



January 3, 2020

Mr. Jonathan Joy  
Facility & Construction Services  
18 North County Street, 9th Floor  
Waukegan, Illinois 60085

RE: Architectural Services Proposal Renovation of Administrative Tower Floor 10

Dear Jon:

HDR is pleased to submit this proposal for architectural services relating to the 10th Floor Remodeling of the Lake County Administrative Tower 18 N. County Street, Waukegan, IL.

<b>Project Description</b>
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The project involves architectural-engineering services for design development, contract documents, and construction of critical infrastructure improvements to the 10th floors and adjacent areas of the Lake County Administrative Tower. The roof system above the 10th floor/penthouse as well as the cooling tower are beyond useful life and require replacement. Elevator cabs and controllers are in need of modernization, and the 10th floor interior HVAC system has begun to fail. We also understand that Lake County Television has forgone broadcast system improvements (including migration to an all-digital platform) pending execution of a major capital project that would address the above mentioned needs. This design seeks to develop solutions to the above facility requirements as well as implement operational improvements as identified by Lake County through the design process.

The 10th floor of the tower is approximately 8,600 square feet and serves as home to the Lake County Board/Forest Preserve, Lake County TV Studios, and (currently) some limited proceedings for the 19th Judicial Circuit Court. It is anticipated that the above improvements will displace 10th floor operations during the construction period. Continued operation of Lake County TV, will be accomplished through temporary offsite accommodations. Formal presentations to Boards or Committees are not anticipated as part of this proposal, but regular updates will be provided to Lake County Construction Management. HDR will meet with Lake County Construction Management and its designated stakeholders to review deliverables and update development of the design. The Stakeholders may include: board members, staff, and other County consultants.

Based on the approved plan developed in Schematic Design, the remodeling project will include replacement of air handling units serving the 10th floor, HVAC, fire protection systems, electrical power, lighting, plumbing and communication/technology infrastructure for the floor. A new roof system and cooling tower will also be designed as part of this effort. Elevator cabs finishes will be upgraded as part of

the renovation. The base scope of the renovation also assumes “like-for-like” replacement of window openings (no alteration to the size or configuration of the exterior windows or exterior walls in the base scope), though a design cost has been provided for modification of these openings should this be requested by Lake County. The project will also include design services for renovation of approximately 8,600 square feet of space interior to the 10th floor.

HDR’s proposal is based our proposal with the assumption that Lake County will procure the project as a traditional design-bid-build lump sum Contract. Current estimates indicate the base project construction cost in the range of \$6.6 million pending the selection of finishes and systems (including additional base scope).

Additional Base scope items are included at the end of this proposal listed as Base Scope Exhibit 1, 2 and 3.

- Replacement of the Administrative Tower Cooling Towers and Renovation of the Penthouse and Roof Replacement
- Full Elevator Modernization
- LCTV Upgrades

Optional Scope Item not currently listed in Base Scope includes:

- Alterations to the exterior wall and larger window openings or curtainwall for 10<sup>th</sup> floor.

<b>Base Scope of Services</b>
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**A. Design Development Phase (8-12 weeks)**

1. HDR will complete a preliminary Design Development package to include floor plans, ceiling plans and preliminary engineering schematics.
2. HDR will analyze the impact of egress and code compliance for the renovation. HDR will meet with the authority having jurisdiction (AHJ) for preliminary code review discussions.
3. HDR will prepare a cost opinion.
4. **Deliverables:**
  - Architectural Plans (Floor, Ceiling, Fire Code),
  - Exterior Envelope related to window replacement (Elevations/Sections),
  - MEP/FP system schematics/diagrams and major equipment/device/fixture locations.
  - Interior Finish Plans and preliminary Interior Elevations
  - Outline Specifications
  - Supporting Design Data and Cost Opinion

**B. Construction Documents (12-16 weeks)**

1. Based on approved design development documents presented in the prior stage, HDR will complete a set of architectural, electrical, mechanical plans including relevant schedules, diagrams, details and

specifications which will be used for permitting, bidding, and construction purposes. (Civil/Site are not anticipated and not included). Structural documentation will be limited to details relating to architectural upgrades at windows, stair modifications and the cooling tower.

2. Construction Documents will address conditions that are either represented on the as-built drawings or observable for the areas affected by the proposed scope of work described in the Project Description.
  - Selective Demolition Plan
  - Floor Plan and Ceiling Plans
  - Interior Finishes Schedule/Notes.
  - Exterior Elevations and Wall Sections related to window replacement.
  - Mechanical-HVAC and Plumbing Plans
  - Electrical-Power, Lighting Plans and related Low Voltage Devices
  - Technical Specifications for the above items.
  - Applicable Details, Schedules, Diagrams and Notes for the above items.
  - Front end documents developed and provided by the County.

