

ATTACHMENT 1

Invitation for Bid

Audio/Visual Equipment and Installation Specification

For

Three Branch Courtrooms in the Monroe County Justice Center

Sparta, Wisconsin 54656

February 28, 2017

DIVISION 27 - MEDIA TECHNOLOGY EQUIPMENT

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DIVISION 00 – CONTRACT REQUIREMENTS

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SECTION 00 01 15 – LIST OF DRAWINGS

SECTION 000115 - LIST OF DRAWINGS

PART 1 - GENERAL

1.1 LIST OF DRAWINGS

Drawing Number	Drawing Title
TA001	Legend 1
TA002	Legend 2
TA003	Legend 3
TA004	Legend 4
TA005	Legend 5
TA006	Legend 6
TA100	Key Floorplan
TA101a	Branch Courtroom #1 – Audio Floor Plan
TA101b	Branch Courtroom #2 – Audio Floor Plan
TA101c	Branch Courtroom #3 – Audio Floor Plan
TA101d	Branch Courtroom #1 – Video Floor Plan
TA101e	Branch Courtroom #2 – Video Floor Plan
TA101f	Branch Courtroom #3 – Video Floor Plan
TA201a	Branch Courtroom #1 – Audio and Video Reflected Ceiling Plan
TA201b	Branch Courtroom #2 – Audio and Video Reflected Ceiling Plan
TA201c	Branch Courtroom #3 – Audio and Video Reflected Ceiling Plan
TA601	Typical Courtroom Audio System Functional Requirements
TA602	Typical Courtroom Video Argument Presentation Functional Requirements
TA603	Typical Courtroom AV System Data and Control Functional Requirements
TA701	Typical Courtroom Connection Plate #1

TA702	Typical Courtroom Connection Plate #2
TA703	Typical Courtroom Connection Plate #3
TA704	Typical Courtroom Connection Plate #4
TA705	Typical Courtroom Connection Plate #5
TA706	Typical Courtroom Connection Plate #6
TA707	Typical Courtroom Connection Plate #7
TA708	Typical Courtroom Connection Plate #8
TA717	Typical Courtroom Monitoring Assembly and Connection Plate #17
TA723	Typical Courtroom Connection Plate #23
TA725	Typical Courtroom Connection Plate #25
TA744	Typical Courtroom Module and Connection Plate #44
TA748	Typical Courtroom Module and Connection Plate #48
TA754	Typical Courtroom Module and Connection Plate #54

1.2 RELATED DOCUMENTS

- A. Refer to Schedule D for Project Drawings.

1.3 DESIGN CONSIDERATION

- A. The Specification text has been provided as a functional description and definition of the performance characteristics of the required systems. For specific system design information, refer to the Functional Design Intent drawings included herein for signal path and feature requirements. The Design Intent drawings *do not* represent wiring diagrams. For inclusion/exclusion of equipment types, items, and quantities, refer to the Equipment Schedule, Schedule B – Schedule B-1, (Recommended Brands and Models). The Drawings take the following precedents and have the following functions.
 1. Legends: Legends are used only to identify symbols used on the plans. Not all symbols shown will be used on the project.
 2. Floor plans show approximate device locations and the needed connections and functions at those locations. The device locations and signal types are specific to this project and all items shown are required at those locations. Plate numbers and general locations are shown on these drawings. Devices shown on these plans override the Functional Requirements Drawings.
 3. Plate drawings show exact custom-built plate requirements related to the locations shown on the Floor and Ceiling plans. Plates are numbered and the numbers are shown on the Floor and Ceiling plans. Refer to the Legends for specific symbols indicating locations for plates. The Technical Media Systems Contractor

(TMSC) shall verify plates per overall requirements and submit with shop drawings as indicated herein with fabrication details and any changes needed to comply with Design Intent.

4. Signal drawings indicate custom-built plates that are used for signaling systems and may have custom electronics and/or relay devices associated with them. Signaling locations are shown on the Floor and Ceiling plans. Plates are numbered and the numbers are shown on the Floor and Ceiling plans. Refer to the Legends for specific symbols indicating locations for plates.
5. Rack drawings, where provided, indicate possible equipment configurations in mountable frames. Equipment shown is based on primary equipment examples listed in Schedule B – Schedule B-1. Final rack drawings provided by the TMSC shall be adjusted to exact equipment provided, proper venting, and coordination with other devices, and cable management in the rear of racks.
6. Functional Requirements Drawings show basic signal flow requirements to portray Design Intent. These drawings shall *not* be used for calculating input and/or output quantities. Many functional requirements of the overall design cannot be illustrated in flow drawings and the TMSC shall consider written specifications contained herein for the system engineering and hardware programming to accomplish needed function. Quantities indicated in the Equipment Schedule, Schedule B, and indicated on the Floor and Ceiling plans take precedence.
7. TMSC shall verify control screen layouts and graphic user interface (GUI) per overall requirements and submit with shop drawings as indicated herein with any changes needed to comply with Design Intent.
8. When included information is in conflict, submit an RFI to Owner’s Representative for clarification.

- B. Quantity requirements and feature locations are driven by floor and ceiling plans and equipment Schedule B. The single line drawings are not intended to show wiring connections, they are provided for signal flow intent only.

1.4 INTENT OF DRAWINGS

- A. The TMSC shall provide and install all connections to all locations on the floor and ceiling plan(s) as indicated by letter and symbol codes that shall be considered part of this contract. Functions coded by letters and symbols and shown on legend sheets shall be made working components of the system and the system shall be engineered to accomplish these requirements as needed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – LIST OF DRAWINGS

SECTION 00 01 20 – LIST OF SCHEDULES

SECTION 000120 - LIST OF SCHEDULES

PART 1 - GENERAL

- 1.1 The following is a list of Schedules used to summarize project scope. The complete set of Contract Documents (Drawings and Specifications) contain other requirements that shall be included in Project Scope along with the Scheduled information.
- 1.2 SAMPLE CONTRACT FORM AIA A107-2007. STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR A PROJECT OF LIMITED SCOPE
- 1.3 SCHEDULE B – B-1/BID FORM
- 1.4 SCHEDULE C – (NOT USED)
- 1.5 SCHEDULE D –PROJECT DRAWINGS

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – LIST OF SCHEDULES

- A. The Bidder agrees to assume all increases in labor rates and/or material prices that may develop during the life of this Contract.
- B. By submitting a bid, the TMSA agrees to furnish all materials, equipment, tools, accessories, miscellaneous parts, transportation, shipping, all applicable value-added rates, fees, permit costs, taxes, and incidentals necessary for the completion of the Work.
- C. Communications concerning this Bid shall be directed to the Owner and copied to the Owner's Representative.

SECTION 00 24 00 – PROCUREMENT SCOPES

SECTION 002400 - PROCUREMENT SCOPES

PART 1 - GENERAL

1.1 SUMMARY

- A. The contractor shall procure, install, configure and test complete and operational turnkey audio, video and video conference systems as listed and described in three (3) courtrooms.

PART 2 - PRODUCTS

2.1 PRODUCTS

- A. Products shall be as defined as new product, reused or Client Furnished Equipment as listed. All other products used other than miscellaneous parts, accessories, and installation supplies shall be listed and provided to the Owner's Representative for review.

PART 3 - EXECUTION (NOT USED)

END OF SECTION – PROCUREMENT SCOPES

SECTION 00 26 00 – PROCUREMENT SUBSTITUTION PROCEDURES

SECTION 002600 - PROCUREMENT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUBSTITUTIONS

- A. The Owner's Representative requires selected manufacturer's original specification tests. The Owner's Representative shall evaluate and accept or reject all substitutions.
- B. Prior approval of substitutions for specified materials, equipment, and systems shall be obtained from the Owner's Representative. Submit requests for approval of substitutions in writing to the Owner's Representative using the Substitution Request Form supplied in this specification (Section 006325) or fill in the "Substitution" column in the Schedule B – B-1 / Bid Form. Substitutions must be approved in writing or they will not be considered as accepted under this contract.
- C. Where model numbers have been discontinued or are no longer available, provide direct updated replacement models that provide identical or better specifications, and notify the Owner's Representative of the change. Where no direct replacement is available, contact the Owner's Representative for direction before ordering any replacement equipment. TMSC is responsible for any variation in physical characteristics of any substitutions that may affect physical installation or change in specifications that may affect Design Intent features.
- D. Equipment brand, model, and quantity are delineated in the B-1/Bid Form (Schedule B). Brands and models listed are products that meet or exceed the project requirements. Equal or equivalent products are acceptable as well, but must be either submitted during the bid process in the column provided on the B-1 bid form or in writing using the Substitution Request Form (Section 006325).
- E. Changing specified equipment to a different brand/model/type in the submittals without a formal change or substitution request accompanying the submittal will not be considered an acceptable change/substitution; even if the "new equipment" is not commented on by the Owner's Representative in the submittal review. A "no comment" or "no changes required at this time" type of submittal review response from the Owner's Representative shall NOT be considered an approval of the equipment that varies from the specified equipment.

PART 2 - PRODUCTS

2.1 REQUIREMENTS

- A. Where specific equipment is described, it is not the intention to discriminate against the products or other manufacturers, but rather to establish a standard of quality and feature performance. All proposed substitutions shall be submitted by filling in the "Substitution" column in the B-1 / Bid Form (Schedule B) or as a Request for Substitution on the form provided in Section 006325. Many components have been selected due to physical dimensions and/or other characteristics. Coordination with the providers of millwork, etc. may have been accomplished with specific brand/models prior to issue of this specification. For compatibility reasons, it is mandatory that all substitutions be reviewed by the Owner's Representative prior to change.

- B. Electronic component models proposed as substitutions must have been commercially available for at least three (3) months prior to bid.
- C. All equipment and material provided by the TMSC shall be new.
- D. All equipment must be UL listed or built to UL standards.

PART 3 - EXECUTION

3.1 ACCEPTANCE

- A. Prior acceptance of substitutions for specified materials, equipment, and systems shall be obtained from the Owner's Representative. Submit requests for substitutions in writing (Refer to Section 006325). Substitutions must be accepted in writing to be considered part of this contract.

END OF SECTION – PROCUREMENT SUBSTITUTION PROCEDURES

SECTION 00 31 00 – AVAILABLE PROJECT INFORMATION

SECTION 003100 - AVAILABLE PROJECT INFORMATION

PART 1 - GENERAL

1.1 PROJECT AREA HISTORY

- A. Courtrooms are all new with new functions and features. Historical documentation will not apply therefore no historical data is provided.
- B. The Control System GUIs shall be all new and custom tailored for the use intended.

PART 2 - PRODUCTS

2.1 CLIENT FURNISHED EQUIPMENT (CFE)

- A. Refer to Section 016400 "Client Furnished Equipment (CFE)".

PART 3 - EXECUTION

3.1 EQUIPMENT PROVIDED BY OTHERS

- A. All equipment provided by others to be re-installed shall be fully tested prior to re-use.

END OF SECTION – AVAILABLE PROJECT INFORMATION

SECTION 00 31 13 – PRELIMINARY SCHEDULE

SECTION 003113 - PRELIMINARY SCHEDULE

PART 1 - GENERAL

1.1 SCHEDULE

- A. Non-mandatory pre-bid walk: May 09, 2017 at 01:00 pm
- B. Bid Opening: Approximately May 23, 2017 at 02:00 pm
- C. Award NTP: Approximately May 25, 2017
- D. Submittals: Approximately June 26, 2017
- E. Start Work on-site for partial cabling: Approximately July 17, 2017
- F. Start Work on-site for cable completion and equipment installation: Approximately July 31, 2017

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – PRELIMINARY SCHEDULE

SECTION 00 41 00 – BID FORMS

SECTION 004100 - BID FORMS

PART 1 - GENERAL

1.1 BID FORM

- A. Schedule B – B-1/ Bid Form will be provided to the bidders in Excel format. Bids must be submitted on completed spreadsheets in Excel format. PDF files only will not be accepted.
- B. Lump sum bids shall be provided.
- C. See Section 002113 "Instructions to Bidders."

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – BID FORMS

SECTION 00 63 13 – REQUEST FOR INTERPRETATION/INFORMATION FORM (RFI)

Replicate Forms as Required.

Project: Three Branch Courtrooms in the Monroe County Justice Center

RFI Number:

Courthouse Address:

Submitted on:

To Owner's Representative:
Contract Date:

Submitted by:

Reason for Request:

- Insufficient Information
- Engineering Conflict
- Alternative Proposal
- Other

Action Requested:

- Clarification
- Direction
- Approval

Probable Effect:

- Increase Cost
- Increase Time / Labor
- No Change
- Decrease Cost
- Decrease Time / Labor

Reference drawing number and/or specification section the request pertains to:

Information Needed/Recommended Solution:

Response Requested By (Date): _____

Signed: _____

Response from Owner's Representative: To be provided on in written format on separate form.

END OF SECTION – REQUEST FOR INTERPRETATION/INFORMATION FORM (RFI)

SECTION 00 63 19 – CLARIFICATION FORM

Replicate Forms as Required.

Project: Three Branch Courtrooms in the Monroe County Justice Center Clarification Number:

Courthouse Address: Submitted on:

To Owner's Representative:
Contract Date: Submitted by:

1.
2.
3.
4.
5.

END OF SECTION – CLARIFICATION FORM

SECTION 00 63 25 – SUBSTITUTION REQUEST FORM (CONSTRUCTION)

Replicate Forms as Required.

Project: Three Branch Courtrooms in the Monroe County Justice Center Request Number:
 Court Address: Date of Request:
 Contractor: To Owner's Representative:
 Requested By:

#	Specified Item	Proposed Substitution	Will substitution in any way negatively impact system? Y/N If yes, explain
1			
2			
3			
4			
5			

State the reason for the unavailability of the specified item. Provide such additional data and information as may be necessary to establish the acceptability of the proposed substitution.

1. _____

2. _____

3. _____

4. _____

Method Specified	Proposed Alternate Method	Reason for change

END OF SECTION – SUBSTITUTION REQUEST FORM (CONSTRUCTION)

SECTION 00 63 44 – ENGINEERING PROOF OF DESIGN (EPOD) FORM

Replicate Forms as Required.

Project:	Three Branch Courtrooms in the Monroe County Justice Center	EPOD#:	
Reference Drawing:		Date:	
Submitted by:		Owner's Representative:	

Submit an itemized list of items identified that will prevent or change the nature of the Design Intent as described in the specification. Submit RFCs and/or RFIs separately and reference them here.

Item #1

Reason for item:

List of revised equipment:

List of equipment not used:

Description of item:

END OF SECTION – ENGINEERING PROOF OF DESIGN (EPOD) FORM

SECTION 00 63 57 – CHANGE ORDER REQUEST FORM (RFC)

Replicate Form as Required

Project: Three Branch Courtrooms in the Monroe County Justice Center Request Number:
 Court Address: Date of Request:
 Contractor: To Owner’s Representative:
 Requested By:
 Reason for Request:

List of materials (credited) and cost:

Item (Brand and Model)	Qty	List	Cost	Subtotal
Total				

List of labor (credited) and cost:

Hours	Number of People	Cost per Hour	Subtotal
Total			

Total Cost for this Change: \$ _____

Project Deadline will be extended by: _____ days _____ hours

Signed: _____

END OF SECTION – CHANGE ORDER REQUEST FORM (RFC)

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01 10 00 – SUMMARY OF WORK

SECTION 011000 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 DOCUMENT QUICK REFERENCE GUIDE

- A. The following list highlights frequently referenced sections of this Design Report. This list is not exhaustive and does not represent all contract requirements contained in this document, its appendices, or change orders associated with this project. The TMSC is responsible for completing all contract requirements associated with this project. This following list has been included only to assist the reader in navigating this document.
1. The TMSC or bidder must use the Request for Interpretation/Information (RFI) and Request for Change (RFC) forms contained in this document. These forms must be used even if the requests are sent via email. The RFI form is found in Section 006313. The RFC form is found in Section 006357.
 2. The Engineering Proof of Design (EPOD) form, found in Section 006344, is to be filled out and submitted according to the submittal instructions found in Section 013300.
 3. Floor plans, ceiling plans and connection plate configurations are to be included in shop drawing submittals as defined in Section 013300, 2.02.
 4. Specific training submittals are required and early planning is needed. See Sections 017900, 011216, and 013300 for specific requirements.
 5. UTP and STP cable testing is required. Refer to the tools, procedures, and reports required in Sections 013300 and 017500.
 6. Section 274116 provides the majority of project specific information regarding the customized system functionality.

1.2 BASIS OF DESIGN

- A. The basis of the design is formulated on the requirements of the Tenant, past projects in the County, State guidelines and Industry Best Practices.

1.3 OBJECT OF PROJECT

- A. The Object of the Project is to provide an operating system described in these documents that is trouble free and engineered suitably so that room users can easily use it.
- B. General: Comply with all Contract Documents, including conduit/wiring drawings and project schedule.

1.4 STATEMENT OF WORK

- A. Provide materials and labor necessary to accomplish the Work indicated on the Drawings, Schedules, and specified herein to assemble the video, audio, and control related equipment into operational systems, making all interconnections, performing all tests and adjustments, and providing documentation as required for a complete installation.

- B. The TMSC shall remove and replace all existing carpet where it is installed over header duct, cell ducts, and/or junction boxes. Remove sub-floor hatches, covers and lids as needed to access cable pathways.
- C. The TMSC shall restore finish hardware and surfaces to original condition if damaged during installation including painting, wall, millwork, furniture, and ceiling modifications and attachments.
- D. The TMSC shall be responsible for painting surfaces that are identified in the specification (for example mounts that are required but not in an acceptable color).
- E. The TMSC shall provide a one-year warranty at no cost to the Owner.
- F. The completed cost/price schedule shall contain separate totals as described herein and on the schedule(s). The base bid and options shall be as follows:

Base Bid:	All audio, video and video conference work in three (3) courtrooms
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PART 2 - PRODUCTS

2.1 STATEMENT OF WORK

- A. Unless noted otherwise, the Work shall include everything necessary or incidental to complete the installation including receptacle plates, wire, electrical boxes, racks, mounts, etc. The Building Owner shall provide conduit and AC power circuits with grounds. The TMSC shall coordinate such excluded equipment with the Building Owner and Building Owner Representatives. The TMSC shall furnish all necessary information to ensure that a proper audio/visual system will be installed.

PART 1 - EXECUTION

1.1 INSTALLATION

- A. The TMSC shall restore all exposed hardware and surfaces to original condition if damaged during installation including painting, wall, millwork, furniture, and ceiling modifications and attachments. Note that it may be necessary to hire or reimburse a contractor where construction work is involved.
- B. The TMSC shall provide a one-year warranty at no cost to the government as a part of the Base Bid.
- C. The TMSC shall provide a system configured and installed for simplicity of operation and low maintenance, with user-friendly controls.

