

Contractors were selected to provide services in the areas of System Composition, Installation, Programming, Maintenance, and Training/Support. It contains example tasks that are typical of each service area along with the typical qualifications of the contracted suppliers.

Service	Example Tasks	Certification
<b>System Composition</b>		
Needs Assessment	Design, prepare, and/or conduct surveys, focus groups, or other instruments to identify future needs or current satisfaction with audiovisual technology; collect results and prepare reports and charts.	No certifications in this service line exist. In lieu thereof, the bidder should present a record of their experience providing this type of service, provide samples of reports, etc.
Equipment Lifecycle Upgrade Assessment	Assist customers with developing a planned, sustainable approach to technology renewal; review and assess the installed audiovisual equipment base and make recommendations for renewal or upgrade; identify gaps between current equipment and preferred levels; prepare reports, quotes, plans, and related documents.	CTS or CTS-D certification preferred
Develop Prototypes and Demonstration Systems	Select and integrate equipment and components; construct and install prototypes or demonstration systems for clients to try and evaluate.	CTS-D certification preferred
Systems and Solutions Development	Identify options and alternatives for audiovisual systems to be installed in classrooms, seminar rooms, lecture halls, conference rooms, and other locations typical of educational environments; develop integration solutions that ensure system components work together smoothly and reliably; apply InfoComm or comparable standards acceptable to the client.	CTS-D certification Required
<b>Installation</b>		
Cabling	Assess cabling needs; provide, run, and terminate coax, twisted-pair, and fiber cables following applicable industry standards; core-drill and trough-lay cabling; install cabling in walls, ceilings, floors, indoor or outdoor; connect cables to equipment, wall plates, connection junction boxes, couplers, receivers, transmitters, or other termination points; test cabling runs for continuity, signal strength, and interference; remediate and repair cabling problems; adhere to local, state, or federal code and regulations, plus any customer-specific cabling requirements.	CTS-I preferred.
System Installation	Prepare and conduct audiovisual system installation or renewal work; follow client-specific standards, conventions, and procedures as well as industry best practices; adhere to local, state, or federal code and regulations as applicable to the installation work.	CTS-I certification required for at least one installer; for jobs that use more than one installer, the lead must be CTS-I certified.
System and Equipment Testing	Configure the audiovisual system to capture events, actions, and signals needed to produce ad hoc, pre-scheduled, or on-demand reports and queries. Examples include trends, source usage, exceptions, etc. from data supplied from audiovisual control systems.	CTS certification required
Equipment Configuration	Prepare or follow a defined testing plan; conduct various types of tests such as system acceptance, equipment function verification, and general system condition testing; ensure the system performs within applicable standards defined in statements of work or in other sources; verify projector alignment, color calibration, volume levels, clarity, and other parameters are within normal limits and meet client expectations; verify that work is done neatly and professionally; identify degree of compliance with regulations such as American with Disabilities Act	CTS certification required
<b>Programming</b>		
Control System Programming, Configuration	Develop layouts and functional designs for control system interfaces (touch panels, button systems, etc.) interfaces based on contractor suggestions or from client specifications; using manufacturer-provided toolsets, write programs or configure system functions and features to specifications. Setup control system processors and devices for network-based monitoring and control using tools such as Extron Global Viewer or Crestron FusionRV.	Certification and training can vary by manufacturer system (Crestron, Extron, AMX, etc.). Bidders shall identify the manufacturer lines they can support and present their staff credentials accordingly.
Report and Query Creation from Control System Data		Since the reporting and query capabilities vary by manufacturer system (Crestron, Extron, AMX, etc.). Bidders shall identify the manufacturer lines they can support and present their staff credentials accordingly. Experience producing reports, and samples of previous work, in lieu of certification.
<b>Service</b>		
Repairs and Maintenance	Provide on-site troubleshooting, repair, and maintenance services for audiovisual systems and components; put in place temporary solutions or place loaner equipment per customer agreements; replace failed components; check, repair, or replace cabling;	CTS-I required
Advanced Troubleshooting and Diagnostics for Hard-to-Diagnose Issues	Provide on-site and/or remote audiovisual system or component troubleshooting for problems that are above and beyond those commonly encountered such as intermittent, recurring, complex failures, malfunctions, or unacceptable performance; coordinate and communicate with manufacturers or industry experts; conduct research using forums, manufacturer knowledge bases, or other resources; identify root causes; log and examine data and recordings; use necessary equipment, software, and other tools; present solution paths and resolution options.	CTS-I certification required
Preventative Maintenance, Cleaning, Equipment Servicing	Develop or follow a preventative maintenance schedule for audiovisual system and components; check, clean, service, test, or replace parts or components at lifecycle or on condition; arrange and coordinate any work that falls within warranty terms and conditions; check connections, terminations, and performance; ensure system is adjusted to specifications; prepare reports of work completed per client requirements.	CTS certification preferred; experience may be substituted

Training and Support		
Training and Resource Development	Develop, plan, and conduct end-user training sessions for audiovisual system users such as faculty and students; develop in-depth training for technical support staff; prepare training and reference resources in print or streaming video formats such as guides, quick tips, manuals, quick-reference cards, how-to instructions, etc.	Previous related experience and samples of previous materials, resources, documents, etc.
End-User Support	Provide telephone, email, Web-based, and/or chat support for end users of audiovisual systems such as faculty and students; respond using client-developed support materials, solutions, FAQ answers, troubleshooting resources, and other materials; track client contacts from initial request through resolution; look up and cross-reference reported problems against known issues in particular venues; contact and engage other support channels, as necessary, for second and third level support, particularly on-site ground support; provide reports and metrics to demonstrate call solution; administer post-contact	HDI certification preferred; CTS-I certification preferred
Product and System Training for Support Staff	Provide in-depth training for the customer's technical and support staff on audiovisual products and systems; topic examples include installation techniques, troubleshooting, configuration, system maintenance, diagnostics and testing procedures, etc.	CTS-I certification required
Emerging Technology and Product Analyses	Find new and emerging technology to be introduced into classrooms, learning spaces, conference facilities, and other customer venues; provide insight into teaching and learning trends and present research to show how the technology options can facilitate positive outcomes.	CTS-D certification preferred