### **C. Engineering Scope**

1. Design of modifications to existing mechanical systems including:
  - a. Fire protection systems:
    - 1) Sprinkler zone designations (zone numbering, zone occupancy classifications and sprinkler types to be installed in each zone).
    - 2) Specification of the fire protection system to serve the TV control room.
    - 3) Specifications for contractor furnished hydraulically calculated piping installation drawings. Piping locations and sprinkler heads will not be shown on our documents.
  - b. Plumbing systems:
    - 1) Domestic hot and cold water for the new restrooms.
    - 2) Sanitary drainage and venting for the new restrooms.
  - c. HVAC systems:
    - 1) Heating, ventilating and air conditioning.
    - 2) Direct digital control (DDC) system.
    - 3) Supplemental cooling for TV control room.
    - 4) Modifications to the AHU serving this floor.
2. Design of modifications to existing electrical systems including:
  - a. Power distribution and grounding.

- b. Interior lighting and controls.
  - c. Cable tray and/or horizontal raceway to allow routing of low voltage systems wiring.
  - d. Fire alarm.
3. Design of technology systems including:
- a. Voice and Data Structured Cabling System: Design of an EIA/TIA-compliant structured cabling system, designed under the direction of a BICSI-registered RCDD. Services include:
    - 1) Design of service entrance including:
      - a) Requirements for extension of riser and associated cable infrastructure from demarcation in service entrance facility to tenant space.
    - 2) Design of telecommunications equipment rooms and computer room including:
      - a) Design and layout of all equipment and telecommunications rooms including:
        - (1) Equipment racks and cabinets.
        - (2) Wire management.
        - (3) Internal room pathways.
        - (4) Termination equipment.
      - b) Coordination of electrical and mechanical requirements with other Engineers.
    - 3) Design of backbone cabling system including:
      - a) Optical fiber and copper cabling interconnection of telecommunications rooms for voice and data systems.
      - b) Design of pathways including risers and conduit.
    - 4) Design of horizontal cabling system including:
      - a) Cabling from the telecommunications rooms to the voice, data and television information outlets.
      - b) Determination of pathway sizes, locations and routing.
      - c) Design of termination requirements of the cabling in the telecommunications rooms and at the information outlet.
      - d) Design of information outlet configuration, location and labeling requirements.
    - 5) Design of telecommunications related grounding system to meet the requirements of EIA/TIA 607.
    - 6) Wi-Fi Systems:
      - a) Provide a preliminary wireless layout based on theoretical computer modeling of the space. Provide cabling design based on the computer modeling.

- b) Recommend adjustments to the wireless infrastructure based on the results of a RF survey provided by others.
4. Prepare applicable structural, mechanical, electrical and technology specifications.
  5. Prepare contract documents that are suitable for pricing and construction purposes.

• **Deliverables:**

- Progress set includes Drawings and Specifications related to the Project Scope.
- Construction Document Progress Review Set
- Pre-Final Construction Document Review Set
- Final Construction Document Set Issued for Bidding, Permit and Construction. Permit sets will be signed and sealed.
- HDR will respond and make modifications to address reasonable Permit Review Comments.
- Cost Opinion

**D. Bid/Construction Contract Administration (CCA) (50 weeks)**

1. **Duration of Services:** Bidding is anticipated as 8 weeks and a total construction period is anticipated as 50 weeks from execution date of the Construction Agreement.
2. **General:** Tracking of Construction Contract Administration Documents: HDR will provide CCA services, including RFI Responses, Submittal Review and Site Visits. Based on past projects, it is assumed that HDR will not review Contractor Pay Requests.
3. **Site Visits:** HDR will provide bi-weekly site visits as described below. A site visit shall be considered any of the following: attendance at progress meetings, construction observation, substantial completion review, system start up or final walk through. HDR will review progress of work and conformance with construction documents. HDR will submit observation report to Client and Contractor. Weekly progress meetings will be attended by conference call.
4. **Change Order Evaluation:** HDR will review and make recommendations regarding Contractor Change Order proposals deriving from potential errors or omissions. Review of proposals due to Owner generated or requested changes in scope or unforeseen conditions may be considered as additional services.
5. **Substantial Completion:** Assist the County and the Contractor to in preparing the Contractor punch list verify all items are resolved. Any site visits required or requested to this end shall be levied against the total number of site visits noted above.
6. **Record Documents:** HDR will provide BIM files for the Contractor to prepare as-built/record documents.

### Assumptions

1. Documents prepared by the Architect/Engineer will be prepared based upon reasonable assumptions derived from existing information provided by the Owner and from observations of the existing conditions by the Engineer without the benefit of intrusive investigation and analysis prohibited by expense and inconvenience to the Owner.
2. Unforeseen conditions, systems requiring repair or conditions that are not code compliant discovered during the progress of the project may require changes in the project, resulting in additional cost, fee and delay.
3. Reproducible construction documents will be delivered in electronic format.
4. The County will retain a 3<sup>rd</sup> party to develop plans for demountable interior partitions and moveable furnishings, if required.
5. The County will retain a 3<sup>rd</sup> party for Commissioning, if required.
6. This project will be designed for sound sustainable concepts, but is not intended for USGBC nor LEED registration.
7. Existing base building systems are code compliant and have adequate capacity to support the project requirements.

