (12Vdc x8): Extron PS 123 (Quantity 3)
 - b. Headphone Output:
 - i. USB Headphone Adapter: (Quantity 21, **College Furnished and Installed Equipment**)
4. Equipment Racks and Mounting Hardware
 - a. Millwork Equipment Rack: Middle-Atlantic SRSR4-21 (Quantity 3, **College Furnished and Installed Equipment**)
 - b. Equipment Rack Power Sequencer: Furman PS-PRO II (Quantity 1)
 - c. Power Distribution Strips (Playback Decks): Middle-Atlantic PD-815SC (Quantity 3)
 - d. Equipment Rack Active Cooling Strip: Active Thermal Management Coolstick 18" (Quantity 3)
 - e. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Refer to drawing AV5.01 for the equipment rack elevation and blank panel size recommendations. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.

2.7 LIBRARY ACTIVITY CENTER 721 SYSTEM EQUIPMENT

- A. Library Activity Center System Equipment (721/Storage 723): Refer to the functional diagram for additional information.
 1. Audio Devices
 - a. DSP Audio Matrix Mixer/Processor: Biamp NexiaPM (Quantity 1)
 - b. Playback/Ceiling Loudspeaker Power Amplifier (8ohm): Crown CX302 (Quantity 1)
 - c. Wireless Combination Handheld/Lavaliere Microphone System: Shure ULXP124/85 System (Quantity 1)

- d. Left/Right Soffit Mount Playback Loudspeakers: Tannoy i9, white, with i9 MB White, Multi Angle Bracket (Quantity 2)
2. Video Devices
 - a. Video/Audio System Switcher/Scaler: Extron IN1508 (Quantity 1)
 - b. VGA UTP Transmitter: Extron MTP T 15HD A (Quantity 1)
 - c. VGA UTP Receiver: Extron MTP RL 15HD A (Quantity 1)
 - d. VGA DA (1x2): Extron Extron P/2 DA2xi (Quantity 1)
 - e. Closed Caption Decoder (with GPI Control): BVS CC-100GPISV (Quantity 1)
3. Source Devices
 - a. DVD/SVHS Combination Player: JVC Pro SR-MV45US (Quantity 1)
4. Display Devices
 - a. Left/Right LCD Video Projector: Model To Be Determined (Quantity 1, **College Furnished Equipment**)
 - b. Instructor LCD Telestration Tablet/Monitor: Hitachi 15” Starboard T-15XL (Quantity 1, **College Furnished Equipment**)
5. Control System Devices
 - a. Control System Processor, with Wifi Network Connection: (**College Furnished and Installed Equipment**)
 - b. Control System Cables: Provided by AV Contractor.
 - c. Custom Control System Programming: To be provided by College.
6. Equipment Racks and Mounting Hardware
 - a. AV Presentation Cart: Model To Be Determined (Quantity 1, **College Furnished Equipment**)
 - b. Wall-Mount Equipment Rack: Middle-Atlantic DWR-12-22 (Quantity 1)
 - c. Equipment Rack Power Distribution: Furman PS-PRO D II (Quantity 2)
 - d. Equipment Rack Blank Panels: Fill in unused panel space with blank solid or ventilating panels. Middle Atlantic rolled edge steel blank panels model EB-x, and rolled edge steel vent panels model EVT-x. Supply in quantity required, and modify quantities and sizes during installation if required to fill all unused spaces.
 - e. Video Projector Lift Attachment Hardware: (Quantity 1)
 - i. Projector Mount: Provide attachment hardware as required for final projector model selected at time of installation, to mount to projector lift assembly.
 - ii. All Mounting Hardware: As approved by licensed structural engineer.

2.8 ADD-ALTERNATE SYSTEM EQUIPMENT

A. Duplication Head-End:

1. 24-Channel LED Audio Monitor: Wohler ALM26-24A (Quantity 1)