END OF SECTION – SUMMARY OF WORK

SECTION 01 11 16 – WORK BY OWNER

SECTION 011116 - WORK BY OWNER

PART 1 - GENERAL

1.1 INFRASTRUCTURE

- A. The TMSC shall use chase ways provided by others for installation. Where chases are shared, use area designated for work. The TMSC shall risk tear-out without additional compensation if cables are installed in non-authorized chase ways. If designated chase ways have been used by other trades, notify the Court's Representative in writing immediately upon discovery. The TMSC shall not disturb cables of other trades without permission from the Owner or Court's Representative.

1.2 LAN CONNECTIONS

- A. The Owner shall provide an active building LAN connection for the rack location(s) and active voice connections as required.
- B. Where LAN connections are shown on A/V plates, provide cable and terminate on each end and test per standards under this contract.

PART 2 - PRODUCTS

2.1 CLIENT FURNISHED EQUIPMENT

- A. Scheduling of the cleaning and delivery of any Client Furnished Equipment will be facilitated by the Owner, but will require proactive involvement on the part of the TMSC.

PART 3 - EXECUTION (NOT USED)

END OF SECTION – WORK BY OWNER

SECTION 01 12 16 – WORK SEQUENCE

SECTION 011216 - WORK SEQUENCE

PART 1 - GENERAL

1.1 SEQUENCING AND SCHEDULING

- A. TMSC to prepare for approval by the Owner and the Owner's Representative a construction schedule that describes the sequence and phasing of the construction work in order for the Court to make internal arrangements to maintain service to the public and performance of their responsibilities.
- B. The TMSC shall comply with all scheduled on-site and off-site times as outlined in the project schedule. Any scheduling changes that need to be made shall be submitted to the Owner's Representative in writing in a timely manner. The Owner's Representative will coordinate site availability times.
- C. Any alterations or modifications of the Work performed under this contract shall be made only by written agreement between the TMSC and the Owner's Representative and shall be made prior to commencement of the altered or modified Work. No claim for any additional Work or materials shall be allowed unless pre-authorized by written agreement prior to commencement of said Work. The Court shall have final approval of all alterations or modifications.

PART 2 - PRODUCTS

2.1 REQUESTS FOR QUOTE

- A. Any Requests for Quote presented to the TMSC shall be negotiated on individual item by item basis. . See Section 013300 "Submittal Procedures" for requirements.

2.2 EQUIPMENT PREPARATION

- A. The TMSC shall install all equipment and other rack items in the main racks in their facility prior to shipping to the site for pre-testing reasons.

PART 3 - EXECUTION

3.1 PRE-INSTALLATION

- A. It is **required** that the TMSC shall conduct a preliminary walk-through inspection and meeting prior to the project start up. This site visit would occur after project award and must be coordinated with the Owner's Representative.

END OF SECTION – WORK SEQUENCE

SECTION 01 14 13 – ACCESS TO SITE

SECTION 011413 - ACCESS TO SITE

PART 1 - GENERAL

1.1 ACCESS TO SITE

- A. The TMSC shall coordinate all working hours and access with Owner and building security personnel. Arrangements for access afterhours shall be made in advance by the TMSC.
- B. The TMSC is responsible for arranging internet access themselves. There may not be access to the building LAN during the installation phase and the TMSC shall not plan on government assistance.

1.2 IDENTIFICATION

- A. The TMSC's installation team shall wear at all times a photographic identification as issued by the building security personnel. The TMSC shall coordinate acquiring identification from the appropriate authorities prior to the start of Work. The project schedule shall not be delayed due to delays in processing building access or obtaining acceptable identification.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – ACCESS TO SITE

SECTION 01 14 16 – COORDINATION WITH OCCUPANTS

SECTION 011416 - COORDINATION WITH OCCUPANTS

PART 1 - GENERAL

1.1 COORDINATION WITH TENANT AND OWNER'S REPRESENTATIVE AND ARCHITECT

- A. The TMSC shall at all times communicate to the Owner's Representative all site issues that impact the project in any way other than what has been established. Such communication shall be conveyed in written format, via either e-mail or cloud-based sharing services. The RFI form shall be used for all such communication (see Section 006313).
- B. The TMSC shall take direction from the Architect or Owner's Representative including those situations that may cause a change in cost or time or both. All issues that arise are to be brought to the attention of the Owner's Representative at once for resolution. Inform the Architect via phone or email that an RFI is pending. Responding to the client on site without pursuing an RFI and the repercussions of the actions *shall in no way be compensated*. The TMSC is given the right to contact the Architect at once in order for clarification.
- C. The TMSC shall only use the RFI process (see Section 006313) to solicit information from the Architect. All RFI's are to be sent to the Architect. Email RFI's are suitable if submitted in a written format agreed with the RFI completed RFI form attached to the email. All RFI's shall be numbered in a sequential order beginning at 1. Any other methods of submitting formal requests will go unanswered. When on site, notify the Architect via email or telephone call that a time-sensitive RFI is pending.
- D. The TMSC's lead installer shall at all times provide and keep possession of an active cell phone which shall be left on from 8:00 AM to 5:30 PM local time M-F and on weekends if site work is underway. The phone number of the cell phone shall be provided to the Court contact and the Owner's Representative at the Installation Kick Off meeting of the first day on-site. Any change to the phone number or site lead shall be communicated to the Court contact and the Owner's Representative immediately.

1.2 COORDINATION WITH OCCUPANTS

- A. TMSC to prepare, for approval by the Owner's Representative, a construction schedule that coordinates with the TMSC and describes the sequence and phasing of the construction work in order for the Court to make internal arrangements to maintain service to the public and performance of their responsibilities.

1.3 OCCUPANCY REQUIREMENTS

- A. The Owner will occupy the existing building but not Courtrooms 1, 2 or 3 during the construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the operations. The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1.4 CONTRACTOR USE OF PREMISES

- A. Use of Premises: During the construction period, the Contractor shall have use of the premises for construction operations, including use of the site, only as approved by the Owner.
- B. Limitations: The Contractor's use of the premises is limited only by the Owner's right to continue operations within the building and site.
- C. Use of the Site and Building: Limit use of the premises to work in areas indicated. Confine operations to areas within construction limits indicated. Do not disturb portions of the building beyond the areas in which the Work is indicated.
- D. Owner Occupancy: Allow for Owner occupancy, day-to-day operations, and use by the public.
- E. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 - 1. Take all precautions necessary to protect the building and its occupants during the construction period.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – COORDINATION WITH OCCUPANTS

SECTION 01 14 19 – USE OF SITE

SECTION 011419 - USE OF SITE

PART 1 - GENERAL

1.1 USE OF SITE

- A. The TMSC shall maintain at all times professional working conditions at the site.
- B. The TMSC shall not interfere with operations of building tenants. Where services need to be disrupted, the TMSC shall coordinate a time with the owner suitable to the tenants.
- C. The TMSC shall coordinate all planned impact and air-borne noise intrusions with the building owner or the tenant. Sound and vibrations that are found to disturb any building tenant shall cease immediately. The TMSC shall immediately contact the Court POC for resolution. The TMSC shall not proceed with problematic work until the issue is resolved.
- D. The TMSC shall maintain the facilities both at the TMSC's workplace and at the job site to store this material with adequate security and with insurance coverage to prevent loss due to theft, vandalism, failure of building systems and all insurable conditions. At the completion of the Work, the TMSC shall dismantle this storage facility and if a building space, return it to its normal state. The TMSC shall remove from the site all construction equipment, surplus materials, supplies, and rubbish used or created as part of this Work and as required.

PART 2 - PRODUCTS

2.1 CONSTRUCTION HAZARDS

- A. During business hours, all ladders and equipment carts in use will be marked with red or yellow/black striped hazard tape. At no time during business hours shall fire exits be blocked by installation equipment or materials. Ladders, equipment, and equipment carts shall not be left unattended and accessible at any time during business hours. Un-spoiled wire, cable, and fish tape shall not be left in hallways or other rooms and shall never be left unattended. Where large quantities of cable are on the floor, they shall be marked by orange safety cones.

PART 3 - EXECUTION

3.1 CONFINED SPACES

- A. The TMSC shall be allowed to remove lids, wall segments, tiles, doors, and grills to work in confined spaces. The TMSC shall be solely responsible for any damage done to building materials and shall replace all materials where they have been removed or displaced for access.

3.2 CONTINUITY OF SERVICE

- A. Scheduling: All necessary interruptions required for installation of the Media Systems or its provisions shall be scheduled ten (10) days in advance with the Owner. No interruptions will be permitted without the Owner's explicit permission. Interruptions shall be arranged during hours and days that least inconveniences the operation of the existing facility and each interruption shall be as short as possible.
- B. Temporary Service: Temporary connections shall be made as required to provide continuity of existing service to areas not affected by construction. Temporary provisions shall be made where interruptions cannot be tolerated.

3.3 CONSTRUCTION PROCEDURES

- A. Construction Debris: Clear away all debris and surplus materials resulting from Work and operations on a daily basis. Clearing shall comply with notes outlined in Continuity of Service above. Do not discard equipment manufacturers' shipping boxes that may need to be used for defective or rejected equipment until after acceptance.
- B. Incidental Damage: The TMSC shall replace or repair all damage to the building or its contents as a result of Work performed in fulfilling the contract or warranty. Refinish and restore to their original condition all equipment and furniture that has sustained damage to the manufacturer's prime and finish coats.

3.4 SECURITY

- A. The TMSC shall provide to the Owner's Representative a list of all workers that will be present at the site at any time. The TMSC shall coordinate with the Owner all issues concerning badges, keys, access, etc. Installation shall occur after normal business hours ONLY with permission from the Owner. It shall be the TMSC's responsibility to secure all equipment and tools at the installation site prior to turning them over to the Owner.

END OF SECTION – USE OF SITE

SECTION 01 18 00 – PROJECT UTILITY SOURCES

SECTION 011800 - PROJECT UTILITY SOURCES

PART 1 - GENERAL

1.1 TEMPORARY UTILITIES

- A. The TMSC shall be responsible for providing all utility services to any temporary facilities and shall not share services with primary building.
- B. Where active low or high voltage lines must be interrupted for work, the TMSC will install bypass equipment and signals to allow the tenants to continue use as needed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – PROJECT UTILITY SOURCES

SECTION 01 25 00 – SUBSTITUTION PROCEDURES

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUBSTITUTIONS DURING BIDDING

- A. Refer to Section 002600 "Procurement Substitutions."

1.2 SUBSTITUTIONS AFTER AWARD

- A. The Owner's Representative requires selected manufacturer's original specification tests. The Owner's Representative shall evaluate and accept or reject all substitutions.
- B. Prior approval of substitutions for specified materials, equipment, and systems shall be obtained from the Owner's Representative. Submit requests for approval of substitutions in writing to the Owner's Representative using the Substitution Request Form supplied in this specification (Refer to Section 006325). Substitutions must be approved in writing or they will not be considered as accepted under this contract.
- C. Equipment brand, model, and quantity are delineated in the TMSC's Bid or Best and Final Offer where requested. Brands listed are products that meet or exceed the project requirements. Equal or equivalent products are acceptable as well but must be submitted in writing using the Substitution Request Form (Section 006325).
- D. Changing specified equipment to a different brand/model/type in the submittals without a formal change or substitution request accompanying the submittal will not be considered an acceptable change/substitution; even if the "new equipment" is not commented on by the Owner's Representative in the submittal review. A "no comment" or "no changes required at this time" type of submittal review response from the Owner's Representative shall NOT be considered an approval of the equipment that varies from the specified equipment.

PART 2 - PRODUCTS

2.1 REQUIREMENTS

- A. Where specific equipment is described, it is not the intention to discriminate against the products or other manufacturers, but rather to establish a standard of quality and feature performance. All proposed substitutions shall be submitted as a Request for Substitution on the form provided in Section 006325. Many components have been selected due to physical dimensions and/or other characteristics. Coordination with the providers of millwork, etc. may have been accomplished with specific brand/models prior to issue of this specification. For compatibility reasons, it is mandatory that all substitutions be reviewed by the Court's prior to change.
- B. Electronic component models proposed as substitutions must have been commercially available for at least three (3) months prior to bid.
- C. All equipment and material provided by the TMSC shall be new.

D. All equipment must be UL listed or built to UL standards.

2.2 DISCONTINUED PRODUCTS

A. Refer to Section 012663 "Change Order Requests Procedures."

PART 3 - EXECUTION

3.1 ACCEPTANCE

A. Prior acceptance of substitutions for specified materials, equipment, and systems shall be obtained from the Owner's Representative. Submit requests for substitutions in writing (Refer to Section 006325). Substitutions must be accepted in writing to be considered part of this contract.

END OF SECTION – SUBSTITUTION PROCEDURES

SECTION 01 26 13 – REQUESTS FOR INTERPRETATION PROCEDURES

SECTION 012613 - REQUESTS FOR INTERPRETATION PROCEDURES

PART 1 - GENERAL (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 FORMS

- A. All requests for Interpretation (RFI) shall be submitted on the form provided in Section 006313 in this specification to the Owner's Representative. Email RFI's are suitable if submitted in a written format agreed with the RFI completed RFI form attached to the email. All RFI's shall be numbered in a sequential order beginning at 1. Any other methods of submitting formal requests will go unanswered.

END OF SECTION – REQUESTS FOR INTERPRETATION PROCEDURES

SECTION 01 26 39 – FIELD ORDERS PROCEDURES

SECTION 012639 - FIELD ORDERS PROCEDURES

PART 1 - GENERAL

1.1 GENERAL INSTALLATION REQUIREMENTS

- A. The TMSC shall at all times communicate to the Owner's Representative all site issues that impact the project in any way other than what has been established. Such communication shall be conveyed in written format, via either e-mail, fax, or regular mail. The RFI form shall be used for all such communication (see Section 006313).
- B. The TMSC shall not take direction from the client or their agents at the site in any way that may cause a change of defined scope, a cost or credit to the project, add additional labor, or delay the project. All issues that arise are to be brought to the attention of the Owner's Representative at once for resolution. Inform the Owner's Representative via phone or email that an RFI is pending. Responding to the client on site without pursuing an RFI and the repercussions of the actions shall in no way be compensated. The TMSC is given the right to contact the Architect at once in order for clarification.
- C. The TMSC shall only use the RFI process (see Section 006313) to solicit information from the Architect. All RFI's are to be sent to the Architect. Email RFI's are suitable if submitted in a written format agreed with the RFI completed RFI form attached to the email. All RFI's shall be numbered in a sequential order beginning at 1. Any other methods of submitting formal requests will go unanswered.
- D. Any alterations or modifications of the Work performed under this contract shall be made only by written agreement between the TMSC and the Owner's Representative and shall be made prior to commencement of the altered or modified Work. No claim for any additional Work or materials shall be allowed unless pre-authorized by written agreement prior to commencement of said Work. Verbal approvals will not be considered valid.
- E. All Change Order requests and quotes shall be provided directly to the Owner's Representative and shall be received within five (5) business days of receipt of the request from the Owner's Representative. All change order requests shall be numbered and completed properly (see Section 006357).

1.2 PROJECT DIRECTION

- A. The TMSC shall not take project direction from any individual or group other than the Owner's Representative. Where the user gives the TMSC direction the TMSC shall contact the Owner's Representative immediately before performing any Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 AVAILABILITY

- A. The TMSA's lead installer shall at all times provide and keep possession of an active cell phone which shall be left on from 8:00 AM to 5:30 PM local time Monday through Friday and on weekends if site work is underway. The phone number of the cell phone shall be provided to the Court contact and the Owner's Representative at the Installation Kick Off Meeting or the first day on-site. Any change to the phone number or site lead shall be communicated to the Owner's Representative immediately.

END OF SECTION – FIELD ORDER PROCEDURES

SECTION 01 26 53 – INVITATION FOR BID (IFB/RFQ) PROCEDURES

SECTION 012653 - REQUEST FOR QUOTE (RFQ) PROCEDURES

PART 1 - GENERAL

1.1 REQUESTS FOR QUOTES

- A. The Owner's Representative shall retain the right to ask for project related quotations at any time during the open project period.
- B. Any alterations or modifications of the Work performed under this contract shall be made only by written agreement between the TMSC and the Owner shall be made prior to commencement of the altered or modified Work. No claim for any additional Work or materials shall be allowed unless pre-authorized by written agreement prior to commencement of said Work. Verbal approvals will not be considered valid.
- C. Work quoted shall not be executed nor shall materials quoted be purchased until the Owner has provided written authorization of the change in time and expense.
- D. The TMSC shall not be compensated for any out of scope work performed, materials purchased, or additional time or expenses unless prior written authorization of the actual expenses is given from the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 QUOTE PROCESS

- A. All RFQ's will be issued by the Owner's Representative.
- B. All quotes shall be provided directly to the Owner's Representative and shall be received within five (5) business days of receipt of the request from the Owner's Representative unless otherwise noted on the RFQ.
- C. All quotes shall be numbered and issued in an easy to understand spreadsheet showing unit prices and a break out and explanation of travel and labor.
- D. Any RFQ requesting a credit that are presented to the TMSC for the project prior to the equipment being ordered shall be negotiated on individual item by item basis. The equipment ordering timeframe shall be based on Submittals (see Section 013300) for requirements.
- E. Work quoted shall not be executed nor shall materials quoted be purchased until the Court has provided written authorization of the change in time and expense.
- F. The TMSC shall not be compensated for any out of scope work performed, materials purchased, or additional time or expenses unless prior written authorization of the actual expenses is given from the Court.

END OF SECTION – INVITATION FOR BID (IFB/RFQ) PROCEDURES

SECTION 01 26 63 – CHANGE ORDER REQUEST PROCEDURES

SECTION 012663 - CHANGE ORDER REQUEST PROCEDURES

PART 1 - GENERAL

1.1 ALTERATIONS OR MODIFICATIONS

- A. Any alterations or modifications of the Work performed under this contract shall be made only by written agreement between the TMSC and the Owner's Representative with agreement from the Architect. This agreement shall be made prior to commencement of the altered or modified Work. No claim for any additional Work or materials shall be allowed unless pre-authorized by written agreement prior to the commencement of said Work. The Owner shall have final approval of all alterations or modifications. Verbal approvals will not be considered valid.

PART 2 - PRODUCTS

2.1 DISCONTINUED PRODUCTS

- A. Where model numbers have been discontinued, or are no longer available, provide a direct updated replacement model that provides identical or better specifications, and notify the Architect of the Change. Where no direct replacement is available contact the Architect for direction before ordering any replacement equipment. The TMSC is responsible for any variation in physical characteristics of any substitutions that may affect physical installation or change in specifications that may affect the Design Intent features.

PART 3 - EXECUTION

3.1 REQUEST FOR CHANGE AFTER THE AWARD

- A. The TMSC does not issue RFQs.
- B. All change order requests shall be provided directly to the Owner's Representative and shall be received within five (5) business days of receipt of the request by the Owner's Representative. All change order requests shall be numbered sequentially and completed properly using the Change Order Request Form in Section 006357.
- C. All Requests for Change (RFCs) shall originate with the TMSC and shall be submitted on the attached form (Section 006357 "Request for Change Form") to the Owner's Representative prior to processing. The form shall be complete, accurate, and hold the stated values for thirty (30) days from date of issue. RFCs may be submitted under only two circumstances:
 - 1. The official scope of the Project has altered since adoption of the last addendum that affects the TMSC's cost for time and/or materials.
 - 2. Identification of a Design or Specification discrepancy not previously corrected.