### Additional Services

If Lake County wishes to add the following services in the project scope. They are currently not included in this scope. HDR can provide these services on an hourly basis or upon an agreed lump sum.

1. Architectural and Engineering services beyond the services described in 'Scope of Services'.
2. Project Changes resulting from:
  - Change in scope or revisions.
  - Inconsistent approvals or instructions previously given.
  - Enactment or revisions of codes, laws or regulations subsequent to the preparation of such documents.
3. Upgrade to any existing system (building structural members, life safety or MEP) related to code or related to the renovation work. Structural documentation will be limited to details relating to architectural upgrades at windows, stair modifications and the cooling tower. Full building analysis or upgrade to building support members is not included.
4. Sustainability / LEED Consulting - Energy Modeling / LCCA Consulting and Analysis
5. System Commissioning
6. Furniture/Fixtures/Equipment - Bidding and Procurement Documents

**Schedule**

HDR shall develop a mutually agreeable schedule based on the following for the base scope (excludes Owner Review Time). Total project not to exceed 100 weeks. Additional time may be needed if scope includes options for cooling tower replacement, roofing replacement, elevator modernization or expanded window openings are added to the scope.

Schematic Design Verification (SD)	4 weeks
Design Phase (DD)	12 weeks
Construction Documents	16 weeks
Bid/Permit	8 weeks
Construction	42 weeks

**Compensation**

HDR proposes the following design fees for professional services as a Lump Sum contract including expenses.

	<b>10<sup>th</sup> Floor Renovation</b>	<b>Service Element #1 Cooling Towers &amp; Re-Roofing</b>	<b>Service Element #2 Elevator Modernization</b>	<b>Service Element #3 AV Services &amp; Design</b>	<b>Total</b>
Schematic Design (SD)		\$15,000.00	\$15,000.00	\$3,000.00	<b>\$33,000.00</b>
Design Development (DD)	\$78,000.00	\$40,000.00	\$30,000.00	\$15,000.00	<b>\$163,000.00</b>
Construction Documents (CD)	\$86,000.00	\$50,000.00	\$35,000.00	\$15,000.00	<b>\$186,000.00</b>
Bidding & Permit	\$10,000.00	\$10,000.00	\$5,000.00	\$2,000.00	<b>\$27,000.00</b>
Construction Contract Administration (CA)	\$86,000.00	\$45,000.00	\$30,000.00		<b>\$161,000.00</b>
<b>Base Scope Total</b>	<b>\$260,000.00</b>	<b>\$160,000.00</b>	<b>\$115,000.00</b>	<b>\$35,000.00</b>	<b>\$570,000.00</b>

The fee for optional scope for expanded window openings would be \$110,000.00 in addition to the above.

Expenses for printing and delivering stamped permit sets to the Authorities Having Jurisdiction is \$1,000.00 in addition to the fees above.

HDR will invoice Lake County monthly for Lump Sum professional services for work completed each month based on the percentage complete of the agreed phase amounts. It is understood that the County will print its own review sets and bidding sets.

Should there be a change in scope or project budget, the fee would be adjusted in writing to reflect the change in work. Our fee is based on timely decisions and advancement of the project phases. All reimbursable expenses are included in the fee above. HDR will invoice for Lump Sum professional services for work completed each month based on the percentage complete of the agreed phase amounts.

<b>Terms and Conditions</b>
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The scope and terms of this proposal letter shall be incorporated into the Agreement for Professional Services.

The scope of this proposal including all descriptions, assumption, scope of work, client responsibilities and exclusions shall be incorporated into Lake County Standard Agreement for Professional Services. Thank you for the continued opportunity to serve Lake County.

Proposal is valid for 60 days.

Sincerely,

**HDR Architecture, Inc.**



Mr. Joseph Cliggott

*Vice President*

**Scope of Service Elements**

**SERVICE EXHIBIT #1 – REPLACE COOLING TOWERS AND RE-ROOFING OF ADMINISTRATIVE TOWER**

Scope will involve design of replacement of cooling towers, structural support and replacement of roofing at the Administrative Tower. Preliminary estimates indicate scope of work may exceed \$1.8 million for this scope of work. HDR will provide design development, construction documents and bidding / construction services as described above in *Base Scope of Services*.

**SERVICE EXHIBIT #2 – MODERNIZATION OF ELEVATORS**

The base scope of services includes upgrade of finishes in the elevator cab. This scope assumes modernization of 4 elevators in the Administrative Tower. Preliminary estimates indicate scope of work may exceed \$1.2 million for this scope of work. Fee below is estimated. Mechanical, Electrical Fire-Protection scope cannot be determined until progress to design development. MEP/FP scope is covered by an allowance.