2. TMS Additional 25 System License (additional 2 year duration): Tandberg #113612S25 (Quantity of 1, for 2 years)
 3. Tandberg Customer Core Service (Duplication Codec, additional 2 year service): Tandberg #113612S25 (Quantity of 1, for 2 years)
 4. HD Camcorder Kit: (Quantity 1 each)
 - a. HD Camcorder: Canon HV20
 - b. Second Battery: Canon BP-2L14
 - c. Battery Charger: Canon CB-2LW
 - d. Soft Carrying Case: Canon SC-2000
 - e. Directional Stereo Microphone: Canon DM-50
 - f. Wide Angle Lens Converter: Canon WD-H43
 - g. Lens Filter Set: Canon FS-43U II
 - h. Compact Tripod: Manfrotto 718B
- B. Media Viewing Room #2 (736):
1. Tandberg Customer Core Service (Duplication Codec, additional 2 year service): Tandberg #113612S25 (Quantity of 1, for 2 years)
- C. Library Conference Room (726):
1. Tandberg Customer Core Service (Duplication Codec, additional 2 year service): Tandberg #113612S25 (Quantity of 1, for 2 years)
- 2.9 CABLE – ALL SPACES
- A. Loudspeaker Cable (8 or 4 ohm, greater than 500 watts): West Penn Wire C210 (10 AWG, unshielded pair) or equal.
 - B. Loudspeaker Cable (8 or 4 ohm, less than 500 watts): West Penn Wire C207 (12 AWG, unshielded pair) or equal.
 - C. Distributed Non-Plenum Loudspeaker Cable (70volt, greater than 60 watt tap): Belden 8477 (12 AWG, unshielded pair) or equal.
 - D. Distributed Non-Plenum Loudspeaker Cable (70volt, less than 60 watt tap): Extron SPK14/1000 (14 AWG, unshielded pair) or equal.
 - E. Distributed Plenum Rated Loudspeaker Cable (70volt, greater than 60 watt tap): West Penn Wire 25227 (12 AWG, unshielded pair) or equal.
 - F. Distributed Plenum Rated Loudspeaker Cable (70volt, less than 60 watt tap): Extron SPK14P/1000 (14 AWG, unshielded pair) or equal.
 - G. Analog Microphone/Line Level Installation Cable: Belden model# 9464 (20 AWG conductor, jacketed, shielded, twisted-pair) or equal.

- H. Analog Microphone/Line Level Equipment Rack Interconnect Cable: Belden model# 8450 (22 AWG conductor, jacketed shielded, twisted-pair) or equal.
 - I. AES/EBU Cable: Provide pre-terminated 110ohm interconnect cable, ProCo or equal between devices where required.
 - J. Composite Video/HD-SDI Serial Digital Video/Genlock Cable (Non-Rack, Extended Length Interconnect Cable): Canare L-5CFB (18 AWG, 75 ohm coaxial conductor, shielded) or equal.
 - K. Composite Video/ HD-SDI Serial Digital Video/Genlock Cable (Equipment Rack Interconnect Cable): Extron RG59 Series, Non Plenum (20 AWG, 75 ohm coaxial conductor, shielded) or equal.
 - L. S-Video/Y/C Cable: Supply two matched-length RG59. Extron RG59 Series, Non Plenum (20 AWG, 75 ohm coaxial conductor, shielded) or equal.
 - M. RGBHV/VGA Cable: Extron RG59-3MHR-3, or equal.
 - N. Production Intercom/Line Level Cable: Provide 20 AWG conductor, jacketed, shielded, twisted-pair cable. Belden model# 9402 or equal.
 - O. Antenna Cable: Conductor will be 13 AWG (RG8/U) covered by braided shield. JSC model# 3040 or equal. Provide co-axial cable whose impedance matches devices requiring 50ohm antenna connection.
 - P. Control System Interface Buss Cable (AMX remote device power and control): West Penn Wire C2415 (AMX Axlink buss with Category 5e) or equal.
 - Q. Control System/Tally System Device Control Cables (RS232, RS422, Serial (IR), Relay or Contact Closure): Supply pre-terminated serial control cables within equipment racks. Provide West Penn Wire 1992 (4 pair) signal cable, or equal for relay or contact closure application, as required.
 - R. Provide plenum rated cable for all cable where required by code. Any cable changes or substitutions must be submitted and approved prior to installation. Cable that has been installed without approval will be replaced at the AV Contractor's expense.
- 2.10 CONNECTORS – ALL SPACES
- A. Microphone, audio, intercom, tally, and portable control system panel-mount XLR connectors: supply metal multi-conductor panel-mount receptacles, in black metal shell. Neutrik B series. Refer to receptacle plate and panel drawings for specific connectors by plate location.
 - B. Audio 1/4" panel-mount connector: Switchcraft 1/4" TS, solder back, or equal.

- C. Video, sync, SMPTE BNC panel-mount connector: Provide a panel-mounted BNC jack with isolated ground bulkhead and compatible connector. Supply Canare BCP-C5FA male, or equal.
- D. Antenna connector: Provide receptacle plate-mounted general purpose UHF antenna connector. Coaxial bulkhead connector will match impedances of antenna cable and match style of connector on device requiring antenna. Supply Amphenol 83-1f.
- E. RS232/Control D-Shell Panel-Mount Connector: Mouser D-sub series, or equal.
- F. VGA D-Shell Panel-Mount Connector: ORA D-sub series, or equal.