- D. Submitted RFCs for other purposes shall become void.
- E. RFCs shall be submitted to the Owner's Representative through written authorization prior to performing any work or ordering any materials contained within the RFC. The TMSC is not guaranteed any compensation for work done or materials acquired prior to the receipt of written approval from the Court.

END OF SECTION – CHANGE ORDER REQUEST PROCEDURES

SECTION 01 30 00 – ADMINISTRATIVE REQUIREMENTS

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 CONTRACT ADMINISTRATION

- A. The TMSC shall be under the direct administration of the Architect. The Owner's Representative therefore shall be the TMSC's first contact in any communication regarding issues related to the specification and the contractors' responsibilities. The Owner's Representative may recommend to the Architect that the Work be stopped if, in the Owner's Representative's opinion, the work is not being performed satisfactorily. Should the Owner issue an Order to Cease Work, and Work performed after the Order to Cease Work has been issued shall not qualify for compensation.
- B. The Owner's Representative shall be the contact person representing the Owner. The TMSC shall perform all work herein specified to the Owner's complete satisfaction. Where direction from the Owner conflicts with the TMSC's understanding of the Scope of Work the Architect shall be contacted as noted above.
- C. The TMSC shall at all times communicate to the Owner's Representative all site issues that impact the project in any way other than what has been established. Such communication shall be conveyed in written format, via either e-mail or cloud-based sharing service. The RFI form shall be used for all such communication (see Section 006313).
- D. The TMSC shall not take direction from the Owner's Representative at the site in any way that may cause a change of defined scope, a cost or credit to the project, add additional labor, or delay the project. All issues that arise are to be brought to the attention of the Architect at once for resolution. Inform the Architect via phone or email that an RFI is pending. Responding to the client on site without pursuing an RFI and the repercussions of the actions shall in no way can be compensated. The TMSC is given the right to contact the Architect at once in order for clarification.
- E. The TMSC shall only use the RFI process (see Section 006313) to solicit information from the Architect. All RFI's are to be sent to the Architect. Email RFI's are suitable if submitted in a written format agreed with the RFI completed RFI form attached to the email. All RFI's shall be numbered in a sequential order beginning at 1. Any other methods of submitting formal requests will go unanswered.

1.2 TMSC AVAILABILITY

- A. The TMSC's lead installer shall at all times provide and keep possession of an active cell phone which shall be left on from 8:00 AM to 5:30 PM local time Monday through Friday or on weekends if site work is underway. The phone number of the cell phone shall be provided to the Owner and the Owner's Representative at the Installation Kick-Off Meeting or the first day on-site. Any change to the phone number or site lead shall be communicated to the Court contact and the Owner's Representative immediately.

1.3 SIGNAGE

- A. TMSC may *not* display their name or logo in any room but the non-occupied rack rooms with the exception of the control panel help screens.

PART 2 - PRODUCTS

2.1 PERMITS, LICENSE INSPECTIONS AND FEES

- A. Refer to Section 014123 "Regulatory Requirements Fees" and Section 014126 "Regulatory Requirements Permits."

2.2 RECORD DOCUMENTS

- A. Provide Record Documents as indicated in Section 017800 "Closeout Submittals."

PART 3 - EXECUTION

3.1 RIGHT OF WAYS

- A. The TMSC shall maintain all working areas in conditions that do not hamper any other trades at any time. The TMSC shall maintain all working areas in conditions that do not hamper the Owner or Tenant's use of the space during agreed on times and as outlined in the project schedule.
- B. The TMSC shall clean up all working areas prior to departure from the site for any period of time.
- C. The TMSC shall not leave materials in spaces where materials may be damaged or individuals may be harmed by tools or equipment.
- D. Where other trades hamper the TMSC work, the TMSC shall notify the Owner's Representative immediately for a resolution.

3.2 FIELD ORDER / CHANGE ORDER / CHANGE ORDER REQUEST

- A. Refer to Section 012613 "Requests for Interpretation" for Request for Interpretation procedures.
- B. Refer to Section 012663 "Change Order Requests" for Change Order procedures.
- C. Refer to Section 012639 "Field Order Procedures" for Field Order procedures.

3.3 PROJECT DOCUMENTATION

- A. Conduits and electrical infrastructure: Immediately after the letter of award or completion of infrastructure installation, the TMSC shall arrange with the Court to visit the site for the purpose of locating all existing conduit runs, junction boxes, and electrical outlets. During the site visit the TMSC shall verify and inspect all necessary conduits and outlets. Following the site visit the TMSC shall provide submittals to the Owner's Representative as defined in Section 013300 "Submittal Procedures." The TMSC shall also submit a list of any conduits, boxes,

and power changes necessary for installation of audio – video systems in each designated room. If no changes are necessary, the TMSC shall submit a statement in writing that the infrastructure is complete and ready for the equipment installation and that no changes are necessary for the equipment installation.

- B. Millwork and Furniture: On the same visit as listed in paragraph 3.03A the TMSC shall locate and verify all existing furniture and millwork items where equipment is to be installed. Verify and inspect all necessary mounting areas. Submit a list of any items requiring modification for installation of the systems in each area at the time of Submittals. If no changes are necessary, the TMSC shall submit a statement in writing that the millwork and furniture are complete and ready for the equipment installation and that no changes are necessary for the equipment installation.

3.4 PHOTOGRAPHS

- A. The TMSC shall not use any photographs for the purposes of marketing or other public use without prior written consent of the Owner's Representative, Users, CO and COTR. Failure to obtain this approval shall violate intellectual property rights.

3.5 SCHEDULING

- A. TMSC shall prepare at the point defined in the Project Schedule, for approval by the Owner's Representative, a construction schedule that describes the sequence and phasing of the construction work in order for the Tenant to make internal arrangements to maintain service to the public and performance of their responsibilities. Refer to Section 013300 "Submittal Procedures."

3.6 PERIODIC FIELD OBSERVATION

- A. The Owner's Representative shall reserve the right to inspect the work site(s) at their discretion. The TMSC shall provide all field records, equipment, and personnel to inspectors as required.

3.7 CLEANUP

- A. Refer to Section 017400 "Cleaning and Waste Management."

3.8 PROJECT CLOSEOUT

- A. The TMSC shall comply with all closeout requirements set forth in the specification. Any departure from the schedule or sequence of requirements shall risk additional costs to the TMSC with no additional compensation from the Government.

3.9 ACCEPTANCE

- A. Refer to Section 017700 "Closeout Procedures."

3.10 INSPECTION AND TESTS

- A. Refer to Section 016100 "Product Requirements", Section 077500 "Starting and Adjusting", and Section 017700 "Closeout Procedures."

3.11 CONTINUITY OF SERVICE

- A. Refer to Section 011419 "Use of Site" and Section 015100 "Temporary Utilities."

3.12 USE OF CABLE PRIOR TO ACCEPTANCE

- A. Partially installed cable plants and equipment systems will not be used by the Tenant until after the system becomes workable. The Tenant will not use working systems until after the date published for the completion of the installation phase. The Tenant may freely use the systems after that date without penalty of time delay or additional payment to the TMSC should the installation period exceed the time allotted to it. Any incident where the TMSC finds evidence of use or tampering by others before the systems become workable should be documented and provided to the Owner's Representative in writing immediately upon discovery. Use of the system in any form will automatically constitute Substantial Completion.

END OF SECTION – ADMINISTRATIVE REQUIREMENTS

SECTION 01 33 00 – SUBMITTAL PROCEDURES

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Fabrication or installation on the project without proper review of related shop drawings shall risk tear out and/or reprogramming at the TMSC's expense. The TMSC shall incur all costs associated with submission of shop drawing iterations and project delays. TMSC shall not delay project or charge additional costs for multiple shop drawing iterations.

1.2 SAMPLES

- A. Where samples are requested by Specification or to verify submittal information, those samples shall be made available for two (2) weeks after the date of receipt. Samples shall be duly cared for but the Owner's Representative shall not be responsible for damage caused by testing within normal parameters or by accidents.

1.3 SHIPPING

- A. TMSC shall receive written verification from the Tenant point of contact as to the shipping address for all submittals and samples. The address may vary from the address of the point of contact or the actual job site. Submittals or samples that are lost or misplaced due to them being shipped to an unconfirmed address must be recreated or requested and resubmitted to the proper address at no additional cost to the project.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

- A. Shop drawings shall consist of separate drawings for the index, video system(s), audio system(s), control system(s), control and power switching, connection plates, master I/O plates, rack elevations, floor and ceiling plans. Include custom pin-out connector information only if custom pin-out connectors have been previously approved. Shop Drawings shall also include the programming file for the DSP that is being implemented.
- B. All shop drawing submittals shall include a completed Engineering Proof of Design Form as provided in Section 006344. The Form shall be completed during the installation drawing preparation phase to identify all areas where the TMSC's engineers find conditions that would prevent or negatively affect the installed system from meeting the Design Intent implied in the materials provided by the Owner's Representative and/or the Client. The Form shall be provided even if no engineering issues arise in which case it would be submitted with "No issues found" indicated.

- C. Shop Drawings shall indicate that all unused connections from rack equipment are to be brought to rear of I/O panel, terminated and labeled. Certain connectors may be excluded, but only if noted in the shop drawing submittal phase.
- D. Drawings shall show all equipment with manufacturer name, model, and location of where the equipment will be placed. If multiple pieces of equipment will be located at a single location, then the TMSC may group the equipment on the drawings with a dashed box with one location label.

2.2 SUBMITTALS REQUIRED

A. The following submittals are required **at the time the bid/proposal is due**:

- 1. The completed Schedule B – B-1 / Bid Form in unmodified electronic format as provided by the Owner’s Representative. Note that travel must be quoted individually for the Base Bid and each Option. Options, if awarded, will be awarded at the time of the base bid award.
- 2. The Manufacturer’s specification sheets (cut sheets) for each equivalent item of equipment proposed *only* as a substitution for an item specified. Do *not* provide specification sheets for items listed in the bid form.
- 3. A statement indicating that the Bidder understands and shall complete the requirements of this task as specified.

B. The following submittals are required **after award but prior to orders being placed** according to the schedule:

- 1. Completed Engineering Proof of Design Form(s). This is required before proceedings with equipment orders
- 2. Floor and/or ceiling plan(s) showing exact plate locations designated by number.
- 3. Exact wiring field diagrams indicating proposed connections of all equipment indicating make and model numbers and locations of that equipment.
- 4. Layout of all connection plates and panels including master rear rack I/O panels.
- 5. Finish and engraving sample for all plates categories.
- 6. Proposed control system screens for XPanels for each room type.
- 7. Proposed control system screens for IOs devices for each room type.
- 8. Proposed control system screens for Android devices for each room type.
- 9. Logo Generator Images (Court approval of images is required).

C. The following submittals are required **after award** and according to the Project Schedule:

- 1. Meeting notes from preliminary walk through of site.
- 2. List of field installation technicians that the TMSC intends to send to the site. This list shall include specific names of individuals who the TMSC certifies are qualified to commission audio/video systems per the specification. Refer to Section 014300, Part, 3.01B. The Owner’s Representative shall review these qualifications **PRIOR** to the technicians being approved to work on this project.
- 3. TMSC shall prepare, for approval by the Tenant and the Owner’s Representative, a construction and closeout schedule that coordinates with the TMSC and describes the sequence and phasing of the construction work in order for the Tenant to make internal arrangements to maintain service to the public and performance of their responsibilities.
- 4. TMSC shall arrange all installation schedules and inspection dates according to the Owner’s Representative’s availability.
- 5. Set of drawings and documents given to the installer’s job site.

D. The following submittals are required **before** the Owner’s Representative travels for the First Inspection:

1. The TMSC shall test all UTP and STP data cables and termination installed under the project scope per the requirements outlined in Section 017500, 3.01.
2. The TMSC shall provide the Owner's Representative with a written record of the final passing results using the analyzer's software provided by the analyzer's manufacturer only. The TMSC shall provide the Owner's Representative a printed format from that software converted to PDFs for issue. The results shall not be provided to the Owner's Representative in spreadsheet or table form that has been manually assembled by the TMSC.
3. The passing test report shall be forwarded to the Owner's Representative at the time of generation for review. The report shall be issued prior to the Owner's Representative's First Inspection.
4. The TMSC shall provide the Owner's Representative with documentation detailing audio system commissioning results including, but not limited to: Gain structure and Equalization filters, RTA printouts, SPL measurements, physical adjustment settings (such as amplifier knob settings), etc.
5. Turnover of all extra fuses, spare multi-pin XLR connectors, button lamps etc.

E. The following submittals are required **after completion** of Work and according to the schedule:

1. The government expects that the customized configuration code for this installation will be delivered to the government at the completion of the installation. The TMSC shall provide a labeled CD-ROM inserted into a plastic computer media sleeve containing software setup and configuration files for all configurable equipment including control system processors, software controlled screens, computer workstation controllers, software-configured signal switchers, mixers, DSP units, or other signal processors. OS code is not required. Provide all software settings/configurations files, compiled and uncompiled configuration files, and all custom display screens on CD-ROM, organized by system location in subdirectories. Provide all installation programs and drivers necessary to transfer the software settings or programs to each respective pieces of equipment. Complete documentation for the software shall be provided as well as the CD-ROM that shall be furnished in a binder at project closeout along with a printout of the contents of the CD-ROM.
2. Training Materials. Refer to Section 017900 "Demonstration and Training."
3. List of Serial Numbers. Refer to Section 017800 "Closeout Submittals."
4. Statement of Warranty. Refer to Section 017836 "Support and Warranties."
5. Project Record Drawings. Refer to Section 017800 "Closeout Submittals."
6. List of all IP addresses that are implemented in the systems and the purpose for each.

2.3 SAMPLES REQUIRED

- A. Samples are not required.

PART 3 - EXECUTION

3.1 EQUIPMENT ORDERING

- A. Equipment for the project shall not be ordered prior to review and acceptance of the Submittals as listed above.

3.2 SUBMITTALS

- A. The TMSC shall submit all information/materials specified above at the times indicated by the Architect. The Architect may request additional information. Submit three (3) identical copies of all submissions except for those

samples required under paragraph 2.03A above where one (1) sample shall be provided and routed to the Architect initially for review.

- B. Shop drawings shall be submitted to the Owner's Representative on all custom fabricated assemblies as described below. Shop drawings shall be reviewed as noted or reflected with re-submittal required by the Owner's Representative. Any resubmitted shop drawings shall have revisions clouded. After shop drawings have been reviewed by the Owner's Representative and anyone else designated by the Owner's Representative, provide copies for the Owner's manuals. Owner's Drawings shall be provided on reproducible media, with two (2) additional prints included with the original.
- C. The following items shall be reviewed by the Architect during the shop drawing submittal process:
 - 1. Submission of all required drawings, diagrams, details, etc.
 - 2. Shop drawings reflect design intent as outlined in the specification.
 - 3. Preliminary review of the Graphical User Interface (GUI) (control screens and touch panel layouts). The Architect shall review all proposed GUI's prior to final acceptance. Comments provided by the Architect shall NOT constitute approval or acceptance of a proposed GUI.
- D. Additional charges to the Owner to provide any submittal or submittal revisions shall not be allowed prior to the start of equipment orders. During the submittal review, revision and acceptance process additional overhead fees, engineering fees, programming costs, drawing costs, shipping etc., shall not be charged in relation to submittals.
- E. Architect review of the TMSC submittals, including shop drawings, shall be limited to the purpose of checking for conformance with the design concept in this specification. Submittal review by the Architect does not relieve the TMSC of its contractual responsibilities to furnish a properly engineered system that meets all requirements of this specification. The TMSC shall have the ultimate responsibility of developing the design drawings included in this specification into a fully functioning system consistent with the design concept. If any Architect review comments or lack thereof, appear to contradict the terms of the scope of work and design concept in this specification, then it is the sole responsibility of the TMSC to issue an RFI to verify the Architect or Architect's intent. A design or equipment change included in the shop drawings shall not be considered an acceptable change or substitution. The only acceptable change to the design or equipment in this specification must be approved through RFQ or RFC. The RFI and RFQ/RFC processes shall supersede any shop drawing review.

END OF SECTION – SUBMITTAL PROCEDURES

SECTION 01 41 13 – REGULATORY REQUIREMENTS CODES

SECTION 014113 - REGULATORY REQUIREMENTS CODES

PART 1 - GENERAL

1.1 REGULATIONS AND CODE COMPLIANCE

- A. The Bidders are advised of their and their Subcontractor's responsibility to comply with all applicable State Statutes and codes. If any unfamiliarity exists with any applicable State Statutes and codes, it is the responsibility of the Bidder to obtain all necessary information on any and all applicable State Statutes and codes.
- B. If this document and any of the documents listed in Section 014219 are in conflict, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The TMSC has the responsibility to determine and adhere to the most recent release when developing the Bid for installation.
- C. This document does not replace any code, either partially or wholly. The TMSC must be aware of local codes that may impact this project.
- D. The TMSC shall also comply with any and all regulations and codes established by the building owner and the Tenant.

PART 2 - PRODUCTS

2.1 CONCEALMENT

- A. All exposed cables, connectors and equipment connection points shall be concealed in compliance with all code and installation guidelines by project-close-out. At the end of each work day during installation, all open and accessible connections over thirty (30) volts shall be covered or sealed.