A. Survey and Report

1. Conduct a detailed survey of all of the existing accessible equipment to determine its condition, remaining service life, and potential for reuse. The survey will include, but not be limited to, the following:
  - a. Machine Room: Hoist machine, controller, power conversion unit, governor.
  - b. Hoistway: Guide rails/brackets, car sling and platform, counterweight, guide shoes, safety, buffers, car door operating equipment, sheaves, hoistway door operating equipment, cables, wiring, switches, sills and supports.
  - c. Corridor: Pushbuttons, signal fixtures, hoistway entrances.
  - d. Car Enclosure: Pushbuttons, signal fixtures, emergency lighting, ventilation, normal lighting, car door protection, interior finishes.
  - e. Other: Fire/life safety provisions, architectural finishes, security features, monitoring panels.
2. Provide the Client with a written report documenting the survey results. Report will include:
  - a. Existing equipment disposition.
    - (1) *Recommendations on the type of equipment needed for modernization.*
    - (2) *A summary of the present equipment which has potential for reuse.*
  - b. Modernization options.
  - c. Current prevailing Elevator Code requirements, non-complying building conditions, and handicapped accessibility requirements relative to the equipment surveyed.
  - d. Related work required by other trades.
  - e. Opinion of probable equipment costs for Division 14 of the elevator modernization recommended.
3. Meet with the Client to discuss the report recommendations.

B. Construction Documents

1. Prepare Division documents including:
  - a. Request for Quotation
  - b. Instruction to Providers
  - c. Quotation Form
  - d. Supplemental Conditions
  - e. Summary of Work
  - f. Alternates
  - g. Project Procedures
  - h. Submittals
  - i. Material and Handling
  - j. Final Contract Compliance Review
  - k. Maintenance
2. Prepare a detailed, performance-based equipment specification for the appropriate Division 14 section(s) in Consultant standard PDF electronic files. Specification will include:
  - a. Specific performance criteria relating to quality of equipment, performance times, ride quality, noise and vibration.
  - b. Established level of quality.
  - c. Compliance with accessibility standards.
  - d. Compliance with prevailing Codes directly related to the equipment application selected.
3. Prepare an after installation continuing Preventive Maintenance Agreement in the standard Consultant format.
4. Configure Construction Documents to encourage competitive bidding.

**SERVICE EXHIBIT #3 – AV SERVICES FOR LAKE COUNTY TV and AV SYSTEMS DESIGN**

Lake County desires HDR to include AVI Systems at the AV Consultant and Designer for the 10<sup>th</sup> floor renovation project and Lake County TV Systems. The following scope of work (below) was developed between Lake County and AVI Systems and will be referenced in as Option #3. HDR understands this meets the expectations for AV system design. The AVI Systems scope of work is for design phase services and responding the bidder questions during the bidding process. The AVI scope (and HDR scope) does not include Commissioning of the System, nor Construction Administration Services for this Option.

**ENGINEERING SCOPE OF WORK**

**GENERAL-** Lake County is in the process of developing schematic designs on the 10<sup>th</sup> floor of their office located at 20 N County Street in Waukegan Illinois. They are working with the architectural firm HDR. AVI worked with Lake County in 2018 and provided a development report related to the renovation of the boardroom and associated broadcast production system. This report generated a rough order magnitude price range and general scope for this project. The project is now on track and Lake County has asked AVI to be part of the design team under HDR architects and to manage all audio visual and broadcast TV technology designs. AVI understands that this will be a publicly bid project and that plans, and specifications will need to be developed to allow this method of procurement. Lake County has acknowledged that AVI can be an active bidder on this project once it is released to the public. AVI understands the relocation of LCTV will be an integral decision early in the design of this project and AVI will work Lake County to select location most beneficial to the long term disposition of LCTV within the building.

Areas of design for this project are outlined below and referenced by the HDR Architects schematic design document dated 10-3-2018 on page 19.

1. **Boardroom AV Level 3**
2. **LCTV Control room AV Level 3**
3. **Green Room AV Level 3**
4. **Assembly Room AV Level 2**
5. **Chairman Office AV Level 1**
6. **(3)-4 Person Meeting rooms AV Level 1**
7. **(3) Signage Displays**

The design effort if Lake County stakeholders are active participants in the exchange of information is estimated to be 90 days. This time frame can change if required design criterion is delayed.

Architectural-Engineering Services Proposal for the Renovation of Administrative Tower Floor 10  
January 3, 2020

**ENGINEERING SERVICES TO BE PROVIDED**

AVI Systems will work with the Customer and any related design professionals selected (architects, engineers, etc.) to provide initial and ongoing audiovisual systems design and engineering support for this project.

AVI Systems strongly encourages the fostering of a truly open, cooperative "design team" approach with team members bringing unique, valuable insight from their special perspective to the team.

The goal of these services is as follows:

- Understand clearly the current and future AV needs of the Customer.
- Provide accurate construction documents for implementation of the AV related infrastructure.
- Provide an overall AV plan that will allow for the procurement of appropriate AV equipment and installation, complete with system diagrams, ensuring correct integration of the equipment.
- Compile the data gathered during the engineering process into an Integration Agreement for a turnkey installation of all AV systems, with the added value of a seamless integration process.