2.11 MISCELLANEOUS HARDWARE – ALL SPACES

- A. Terminal cabinets and boxes: all terminal cabinets and junction boxes housing audio cabling will be metallic. Terminal cabinets are to be verified for size by audiovisual contractor prior to beginning job-site work. Size cabinets for required base-bid wiring fill. Allow forty percent (40%) additional capacity for future system growth.
- B. Provide matching manufacturer vents and blanks as required.
- C. Rack connections: ac power cables to the power strips shall be run in steel conduit. All in-going and out-going signal cabling shall be run in conduit independent of ac power conduit.
- D. Connectors: provide compatible plugs as indicated on the receptacle plate drawing sheets; all cable connectors shall have black anodized finish where available unless otherwise noted. Connector parts subject to any possible structural loading or stress shall be metal.
- E. Conduit: provide removable seals at penetrations for acoustic isolation.
- F. Receptacle plates: steel or aluminum with etched and ink-filled labeling. Confirm plate color requirements prior to fabrication with college's representative through the submittal process. Refer to Audiovisual drawings for specific plate connector requirements.
- G. Audio visual system face plates: silk-screened and coated lettering shall identify individual plate mounted receptacles. Connector identification shall denote function and unique input/output number. Center lettering vertically over appropriate connector. Connector mounting will allow sufficient finger clearance for connector insertion and removal without interference from adjacent connectors.
- H. Electronic component face plate labels: provide permanent labels on equipment to identify device, system, or control function as appropriate for operational purposes. All control knob and switch labels will be located vertically adjacent over the appropriate control. Engraved plastic labels fastened with epoxy are acceptable. Dymo type labels are not acceptable.
- I. A/V equipment rack to have placard that states "Designed by Charles M. Salter Associates, Inc. & installed by _____ (with phone and website). For repairs call _____"

(with phone).” provide as either a rackmount panel, or as a placard attached to one of the equipment racks in each major control room equipment location.

PART 3 - EXECUTION

3.1 GENERAL

- A. The following is required for acceptance of the audiovisual system by the College:
1. Install complete and functioning audiovisual system specified.
 2. Label equipment and cables as specified and corresponding to functional diagram.
 3. Conduct adjustments and preliminary testing.
 4. Report results of preliminary testing along with system documentation.
 5. Participate in acceptance test and deliver final system and documentation.
 6. Conduct any adjustments or re-testing required to meet the specifications.
 7. Provide training to individuals designated by the College.

3.2 GENERAL REQUIREMENTS

- A. All equipment except portable equipment shall be held firmly in place. This includes racks, conduits, cables, amplifiers, and other electronic equipment. Fastenings and supports shall be approved by a licensed structural engineer.
- B. Submit shop drawings for custom fabrications including custom panels, receptacle plates, and rack elevations to the College for review and approval. Make submittals at least fifteen (15) working days prior to scheduled fabrication. Note on the submittal the dates of scheduled fabrication.
- C. Do not commence work on any portion of the project requiring College 's approval prior to obtaining such approval. Work commenced and installed prior to review and approval shall be accepted at the College's discretion. Installation does not imply acceptance or review for acceptance.
- D. Keep at the job site an up-to-date complete record set of prints and specification. Make daily corrections and show all changes from the original contract drawings. Final as-built drawings will be required at the conclusion of the project.
- E. Keep the job adequately staffed at all times. A qualified engineer approved by the College and employed by the Audiovisual Contractor shall exercise engineering supervision over the entire installation. Unless through illness, loss of personnel, or other circumstances beyond the control of the Audiovisual Contractor, keep the same individual in charge throughout the execution of the work.

- F. Cooperate with other trades in order to achieve well-coordinated progress and satisfactory results. Watch for conflicts with work for other contractors on the job. Execute, without claim for additional payment, moderate moves or changes as necessary or required by the College prior to installation to accommodate minor design changes, rack layout changes, touchpanel control functionality changes, or to preserve symmetry and pleasing appearance.

3.3 EQUIPMENT CONNECTION

- A. Wiring: All wiring shall be installed in strict accordance with broadcast standard practices. Cabling jacket color shall be coordinated to maintain consistent identification.
- B. Cabling: Install vertical cable runs in conduit. All cable is to be continuous and without splices. Permanently label all cabling at termination points. Cables shall be bundled and laced neatly to maintain convenient access to all equipment connections. All audiovisual signal cabling are to be separate from all power lines. ***Do not pull cable at greater than 40 percent conduit-fill capacity without first contacting the College.***
- C. Power: Power conduit to be separated from other conduits containing signal lines. Connect AC power to the equipment from junction boxes designated by the Electrical Engineer.
- D. Connectors: Connections to screw clamp or binding post terminals require flanged or snap spade type lugs appropriately color-coded. Bare wire connected to a binding post is not acceptable. Soldered connections shall be soldered with rosin core solder.
- E. Grounding: Use the equipment chassis as a common point of grounding the sound system; the equipment chassis is to be grounded to earth. Cable shields shall only be used for shielding (not signal) and connected to ground at the rack. All equipment shall be checked for ground continuity.
- F. Fasteners, Hangers, Supports: Provide fasteners, supports and seismic restraints to adequately support the load as required by local codes.
- G. Ventilation: Provide adequate ventilation in equipment racks to conform with the equipment manufacturer's temperature rise requirements or 20 degrees C maximum temperature rise, whichever is less. Provide internal equipment rack fans as required to direct the distribution of airflow within equipment racks as required to maintain proper operating temperatures.
- H. Cable Labels: Cables and wiring in racks, consoles, connector boxes and on terminal strips shall be clearly marked between 2” and 4” from end of cable gasket/harness. Provide maximum label visibility. Indicate the signal type, wire number, source and destination and jack, receptacle or socket to which connector should be mated. Use appropriate diameter clear shrink tubing over surface of label for protection and permanence. Extend shrink tubing over label by approximately 1/4” at each end.
- I. Device Labels: Label all devices including switches, control panels, monitors, and equipment, where appropriate for Operator device interaction (not required for non-user