PART 3 - EXECUTION (NOT USED)

END OF SECTION – REGULATORY REQUIREMENTS CODES

SECTION 01 42 00 – ABBREVIATIONS & ACRONYMS

SECTION 014200 - ABBREVIATIONS & ACRONYMS

PART 1 - GENERAL

1.1 ABBREVIATIONS & ACRONYMS

A. For the purposes of this document:

1. A/E means Architect/Engineer.
2. AV or A/V means audio-visual or audio-video systems.
3. BB means Back Board.
4. CFE means Court/Client/Customer Furnished Equipment.
5. CO means Contracting Officer.
6. COTR means Contracting Officer's Technical Representative.
7. CR means Court Reporter.
8. CRD means Courtroom Deputy.
9. DSP means Digital Signal Processor — typically found in audio systems.
10. ECRO means Electronic Court Recording Operator.
11. EPOD means Engineering Proof of Design Form (See Section 006344).
12. FF&E means Furniture, Fixtures, and Equipment.
13. IFB means Invitation for Bid. Also, see RFQ.
14. IT means Information Technology.
15. PoE means Power over Ethernet.
16. Prosecution also means Plaintiff.
17. RFI means Request for Interpretation/Information (See Section 006313).
18. RFC means Request for Change (See Section 006357).
19. RFQ means Request for Quote. Also, see IFB. (See Section 012653).
20. TIP means Telephone Interpreting Program.
21. TMSC means Technical Media Systems Contractor (A/V Integrator/Installer/Dealer).
22. TSOW means the Technical Statement of Work.
23. VD or V/D means Voice and Data systems or cable.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – ABBREVIATIONS & ACRONYMS

SECTION 01 42 16 – DEFINITIONS

SECTION 014216 - DEFINITIONS

PART 1 - GENERAL

1.1 DEFINITIONS

- A. Award is the agreement that the government has accepted the proposal of the TMSC and indicated such either in writing or by issuing a Purchase Order.
- B. Bidder(s) means organizations that submit a quote for all work in the Contract documents to contract prior to award.
- C. Bidding Documents are this document and any drawings or schedules issued for bid pertaining to this project.
- D. Bid Form is the Schedule B – B/1 Bid Form.
- E. Building Owner is the entity or organization that owns the physical building to which rent is paid by the tenant.
- F. Owner’s Representative means the Designated contact whether an Owneremployee or 3rd party under separate Contract.
- G. Contract and Contract Documents consist of this specification, documents listed in the table of Contents, all schedules, addenda and interpretations, clarifications, corrections, or changes made by the Architect prior to the time bids are opened and properly executed written change orders after award.
- H. Court shall be a building Tenant.
- I. Final Acceptance means that the specification has been met 100% and that all punchlist items have been completed to the satisfaction of the Owner, Court, and Owner’s Representative. Documentation is not required for Final Acceptance.
- J. First Inspection means the initial inspection performed by the Owner’s Representative when the TMSC’s work on the project is nearly complete. Ideally, this inspection will occur when the system is Substantially Complete (see the definition of Substantial Completion in Section 014216, 1.01, O). There is no maximum number of possible inspections, however there will be a minimum of two (2). Inspections may continue until the system reaches Final Acceptance.
- K. H.239 is an ITU-T recommendation from the H.32x Multimedia Communications’ macro-family of standards for multimedia communications over various networks. A traditional videoconference has an audio channel, a video channel, and an optional data channel. The video channel typically carries the camera image of the participants. H.239 defines rules and messages for establishing an additional video/graphics channel, often to transmit a PC graphics presentation or video from an evidence camera, while still transmitting the video of the presenter.
- L. JERS is a system (originally initiated by Judge Conrad in the Western District of North Carolina) which captures exhibits as they are presented in a Court proceeding and then makes them accessible at a touch of a button to jurors as they deliberate.

- M. Owner means the entity that holds the TMSC contract.
- N. Additional Inspections are performed by the Architect until the specification has been met 100% and that all punchlist items have been completed to the satisfaction of the Owner.
- O. Substantial Completion is a milestone in project construction where the work has been completed. Documentation, cable management, typos on control panels, temporary plates and labels, crooked or loosely installed items, missing rack mounts, temporary equipment, unpainted housings, and poorly aimed cameras or lighting are items that can remain incomplete and still allow for Substantial Completion status. Three criteria shall be used to determine if an installation is Substantially Complete:
1. The System works 100 percent, as it *may* be used for daily operation – i.e., the entire system is completely usable as designed.
 2. Any training that is done on the system by the Court staff is 100 percent effective and all training aspects can be demonstrated, as they will be in their finished form.
 3. The Owner’s Representative reserves the right to determine Substantial Completion to occur upon usage of the Courtroom on a case-by-case basis.
- P. Tenant is the entity that is the primary user in the space where the work is done.
- Q. Technical Media Systems Contractor (TMSC) means the person or organization undertaking to do the Work required by the Contract Documents.
- R. TIP is a system where a remote interpreter can provide language interpretation to a defendant (typically). Being able to have a two-way private conversation with the defendant over the phone and using two phone lines for true duplex conversation is a hallmark of the TIP program.
- S. Work means all or any part of the performance of the TMSC, the TMSC’s agents and subcontractors, pursuant to, and whether or not in compliance with the Standard Specifications, Drawings, Schedules, Addenda (if applicable).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – DEFINITIONS

SECTION 01 42 19 – REFERENCE STANDARDS

SECTION 014219 - REFERENCE STANDARDS

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

A. All work shall comply with the following reference standards:

1. Federal Communications Commission (FCC)
2. National Electrical Code (NEC)
3. National Fire Protection Agency (NFPA)
4. Occupational Safety and Health Act (OSHA)
5. Society of Motion Picture and Television Engineers (SMPTE)
6. Uniform Building Code (UBC)
7. Underwriter's Laboratory (UL)
8. Telecommunications Industry Association (TIA)
9. ANSI/TIA/EIA – 568B.1, Commercial Building Telecommunications Cabling Standard. Part 1: General Requirements April 2001
10. ANSI/TIA/EIA – 568.B2, Commercial Building Telecommunications Cabling Standard Balanced Twisted-Pair Cabling Components, April 2001
11. ANSI/TIA/EIA – 568B.3, Optical Fiber Cabling Components Standard, April 2000
12. ANSI J-STD – 607-A, Commercial Building Grounding and Bonding Requirements for Telecommunications, 2002
13. Electronic Industry Association (EIA)
14. ICIA CTS-I, NICET, and NSCA C-EST standards
15. All local, County and State codes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – REFERENCE STANDARDS

SECTION 01 43 00 – QUALITY ASSURANCE

SECTION 014300 - QUALITY ASSURANCE

PART 1 - GENERAL (NOT USED)

PART 2 - PRODUCTS

2.1 QUALITY ASSURANCES

- A. **New Material Quality:** All material shall be new and free from defects or damage. No refurbished or rebuilt goods shall be supplied as new, regardless of condition or warranty extension. Finishes shall be unmarred. Material shall be adequately protected during construction from dirt, dust, moisture, temperature extremes and physical damage.
- B. Where it is apparent that Equipment has been dropped, all damaged equipment and equipment affected by the drop shall be replaced with new equipment regardless of the condition.
- C. **Existing Material Quality:** Any existing material or equipment, whether associated with, within proximity of Work, reused, or turned over to the Court, whether listed in the specifications or not, must be tested for operation prior to start of project. The TMSC must obtain a letter from the Court accepting the defective condition of the material or equipment. Any such material or equipment found to be defective by the Owner or Owner's Representative during project closeout, without such a letter, shall be replaced under this contract at no additional cost to the project.
- D. **Serial Numbers:** TMSC shall submit all serial numbers of equipment with suggested list prices of equal or greater than \$250.00 to the Owner's Representative at the end of the project. Submit data on Form included in Section 006365 "Serial Number List."

PART 3 - EXECUTION

3.1 QUALITY ASSURANCES

- A. **Installation Quality:** Quality of the installation shall be consistent with the highest standards of construction. All work shall be accomplished in a neat and orderly manner using current methods and methods recommended and/or required by the manufacturer of the equipment as qualified in its installation. The Owner's Representative shall be the sole arbiter of construction quality.
- B. **Reference Standards:** Refer to Section 014219.

END OF SECTION – QUALITY ASSURANCE

SECTION 01 45 00 – QUALITY CONTROL

SECTION 014500 - QUALITY CONTROL

PART 1 - GENERAL

1.1 PROOF OF PERFORMANCE

- A. Testing: All work shall be tested in a manner consistent with industry standards and otherwise as specified herein. Prior to system start up, all portions of the Work shall have a careful and thorough visual inspection to detect any erroneous or loose connections, damaged components, presence of foreign objects or materials, poor workmanship, incorrectly rated devices, or other abnormal conditions. Systems shall be examined and tested as defined in the pertinent Specification sections. Acceptance of the Work by the Owner shall be contingent upon satisfactory completion of these tests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TESTING

- A. Quality control testing and correction of any found deficiencies must occur prior to the Owner's Representative traveling for any inspections. A written report including a checklist of items that have been tested shall be submitted to the Owner's Representative prior to any inspections.

END OF SECTION – QUALITY CONTROL

SECTION 01 61 00 – PRODUCT REQUIREMENTS

SECTION 016100 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 EQUIPMENT AND MATERIALS MINIMUM REQUIREMENTS

- A. All equipment must be UL listed or built to UL standards.
- B. All equipment must be self-supporting. Provide all necessary support, rack mounting, and stability hardware and accessories.
- C. All equipment and material supplied by the TMSC shall be new (unless otherwise directed) and free from defects or damage. No refurbished or rebuilt goods shall be supplied as new, regardless of condition or warranty extension. Finishes shall be unmarred. Material shall be adequately protected during construction from dirt, dust, moisture, temperature extremes and physical damage.
- D. Where apparent that Equipment has been dropped, all damaged equipment and equipment affected by the drop, shall be replaced with new equipment regardless of condition.
- E. Refer to Section 012500 "Substitution Procedures."

PART 2 - PRODUCTS

2.1 FACTORY ASSEMBLED PRODUCTS

- A. All equipment is intended to be professional grade and rated for continuous duty. Basic guidelines have been prepared with minimum performance requirements. These must be satisfied, unless a variance (separate document) is submitted and approved by the Court or Owner's Representative.

2.2 MISCELLANEOUS MATERIALS

- A. Miscellaneous Materials not specified by a part number, such as cables and connectors, shall be of the highest quality. High and low resolution video cables shall be professional grade only and be rated at the lowest signal loss feasible. Consumer grade parts shall not be used unless specifically noted.

2.3 COMPATIBILITY OF RELATED EQUIPMENT

- A. The TMSC shall assure that all components provided are compatible as per Design Intent. Any discrepancies shall be brought to the Owner's Representative's attention prior to ordering equipment. The TMSC shall not be compensated for restocking or labor costs associated with compatibility issues in lieu of a proper RFI.
- B. Where model numbers have been discontinued, or are no longer available, provide direct updated replacement model that provides identical or better specifications, and notify the Owner's Representative of the change. Where

no direct replacement is available, contact the Owner's Representative for direction before ordering any replacement equipment. TMSC is responsible for any variation in physical characteristics of any substitutions that may affect physical installation, or change in specifications that may affect design intent features.

2.4 EQUIVALENT PRODUCTS

- A. Equipment brand, model, and quantity suggestions are delineated in the Equipment List (Schedule B). Brands and models listed are products that meet or exceed the project requirements. Equal or equivalent products are acceptable as well, but must be submitted in one of the two following ways:
 - 1. Prior to award. Refer to Section 002600 "Procurement Substitution Procedures."
 - 2. After award. Refer to Section 012500 "Substitution Procedures.'

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Inspect all factory-assembled products for defects prior to installation. The TMSC shall be responsible for replacing any product that is defective from the manufacturer without project delays and without additional cost to the government.
- B. The TMSC shall install all equipment and other rack items in the main racks in their facility prior to shipping to the site.
- C. The TMSC shall configure the main rack(s) such that minimal soldering and other connections are needed directly to the equipment at the site.

END OF SECTION – PRODUCT REQUIREMENTS

SECTION 01 61 13 – SOFTWARE LICENSING REQUIREMENTS

SECTION 016113 - SOFTWARE LICENSING REQUIREMENTS

PART 1 - GENERAL

1.1 LICENSES AND CODES

- A. The government expects that the customized configuration code/software for this installation will be delivered to the government at the completion of the installation. The TMSC shall provide a labeled CD-ROM inserted into a plastic computer media sleeve containing software setup and configuration files for all configurable equipment including control system processors, software controlled screens, computer workstation controllers, software-configured signal switchers, mixers, DSP units, or other signal processors. OS code is not required. Provide all software settings/configurations files, compiled and un-compiled configuration files, and all custom display screens on CD-ROM, organized by system location in subdirectories. Provide all installation programs and drivers necessary to transfer the software settings or programs to each respective pieces of equipment. Complete documentation for the software shall be provided as well as the CD-ROM that shall be furnished in a binder at project closeout along with a printout of the contents of the CD-ROM.
- B. All software products installed shall be licensed and registered to the end user. Site licenses shall be applied to the installation as advantageous to the Owner.

PART 2 - PRODUCTS

2.1 SOFTWARE

- A. Only the most current software versions shall be installed unless otherwise determined.
- B. All software shall be turned over to the owner on the original media with the original packaging. The materials shall include all warranty and license information.

PART 3 - EXECUTION

3.1 ACTIVATION

- A. The TMSC shall be responsible for activating all provided software licenses and products as part of the installation.

END OF SECTION – SOFTWARE LICENSING REQUIREMENTS

SECTION 01 64 00 – CLIENT-FURNISHED PRODUCTS

SECTION 016400 - CLIENT-FURNISHED PRODUCTS

PART 1 - GENERAL

1.1 CLIENT FURNISHED EQUIPMENT

- A. The equipment provided by the Owner will be provided to the site in working condition at the Owner's expense. TMSC shall assemble equipment and accessories delivered by the Owner or Suppliers related to the Project. This includes, but is not limited to, installation and alignment of rack slides, faceplates, mounting ears, and other hardware items provided separately by the manufacturer. TMSC shall mount equipment and related accessories into furniture, consoles, and racks as required for the equipment to be properly operational and physically stable. Manufacturer's guidelines for installation shall be followed. Discrepancies in installation procedure or inability to complete a given task due to shortage of materials or malfunctioning of equipment shall be reported to the Owner's Representative upon discovery.

PART 2 - PRODUCTS

2.1 CLIENT FURNISHED EQUIPMENT

- A. Scheduling of the cleaning and delivery of Client Furnished Equipment will be facilitated by the Owner, but will require proactive involvement on the part of the TMSC.
- B. Equipment furnished by the Client is currently installed and operational at other locations.
- C. Key/significant components of Client Furnished Equipment that is to be provided by the Client for use and installed by the TMSC under this project is listed in Schedule B as "CFE". Some items that do not affect the system engineering may not be listed.
- D. The Client Furnished Equipment that is to be used in this project shall be identified and verified at the Pre-Installation Site Visit.

PART 3 - EXECUTION

3.1 EXISTING MATERIAL QUALITY

- A. Any existing material or equipment, whether associated with, within-proximity of Work, reused, or turned over to the Court, whether listed in specifications or not, must be tested for operation prior to start of project. The TMSC must obtain a letter from the Court accepting the defective condition of the material or equipment. Any such material or equipment found to be defective by the Owner's Representative during the project closeout, without such a letter, shall be replaced under this contract at no additional cost to the project.

3.2 EXISTING MATERIAL/EQUIPMENT TESTING

Three Branch Courtrooms in the Monroe County Justice Center
Sparta, Wisconsin

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- A. At the earliest opportunity and before any CFE is moved or modified, The TMSC shall be responsible for the testing of any existing material or equipment to be reused prior to the installation or addition of any new equipment. The TMSC shall be responsible for documenting, in a letter to the Government and Owner's Representative, any abnormalities or malfunctions with the existing material or equipment that is to be reused.
- B. After the letter of abnormalities has been sent to the Court, the TMSC shall be responsible for obtaining a written acknowledgement of the letter from the Government prior to beginning work on any of the CFE. The TMSC may request the presence of Court staff for testing and/or demonstration of faulty equipment and/or non-project wiring prior to the start of work. Any pre-existing deficiencies documented by the TMSC prior to work will NOT be the responsibility of the TMSC to repair without additional compensation. The Court may choose to repair outside this contract, continue with the deficiency, or request pricing from the TMSC to repair or replace the faulty item. If the fault is not documented prior to start of work, the contractor runs the risk of accepting responsibility of the fault(s) and the repairs will be needed under this TMSC's warranty.

END OF SECTION – CLIENT FURNISHED PRODUCTS

SECTION 01 65 00 – PRODUCT DELIVERY REQUIREMENTS

SECTION 016500 - PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 PRODUCT DELIVERY REQUIREMENTS

- A. The TMSC shall control the handling and installation of hardware and equipment so that completion of the Work will not be delayed by hardware or equipment losses, both before and after installation.
- B. The Court or other Tenant shall not be expected to provide additional space to the TMSC for the purpose of pre-assembly and testing. Any required pre-assembly and testing must be conducted at the TMSC's facility unless other arrangements are made prior to project start up.
- C. All equipment shipping costs and any costs for shipping furniture and/or equipment to and from the fabrication points shall be the complete responsibility of the media systems TMSC. These costs shall be included in the base bid amount.
- D. TMSC is responsible for verifying the address that all equipment should be shipped to with the Court.
- E. Any equipment shipped to the work site must be quoted as "inside delivery". The Court or other Tenant shall not be responsible for moving any equipment from the loading dock.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – PRODUCT DELIVERY REQUIREMENTS

SECTION 01 66 00 – PRODUCT STORAGE & HANDLING REQUIREMENTS

SECTION 016600 - PRODUCT STORAGE & HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 STORAGE AND PROTECTION OF MATERIALS

- A. Prior to installation, protect exposed surfaces with material that is easily removed without marring finishes.
- B. The TMSC shall provide protection to all final surfaces at the site. Tools shall not be used or left on furniture or millwork at any time. The TMSC will be solely responsible for any damage made to the site by the installation team. Any pre-existing damage shall be documented immediately at discovery via written notification and digital photograph(s) and delivered to the Owner's Representative prior to start of Work.

1.2 PRODUCT STORAGE

- A. All products shall be sent to the site only when needed for installation. Coordinate directly with the building owner the locations suited for secure short-term storage of the equipment.
- B. Locations for product storage shall be suitable for the materials. Wet areas and areas with extreme heat shall not be used for storage.
- C. The TMSC shall log all equipment shipped to the site if stored by the Owner. The Owner shall sign for each piece acknowledging acceptance of each piece of equipment and its condition as it is left at the site. Failure to obtain signature of equipment turned over to Owner will risk liability of the TMSC to replace at no additional charge for any equipment that is lost or damaged.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – PRODUCT STORAGE & HANDLING REQUIREMENTS

SECTION 01 74 00 – CLEANING AND WASTE MANAGEMENT

SECTION 017400 - CLEANING AND WASTE MANAGEMENT

PART 1 - GENERAL

1.1 CLEANING

- A. The TMSC shall clean all surfaces of the work site areas when the project is complete. All floorboxes and rack interiors shall be vacuumed. All equipment and housing surfaces shall be wiped with a slightly moist cloth. All fans shall be blown with compressed air.

PART 2 - PRODUCTS

2.1 WASTE MANAGEMENT

- A. The TMSC shall remove all shipping materials and protective covers from plastic windows, lamp housings, etc.
- B. The TMSC shall arrange for all refuse containers and not use tenant containers. The TMSC shall be solely responsible for providing dumpsters, dumpster permits, and tarping. Dumpsters shall be removed promptly when Work is complete or dumpster is full. Coordinate location with building owner.
- C. Original packaging shall be retained where product performance is suspect or if requested by the Owner or Owner's Representative. Do not discard equipment manufacturers' shipping boxes that may need to be used for defective or rejected equipment until after acceptance.

PART 3 - EXECUTION

3.1 CLEANING

- A. The TMSC shall clean up all work areas prior to departure from the site for any period of time.
- B. The TMSC shall not leave materials in spaces where the materials may be damaged or individuals may be harmed by tools or equipment.

3.2 WASTE MANAGEMENT

- A. The TMSC shall remove and discard all temporary construction materials that are not required prior to project closeout.