The Design Process can be modified at any time per the direction of the Customer – otherwise it shall follow this general outline:

**AV Program Review / Verification** – The AVI Systems design team will obtain from the Customer operational specifications desired of the audio and video systems within the designated facility. Additional facility information will be required including the building's electrical, structural infrastructure, as well as the physical sizes of each room or space. Using compatible AutoCAD drawings, the integration of desired AV systems within available spaces will be visualized. During this initial design phase various equipment options, with an eye toward future expandability while maintaining current value, will be suggested.

**Budget Verification** – The AVI Systems design team will create a project scope compiled from the information received from the Customer. AVI Systems will generate cost estimates for the various systems as outlined above and compare these budget estimates to any initial AV budgets. This process will reaffirm the exact direction that engineering resources should target in the next phase.

**Initial Design** – During this phase, AVI Systems will begin applying the above-defined systems in detail to the various areas of the Customer facility. Further communications between the Customer and the other design team members, as various options are explored will be necessary at this time. Typical deliverables from this phase would include the following drawings and/or documents.

- Preliminary AV Floor Plan and Elevations detailing locations of all AV devices
- Preliminary Projection Geometry detailing projection/screen locations with viewing angles, mounting details, and etc.
- Preliminary AV Technical Power, Conduit Plans, and Riser Drawings
- Preliminary AV Video Flow
- Preliminary AV Audio Flow
- Preliminary AV Control Flow
- Preliminary AV Rack Layouts
- Preliminary Equipment Lists
- Preliminary Budget Estimates

Submittal of the above for the various rooms will be a progressive process, with most critical drawings being submitted first, allowing construction details to be available on an as needed basis. During this process, modifications to the preliminary plans due a variety of considerations - architectural/aesthetic considerations, budget reviews etc. Electronic exchange of AutoCAD drawings between all the "team members" will facilitate quick exchange of updates. Specific design "freeze dates" will be established with all parties to facilitate timely submittals and help manage Customer's end cost. All changes are to be reviewed and approved by all parties. The design effort for Lake County will include (3) schematic design revisions to preliminary plans. Schematic design revisions requested beyond this will trigger a labor change order to capture the desired changes.

**Final Systems Design** – The changes made in the previous phase to the preliminary designs will be updated and regenerated as "final" construction documents. AVI Systems will typically work off of background drawings from an architect under contract to the Customer, entering AV specific data and returning these back to the architect (or other Customer retained design professional) for integration into final construction documents.

Architectural-Engineering Services Proposal for the Renovation of Administrative Tower Floor 10  
January 3, 2020

Project Specifications Document – The final audiovisual systems designs will be compiled into a written project technical specifications document with equipment lists and any pricing not already included in the quote for a complete integration. This document will include the following system diagrams and documents.

- AV Floor Plan and Elevations detailing locations of AV devices
- AV Video Flow
- AV Audio Flow
- AV Control Flow
- Equipment lists as specified
- System infrastructure requirements including cable and termination specifications
- System operational and post operational requirements
- Project Scope of Work
- Project costs

AVI understands that this will be a publicly bid project and that plans, and specifications will need to be developed to allow this method of procurement. Lake County has acknowledged that AVI can be an active bidder on this project once it is released to the public

<b>Optional Scope of Service</b>
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**OPTIONAL SERVICE #1 – EXPANDED WINDOW OPENING OR REPLACING EXTERIOR WITH CURTAINWALL**

The base scope of service includes replacement windows of the same size in existing openings. Lake County may consider enlarging existing window openings or replacing the exterior limestone with curtainwall to improve natural light, thermal performance and aesthetics. Exploratory work may be needed to confirm existing conditions. HDR’s MEP consultant will provide documentation to relocate heating and cooling distribution that interferes with the new window locations. Current estimates project the cost of such work ranging from \$1 million to \$1.6 million. HDR will provide design development, construction documents and bidding / construction services as described above in *Base Scope of Services*.

	<b>Optional Service #1 Window Opening Enlargement</b>
Schematic Design (SD)	n/a
Design Development (DD)	\$31,000.00
Construction Documents (CD)	\$36,000.00
Bidding & Permit	\$7,000.00
Construction Contract Administration (CA)	\$36,000.00
<b>TOTAL</b>	<b>\$110,000.00</b>



# PRO DEVELOPMENT REPORT

Lake County Government

November 12, 2019

**Submitted by**  
**Thomas Burns**

Senior Account Manager

**d** 630-477-2354 **m** 847-217-1033

717 West Algonquin Rd.

Arlington Hts. IL 60005



## PROJECT SUMMARY

### **AVI Systems**

717 West Algonquin Rd.  
Arlington Hts. IL 60005

### **Attn: Jonathan Joy**

Facilities & Construction Services  
Jjoy@lakecountyil.gov

### **RE: Lake County Government 10<sup>th</sup> Floor Renovation and AV Technology Upgrades**

AVI Systems is pleased to present you with the following audiovisual PRO Development Overview for your project. This overview includes the following deliverables:

- Project Development Summary
- Introduction to AVI
- Summary of Systems
- Use Case
- Why PRO Development
- AVI Process
- Functional Scope of Work
- Potential Concerns
- Preliminary Budget
- Project timeline with Milestones

We would like to thank you again for choosing AVI Systems as your partner for this important project.