operated devices). Label to be logical and permanent with clarity and legibility. Submit samples for approval.

3.4 GENERAL INSTALLATION AND PROGRAMMING REQUIREMENTS

- A. The following installation and programming requirements apply to all spaces and subsystems throughout the project, where the described system device or configuration requirement is present. Functional requirements for individual spaces are as described in Part 1 of this specification and as indicated on the functional drawings. Specific installation and programming requirements are outlined by location in the following Installation and Programming Requirements specification section 3.5.
- B. Audiovisual Contractor will review and assess the appropriate focal length between the video projectors and the video screens to ensure optimum picture sizing and focus. The image should completely fill the screen height available.
- C. Power Sequencing: All Control System equipment is to be in an “always on” state to accept control system input, including turning power on to the equipment rack devices. Provide power up sequencing such that power amplifiers turn on last and power down first for AV systems that include power-sequencer control capability.
- D. Wall-Mount Loudspeaker Installation:
 - 1. Mount loudspeakers and orient for optimal coverage of the intended listener area. Perform loudspeaker mounting angle readjustment during system testing to optimize the uniformity of coverage to the space.
 - 2. Use rigid support members to prevent movements of the loudspeaker components. Each loudspeaker may be reoriented slightly for optimum coverage but must maintain its precise location and orientation after adjustment.
 - 3. All loudspeakers will be wired in positive polarity.
 - 4. All components of the loudspeaker assembly will be painted white unless directed otherwise by the College’s Representative.
- E. Patchbay Installation: All patch panel jacks will be clearly and permanently. Jacks shown in close proximity on the functional diagram will be in close proximity in the patch panel. Patch panel jacks will be "normalled through" as shown. "Normalled through" jacks will be vertically adjacent.
- F. Millwork-Mounted Equipment Racks: Verify final equipment millwork clearances prior to ordering equipment racks, and provide an alternative in writing if the base-bid specified model will not fit.
- G. IT/Network Coordination: Coordinate with the College’s IT administrator for all network configuration requirements for operation on College Provided networks.

- H. Ventilation: Provide adequate ventilation management within equipment racks to conform with the equipment manufacturer's temperature rise requirements or 20 degrees C maximum temperature rise, whichever is less.

3.5 SYSTEM-SPECIFIC INSTALLATION AND PROGRAMMING REQUIREMENTS

A. Duplication Head-End (710A):

1. Remote Control System:

- a. Coordination is required with the College's Representatives and the Design Consultant to create an acceptable control system look and feel that is intuitive to understand and operate, and designed for technical operator control. Concept system layouts (without linked hard-code) are required for College approval prior to final installation.
- b. Provide all necessary software programming to access all commonly used features for each item to be controlled. Verify device control protocols, and provide required control connection hardware.
- c. Include appropriate service time to provide touchpanel reprogramming to address minor College requests for changes and additions after the initial touchpanel design review.
- d. Revise touchpanels as required prior to the acceptance of the system. Provide at no extra charge, minor reprogramming of the control system or touchpanels requested by the College within thirty (30) days of acceptance of the system for user functionality issues, such as labeling changes, minor button layout configurations, etc.
- e. Provide all necessary programming for the functions listed in part 1 of this specification via the rackmount touchpanels. Refer to the functional diagrams for additional information regarding devices to be controlled, and control signal type.
- f. Control system pages for all controls are to incorporate the SRJC logo or seal as part of the start-up screen, with all control system pages provided within a variation of the SRJC official colors, and preferred fonts for non-button general text labels. Contact The College's Representative for appropriate graphics sources.
- g. The following control functionality is required:
 - i. Sequenced System Power On/Off: Provide a power On/Off control switch, which can be used to power up or down the equipment within the Duplication Head-End (except always on control devices). Provide an "Are you sure?" confirmation prompt before powering down the system.
 - ii. Matrix Switcher Preset Recall: Provide required preset configurations to address all common dubbing conditions. Recall should occur seamlessly as a result of source selection and control selection options.
 - iii. Source Routing: Provide a page with all available sources and destination options. The page should dynamically indicate devices that are currently in a dub process and unavailable.