END OF SECTION – CLEANING & WASTE MANAGEMENT

SECTION 01 75 00 – STARTING AND ADJUSTING

SECTION 017500 - STARTING AND ADJUSTING

PART 1 - GENERAL

1.1 TESTING

- A. All materials and assemblies are to be tested and any problems corrected at the TMSC's assembly point prior to shipping.
- B. System start up shall be ongoing during the installation to uncover defects.
- C. Acceptance tests may include speech intelligibility surveys and subjective evaluations by observers listening at various positions under various operating conditions using speech, music, and live or recorded effects material. Acceptance test shall include viewing of monitor images for sharpness, contrast, brightness, and color.
- D. Measurement of frequency response, distortion, noise waveform, color vector, or other characteristics may be performed (or a demonstration test requested) by the Owner's Representative in any item or group of items deemed necessary to determine conformity with criteria.

PART 2 - PRODUCTS

2.1 TEST GEAR

- A. The TMSC shall test all UTP and STP data cables and termination installed under the project scope using an analyzer certified for UL, ISO Level IV and proposed TIA Level IIIe use (such as Fluke's DTX -1800 CableAnalyzer).
- B. Primary audio levels shall be testing with a commercial certified and calibrated SPL meter accurate to with +/- 1dB_{spl} set at slow response, A-weighting.
- C. Primary audio levels shall be tested with a commercial certified and calibrated pink noise generator with variable level adjustment.
- D. Video test generators should include dedicated multi-pattern generators for outputs at all used resolutions and frequencies. Include both analog and digital testing where present. After master generators are used, test with real-world laptop inputs at various resolutions and laptop generated test patterns from software such as Display-Mate or as provided from Extron, etc. Test from multiple laptops and multiple inputs with a wide variety of source materials.

PART 3 - EXECUTION

3.1 TESTING

- A. All Work shall be tested in a manner consistent with industry standards and as otherwise specified herein. Prior to energization, all portions of the Work shall have a careful and thorough visual inspection to detect any erroneous or loose workmanship, incorrectly rated devices, or other abnormal conditions. Systems shall be examined and tested as defined in the pertinent Specification sections. Acceptance of the Work by the Owner shall be contingent upon satisfactory completion of these tests.
- B. The TMSC shall power up each piece of equipment and shall completely test all system functions and interconnecting and distribution lines prior to the initial inspections. Signals at major system termination points throughout the system shall be tested for level and signal quality. Analyzers and scopes shall show no components of cross-modulation, beat interference, feedback, oscillations, noise products or power supply hum caused by improper levels, interconnection routing or grounds. The signal to noise ration shall be tested at major system terminations, the system output and at the last outlet on the longest branch by recording the signal strength a normal signal and then recording the signal strength with the inputs to the amplifiers terminated at rated impedance. The TMSC shall verify that all equipment and interconnections meet FCC requirements for limiting radiated interference. Conditions revealed in testing to be outside of limits shall be corrected and retested.
- C. If ground noise/hum is present, test all equipment for the Pin 1 problem. The TMSC shall be prepared to disconnect one end of the cable shield from the input side of the equipment chassis. This solution is to be used only when absolutely necessary; after all other solutions have been tried and failed.
- D. General System Performance, Tests, and Adjustments to be provided by the TMSC:
1. The TMSC shall test all UTP and STP data cables and termination installed under the project scope using an analyzer certified for UL, ISO Level IV and proposed TIA Level IIIe use (such as Fluke's DTX -1800 CableAnalyzer). Testing shall be used to identify faults and indicate where repairs are to be made in the system prior to the First Inspection.
 2. The TMSC shall provide the Owner's Representative with a written record of the final passing results as detailed under Section 013300, 2.02.
 3. The TMSC shall provide the Owner's Representative with documentation detailing audio system commissioning results including, but not limited to: Gain structure and Equalization filters, RTA printouts, SPL measurements, physical adjustment settings (such as amplifier knob settings), etc.
- E. Video System Performance, Tests, and Adjustments to be provided by the TMSC:
1. Picture shall be evaluated for image stability, lock- up time, brightness, convergence, sharpness, and color.
 2. Picture shall be evaluated for Proper EDID performance and color space.
 3. Utilizing a variety of video test patterns, perform system calibration as described below.
 - a. Apply an all-white test field. Check for missing pixels in all displays. If missing pixels are found, then replace the affected display (if provided under contract) with new displays.
 - b. Apply "Circle" pattern and check geometry to verify the aspect ratio (make sure circle are round and not oval).
 - c. Apply Crosshatch pattern and adjust positioning to center the image on the display.
 - d. Apply an Alternating Pixel pattern. Adjust the pixel clock and phase to provide cleanest signal with no "waves" or other anomalies.
 - e. Apply Multi-burst to check for color shift and adjust so that only black/white/grey is seen.
 - f. Apply "H" Pattern. Check overall sharpness and text legibility. Verify that there is no keystone present (will show up as a "tree" in the pattern).
 - g. Apply Extreme Gray scale. Use to adjust absolute black and absolute white levels (The far right white block and the far left black block should just barely disappear).

- h. Apply Transient Response and check for smearing (over peaking of the video signal results in smearing on white; under peaking results in smearing on black). Adjust peaking levels as appropriate to achieve clear image.
- 4. All video shall be free of moiré, noise, ringing, colorimetry error, and interline distortion.
- 5. All displays shall be equally clear and free from softness and blur.
- 6. Meet with the Owner's Representative and make system control changes as directed.

3.2 TERMINATION POINT LABELING

- A. Appropriate labeling shall be supplied on all devices. Handwritten labels will not be acceptable.
- B. Provide engraved or printed (not adhesive) labels for all floorboxes in high contrast between the background and the lettering. Engrave exposed plates as required for user clarity.
- C. All J-boxes above carpet level shall only be provided with directly engraved or directly silk-screened labels. Adhesive or window slip-in style plastic or paper labels are absolutely unacceptable on any plate where AV or media technology functions are present.
- D. Submit engraving sample if requested for the Submittals. Printing shall not be applied directly to the equipment. Provide a removable intermediate plate for all labels on frame equipment. Where space is limited on the device, provide a coded system and label reference chart sorted adjacent to the equipment and in the O&M manuals. Provide labels on all patch bays and user removable cables and harnesses for each connector.

3.3 RACK AND EQUIPMENT LABELING

- A. Provide printed physical removable labels on the front of equipment rack. Labels shall include references to system documentation including, but not limited to, frame numbers, patch bay numbers, patch point labels, device IP addresses, data switch IDs, etc.
- B. Label all user adjustable settings within the user rooms that have a preferred calibrated setting.
- C. Label correct setting on all volume and tone controls of loudspeakers that can be adjusted by users.

3.4 AS-BUILT AND SYSTEM DOCUMENTATION

- A. Refer to Section 013100 "Project Management and Coordination" and Section 044300 "Quality Assurance."

END OF SECTION – STARTING & ADJUSTING

SECTION 01 77 00 – CLOSEOUT PROCEDURES

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 ACCEPTANCE

- A. The TMSC shall coordinate with the Owner's Representative dates that the TMSC will be completing work at the site. Dates shall be established by the point indicated in the Project Schedule. Changes to dates that have been agreed upon shall not be accepted.

1.2 WARRANTY

PART 2 - he one year warranty starts at Final Acceptance. The warranty start date shall be agreed upon by the Owner and the TMSC. If the Owner and the TMSC cannot reach consensus as to when the warranty starts, they shall defer to the Architect.PRODUCTS

2.1 EQUIPMENT CLOSEOUT PROCEDURES

- A. All exposed cables, connectors, and equipment connection points shall be concealed in compliance with all code and installation guidelines by project closeout.
- B. The TMSC shall remove and discard all temporary materials and construction that may be required prior to project closeout.
- C. Spare materials such as lamps, special adjustment tools, software, remote controls, unused cable, and accessories shall be deliberately turned over to the Owner near project closeout. Materials shall not be simply left in the project area.

PART 3 - EXECUTION

3.1 CLOSE OUT PROCEDURES

- A. The TMSC shall officially notify the Owner's Representative in writing when they are or will be Substantially Complete. Only after receiving written notification, will the Owner's Representative plan a Final Inspection to determine if the system is substantially complete pursuant to the Contract. Notifying the Owner's Representative of an expected future completion date shall not be considered an official notification. The TMSC is not required to be present at this inspection.
- B. Prior to the Final Inspection, the TMSC shall test all UTP and STP data cables and terminations under the project scope (see Section 017500, 3.01) and provide a written record of the final passing results as provided in Section 013300, 2.02.

- C. Architect or Owner's Representative will conduct a Final Inspection to determine if the system is substantially complete pursuant to the Contract. Systems/equipment will be tested with same test equipment and methods required for installation. A punchlist will be generated by the Architect or Owner's Representative of any malfunctioning or missing equipment. See Project Schedule.
- D. The TMSC shall officially notify the Architect in writing when they finish all punchlist items that were generated by the Owner and the Owner's Representative during the Final Inspection. Only after receiving official written notification, will the Owner's Representative determine if the system is ready for final acceptance.
- E. The TMSC shall provide a written status report at the conclusion of work directed through inspection reports. The report from the TMSC shall provide a line-by-line response explaining the action taken on the inspection reports. The report from the TMSC will be evaluated by the Owner's Representative and Architect to determine if subsequent inspections are required.
- F. The Architect or Owner's Representative will provide Additional Inspections until the systems reach Final Acceptance. Meeting notes will be generated by the Owner's Representative listing any remaining issues. It shall be expected that new items may appear on each Inspection Report. TMSC shall be expected to return to the site to finish any malfunctioning or incomplete work as long as Inspections are determined as necessary.
- G. The TMSC shall officially notify the Owner's Representative in writing when they finish all punchlist items that were generated by the Architect and the Owner's Representative after any Inspection.

END OF SECTION – CLOSEOUT PROCEDURES

SECTION 01 78 00 – CLOSEOUT SUBMITTALS

SECTION 017800 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 CLOSE OUT SUBMITTALS

- A. TMSC shall receive written verification from the Court point of contact as to the shipping address for all closeout submittals. This address may vary from the address of the point of contact or the actual job site. Submittals that are lost / misplaced due to them being shipped to an unconfirmed address must be recreated and re-submitted to the proper address at no additional cost to the project.

PART 2 - PRODUCTS

2.1 RECORD COPY AND AS-BUILT DOCUMENTATION

- A. Manuals and Publications: The media systems TMSC shall provide the manuals and publications with the following inclusions:
 - 1. O&M Manuals: Provide one (1) O&M Manual in electronic format (CD ROM) containing editable files to the Owner's Representative as per the Project Schedule. All information must be accurate as per written acceptance. Each CD shall contain the following required materials in the below subfolders:
 - a. Subfolder labeled "O&M Manual"
 - 1) An index of the contents of the O&M Manual.
 - 2) Printed operating instructions for all system functions whose format has been compiled specifically for each system. Providing standard factory equipment operating instructions alone is not acceptable.
 - 3) Troubleshooting procedures.
 - 4) Numerical values for all control settings and photographs or other graphic representation of all visible adjustments and all accessible switches indicating correct position for properly calibrated operation.
 - b. Subfolder labeled "Complete Parts Lists" (other than consumables).
 - 1) A list of serial numbers of equipment installed (Use Form provided in Section 006365 "Serial Number List Form").
 - 2) A list of replacement fuses, lamps, and connectors in sufficient quantities to last one (1) year that have been handed over to the Owner.
 - c. Subfolder labeled "IP Addresses"
 - 1) A list of all IP addresses implemented in the systems and the purpose for each.
 - d. Subfolder labeled "Drawings"

- 1) "As-Built" (project record drawings) schematic wiring diagrams of all systems with labeled equipment and wiring.
 - 2) Rack layouts, plate fabrication drawings, and all non-standard connector pin configurations.
 - 3) Patch bay and punch block schedules: Equipment signal patch bay tables (if any have been specified) shall be provided, descriptively listing, in a non-technical fashion, all signals related to ultimate source or destination.
- e. Subfolder labeled "Manufacturers Manuals"
- 1) Operation and installation manuals for each component. PDF's of manuals shall be separated into individual folders per manufacturer. (Example: Folder name "Manufacturer A", all manuals from Manufacturer A shall be included in this folder. All manuals from Manufacturer B shall be included in a folder named "Manufacturer B").
- f. Subfolder labeled "Programming"
- 1) Provide a CD-ROM that contains all software configurations, both compiled and un-compiled, custom programming, and files in the manufacturer's native program format with a sheet describing the contents of the CD-ROM.
 - 2) Static IP addresses shall be provided and listed for each piece of equipment in each room.

PART 3 - EXECUTION

3.1 FINAL O&M MANUALS

- A. Once the O&M Manuals are considered "Technically Acceptable" by the Owner's Representative, the TMSC shall submit one (1) final copy of the O&M Manuals to the Owner's Representative in electronic format containing PDF, AutoCAD, HTML, Programming, control and control panel layout files in the manufacturer's native program format. The TMSC shall also provide two (2) hard copies and two (2) electronic copies of the O&M Manuals to the Court. Provide electronic copies on CD-ROM in the fewest discs possible.

END OF SECTION – CLOSEOUT SUBMITTALS

SECTION 01 78 36 – SUPPORT & WARRANTIES

SECTION 017836 - SUPPORT & WARRANTIES

PART 1 - GENERAL

1.1 SUPPORT

- A. Control System program and control screen layouts shall be reviewed by the Architect with final approval provided by the Architect.

1.2 WARRANTY

- A. The one-year Warranty starts at Final Acceptance. The Warranty start date should be agreed upon by the Owner and the TMSC. If the Owner and TMSC cannot reach a consensus of when the warranty starts, they should defer to the Architect for assistance.
- B. The TMSC shall provide warranty for the minimum duration of one (1) year as part of the base bid. This work shall be performed at no additional cost to the Government.
- C.).

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Warranties shall be provided for all equipment for the duration of the warranty period. All OEM warranties shall be passed through to the Owner. Where OEM warranties fall short of the total warranty period the warranties shall be extended to meet the total warranty period. Where OEM warranties extend past the total warranty period, the OEM warranty information shall be turned over to the Tenant.

2.2 SOFTWARE & FIRMWARE

- A. The TMSC shall proactively keep all of the installed systems' software and firmware based products up to date through the warranty period. If the Owner's staff is unable to assist the TMSC by installing the updates themselves, then the TMSC shall be on site to install the software and/or firmware. In either case, the TMSC shall contact the Point of Contact at the Court when each update is published and schedule an installation time for the duration of the warranty.

PART 3 - EXECUTION

3.1 WARRANTY

- A. Where equipment, software, or a system is operating improperly, operating defectively, or malfunctions, it shall be repaired or replaced within forty-eight (48) hours of the initial call requesting service. An assessment of cost impact will be discussed if failure to completely resolve the problem within forty-eight (48) hours impedes, suspends, or otherwise negatively impacts use of the system.
- B. Provide a toll-free telephone number, which the Tenant can call to obtain warranty/technical assistance as described:
 - 1. This number shall be displayed on site in the following locations:
 - a. In an easily accessible "help" page on all control software control panels.
 - b. On all laminated operation instruction sheets.
 - c. In all operation and maintenance manuals
 - d. On label adhered or secured to all equipment racks, mobile equipment carts, and all other locations where substantial processing equipment is installed.
 - e. This number shall be available to the Tenant from 8:00 am to 8:00 pm, Eastern Time, Monday through Friday, Government Holidays excluded. Each phone call shall be answered within ten (10) rings either by a live attendant or by automated attendant that will, at a minimum, record the caller's name, telephone number, the item of equipment or software in question, and a brief description of the nature of the support required. A qualified technician with the means to address the nature of the inquiry shall respond to each call within two (2) hours of placement of the call.
- C. The Tenant shall be able to access the equipment racks after Final Acceptance without voiding the warranty.

3.2 SPARE PARTS

- A. Provide and turn over to Tenant at project closeout replacement fuses, lamps, and connectors in sufficient quantities to last one (1) year.

END OF SECTION – SUPPORT & WARRANTY

SECTION 01 79 00 – DEMONSTRATION AND TRAINING

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 4 - GENERAL

4.1 TRAINING

- A. A TMSC representative shall be on site for training and participate in it. The Owner requires that a knowledgeable person skilled in training presentation be scheduled to provide instruction.
- B. Where special skills are required for training, the TMSC shall provide additional training personnel as needed. This may include training specialist and/or factory personnel.

PART 5 - PRODUCTS

5.1 TRAINING MATERIALS

- A. Trainer shall have ten (10) copies of quick reference sheets ready for training participants to use during each training session. The materials are to be retained by each trainee.
- B. Training materials shall also include a sheet of paper detailing the equipment an attorney can bring into the courtroom for presentations, and where each individual connection is located. This is to include a list of laptop model numbers that are known to work and known to be problematic with the digital video systems, if any. This document is to be turned over to the Court at the time of training. This document shall be included in the training materials reviewed by the Court and Owner's Representative or Consultant.

PART 6 - EXECUTION

6.1 TRAINING PLANNING MANAGEMENT

- A. The TMSC shall provide *operating personnel* with adequate user training on the completed system so that they can perform standard duties in the project rooms per the government's expectations.
- B. The TMSC shall provide *staff technical support personnel* with adequate training on the operation and architecture of the systems so that they can perform first-line system trouble shooting and provide effective corrective action when systems are not functioning nominally.
- C. Operational training must be provided on-site in the room where the systems have been installed.
- D. Technical support training must be provided on-site in the room where the systems have been installed.

- E. A written training schedule plan must be submitted to the Owner’s Representative or Consultant and the Court in writing prior to training in order to be considered valid training. The Court must approve the training schedule. The participants shall not be expected to schedule training with less than 21 working days’ notice.
- F. Training shall not commence until after systems are completely operational and into final operation condition. The training must provide for proper usage of the entire system. The TMSC shall assume that operational personnel have no prior experience with the operation of the systems being installed.
- G. It shall be the responsibility of the TMSC’s trainer to quiz and interactively determine if the provided training is effective. The TMSC is responsible for effective training. Ineffective training will result in repeated training without additional compensation.
- H. It is strongly advised that the trainer advises trainees that they will be asked to demonstrate certain functions that were included in the training in order to evaluate retention levels.
- I. Training shall be organized by user’s position and not by system category. Technical terminology is to be avoided in the operational training sessions.
- J. Demonstrations of control panels where present shall be done by loading all control panel screens onto a laptop and displaying the laptop video through the evidence presentation system where present. Individual training shall also be provided at the actual control panel.

6.2 TRAINING SESSIONS

- A. TMSC training personnel shall adhere to appropriate business casual attire during training sessions. Business casual attire does not include any of the following: shorts of any kind, ripped clothing, jeans, T-shirts, any attire with writing/Logos other than the Trainer’s company logo, baseball caps, tennis shoes, or sandals. Trainers must exercise good personal hygiene and have a neat and orderly appearance.
- B. Training shall consist of two different types of training sessions and the described durations.
- C. User Training shall be held as follows:

Room / Area	Number of Users in each session	Number of sessions	Hours in each session	Total number of hours
Courtroom 1	8	1	2	2
Courtroom 3	8	1	2	2

- 1. User training shall be for those individuals who regularly use the systems but not necessarily service or maintain the systems. Training shall be non-technical with emphasis on common terms and user comfort with the systems. These "user" trainees shall receive training on subjects including but not necessarily limited to the following:
 - a. *Announce that will be a hands-on quiz at the end of the training.*
 - b. Thirty minutes (0.5 hours) minimum of simulated Court use with key users of the system working in their typical roles. The trainer shall simulate the functions of the judge and attorney during this practice.
 - c. Different types of users and show the locations of their respective stations and including different physical configurations or modes of operations.