If you have any questions or comments, please do not hesitate to contact me at your earliest convenience.

Respectfully,

### **Thomas Burns**

Senior Account Manager  
d 630-477-2354 m 847-217-1033  
Thomas.burns@avisystems.com



## ABOUT AVI SYSTEMS

Most organizations have one principal requirement for their AV technology: that it frees them to do their job. That's why the best system is one that opens the lines of communication, and then gets out of the way. It's also why AVI designs our systems to be easy to integrate, intuitive to operate, and simple to maintain. This is our definition of Communication Liberation, and it's reflected in the incredible diversity of AV solutions that we provide for business, commercial, educational and government clients across America.

Founded in 1974, AVI Systems has 17 offices throughout the Midwest, Central South West and on the West Coast, giving us a regional presence and national reach.

Our success owes in great part to having the most highly trained, capable and motivated team of experts in the AV industry. As a 100% employee-owned company, we are able to attract and retain the most qualified people by treating every individual as a crucial member of AVI; providing them the opportunity and encouragement to grow in their careers; and empowering our employee-owners with stock ownership via 401(k) matching, dividends and profit sharing.

The people of AVI not only share in the success of our company. We share a conviction that technology should liberate, not impede. And working together, we provide integrated audiovisual solutions that remove barriers instead of creating them, freeing our customers to seize opportunity – and imagine new possibilities.



## AVI PRO DEVELOPMENT TEAM

### Thomas Burns, CTS

Senior Account Manager

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### Steve Johnson CTS-I

Sales Engineer

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### Ben Howarth CAPM CTS-D

Technical Services Manager

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717 West Algonquin Rd. Arlington Hts. IL 60005

### Denny McDougald

Regional Manager

**d** 630-477-2355 **m** 630-267-0705

717 West Algonquin Rd. Arlington Hts. IL 60005



## SUMMARY OF EXISTING SYSTEMS

Lake County is planning to renovate their 10<sup>th</sup> floor office and main boardroom space in 2019. The county's main boardroom has camera technology that allow for the meetings to be recorded and then streamed and played to the cable providers. The county has asked AVI to provide preliminary pricing ROM (Rough Order of Magnitude) for the redesign and re-deployment of the AV technology subsystems utilized in the spaces. Additionally, the county has asked for a ROM if the TV control room were to be located in the basement of the building with the ability to manage production recordings from that location vs staying in the 10<sup>th</sup> floor. The ROM reports have been developed and delivered to Lake County for their review and assessment. The 10<sup>th</sup> floor consists of two areas of technology re-design as outlined below.

- Boardroom AV Level 3
- LCTV Control Room AV Level 3
- Green Room AV Level 3
- Assembly Room AV Level 2
- Chairman Office AV Level 1
- (3) 4 Person Meeting Rooms AV Level 1
- (3) Signage Displays

Each of these spaces contain the following core functions with associated existing equipment

### **TV Control Room**

5-Panasonic PTZ High Definition cameras and a Ross production switcher and graphics generator are the core components that allow Lake county to produce and deliver meeting content to their constituents. These components are planned to remain. Though the system has some core components that are HD, the system is functioning in a standard definition mode. All core HD components will be preserved as part of the upgrade.

Currently, meetings are recorded and streamed. Recordings are made on a variety of tape based recorders and streaming is done through the Swagit platform. It is suggested that the tape recordings be replaced with digital media recorders and that the Swagit system will remain until the vendor can provide an HD encoding platform.

The current system has most of the signals passing through analog patch panels. This is antiquated, and it is recommended that these all be removed in favor of a new HD video routing platform. The new platform will offer users a simple method of directing video and audio signals to the appropriate destinations within the production environment.

The current system utilizes analog terminal equipment such as distribution amplifiers, frame synchronizers, monitors and waveform monitors. These components will not be compatible when the new system is converted to an all HD production work flow. It will be recommended to replace all of these components in the new design.



There are a variety of computers within the existing system that are used for various functions such as, Biamp audio control, Leightronix server programming, traffic graphics computer and access to Swagit. All of these computers will be needed in the re-design however Lake County may want to upgrade them as part of the project. This is a cost center not captured in the (ROM)

The production room currently controls audio two ways. There is an analog audio mixer and a computer that controls the audio channels of the council chamber microphones. It is unclear how the county is currently functioning with these overlapping platforms but it is recommended to upgrade the analog mixer to one that processes multi-channel audio digitally and would work in conjunction with the existing Biamp audio processing platform that governs the AV system sound processing. This combination of these mixing platforms will offer the County a powerful new production capability with the digital mixer and the ease of use control of the Biamp software.