- iv. Re-routing Protection: A selectable hierarchy is required, with conditional logic to prevent interruption of dubbing projects in process. Rerouting or control of a dubbing source or destination device should cause a confirmation prompt prior to initiating a change that will interrupt a dub in progress.
- v. Matrix Switcher Full Router Controls: Provide advanced operator touchpanel pages for direct crosspoint routing for each of the three HD/SD-SDI, VGA/component, and composite video/stereo audio matrix switchers. Routing preset configurations are also to be storable as preset configurations in several available preset routing buttons.
- vi. Full Source Device Transport Controls: Provide basic transport controls (play/stop/pause/fast forward/rewind), with additional options specific to the player. These should include menu navigation options, chapter skip forward/reverse, and other commonly used controls.
- vii. Recording Destination Device Controls: Provide synchronized control of all recording decks within a group, with up to two groups linked for a single dubbing project.
- viii. Provide source selection controls for typical dubbing selection process. This includes selection of the BARS/Black/Tone source, followed by the duplication source, with transport control access. A dub time “lock” selection with various time settings available will also provide a visual countdown for the dubbing time, and prevent accidental interruption of a duplication batch in process.
- h. Dual Channel Format Converter: The dual-channel format converter may be controlled directly via a networked software application, but requires basic control functionality via the control system for ease of use for common applications. This requires some specific recall to occur depending on the source type used. The details of the control parameters for this device have already been implemented at the Santa Rosa Junior College Doyle Library Duplication Head-End, and are summarized below:
 - i. Automatic Sync Detection: Routing an HD-SDI output from the TV one, automatically references the HD-SDI input for genlock, which then sets the output resolution. Routing a composite video output from the TV one automatically references the composite analog input for genlock, which then sets the output resolution.
 - ii. A selection of input source is required for each of the connected input formats, AND independently for each of the two channels: HD-SDI input (not genlock reference input), composite video input (not genlock reference input), DVI-A (VGA) input from VGA/component video matrix.
 - iii. A selection of output destinations WITH RESOLUTION SELECTION is required for each of the connected output formats, AND independently for each of the two channels. HD-SDI output (720p/1080i output selection), composite video (fixed at NTSC), DVI-A (VGA) output with selection of the following output resolutions: 1024x768 (XGA) , 1280x720 (HD 720p), 1280x768

(WXGA), 1280x1024 (SXGA), 1400x1050 (SXGA+), 1920x1080 (HD 1080p).

- i. AMX i!-MacroManager allows users to create custom macros from any NetLinx compatible touchpanel and execute them in real time without modification to the NetLinx program. Provide the i!-MacroManager series of modules to allow users to create, edit, delete, execute and schedule macros from any NetLinx compatible touch panel.
 2. Rackmount Device Locations: Coordinate with the College’s Representative for final rackmount locations of user interface and monitoring devices, with submittal approval prior to installation.
- B. Media Viewing Rooms #1- #4 (715, 736, 739, 740):
1. Surround Sound Processor: Provide subwoofer base management equalization and time alignment adjustments to the Media Viewing Room surround sound processors.
 2. Center Channel Loudspeaker Panel: Provide a custom rackmount grill cloth covered panel to conceal the center channel loudspeaker. A highly perforated vented panel may be used as a basis, or a panel with an open area trimmed out, such as a Middle-Atlantic RSH-series model.
 3. Coordination is required with the College’s Representatives and the Design Consultant to create an acceptable control system look and feel that is intuitive to understand and operate, and designed for technical operator control. Concept system layouts (without linked hard-code) are required for College approval prior to final installation.
 - a. Provide all necessary software programming to access all commonly used features for each item to be controlled. Verify device control protocols, and provide required control connection hardware.
 - b. Include appropriate service time to provide touchpanel reprogramming to address minor College requests for changes and additions after the initial touchpanel design review.
 - c. Revise touchpanels as required prior to the acceptance of the system. Provide at no extra charge, minor reprogramming of the control system or touchpanels requested by the College within thirty (30) days of acceptance of the system for user functionality issues, such as labeling changes, minor button layout configurations, etc.
 - d. Provide all necessary programming for the functions listed in part 1 of this specification via the portable touchpanel. Refer to the functional diagrams for additional information regarding devices to be controlled, and control signal type.
 - e. Control system pages for all controls are to incorporate the SRJC logo or seal as part of the start-up screen, with all control system pages provided within a variation of the SRJC official colors, and preferred fonts for non-button general text labels. Contact The College’s Representative for appropriate graphics sources.