- d. The video display locations and the types of materials which might be carried on each display. Demonstrate videoconferencing monitors vs. evidence presentation monitors and how H.239 content is displayed and utilized.
- e. A demonstration of the use of applicable equipment and system "tools" located at each user station.
- f. Answers to any questions posed by the trainees. Forward any comments about the system functionality to the Owner's Representative or Consultant for review.
- g. Provide a hands-on *quiz* to users where the trainer has individuals demonstrate some of the features they have been trained on.

D. Technical Training shall be held as follows:

Room / Area	Number of Users in each session	Number of sessions	Hours in each session	Total number of hours
Main Rack room	5	1	2	2
Courtroom 1	5	1	1	1

- 1. Technical training shall be hands-on training for select personal that will be determined by the Owner to maintain service and/or operate the systems from specific control stations. These technical trainees shall receive training on subjects including but not necessarily limited to the following:
 - a. An overview of the same topics covered in "User" training with an emphasis on how-to train the end users.
 - b. Demonstration of day-to-day function and operation of equipment/components including equipment settings and use of any applicable setup software.
 - c. A summary of major cable paths throughout the facility including conduit/raceway destinations and cable pull locations and access routes.
 - d. Thorough instruction on how to interpret and utilize the Project Record Drawings and Owner's Manuals (listed elsewhere herein).
 - e. Symptoms of common problems and their respective resolutions or any relevant system troubleshooting tactics.
 - f. Demonstrations on restarting, resetting, and determining source of component level failures.
 - g. Procedures to take prior to and after severe weather or power problems.
 - h. A summary of the maintenance/repair services provided under this contract and the BPA contract, contact names and phone numbers for repair.
 - i. Answers to any questions posed by trainees.
 - j. Evaluation by the trainer of how effective the training has been.

END OF SECTION – DEMONSTRATION & TRAINING

DIVISION 27 – COMMUNICATIONS

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SECTION 27 06 40 – SCHEDULES FOR AUDIO-VIDEO COMMUNICATIONS

SECTION 270640 - SCHEDULES FOR AUDIO-VIDEO COMMUNICATIONS

PART 1 - GENERAL

1.1 SCHEDULE A - EQUIPMENT LIST/INFORMATION

1.2 SCHEDULE B – B-1/BID FORM

1.3 SCHEDULE C – (NOT USED)

1.4 SCHEDULE D – DRAWINGS

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION – SCHEDULES FOR AUDIO-VIDEO COMMUNICATIONS

SECTION 27 11 00 – AUDIO-VIDEO EQUIPMENT ROOM FITTINGS

SECTION 271100 - AUDIO-VIDEO EQUIPMENT ROOM FITTINGS

PART 1 - GENERAL

1.1 COORDINATION

- A. Coordinate all equipment room installation with other trades using the same room. Where there is conflict, limited space, or missing infrastructure, bring the issue to the Owner's Representative immediately upon discovery.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS MATERIAL

- A. Miscellaneous materials including rack adapters, power supplies, cabinets and other accessory hardware required to make a complete and functional unit shall be provided as required even though not specifically indicated in Drawings or Specification. TMSC shall provide specialized cable, connectors, adapters, connecting accessories, terminal blocks, and related connector and termination hardware required by but not supplied with the equipment.

2.2 RACKS, CABINETS, AND HARDWARE

- A. Provide racks and cabinets as indicated on Drawings and equipment list. If the racks are not supplied through TMSC, verify that existing racks and cabinets provided by others are complete bringing any discrepancies to the attention of the Owner and Owner's Representative prior to beginning installation.
- B. TMSC shall supply necessary mounting hardware to install rack-mounted equipment. Hardware shall be products of the manufacturer of the rack system or approved by them for use with their product. Verify that equipment provided by others is supplied with necessary rack mounting rails or frames, both front and back, and provide other frames or rails where required. Provide supporting channels, mounting shelves and rails as recommended by equipment manufacturers. Equipment that provides unbalanced audio output connections that are used in the system design shall not touch metallic surfaces at any location providing for chassis ground isolation. Screws used to mount equipment and panels to the rack rails shall be the same throughout the installation consisting of a #10-32 thread truss head machine screw with Phillips cut. Screws shall include a polyethylene or nylon washer. Use length appropriate for equipment. #10-32 nuts shall have integral captive clip.
- C. TMSC shall provide fill panels to cover all open rack space. Fill panels may not be indicated in the equipment list but shall be the responsibility of the TMSC to account for and provide. Panels shall be 3 mm (1/8 inch) aluminum unless otherwise specified, sized as large as possible with a maximum dimension of 267 mm (10-1/2 inches). Panels shall be finished in baked enamel matching the rack frame exterior, unless otherwise specified.
- D. Ventilation Panels shall be provided. Panels shall be 89 mm (3-1/2 inches) high and, unless otherwise indicated, of full perforated or louvered design. Finish of ventilation panels shall match finish of fill panels.

- E. Side panels on racks, if provided, shall be field removable after all equipment is loaded to allow for side-access maintenance.

PART 3 - EXECUTION

3.1 RACKS, CABINETS, AND HARDWARE

- A. TMSC shall assemble and install racks and cabinets as directed by the manufacturer.
- B. TMSC shall install hardware in a secure manner, carefully aligning components using methods as directed by manufacturer. Screws shall be tightened to a torque just sufficient to secure equipment. Plastic washers included as part of the screw assembly shall not be deformed beyond their original diameter. All supplied equipment mounting holes that align with rack rails shall be used to secure equipment.
- C. TMSC shall securely mount fill panels in careful alignment using methods as directed by manufacturer. All supplied panel mounting holes that align with rack rail shall be used to secure panels.
- D. The TMSC shall provide a single power cable from the equipment rack to the Court provided UPS. The TMSC shall securely attach the power cable to the outlet, using a screw type of cable end, in order to minimize the risk of unauthorized or accidental removal of the power cord.

3.2 CONNECTION OF EQUIPMENT TO I/O PANEL

- A. In order to preserve signal integrity, Twisted Pair (TP) used in conjunction with Tx and Rx "baluns" for extension of audio, video, and/or control signals shall NOT be routed through the rear I/O panel.
- B. All other input and output connections at rear of equipment shall be brought out to a hinged I/O panel and terminated on a proper native connector as defined elsewhere, even if the connection has no function in the current design. Certain connectors may be excluded, but only if noted in the shop drawing submittal phase.
- C. The I/O panel(s) shall be hinged on either the right or left side and provided with wire management tied near the hinge point in order to allow access behind the panel for interior rack work. The panel(s) shall be installed in such a manner that no strapping, connector or cable needs to be removed for full access inside the rack.

3.3 SIGNAL SEPARATION

- A. Signals shall be separated and managed based on current InfoComm CTS-I Standards and Best Practices.

END OF SECTION – AUDIO-VIDEO EQUIPMENT ROOM FITTINGS

SECTION 27 15 43 – AUDIO-VIDEO FACEPLATES

SECTION 271543 - AUDIO-VIDEO FACEPLATES

PART 1 - GENERAL (NOT USED)

PART 2 - PRODUCTS

2.1 FACE PLATES

- A. Face Plates shall be as indicated on Drawings and as specified herein. Mounting screws shall be stainless steel with finish matching fitting faceplates and heads fitted to the mounting hole reliefs.
- B. Labels on plates are to be engraved or silkscreened to match previous projects. Unless indicated otherwise, engrave labels as indicated on Drawings in a sans serif proportional font in high contrasting colors. Labels shall be 8 mm (5/16 inches) H x 37 mm (1-7/16 inches) W with 4 mm (5/32 inches) character heights and 1 mm (1/32 inch) stroke width unless indicated otherwise by dimension or scale on Drawings. Where devices are shown by symbol only, the legend shall be a brief descriptor and number indicating function and connection channel if appropriate. Verify legends in Shop Drawings.
- C. Face Plates shall mount to standard electrical boxes unless indicated otherwise. Plates shall be for direct box mounting. Where the standard electrical plates in the area are metal, plates of the same manufacturer and style shall be used. Face Plates shall be provided as defined on each plate drawing detail. Note that Bras plates are to be submitted as sample prior to ordering custom versions. Where there are existing plates to remain, match finish and labeling style where suitable. Plastic Face Plates shall not be used.
- D. Fabricated large form assemblies shall include steel back box and plate. Back box shall be fabricated from galvanized cold rolled steel with spot welded corners and seams. Brackets and flanges shall be provided as required to mount box in wall construction as required. Boxes in recessed applications shall be 89 mm (3-1/2 inches) deep and 13 mm (1/2 inch) smaller than plate in height and width unless indicated otherwise. Boxes in exposed applications shall be 89 mm (3-1/2 inches) deep and the same size as the plate in height and width unless indicated otherwise. Plates shall be 3 mm (1/8 inches) clear anodized brushed aluminum sized as indicated with 3 mm (1/8 inches) fillet at corners.
- E. Face Plates and other termination locations, where shared, require coordination with the Data Communications services. In most cases, the TMSC will provide data connector punches, connectors, labels, and cable to the nearest termination location for continuation by others.

PART 3 - EXECUTION

3.1 FACE PLATES

- A. TMSC shall verify in field locations and sizes of all custom plates prior to submitting Shop Drawings. TMSC shall provide shop drawings of plate layouts and labeling as well as button types and wiring to Owner's Representative for review prior to fabrication/installation according to project schedule.

- B. Face plates shall be metal. Plates mounted below the floor carpet level shall be brushed aluminum with black engraved or silk screen lettering. Face plates at or above the floor carpet level shall be black with white engraved or silk screen lettering.
- C. Face Plate connectors shall be installed true and aligned as detailed. Holes shall be punched with dies sized for the fitting. Mounting hardware shall be torqued snugly with the nut secured in place with Loctite or similar compound.
- D. Surfaces shall be cleaned where labels are to be affixed and mount labels carefully aligned as detailed. Verify that adhesive adheres to surface finish and use alternative compounds where necessary.
- E. Face Plates and cables shall be provided and installed by the TMSC for these shared locations unless otherwise noted.

END OF SECTION – AUDIO-VIDEO FACEPLATES

SECTION 27 16 13 – AUDIO-VIDEO RELATED CABLE ASSEMBLIES

SECTION 271613 - AUDIO-VIDEO RELATED CABLE ASSEMBLIES

PART 1 - GENERAL

1.1 COORDINATION

- A. Coordinate all cable pathways and mounting with other trades. Coordinate termination locations. Bring conflicts and discrepancies to the attention of the Owner's Representative immediately upon discovery.

PART 2 - PRODUCTS

2.1 CABLE

- A. Cable shall be selected and applied in a manner defined by signal type, consistent with industry practice. Highest quality products shall be used with attention given to shielding characteristics, termination methods, resistive and complex impedance at operating frequencies and insulating material characteristics. Areas where cable is not enclosed in conduit or cable that passes through any space where open air handling is present (or any other area where construction codes, building codes, local codes, or the National Electrical Code dictate plenum cable) shall be provided with plenum cable for the entire length of the cable regardless of the length of the plenum area that the cable passes through. Plenum cable shall be quoted as part of the contract during bidding where required or anticipated and no additional compensation shall be provided for addition of this cable requirement after contract award except where field conditions have changed. Substitutions of air handling plenum rated cable shall exactly match the normally applied product and shall meet the standards of UL Standard #900 and the NEC (National Electrical Code) Article 820.
1. Video signal coaxial cables shall have #23 solid bare copper covered steel center conductor, polyethylene insulation, bare copper braid of at least 95 percent coverage and black PVC jacket unless color is otherwise noted. Plenum cable, Belden #88241 or equal.
 2. Low-Skew RGB Video TP cable shall have 4 twisted pair #24 solid copper conductors, unshielded, FEP conductor insulation with ripcord and a grey Flamarrest jacket. Plenum cable, Belden #7987P or equal.
 3. Digital Video STP cable shall have 4 twisted pair #26 solid copper conductors individually foil shielded with overall braided shield, FEP conductor insulation, and Flamarrest jacket. Plenum cable, Extron STP201P or equal.
 4. Digital Video 8G cables shall have 4 twisted pair #24 solid copper conductors for video data and data management with aluminum shield. All conductors have FEP conductor insulation and are contained within an overall blue low-smoke PVC jacket with ripcord. Plenum cable, Crestron DM-CBL-8G-P or equal. Where the equipment manufacturer offers a specific cable for their equipment, it shall be used.
 5. Audio signal cable shall have twisted pair #22 stranded tinned copper conductors, polyethylene conductor insulation, aluminum foil shield, #22 stranded tinned copper drain wire and chrome PVC jacket. Plenum cable, Belden #88761 or equal.
 6. Control cable shall be multi-core with #18 stranded tinned copper conductors, PVC conductor insulation, cable laid, gray PVC jacket. Plenum cable, Belden #83656 or equal.
 7. Data cable shall be Enhanced Category 6 bonded-pair cable, 4 twisted pair #23 solid copper, FEP conductor insulation with a yellow PVC jacket. Plenum cable, Belden #7852A or equal. conductors *or as approved by the equipment manufacturer.*

8. Serial Data cable shall be Category 6 non-bonded-pair cable, 4 twisted pair #23 solid copper conductors, 100 percent coverage overall Beldfoil shield with drain wire, FEP conductor insulation and polyester separator with a grey PVDF jacket with ripcord. Plenum cable, Belden #1352A or equal. Verify suitability of all cable specifications with the manufacturer of the equipment that the cable will be connected to prior to ordering. All cable provided shall be pre-approved by the manufacturer of the equipment to be connected.

B. The TMSC shall use cables with only braid or double wound cable shields. Foil shielded cable with conventional drain wire shall only be used for short "in-rack" connections.

2.2 CABLE MANAGEMENT

A. New cabling shall have proper cable management consisting of ties and lashing straps. Ties and lashing straps shall consist of black nylon with banners, screw fittings, mounting clips or other devices deemed appropriate for proper installation. T&B, Panduit, or equal. Lashings shall be releasable nylon type. T&B, Panduit, or equal. Fittings utilized to secure ties and straps shall be screw mounted. Neither adhesive backed devices nor hook-and-loop devices shall be used.

B. Plastic signal wiring duct shall be dark gray or black vinyl with snap-on cover. Slotted duct shall have deflecting side fingers with restricting flanges to retain wires. Panduit or equal. Solid duct shall have no side openings. Panduit or equal. Metal duct shall be an integrated assembly consisting of channel and cover with elbows, fittings, and boxes. Walker or equal.

C. All cables shall be labeled. Labels shall be applied to the center of cables less than 600 mm (2 feet) in length and to both ends of all cables of greater length within 100 mm (4 inches) of the termination point. Labels shall be laser printed on white tags and clear heat-shrink wrapped only. Labels shall describe function (i.e. Defense Table 2, MIC 1) to avoid documentation lookup. No other label type will be acceptable.

2.3 CONNECTORS

A. Connectors shall be selected and applied as defined by the manufacturer of the terminating equipment, in a manner consistent with cable and signal type and industry practice. Highest quality products shall be used with attention given to shielding characteristics, termination methods, resistive and complex impedance at operating frequencies and insulating material characteristics. Strain reliefs and cable clamps shall be sized for the cable.

1. BNC video signal connectors shall be crimp-on type with insertion barrel and ferrule, and gold flashed crimp-on center pin. Barrel shall provide full circumferential contact with the braid. Male fittings shall be sized to fit the cable. Kings Electronics Company Incorporated #2026-25-9 or equal. Female connectors shall be panel mount. Kings Electronics Company Incorporated #2022-29-9 or equal. Crimping and die tools shall be Kings Electronics Company Incorporated #KTH-1000 with appropriate dies inserts or equal. Crimping tool shall be ratchet style and not release fitting until sleeve is fully crimped.

2. All 3 pin (and 4, 5, or 6 pin) connectors shall have gold flashed bronze sleeves or gold flashed brass pins, glass filled thermoset plastic insert, cast metal shell and screw secured cable clamp and strain relief. Strain relief shall be sized to fit the cable. Connector shell shall be isolated from all contacts. Neutrik #NC3MCB (male) or #NC3FCB (female) or equal.

3. Female 6 mm (1/4 inch) phone connectors shall have a metal shell, plated bronze contact springs or plated brass plugs with solder lugs, and internal strain relief. Switchcraft, two (2) wire female #121, three (3) wire female #131 or equal.

4. Male 6 mm (1/4 inch) phone connectors shall have metal shell nickel-plated shafts and metal bodies, with metal spring strain relief. Canare, two (2) wire male #F-15, three (3) wire male #F-16 or equal.

5. RJ45 (Cat 5E non-shielded) modular connectors shall be crimp-on style for 4 twisted pair #24 solid copper conductors. L-com, plug: TDS4088C5 or equal; jack: MJSTLC5E-IV or equal.
6. RJ45 (Cat 6 non-shielded) modular connectors shall be crimp-on style for 4 twisted pair #23 solid copper conductors. L-com, plug: TDS4288C6 or equal; jack: MJSTLC6-IV or equal.
7. RJ45 (Cat 6 shielded) modular connectors shall be crimp-on style with metallic strain relief providing cable retention and 360-degree shielding contact for shielded 4 twisted pair #23 solid copper conductors. L-com, plug: TDS8PC6 or equal; jack: MJSTLC6-IV or equal.
8. RJ45 (8P8C STP) modular connectors shall be crimp-on style with metallic strain relief providing cable retention and 360-degree shielding contact for shielded 4 twisted pair #26 solid copper conductors. L-com, plug: Extron STP RJ-45 or equal.
9. RJ45 (8G) modular connectors shall be crimp-on style with metallic strain relief providing cable retention and 360-degree shielding contact for shielded 4 twisted pair #24 solid copper conductors. L-com, plug: Crestron DM-8G-CONN or equal.
10. Open wire terminating lugs shall be un-insulated, tinned copper, spade lug type sized to fit the wire. T & B or equal. Crimping tool shall make detent type crimp.
11. Bare wire device capture clips, such as on the rear of some loudspeakers, shall be supported and secured with a strain relief tie near the cable end. Where a loop is not provided on the back of equipment or loudspeakers for such termination, drill hole in device and attach "P" clamp for tie-down connection. No stress shall be applied on the clip connections when the device or cable is moved.

B. Custom connectors shall be submitted for approval prior to ordering or fabrication.

2.4 SYSTEM INTERCONNECTIONS

A. TMSC shall provide wire, cable, connectors, adapters, connecting accessories, terminal blocks, bulkhead connectors and related connector and termination hardware not supplied with the equipment. Cable and connectors shall be provided as required by equipment termination jacks and by industry standard application by signal type. Standard interconnection cables provided with equipment serving video, audio, or control functions shall not be used unless of a specialized nature. Fabricated interconnecting cables using products defined herein shall be used instead.