Leightronix standard definition video servers are utilized to play back video to the cable providers Comcast and AT&T. One unit is the primary and one is the backup. It will be recommended to upgrade these units to high definition. It may be possible to keep one of the SD servers as a back up to the primary HD server although having two of the same would provide the easiest way to switch over in the event of failure.

In the TV control room there are 9 racks of equipment. The upgrade to HD should represent a chance to shrink the racks down by 2 or 4. Should the TV control room move on the 10<sup>th</sup> floor Lake County should consider the lead time to getting AT&T and Comcast in to move their encoders and cabling to the new TV control room. Typically, this is not work that the AV integrator is allowed to perform and it can take many months to coordinate.

It is the opinion of AVI Systems that the TV production system should stay on the 10<sup>th</sup> floor near the council chamber. There are a number of audio, video, and control components that link between the TV production system and the council chamber AV system. In addition, the servicing of the systems can be achieved efficiently and in a more economical manner when the components running together are in the same temperature controlled environment. Lastly, the operators of the system having quick access to the council chamber will assist in troubleshooting technology issues and provide assistance to staff.

### **County Boardroom**



The Boardroom (Council Chamber) has undergone a recent audio upgrade however the video system is overdue for an upgrade to digital.

The video processing for connected laptops within the room is via analog VGA through an analog router. It is recommended to upgrade to HDMI digital and a new router will manage various connections points within the modular furniture space. Other new sources to the system would include an HD document camera, and two channels of BYOD wireless presentation portals so that users with phones and tablets can connect to the new projection system.

Currently there is one analog lamp based projector. In the new design it will be recommended to upgrade to having two projectors that would be digital Laser projectors. These would project on opposite walls of the boardroom to optimize viewing angles of seated participants. Additionally, small 19" displays will be suggested for use at the Dais by the board members to view presentation content.

The current system utilizes gooseneck microphones that are in fixed positions. It has been suggested that the new room design layout will have a conventional Dais and open modular seating in the middle area of the room. If this is to be the case, wire management will be an issue and the design team will have to explore microphone options ranging from ceiling mounted to wireless mic technology. At this time the ROM is priced with a multi-channel wireless package consisting of 24 microphones. The audio is currently processed by a Biamp unit. This unit will stay in the re-design plan.

Audio only recordings are not done at the moment, but it is suggested to add this feature so that meetings can be archived or used as on demand content.

The voice lift in the room consists of point source speakers located on four wall points. The ceiling height of the room is such that this speaker technology is outdated and inefficient. It will be suggested that two directional line arrays be designed in the system so that audio can be directionally focused to the audience for maximum level and voice intelligibility.

The AV control system is updated at the time of the audio upgrade. With the advancements in processing power and the new complexity of the digital AV upgrade it will be suggested to upgrade the core control processor and all of the user touch panels. The ROM has a total of four user panels on plan however this could change in the design proceedings.



### **Assembly Room**

This room currently functions with a control system that operates local presentations seen on multiple displays from multiple sources. Lighting and shades are also controlled. The room has a sound system for voice lift and audio conferencing. The design criterion has not been fully defined by facilities so AVI will provide essential design service time to meet with stakeholders to identify their functional needs and provide a design and use case that they can agree with.

### **Green Room**

The Green room will only consist of a single display that will receive a LCTV broadcast feed and have the ability to plug in a laptop at a wall receptacle. The display will be controlled by a small wall mounted touch panel.

### **4 Person meeting rooms**

These meeting rooms will consist of a single display that will have the ability to plug in a laptop at a wall or table receptacle. The display will be power on and off when signals are sensed.

### **Chairman office**

This room will consist of a single display that will have the ability to plug in a laptop at a wall or table receptacle. The display will be power on and off when signals are sensed.

### **Signage Displays**

These 3 displays will be located in the 10<sup>th</sup> floor corridors and display dynamic messaging with video and RSS feeds such as weather and traffic. The software platform driving the content will be web based and either on premise or the cloud.



## USE CASE

AVI Systems met with Lake County stake holders and discussed their existing systems in the TV control room and the boardroom. The systems have evolved over several years since they were initially installed. Some of the rework in the TV control room was done by Lake County over the years and in 2015 AVI Systems installed a new camera, graphics and switching system. The Boardroom audio was recently upgraded by IVCI.

### **TV Control Room Overall Concerns**

- Core components such as the Ross switch, Ross graphics and the Panasonic cameras are HD. The system is currently configured and wired for SD. Lake County would like to upgrade everything to HD and take advantage of higher resolution most of their system has.
- The System records to tape based recorders. System upgrades would record to digital media
- The current cable playback system only records standard definition. System upgrades would allow for high definition recording and standard definition or high definition playback.
- The current audio mixer is analog. System upgrades would provide a digital audio mixer and allow for multi-channel transport of audio from the Boardroom to the TV control room over a single CAT cable.
- The current system uses an extensive amount of manual patch panels for analog video and audio signals many of which are un-used. The system upgrade would provide a large HD digital video router with an analog audio level. This system upgrade will allow users to more easily router signals in the plant through the use of tactile panels and a web interface.
- The current components reside in 8 to 9 racks in the control room. The system upgrade will reduce the equipment footprint to 4-5 rack and reduce power consumption.