- f. The following control functionality is required:
 - i. Sequenced System Power On/Off: Provide a power On/Off control switch, which can be used to power up or down the equipment (except always on control devices). Provide an “Are you sure?” confirmation prompt before powering down the system.
 - ~~iii-ii.~~ Playback Volume Controls: Provide Up/Down/Mute controls for playback volume levels, with appropriate level control ranges set to prevent extremely loud playback levels.
 - ~~iv-iii.~~ Source Select: Provide audio-follow-video source selection for all installed sources and receptacle plate inputs, including receptacle plate and panel locations.
 - ~~v-iv.~~ Flat Panel Control: Seamless source switching as necessary. Control is to be bi-directional RS232, not 1-way serial control.
 - ~~vii-v.~~ DVD/VHS Players: Basic transport controls (play/stop/pause/fast forward/rewind), with additional options specific to the DVD player. These should include menu navigation options, chapter skip forward/reverse, and other commonly used controls.
 - ~~viii-vi.~~ VHS TV Tuner: Provide channel selection for the VHS TV tuner section for television viewing, and include navigation buttons to emulate common commands for faster channel navigation and selection.
 - ~~ix-vii.~~ DVCAM Player: Basic transport controls (play/stop/pause/fast forward/rewind).
 - ~~x-viii.~~ Closed Caption Decoder: Provide control selection to turn the closed captioning decoder on or off.
- 4. Media Viewing Room #1 Specific Requirements (715 only):
 - a. Configure the Composite Video Image Split Screen Combiner for an evenly divided signal, and recall this default setting when a recording is being setup. The flat panel monitor will be used to initially aim cameras, and will normally not be on during a recording.
 - b. Provide camera controls and additional control functionality to address the mini-DV/DVD-R recorder for a recording session.
 - c. Adjust microphone input gain for optimum audio recording signal level. Note that the audio cannot be played back through the system when recording, or feedback will occur. A mute condition is required during recording, to be unmuted during the selection of any device for playback.
- 5. Media Viewing Room #2 Specific Requirements (736 only):
 - a. Coordinate with the College’s Technical Representative for display preferences during single and multi-site videoconferences.
 - b. The existing floorbox plate is to be modified to include an XLR connector for a portable wired microphone connection at the table. Provide punch and labeling as required.
 - c. Provide touchpanel control functionality per the College videoconferencing control interface standard.
 - d. Provide an additional opening in the loudspeaker rackmount cover panel for the videoconference camera.

C. Library Conference Room (726):

- ~~3-1.~~ Coordination is required with the College's Representatives and the Design Consultant to create an acceptable control system look and feel that is intuitive to understand and operate, and designed for technical operator control. Concept system layouts (without linked hard-code) are required for College approval prior to final installation.
- a. Provide all necessary software programming to access all commonly used features for each item to be controlled. Verify device control protocols, and provide required control connection hardware.
 - b. Include appropriate service time to provide touchpanel reprogramming to address minor College requests for changes and additions after the initial touchpanel design review.
 - c. Revise touchpanels as required prior to the acceptance of the system. Provide at no extra charge, minor reprogramming of the control system or touchpanels requested by the College within thirty (30) days of acceptance of the system for user functionality issues, such as labeling changes, minor button layout configurations, etc.
 - d. Provide all necessary programming for the functions listed in part 1 of this specification via the portable touchpanel. Refer to the functional diagrams for additional information regarding devices to be controlled, and control signal type.
 - e. Control system pages for all controls are to incorporate the SRJC logo or seal as part of the start-up screen, with all control system pages provided within a variation of the SRJC official colors, and preferred fonts for non-button general text labels. Contact The College's Representative for appropriate graphics sources.
 - f. The following control functionality is required:
 - i. Sequenced System Power On/Off: Provide a power On/Off control switch, which can be used to power up or down the equipment (except always on control devices). Provide an "Are you sure?" confirmation prompt before powering down the system.
 - ~~iii-ii.~~ Playback Volume Controls: Provide Up/Down/Mute controls for playback volume levels, with appropriate level control ranges set to prevent extremely loud playback levels.
 - ~~iv-iii.~~ Source Select: Provide audio-follow-video source selection for all installed sources and receptacle plate inputs, including receptacle plate and panel locations.
 - ~~v-iv.~~ Projector Control: Seamless source switching as necessary, and projector on/off/mute. Provide a projector lamp-life query upon system power-up and display this number in hours next to the projector power on button. Projector control is to be bi-directional RS232, not 1-way serial control.
 - v. The motorized projection screen will be controlled via the control system touchpanel, in parallel with any installed wall-mount low-voltage projection screen control.
 - g. Videoconferencing Configuration and Control Requirements:
 - i. Coordinate with the College's Technical Representative for display preferences during single and multi-site videoconferences.

- ii. The existing floorbox plate is to be modified to include an XLR connector for a portable wired microphone connection at the table. Provide punch and labeling as required.
- iii. Provide touchpanel control functionality per the College videoconferencing control interface standard.
- iv. Provide an additional opening in the loudspeaker rackmount cover panel for the videoconference camera.