B. Tie-in all audio systems and control that are to remain to new video and video system control under this contract.

2.5 TERMINATIONS

A. Provide specialized terminating hardware as required.

PART 3 - EXECUTION

A. TMSC shall practice the highest industry standards in soldering, crimping, and other forms of installation and connection based on current InfoComm CTS-I Standards and Best Practices. Quality of Work shall be subject to approval by the Owner's Representative.

B. The existing metallic raceway, grounding, and permanent power for is for use under this contract. The TMSC shall coordinate with the Owner's Representative to obtain information about pathways, lengths, access, and locations of the provisions provided for Work to be installed under this Contract.

3.2 CABLE AND CONNECTORS

- A. Cable shall be carefully stored and handled to assure that it is not kinked, crushed, or abraded in any way. Coaxial cables shall not be bent to a radius of less than 3 inches; other cables shall not be bent to less than 1 inch radius. Interconnecting cables shall not be spliced. Cables shall not be exposed to moisture at any time during storage and, unless specifically designed for damp applications, shall not be installed where moisture is present. Cable designed for interior applications shall not be manipulated in temperatures lower than 40 deg F. Cable shall not be applied in ambient temperatures or moisture conditions above or below the rating of the manufacturer.
- B. Cables shall be carefully prepared and connectors installed as directed by the manufacturer. Proper stripping devices and crimping tools shall be used.
- C. No splices shall be installed in any cable less than 150 meters (500 feet) in length.
- D. When the length of a cable is indicated, the cable shall be cut to that length with less than 25 mm (1 inch) of error. Where cables are to be of the same length, variations in length shall be less than plus or minus 13 mm (1/2 inches). Lengths of cables are based on the length of the un-terminated signal conductors.
- E. Where chases are not provided in plenum rated spaces, the TMSC shall provide plenum grade cable and devices. For the purposes of bidding, The TMSC shall bid and supply plenum rated cables and devices at all locations above ceilings and in open vertical riser closets.

3.3 SYSTEM INTERCONNECTIONS

- A. Cables at each termination shall be labeled to identify the run involved corresponding to TMSC's line drawings of the system. Labels shall be carefully applied with legend fully visible.

3.4 TERMINATIONS

- A. Connectors shall be carefully fitted to mating devices on equipment to avoid damage to mating contacts, inserts, or bodies. Specialized terminations shall be made in a neat and secure manner suited to the service of the wire and as directed by the manufacturer.
- B. Equipment interconnections shall be made to connectors provided on the equipment. Where terminations are to be directly soldered, this shall be accomplished using rosin core solder by a person skilled in the practice. Connections to screw terminals shall be made using un-insulated type lugs only installed by indenture type pliers. Only at connections to barrel type setscrew terminals shall tinned bare wires be terminated. Terminations to punch block insulation displacement terminals shall be made using the proper tools and methods.
- C. Ground both ends of shielded 4-pair cables at all pass-throughs, plate termination jacks and equipment with a separate power ground. Where shielded 4-pair cables are terminated directly on equipment without a separately grounded power supply, the TMSC shall contact the manufacturer of the devices at both ends of the connection for guidance.
- D. Wire termination shall be made using tools designed for the purpose and approved by the manufacturer. In congested areas, the connection shall be covered with an insulating sleeve. In all cases where the manufacturer specifies terminations, those terminations shall be used.

3.5 CABLE MANAGEMENT

- A. Cable ties and lashing straps shall be sized appropriate for the use: 4 mm (0.15 inches) wide straps shall be used for Non-UTP bundles less than 13 mm (1/2 inch) in diameter, 5 mm (0.20 inches) wide for bundles 13 mm (1/2 inch) to 38 mm (1-1/2 inches) diameter, and 8 mm (0.30 inches) wide for larger bundles. Ties shall be installed snugly without deforming cable insulation. 4-pair data and video bundles shall only be bound with hook-and-loop straps. Ensure that at all points along the cable, the original shape of the cable is retained and not distorted.
- B. Cable duct shall be installed using hardware with large head surface to prevent pull-through. Locate duct so that cover can be easily removed. Cover of duct shall be un-spliced between junctions or ends except where length of run exceeds standard cover lengths. Assemble and install metal duct as directed by manufacturer. Mounting in cabinets and racks shall be accomplished without hardware projecting through panels or into duct. Mounting to walls shall be secure with hardware running into studs or masonry. Mounting via after set anchors to gypsum board shall be avoided.
- C. Cable routed in enclosures shall be direct, neat, and orderly with only enough slack as required for access to equipment or to facilitate movement. Cables shall be secured to prevent contact with hot surfaces or power conductors. Cable shall be carefully installed to assure that it is not kinked, crushed or abraded in any way. Coaxial cables shall not be bent to a radius of less than 75 mm (3 inches); other cables shall not be bent to less than 25 mm (1 inch) radius. Cables shall not be pulled by their connectors. Cables not in ducting shall be bundled and tied off in groups.
 - 1. TMSC shall drill holes through enclosure bulkheads, computer type flooring, and walls where required. Holes shall be drilled neatly and shall be accurately aligned in locations that are concealed within the enclosure or by the enclosure served. Plastic grommets shall be fitted to the circumference of holes to protect cable.
 - 2. The TMSC shall remove and replace all existing carpet where it is installed over header duct, cell ducts, and/or junction boxes. Remove sub-floor hatches, covers, and lids as needed to access cable pathways.
 - 3. Cable within equipment enclosures and cabinets running for more than 1 meter (40 inches) in parallel shall be routed in slotted cable duct. Other cable shall be secured in bundles using cables ties and straps in sizes appropriate for the use at approximately 305 mm (1 foot) intervals. A bundle, for the purposes of this Specification, refers to a condition where four or more wires or cables of the same signal class travel in parallel for a distance of greater than 305 mm (1 foot). Cables shall be divided as to signal type to maintain proper isolation. Bundles shall be supported independent of the connectors and branch runs at intervals of approximately 305 mm (1 foot).
- D. TMSC shall provide cable duct to conceal exposed cable runs between separately located equipment enclosures and between raceway terminations and enclosures. Cables installed on backboards shall be run in slotted cable duct, board pegs, or square harness loops in a neat and orderly manner according to signal class.
- E. Cables running exposed at building walls or chases shall be located as high as possible on the walls or shall be run at the ceiling and secured to prevent sagging or movement using nylon straps. Cable shall be carefully routed to assure that the cable is not kinked, crushed, or abraded in any way. Cable shall not be secured to piping or conduit and shall not come within 152 mm (6 inches) of piping carrying fluids at an elevated temperature. Cable shall be run parallel to surfaces but shall not be bent to less than a 76 mm (3 inch) radius or to cable manufacturer's bending Specification minimum, whichever is greater.
- F. Cables that are concealed and not in conduit shall be run in voids in walls or ceilings. Cable shall be supported at least every 1 meter (4 feet) and secured as required to prevent movement or excessive sagging. A small amount of slack shall be provided between supports to allow cable to move if accidentally contacted by objects penetrating wall or ceiling. All cable shall be carefully routed to assure that the cable is not kinked, crushed, or abraded in

any way. Cable shall not be secured to piping or conduit and shall not come within 152 mm (6 inches) of piping carrying fluids at an elevated temperature. The cable shall be run parallel to surfaces but shall not be bent to less than a 76 mm (3 inch) radius or to cable manufacturers bending Specification minimum, whichever is greater.

- G. Cable run within conduit shall be carefully pulled to assure that the cable is not kinked, crushed, or abraded in any way. The pulling tension shall not exceed the limits set by the manufacturer. When lubrication is used, it shall be verified that the compound will not deteriorate the cable jacket.
- H. Possible sources of crosstalk and EMI shall be avoided. Isolation shall be accomplished by separating conductors according to signal type and service. Input conductors shall be isolated from output conductors within groups and between groups to avoid feedback.

END OF SECTION – AUDIO-VIDEO RELATED CABLE ASSEMBLIES

SECTION 27 21 16 – DATA COMMUNICATIONS EQUIPMENT

SECTION 272116 - DATA COMMUNICATIONS EQUIPMENT

PART 1 - GENERAL

1.1 SCOPE

- A. Only Audio-Video related Data Communications equipment and related equipment are to be provided under this contract.
- B. Face Plates and other termination locations, where shared, require coordination with the Data Communications services. In most cases, the TMSC will provide data connector punches, connectors, labels, and cable to the nearest termination location for continuation by others.
- C. Face Plates and cables shall be provided and installed by the TMSC for these shared locations unless otherwise noted.

PART 2 - PRODUCTS

2.1 SWITCHES/ROUTERS

- A. Data:
 - 1. Provide fully functional data switches indicated for routing of data for LAN type communications interconnectivity.
 - 2. Provide VLAN functions to isolate the control system layer from the Tenant's secure data layer where requested.

PART 3 - EXECUTION

3.1 TESTING

- A. Test data switches with IT staff.

END OF SECTION – DATA COMMUNICATIONS EQUIPMENT

SECTION 27 25 23 – SOFTWARE

SECTION 272523 - SOFTWARE

PART 1 - GENERAL

1.1 INCLUSIONS

- A. All software required for operation of any and all hardware provided under this Contract shall be included under this Contract.
- B. All software becomes the property of the Owner.
- C. The government expects that the customized configuration code for this installation will be delivered to the government at the completion of the installation. The TMSC shall provide a labeled CD-ROM inserted into a plastic computer media sleeve containing software setup and configuration files for all configurable equipment including control system processors, software controlled screens, computer workstation controllers, software-configured signal switchers, mixers, DSP units, or other signal processors. OS code is not required. Provide all software settings/configurations files, compiled and un-compiled configuration files, and all custom display screens on CD-ROM, organized by system location in subdirectories. Provide all installation programs and drivers necessary to transfer the software settings or programs to each respective pieces of equipment. Complete documentation for the software shall be provided as well as the CD-ROM that shall be furnished in a binder at project closeout along with a printout of the contents of the CD-ROM.

PART 2 - PRODUCTS

2.1 REQUIREMENTS

- A. Products shall be provided in full compliance with license requirements.
- B. Products shall be provided on permanent media such as a CD-ROM. CD-ROM shall be professionally labeled.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The TMSC shall review all needed Data requirements with the IT staff immediately after Contract award.
- B. The TMSC shall acquire all necessary IT assistance such as IP addresses, LAN connections, and firewall ports, etc. at Contract award.
- C. Products shall be installed and configured on all devices necessary under this Contract even where coordination is required. Coordinate access and operating system with designated IT staff.

- D. Where PC applications must auto-start to operate the equipment properly, install in Operating system Start-Up group and/or configure for automatic start-up. Ensure that all users likely to log onto the PC have this feature functioning.
- E. Products shall be fully tested in coordination with staff.

END OF SECTION – SOFTWARE

SECTION 27 41 16 – INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

SECTION 274116 - INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.1 ALL SYSTEMS

- A. Provide and install all cables, wire harnesses, and pigtails as required for complete system audio, video, and control systems as described herein, even where future equipment is not purchased or provided. Provide cable runs terminated where possible that are required to or from equipment connected from rack, distribution point, and switcher and/or connector plates in order to provide for a quick installation of mobile, temporary, or rented equipment at any point in designed systems, even though one end of run may not be terminated.

1.2 ROUGH-IN

- A. Where equipment is indicated as future or identified as an option, all cables indicated for such device(s) shall be installed in a rough-in condition when listed in the Equipment Schedule (Schedule B). When listed in the equipment schedule cables shall be installed for equipment even if the option for the equipment portion is not awarded. Indicate rough-in cables on the Project Record Drawings. Terminate equipment where equipment is provided by others. Provide and install connection plates where rough-in cables terminate on plates even where equipment is not being provided. Provide control for all future equipment in the control panel pages and in control system.

1.3 CUTTING AND PATCHING

- A. The TMSC shall be responsible for cutting and patching where it has not been provided by others. Where Work trade site restrictions exist, the TMSC shall notify the Owner's Representative in writing within Ten (10) days of the initial site inspection of Work trade limitations observed. Where Non-Work trade conflicts exist and/or where the TMSC has not notified the Owner's Representative within the Ten (10) day period, the TMSC shall not be additionally compensated for any cutting and patching required to complete the Work and the cutting and patching shall become part of the scope of the contract.

PART 2 - PRODUCTS

2.1 EQUIPMENT LIST

- A. See Schedule A – Equipment List/Information & Schedule B – B-1 / Bid Form.

2.2 MISCELLANEOUS SUPPORTS

- A. The TMSC shall provide shims, brackets, hook-and-loop fasteners, and other supports as required for a stable and neat installation.

- B. The TMSC shall provide only hook-and-loop fasteners under all furniture and millwork areas where cable is attached to a movable device (i.e. microphones, touch panels, etc.). The hook-and-loop fasteners shall be mounted unobtrusively at one end of the fastener strip below the millwork or furniture and it is to allow for user adjustment of cable length without use of tools. Double-stick tape shall not be used anywhere in the project.
- C. Provide bolts for all wall and ceiling mounted equipment in excess of 11.3 kg (25 lbs.) to four (4) times dead weight or shear force, whichever is greater. Additionally, all ceiling mounted equipment in excess of 4.5 kg (10 lbs.) shall be provided with safety chain or cable to withstand five (5) times total equipment weight.

PART 3 - EXECUTION

3.1 AUDIO SYSTEMS

- A. Any installed master mixing system/DSP shall be configured, setup, and calibrated on-site with a DSP factory certified technician. The certified technician shall not permit another non-certified technician to make adjustments or perform final system alignment in their stead. The Owner's Representative or Consultant shall be the sole arbiter of the quality of the certification. The TMSC shall provide the name of the certified technician(s) that will be on-site during the submittals phase. Refer to Section 013300.
- B. An individual Installer on site shall be directly certified by the manufacturer of the digital signal processing and audio mixing equipment where it is firmware or software configurable. Support for these processors shall not only be provided during equipment assembly off site. All final room balancing and room equalization shall be performed directly and on-site by at least one certified technician. Where the contractor does not have a certified technician on staff, the contractor shall sub-contract a certified technician and provide them on site without additional cost to the project.
- C. Configure and program audio microphone/line automatic matrix mixers, amplifiers, speakers and other audio equipment in conjunction with integrated control systems within each project area defined for the following functions to comply with the overall design intent.
 - 1. Provide balanced line level audio feeds to conference rooms as indicated.
 - 2. Routing Configurations: shall be individual presets within the matrix mixer and/or within the integrated control system, as required. Configure and program according to the overall design of the system including but not necessarily limited to the following configuration presets:
 - a. The "Out of Room On/Off" function is a routing condition that shall be provided to stop audio and video from traveling outside the visible perimeter of the courtroom. When Out of Room is off, no feeds shall be routed to the designated locations. Those are:
 - 1) Audio plates in the conference rooms.
 - 2) Embedded audio in video plates in the conference rooms.
 - 3) Future streamer connections.
 - b. The bench conference microphone shall never be routed to these outputs although the white noise generator is to be routed when a bench conference is active.
 - c. Audio routing matrix presets shall include mix-minus speaker zones where indicated for nearfield speakers to exclude the nearby microphones to that loudspeaker.

- d. There are two (2) basic modes the active audio system shall have:
- 1) The "Normal" mode refers to how the system operates under normal circumstances with no active bench conference ("sidebar"). This is also the condition reestablished after a system reset and power on.
 - 2) The "Bench Conference"(sidebar) mode refers to how the system operates under circumstances when the judge chooses to hold a bench conference ("sidebar"). The native language of the Witness in the witness box is irrelevant in this mode so interpreter broadcast functions are inactive. The bench conference microphone is only routed to the Reporter's monitoring station, the ear set of the in-room interpreter and to the audio transcription channel designated by the Court. White noise is routed to the conference room connections, the outgoing ATC and VTC audio when active and to the speakers marked for masking noise. The bench conference mode is selected on the Court Reporter's monitoring station and the main control panels only.
- e. Language Interpretation shall be provided selectable to various modes according to the functions defined below:
- 1) A "Local Interpreter" shall be one that provides oral language interpretation to the Court. The Local Interpreter shall be situated within the courtroom itself, electrically connected to the courtroom with wired technology without the use of a telephone or data line. The following requirements shall be provided as part of this contract:
 - a) Where multiple locations for language interpretation connections are indicated, use automatic gating feature of audio mixer to "mute" unused inputs, in order to minimize risk of system noise (as shown on detail drawings). No physical "location" switching shall be acceptable. Neither staff nor interpreters shall be required to access the equipment rack area to pre-select the active interpreter location.
 - b) "Non-English Witness with Local Interpreter" mode refers to system operation with no active bench conference ("side bar") and when there is a witness in the witness box that is speaking in a language other than English. This mode shall be activated when the interpreter presses the "broadcast" or "public" button on the interpreter's control box.
 - 2) A "Remote Interpreter" shall be one that provides oral language interpretation to the Court. The Remote Interpreter shall be electrically connected to the courtroom via a telephone or other remote data line and is typically outside the courthouse building.
 - 3) "Remote Interpreter" function shall be available to use on any and all telephone or voice data phone lines provided in the system. The following requirements shall be provided as part of this contract:
 - a) "Non-English Witness with Remote Interpreter" mode: Refers to system operation with no active bench conference ("side bar") and when there is a witness in the witness box that is speaking in a language other than English. It is used when the language interpreter is not in the courtroom, but is connected to the courtroom over an audio conferencing hybrid or VoIP interface.
 - b) The interpreter may not have controls at the remote location, so it shall be necessary for one of the main courtroom control panels to select the "Remote Interpreter" mode to direct the audio conference system to the listed destinations and place the system in the "Broadcast" mode.
 - c) Where Biamp brand DSP equipment has been provided, additionally provide DTMF programming in system which enables "DCI" functionality.

- 4) Assistive Listening Channels:
 - a) The first channel (or "A" channel or left channel or left ear) of the ALS system shall be assigned only for English voice reinforcement.
 - b) The second channel (or "B" channel or right channel or right ear) of the ALS system shall be assigned only for interpretation into a language other than English. English should not be heard of the second channel at any time.
 - c) Provide programming to allow for the assignment of the local interpreter of any remote interpreter return audio to the second channel when interpreting into a non-English language. Any and all channels shall be assignable at any time in any combination.

- 5) Court Reporter monitoring and control panel settings:
 - a) The "Aux" level connections on the panel shall be calibrated to range from -56dBu to +6dBu.
 - b) The "Headphone" level connection on the panel shall be calibrated to 1.2mV measured at the 12 o'clock level adjustment position with a -30dBu pink noise source into a calibrated house system.
 - c) Both the aux level jacks and the headphone jacks are to be fed the full courtroom mix with the lectern and reporter area boundary microphones mixed in at an appropriate ratio in order to fill-in areas of the courtroom where there is inadequate microphone coverage otherwise. The DSP shall be configured with additional auto mixers to provide a higher effective NOM to avoid clipping and squelching.

3.2 VIDEO EVIDENCE PRESENTATION SYSTEMS

- A. Configure and program video router, extenders, distribution equipment, displays and other video equipment in conjunction with integrated control systems within each project area defined for the following functions to comply with the overall design intent
 1. Routing of signals shall be at 1920x1080 @60Hz.
 2. Provide HD-SDI video feeds to conference rooms as indicated.
 3. Video signals shall be routed through the router to evidence "publishing" zones as defined on floor plans adjacent to each display icon. Zone one (E1) shall not switch. All other zones (E2 and E3) shall be separately and individually switchable from the designated control locations and shall switch to black or to the logo/graphics generator as provided.
 4. Provide automatic video muting control mode selection as defined in 3.03 Control Systems.

3.3 CONTROL SYSTEMS

- A. Configure the control systems for the following functions to comply with the overall design intent.
 1. Provide and install integrated control system to interface with systems specified. Provide integrated control system capable of Ethernet, RS232, infrared and contact closure control. The control system shall be capable of connecting to network via standard Ethernet connections.
 2. Provide automatic external time and date reference for control system and command system to perform an update on each startup sequence.

3. The TMSC shall provide and install all network control cables, jacks, data switches, hubs, and termination equipment needed for a control network. The Owner or Tenant shall not provide services or devices to support the control network.
4. The TMSC shall provide all programming of control panel layouts. Programming shall include use of graphics and icons for ease of use by Owner. Each control station shall be programmed using logic driven customized code so that each panel works independently from the others and does not echo screen switches of the other(s) in use. Button functions shall track on multiple panels to always indicate the true status.
5. Provide control system programming on all PC's designated by the Court for a PC based control interface where specified. Install and test software and hardware interface as required. The PC(s) shall not be removed from the site.
6. Where PC based control interface is provided, configure Windows Start-up group to automatically load the control screen. Configure for each common user of the courtroom (as logged in under the individual's names) to ensure that the page will start under different user configurations.
7. Where control screens are provided for PCs, the screens shall be revised to say "Click" instead of "touch" or "press" where mouse control is used.
8. Provide power up sequencing as defined. Provide separate power-up sequences with separate start-up buttons for audio only and audio/video use. All power up functions listed below and timing sequences are approximate and shall be verified and reprogrammed as required for shortest timing possible. This will occur during project engineering and programming stages, based upon actual equipment used and according to Court preferences.

a. When the Audio System Power On sequence is selected:

- 1) An animated graphic shall be displayed showing the user that the system is in the process of starting.
- 2) Power relay 1 connected to selected audio equipment shall turn on immediately.
- 3) Only after the system has stabilized, the control system shall call the normal configuration audio matrix preset routing all nominal inputs and outputs.
- 4) The matrix settings shall retain the last used level settings and mute conditions and restore those to system. Note that these *may not* be the same settings to be called when the Master Reset is called.
- 5) Set correct time and day from external reference.
- 6) All microphone phantom power shall be turned on.
- 7) Only after the above functions complete shall the control surfaces become responsive to user input.

b. When the Audio/Video System Power On sequence is selected:

- 1) All functions of the audio-only mode shall either remain on or sequence on depending on the initial state. There is no function where only the video system is on.
- 2) After the audio system is stable, power relay 2 connected to selected video equipment shall turn on after 5 seconds.
- 3) Activate all monitors used for evidence display only and publish selected Courtroom graphic (typically the Court Seal) to all zones.
- 4) Only after the above functions complete shall the control surfaces become responsive to user input.

c. When the System Shutdown button is engaged:

- 1) A pop-up selection shall appear with three buttons. They shall be:
 - a) Cancel (returns to previous screen)

- b) Power off video system only
 - c) Power off audio and video system
- 2) If audio or audio and video was selected to power off, then the current audio matrix level and mute settings at the time of power off shall be retained and a "blank" matrix shall be called to prevent audio system popping and equipment damage.
 - 3) If audio or audio and video was selected to power off, power relay 1 shall turn off after 5 seconds.
 - 4) If audio or audio and video was selected to power off all microphone phantom power shall be turned off in order to extinguish the power lights on the microphone bases.
 - 5) If video only or audio and video is selected to power off, power relay 2 shall turn off after an additional 5 seconds.
 - 6) If audio and video was selected to power off, the control surfaces shall return to the main startup page to await a restart.
 - 7) If video only was selected to power off, the control surface shall return to the main audio page.
9. Provide additional power-on and power-off control on Bench Conference button plate #17. The button, when held down for 8 seconds, shall start the audio system (only) with the standard power-on sequence (not Master Reset) if the system is off. When the system is on, the same button shall turn all systems (audio and video) off with the standard power-off sequence after continuous closure for 8 seconds.
 10. Provide Master Reset function in code so that users can (at any time) reset the system to the last calibrated state as intended by the TMSC such that:
 - a. This reset state shall NOT be automatically initiated at each power-up sequence.
 - b. Each and every controlled device shall have action or actions that are called under this function.
 - c. Given the restrictions above, programming shall be provided as required for the shortest sequence timing possible.
 11. The following sequence actions shall commence when the Master Reset sequence is selected in the order listed:
 - a. Control surfaces input shall be locked until the reset sequence is 100 percent complete and the system is stable.
 - b. An animated bar graph or countdown timer showing the reset progress shall be displayed on the control screens. The bar graph or countdown timer shall remain displayed until after the system is 100 percent stable and functional.
 - c. All microphones shall be muted and phantom power switched off where employed.
 - d. The control system shall call a "blank" preset in the audio matrix in order to disconnect all inputs from routing to any output.
 - e. Audio conference hybrid shall be placed on-hook.
 - f. The bench conference mode shall be turned off.
 - g. All mixers shall be reset to the original stored, calibrated, and approved commissioned settings for all mixer functions.
 - h. Out of room function shall be turned off.
 - i. The transcription playback input shall be muted.
 - j. Videoconference system shall be placed on-hook.
 - k. Zoom all cameras to maximum wide and centered angle.
 - l. Presentation lectern items under control shall be set to "on", regardless of the original power state.
 - m. The evidence camera shall be powered on, the resolution selected to maximum stable resolution of the courtroom, base lamp turned off, and upper lamps turned on.
 - n. Provide command to set 16:9 ratio displays to 16:9 (full screen)

- o. All switches feeding evidence monitors in all zones shall be selected to have the Court logo displayed from the graphics generator provided.
 - p. The annotation system chalkboard mode (if enabled in software) shall be cleared and all other annotation erased.
 - q. The "Auto-publish" mode shall be set to "off".
 - r. The "Video-Follows-Audio" automatic mode shall be set to "on".
 - s. All microphones shall be un-muted, with the exception of the side bar microphone, lavalieres and all wireless microphones, which shall be muted.
 - t. The control system shall call the normal room configuration audio matrix preset routing all nominal inputs and outputs.
 - u. Control panels shall return to home page.
 - v. Only after the above functions complete shall the control surfaces become responsive to user input.
12. Provide LAN, contact closure or RS232 interface to low voltage room lighting of 4 scenes, where provided. Label scenes to Court's preference.
 13. Provide automatic system shutdown feature. System shall commence the shutdown feature each night of the week at 11:00 pm local time. The system shall automatically adjust for daylight savings time twice yearly.

B. Configure control systems for the following functions to comply with the audio system design intent.

1. All microphone and program audio outputs: Configure and program the control system and matrix mixer according to the overall design of the system. Provide individual level and mute controls for each input.
2. Wireless Mic On/Off: shall mute the Wireless Microphone inputs from the receiver at the matrix mixer when set to "off". When set to "On" the system shall open the Wireless Microphone inputs. The default state for this control on system start-up shall be "Off".
3. Judge Mic/Lav: shall mute the Judge's desktop microphone input and open the Judge's lavalier input when set to "Lav". When set to "Mic" the system shall open the Judge's microphone input and mute the Judge's lavalier input. The default state for this control on system start-up shall be the microphone. At no time should both microphones be on simultaneously.
4. Witness Mic/Lav: shall mute the Witness' desktop microphone input and open the Witness' lavalier input when set to "Lav". When set to "Mic" the system shall open the Witness' microphone input and mute the Witness' lavalier input. The default state for this control on system start-up shall be the microphone. At no time should both microphones be on simultaneously.
5. Out of Room On/Off function: shall be provided to stop audio from traveling outside the visible perimeter of the courtroom. When Out of Room is off, no feeds shall be routed to the designated locations. Those are:
 - a. Audio plates in the conference rooms.
 - b. Embedded audio in video plates in the conference rooms.
 - c. Future streamer connections.
6. Microphone base mute programming: where local mute buttons have been provided, program local control buttons on all boundary type of microphones for push-and-hold to mute mode. Program all attorney and attorney table microphones, lectern and witness microphones for push-and-hold to mute mode. Program all remaining all remaining microphones for push-on/push off toggle.
7. Overall Gain: shall be readily accessible control and shall control the gain of all loudspeaker outputs simultaneously. Control of noise masking output level shall be provided separately. Where direct outputs have been provided to drive powered loudspeakers, direct outputs shall also track with overall room gain and with room mute functions.

8. Individual Gain: shall be provided for all input channels. These shall control the gains of each of the individual inputs separately. Output zones should be pre-calibrated and fixed.
9. Bench Conference: Provide gain control to bench conference system so that when activated, control system can adjust gain of noise masking generator. Bench conference masking gain control shall be programmed as a steady ramp up and down with no more than 3dB resolution.
10. Telephone Interface: Provide programming to control system. Provide remote control of telephonic interface functions, including but not limited to caller volume control, mute, speed dial, call setup, number entry clear, flash, and calibrate. Provide dialer for each phone line provided.
11. Telephone Interface IR/Broadcast Display: When any phone dialer screen is active, show "Private" and "Public" switch on screens for all lines for use with remote interpreter mode. Default setting for incoming sound should be set to "Public" to route to the PA system.
12. Telephone Hybrid Incoming Calls: Provide interface setup control on control panels so that the system accepts incoming calls but does not ring audibly within the courtroom. Provide control programming such that the bench area control screens flash an indicator that an incoming call is being made. The visual alert on the control screen(s) shall graphically cover 90 percent of the display area and flash in contrasting images to alert Court staff as to call status.
13. Evidence Publishing: Audio used as evidence shall follow zone routing for video monitors. Only when no evidence monitor displays are muted shall evidence audio be routed to public devices such as channel 1 of the infrared system, any loudspeakers, or be allowed to be recorded on any transcription device.
14. Court Reporter Panel: A separate multi-gang control panel at the Reporter location designated as Plate 17 shall not be eliminated by the control system software based control panel(s), although control functions may be duplicated onto software based control panels(s). Provide equipment and wiring necessary to implement functions indicated on plate drawings. Provide required power supplies and logic controls. All momentary buttons, with the exception of microphone mutes, shall interface with and act as inputs to integrated control system if provided. All lamps shall extinguish when system power is turned off. Rotary switches shall be provided where indicated and shall control inputs to integrated control system or directly to route signals.

C. Configure control systems for the following functions to comply with the video evidence presentation system design intent.

1. Muting: Provide individual video muting controls for each evidence monitor zone higher than zone one.
2. Display Ratios: Provide programming so that each source selection calls a 16:9 ratio display on all 16:9 displays.
3. Automatic Video Publishing Mute Function: Provide selection switch on main control panels to enable or disable the "Auto Publish" mode. Mode switch should not be on the top menu. The function is intended to set a system operating mode that allows automatic publishing to the courtroom monitors in zone two and/or zone 3 of a video evidence source. Court staff shall be able to enable and disable the "Auto Publish" feature at any time; however, the design intent of this switch shall be used to set a typical condition for a particular hearing, for a day or for an entire trial. *The mode switch is NOT changed routinely.* The selected mode is not intended to be varied each time video evidence is presented or changed during the course of testimony presentation.
 - a. When "Auto Publish" mode is *disabled*, any change of source (such as changing from PC presentation to evidence camera presentation) shall automatically black out (or display logo according to Court preference) to all monitor zones higher than zone one. i.e., the evidence is not automatically published. Audio from any source that has audio (only the evidence camera has no potential audio) shall be muted to all destinations unless *all* monitor zones are published.
 - b. When "Auto Publish" mode is *enabled*, changes of sources selected shall instantly switch all monitor zones to the new source without judge or court staff intervention. Any selection of evidence on any courtroom control panel shall immediately publish to all zones. Audio associated with the evidence

shall also be published (unmuted) at this time. In this mode neither the Judge nor court staff shall be required to intervene and publish to monitor zones higher than zone one.

- c. At any time, any control panel (not under the control of an attorney), shall be able to toggle publish or un-publish separately on zones higher than zone one. An "all-publish" button to publish to zones 2 and 3 simultaneously shall not be provided. Label each display toggle button for each zone such as "Witness Publish On/[Off]" and "Jury/Gallery Publish On/[Off]".
- d. The "Auto Publish" mode shall NOT change when the system power is turned on or off. The last setting used shall remain after a power startup.
- e. The "Auto Publish" mode shall be set to "off" (disabled) during a Master Reset.

4. Attorney Control Panel: Provide and install control panel at Presentation lectern. Control panel shall be used to switch lectern sources, control functions and control audio of equipment in the lectern.

5. Graphics Generator: Provide the following video pages on the graphics generator to be controlled under the master system under selected conditions:

- a. Court Graphics: Provide and select to all zones the Court Seal or other logo of the Court's choice to display on all zones during system reset and after system power on.
- b. Black: Provide a full field black image.
- c. Unpublished Source: Provide and select a Court Seal or other logo of Court's choice to all zones higher than zone 1 for use when evidence presentation system is not to display an evidence source (unpublished). Choice of graphic, or black, shall be established by the Court and Owner's Representative during control panel commissioning.
- d. Bench Conference Graphics: Provide and select to display on all zones a full screen graphic that reads "Private Bench Conference is Active" during bench conference mode only.

D. Configure control systems for the following functions to comply with the overall videoconferencing system design intent.

1. Remote Control: Provide remote control to videoconferencing systems, including but not limited to complete menu access and control, speed dial, call setup, and camera movement where indicated.

2. Pan/Tilt/Zoom/Focus: Provide and install Pan/Tilt/Zoom/Focus cameras at the locations indicated on the drawings. The cameras shall be calibrated and set for automatic white balance and automatic iris control with manual override. Cameras to be installed and calibrated for each individual camera shot location as indicated on the drawings.

3. Video-Follow-Audio:

- a. Video Follow: Where cameras have been provided for coverage of activity in areas that have microphones connected to the DSP, provide programmed video-follow-audio switching and pan/tilt/zoom/focus control over all coverage cameras, as well as camera input source codec switcher control. Set camera presets to frame shots of active microphone(s) based on gating data from DSP.
- b. Automatic Mode: Provide an Audio-Follows-Video automatic "On" and "Off" button so that at any time the Court can select and operate cameras manually. Master Reset command (not power sequence) shall set the Automatic mode to "on".
- c. Switching Delay: Set switching delay to two (2) seconds before cameras respond to gated-on microphone. Once camera is selected, the camera shall not be de-selected for a period of three (3) seconds. No camera shall pan, zoom, tilt, or focus while "on air" and must only adjust when another camera is selected. When no microphone input is active, or when it is necessary to move the lectern/attorney area camera, the control processor shall select a wide shot of the bench area.
- d. Presets: Store presets according to user preferences. Each wired microphone shall have a preset associated with it. After portable VTC cart is placed by the Judge or Court Representative, provide removable on-carpet "marks" under 3 of the 4 caster positions to that the camera presets remain

consistent. Camera positions shall be fully configurable for each preset from the main control panel for end user modification as desired.

- e. Preset Camera Locations: The control processor shall configure preset camera locations, including pan, tilt, zoom, and focus positions according to the input locations so identified. Stored locations and positions shall be non-volatile and survive full power outages for up to 30 days. Coordinate exact camera positions (shot framing) with the Judge or their designate. Program integrated control system to select input on codec or switcher for camera to cover active microphone (video follow audio). Main control panels shall always be able to adjust shots as needed after the camera has been selected. Initial camera presets shall be as follows:
 - f. Judge/Witness Camera (on portable VTC cart)
 - 1) Wide shot of bench
 - 2) Close up of Witness (camera shot to cover an area of approximately 1 meter [48 inches] wide).
 - 3) Close up of Judge (camera shot to cover an area of approximately 1 meter [48 inches] wide).
 - g. Lectern/Attorney table Camera (on wall behind witness)
 - 1) Medium close up of lectern/presentation cart area (camera shot to cover an area of approximately 3 meters [10 feet] wide).
 - 2) Coverage shot of Government Attorney Table.
 - 3) Coverage shot of Defense Attorney Table.

E. Configure control system in each room defined for the following functions to comply with the special feature systems design intent.

- 1. Argument Timer: Provide argument countdown timer in control program. Provide on-screen control settings for timer system on/off, start/pause/stop and timer preset countdowns for yellow and green screen indicators. The yellow screen indicator and green screen indicator shall each be provided with separate time settings up to 59 minutes and 59 seconds (59:59) individually settable. Timers shall default at reset to predetermined times for yellow and green which shall be established by the sitting Judge during system installation at the site. When the timer system is started, the green indicator shall activate and remain lit for the period of time set by the timer for the green light. The active countdown time shall be displayed on the display along with the green indicator. When the preset time expires, the yellow indicator shall light and the green indicator shall be extinguished. The yellow indicator shall then remain lit for the period of time set by the time for the yellow indicator. The active countdown time shall be displayed. At the end of the yellow indicator time cycle, the yellow indicator shall be extinguished and the red indicator shall light and remain lit until the system is either restarted or turned off. The red indicator activation shall also flash the control screen with a high contract image and cover at least 50 percent of the entire screen area.

F. Acceptance of the Control System(s) shall be based on two criteria:

- 1. Substantial Completion: Providing inspections of control systems DO NOT necessarily define the system as Substantially Complete. Inspection Reports provided by the Owner's Representative or Consultant are provided to establish the functionality of the system at the time of inspection. Accordingly, a list of items provided on any inspection cannot be considered final and all-inclusive as subsequent inspections of the system prior to acceptance may uncover new problems that previously did not exist or have changed in nature. Programming revisions by the TMS required to meet Substantial Completion shall be provided in any quantity needed until the Systems reach Substantial Completion. Multiple inspections may also be required, either by the Owner's Representative or Consultant or the Government, to determine if the Control Systems' functions meet the Substantial Completion's required functionality.

2. Meeting Final Acceptance: The number of programming revision iterations required by the TMSC is indicated in the Schedule B-1. The revisions defined are only those that involve issues that prevent Final Acceptance. The TMSC shall provide additional iterations for the Final Acceptance items of programming for individual processors and each control panel device in a given room based on the quantity of revisions identified in Schedule B-1. Programming revisions cannot be expected to occur prior to the 1st site inspection and until after the TMSC has brought the control system on-line in the project room thereby making the system testable. Also, the Final Acceptance programming revisions cannot be expected to occur until the Control System is Substantially Complete. These revisions shall be provided prior to project close-out at no additional cost to the government up to the maximum number of iterations indicated.

END OF SECTION – INTEGRATED AUDIO-VIDEO SYSTEMS AND EQUIPMENT

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SCHEDULE A – EQUIPMENT LIST/INFORMATION

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BID FORM SCHEDULE B-1

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DRAWINGS

SCHEDULE D

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