D. Media Viewing Carrels (700/701):

1. Control Button Panel Configuration: Provide configuration of the individual Viewing Carrel button controllers for remote DVD/SVHS combination player or DVD player IR control.
2. Coordinate with the College's Technical Representative for millwork mounting, and appropriate backbox solution behind the millwork mounted control receptacle plate. ***Provide millwork cutout routing for all Media Viewing Carrel controllers.***

E. Library Activity Center (721):

1. DSP Audio Matrix Mixer Programming: It shall be the Audiovisual Contractor's sole responsibility to make all adjustments to meet the functional requirements of this specification. Provide all necessary programming of DSP based audio system devices to provide the following:
 - a. Matrix Mixing/Routing: Provide all necessary setup for the use of microphone mixing with stereo playback inputs..
 - b. Provide separate input equalization for speech and playback sources. Provide limiting on all drivers, and appropriate control system range for volume operation, including up/down/mute volume controls for both speech and playback sources.
 - c. Provide equalization on microphone input channels for speech input range, with low frequency roll-off, and dynamic feedback equalization.
2. Wireless Microphone: Provide reliable RF reception from the wireless microphone used within the Library Activity Room to the wireless RF receiver located within the Storage 723 wall-mount equipment rack. Provide remote antenna extension if necessary to achieve reliable RF reception.
3. Coordination is required with the College's Technical Representative for the receipt of the College Furnished portable equipment cart as required to meet the equipment installation schedule.
4. Coordination is required with the College's Technical Representative to provide appropriate control system interface cable to support the College Furnished and installed control system equipment.

3.6 WORKMANSHIP

- A. Installation of all work including cabling will be neat. All boxes including the loudspeaker enclosures, equipment, racks, etc., will be plumb, squarely located and, where appropriate, flush with adjacent surfaces. Replace all ceiling tiles removed for this work when the work is complete. Leave the job site clean and free from marks and blemishes.

3.7 AUDIOVISUAL CONTRACTOR'S PRELIMINARY TESTING AND ADJUSTMENTS

- A. Furnish all equipment and personnel to conduct these tests in accordance with the performance specification requirements. ANSI S1.13 and EIA Standards RS-160, RS-219 and RS-189A will apply.
- B. Audio Testing and Adjustment:
 - 1. Load a "straight-wire" algorithm into DSP Audio Matrix Mixers so that end-to-end system measurements can be made, as noted below.
 - 2. Initially adjust all system gain controls for optimum signal to noise ratio. After all adjustments required to meet specification requirements are made, measure and report the resulting system electrical signal to noise ratio at the amplifier outputs from 20 Hz -20 kHz in 1/3 octave bands.
 - 3. System Frequency Response: Measure the sound pressure level in audience areas using a calibrated type 1 precision sound level meter as defined by ANSI S1.4. Measure using the slow time constant. Report the unequalized house curve with the equalizer controls set to "0", by space.
 - 4. Audio Coverage Uniformity: Scan the areas served by the system and record sound pressure level in octave bands. Perform any necessary adjustments as required to achieve coverage uniformity.
 - 5. Adjust the crossover settings within DSP Audio Matrix processors to provide optimal frequency distribution to each loudspeaker in accordance with manufacturer recommendations.
 - 6. Special adjustment of dynamic feedback equalizers shall be as follows: Low frequencies shall roll-off 3 dB per octave below 200 Hz. High frequencies shall roll-off 3 dB per octave above 8.0 kHz. Apply up to three (3) additional filters to provide smoother audio response. Leave at least half of the dynamic filters unassigned in a roaming "feedback notch" mode.
 - 7. Adjust the DSP based equalizers to provide "flat" frequency response (± 3 dB) throughout audience seating areas. Special adjustment of microphone input channel equalizers shall be as follows: Low frequencies shall roll-off 3 dB per octave below 200 Hz. Adjustments are to be made using a calibrated type 1 precision sound level meter as defined by ANSI S1.4. Measure using the slow time constant. Document and report the equalized house curves for both speech and playback audio where applicable and save settings as a preset on diskette.

8. Surround Sound Calibration: Provide subwoofer base management equalization and time alignment adjustments to the Media Viewing Room surround sound processors.
 9. Measure the 70volt loudspeaker line impedances at each equipment rack with all loudspeakers connected and the amplifier disconnected. Report the absolute value at 1KHz.
- C. Audiovisual Contractor will review and assess the appropriate focal length between the video projectors and the projection screens to ensure optimum picture sizing and focus. Make all adjustments necessary, including projector keystone correction and lens shift to achieve the image size and shape required.
- D. Provide full video projector calibration and adjustments for optimal picture quality. Provide proper aspect ratio configuration for both 4:3 and 16:9 sources. Set all projector configuration presets required for control system recall coordination, and provide with final system documentation.
- E. Provide full flat panel monitor display calibration and adjustments for optimal picture quality. Provide proper aspect ratio configuration for both 4:3 and 16:9 sources. Set all flat panel monitor configuration presets required for control system recall coordination, and provide with final system documentation.
- F. Post Production Room #1 & #2: Initial LCD color calibration is to be provided, for both the analog and HDMI source inputs for the production LCD video monitor.
- G. Video Testing and Adjustment:
1. Video Testing: Provide video testing of source-to-destination production signal paths through cabling and equipment input/output for composite video and HD-SDI. Provide plots at each test point including video waveform displays, vectorscope, eye diagrams, SDI jitter testing and other tests required to demonstrate a fully operational broadcast production system.
 2. Adjust controls and ensure that all equipment is installed in compliance with manufacturer's specifications.
- H. Controls: Adjust all controls to achieve the specified performance. Provide shaft-locks or covers for all level controls, as appropriate to prevent unauthorized gain changes. Audiovisual Contractor will confirm that all control system operations are properly programmed and repeatable.
- I. Testing Report: Provide a letter/report documenting the results of these preliminary tests, including amplifier gain/level settings, crossover filter settings, and AV equalization curves for review by the Design Consultant.

3.8 ACCEPTANCE TESTS

- A. Qualification for Acceptance: Subsequent to completing preliminary testing, the Audiovisual Contractor shall furnish the Construction Manager with the letter/report documenting the results of the preliminary tests and two (2) copies of "as-built" wiring diagrams of the entire system including the connection numbers, and their locations. The receipt of this documentation will constitute the Audiovisual Contractor's acknowledgment that the installation is complete and conforms to this specification, and is ready to be reviewed and tested by the Design Consultant.
- B. Acceptance Test: The Design Consultant, College's Representative and/or Construction Manager will be present during the acceptance testing and require the assistance and cooperation of the Audiovisual Contractor. Provide personnel who participated in the actual installation and preliminary testing and adjustment of the audiovisual systems.
 - 1. Equipment cabinet keys and any tamper-proof fastener tools must be available to the Design Consultant. Delays associated with failure to access the equipment will be back-charged to the Audiovisual Contractor at the Design Consultant's current hourly rates.
 - 2. Each major component shall be demonstrated to function, as specified.
 - 3. Measurements: Further electrical and acoustical measurements may be performed at the discretion of the College and/or College's Representatives. Acoustical test equipment will be supplied by the Design Consultant. Such measurements may include sound pressure levels, uniformity of coverage, distortion, or other pertinent characteristics.
 - 4. The Audiovisual Contractor shall provide a laptop with all manufacturer supplied configuration software necessary for communicating with the DSP Audio Matrix Mixer. A review of system settings may be required for either of the programmable units at the Design Consultant's request, and settings may be adjusted if necessary.
- C. Such tests may be performed on any piece of equipment or system. If any test shows the equipment or system is defective or does not comply with the specifications, the Audiovisual Contractor shall perform any remedies at his expense and pay the subsequent expenses of any retesting required.
- D. Delays: If the acceptance of the system is delayed because it does not meet the specification requirements, the Audiovisual Contractor shall reimburse the College for all expenses of consultants retained to represent the College during the final acceptance testing. This will include costs associated with travel to the site, and include reimbursable business travel expenses.

3.9 SYSTEM DOCUMENTATION, TRAINING, AND FIELD SUPPORT

- A. Operation and Maintenance Manuals: For each system, provide three (3) copies of system manuals per system, two (2) for the College and one (1) for the Design Consultant.

Manuals shall be in adequately sized three-ring binders, clearly labeled on spine. Manuals shall contain the following:

1. Service Reference Cover Sheet: Provide a cover sheet with Audiovisual Contractor name, address, telephone and Fax numbers.
 2. Equipment Manuals: Include copies of individual equipment operation manuals separated by tabbed dividers. Order manuals in nominal signal path order (i.e. sources first, amplifiers/loudspeakers last), followed by control system manuals, followed by miscellaneous manuals.
 3. Equipment List: List all system equipment including, connectors and specialty hardware, by manufacturer and model.
 4. As-built Drawings: Provide reduced 11"x17" foldout "as built" functional diagrams in clear plastic binder sleeves. Fold and insert drawings so that drawing title is clearly visible at the front of the sleeve. Three (3) half or full-size drawing sets are also to be provided for clearer system reference.
 5. Provide software programmable device configuration files to the College for the following:
 - a. Facility-Wide Control Systems (AMX source code, including any interfaces and computer-based application files)
 - b. Default Video/Stereo Audio, HD-SDI, and VGA/Component Video Matrix Switcher configuration files
 - c. Store files on site in the system documentation binders in disk sleeves. Provide the files on CD-ROM.
 - d. All files should also be stored on the main network server, in a folder designated by the College's IT Representative
- B. Training: Provide up to 20 hours of system training to operator(s) designated by the College. Training time is to be non-contiguous, in multiple separate sessions. Some training time is to be used as live "first event" assistance. Assist and oversee operator(s) during these events. Training sessions are to be videotaped upon College request.

END OF SECTION