### **Boardroom Overall Concerns**

- This re-design of this space is calling for modular seating in the center section of the room. Additionally the ceiling height is projected to be 15-20 ft. The engineering challenge is that hardwiring microphones and laptops will be difficult to wire manage and conceal. The system upgrade will likely look to deploy wireless microphones in the modular seating spaces and strategically place floor cores to allow some users to plug laptops into floor devices for transport to the AV switching and room projectors.
- The PTZ cameras in the space will be retained. Special care will be needed to remove, store, and redeploy once the room construction is finished.
- Due to the ceiling height in the space it will be challenging to use speakers in the ceiling for voice lift. The system upgrade will likely look to deploy line array speakers that would mount on the wall surfaces and allow for sound to be electronically steered to the audience.

AVI performed a high-level evaluation of the audio-visual systems at Lake County, using design documentation submitted to Lake County by previous audio visual integration firms.



Based on that documentation and the initial meeting, AVI has provided two (2) high level budget proposals that will allow Lake County to prepare for the technology upgrade they are planning for and to achieve the usability and functionality Lake County stake holders want to achieve for their end users. As the County prepares for the 10<sup>th</sup> floor renovation to progress to the construction stage AVI is providing the second step to our proven process which is a Pro Design Agreement. This agreement will look to put a finalized design together that will allow Lake County to put the design to formal bid through their selected general contractor.

### **Budget Proposal Scenario 1:**

Upgrade the boardroom with new AV technology and keep the TV control room/headend on the 10<sup>th</sup> floor. AVI believe this is the better scenario as the cost to deploy is less, it allows TV operators to access the boardroom space more quickly and easily, and the system would be more serviceable. Estimated Equipment and Implementation \$428,277.00

### **Budget Proposal Scenario 2:**

Upgrade the boardroom with new AV technology and move the TV control room/headend to an undetermined room in the basement of the building. Estimated Equipment and Implementation \$499,940.00

The above budget scenarios do not include the following spaces

- Assembly Room AV Level 2
- Chairman Office AV Level 1
- (3) 4 Person Meeting Rooms AV Level 1
- (3) Signage Displays

## **WHY IS PRODEVELOPMENT IMPORTANT?**

Anything is possible with a solid foundation of information and a clear understanding of objectives. And this can be done without signing an expensive, long-term contract. We call it PRO Development.

Imagine custom building a home without a plan. In the end you'll have a home, but only after unnecessary expenditures, wasted time and numerous renovations. With minimal upfront cost, PRO Development ensures you get everything you want from your project vs. settling for a poorly planned solution that doesn't fit your needs.

PRO Development defines what happens in a room before even thinking about AV. It begins with due diligence and discovery, followed by project scope and budget. Once we've worked together to determine the desired use of the room – then we begin planning how the room



should be set up. System recommendations, estimates, timelines, support plans and technology roadmaps come next.

PRO Development might be the smartest money you can spend, because even if you decide not to go with AVI, you'll still have a plan to take to another builder. And if we move forward together, PRO Development sets the stage for success, laying the foundation for a project that is completed on time, within budget – and free of headaches along the way.

## AVI PROVEN PROCESS

AVI Systems follows a proven process to get you where you want to go. On time, within budget, and free of headaches along the way.

### STEP 1: PRO DEVELOPMENT

Anything is possible with a solid foundation of information and a clear understanding of objectives. PRO Development begins with due diligence and discovery, followed by project scope and budget. Next we define system recommendations, estimates, timelines, support plans and technology roadmaps. All this is included in an Executive Summary.

PRO Development delivers:

- Initial scope of functionality/scope of work
- Potential concerns
- Identification of stakeholders
- Preliminary budget
- Project timeline with milestones
- Support plan discussion
- Executive summary

### STEP 2: PRO DESIGN

Specialized engineers, technicians and project managers partner with you at every stage, decreasing design time and eliminating hassles, including post-construction costs related to redesign, equipment changes and unexpected surprises. As a result, we're able to complete even complex, highly customized projects precisely on schedule.

PRO Design delivers:

- Detailed project scope of work.
- Schedule of milestones and long-term goals.
- Trade coordination and accurate construction documents for implementation of AV-related infrastructure.



- Detailed floor plans, drawings and renderings.
- Equipment lists as specified (Bill of Materials.)
- System infrastructure requirements including cable and termination specifications.
- System operational and post operational requirements.
- Total project costs.
- Project Systems Implementation Agreement.
- Never any change orders – unless you ask for them.

### STEP 3: PRO INTEGRATION

Once the Retail Sales Agreement is signed, the pre-integration phase begins. Coordination between the project manager, engineers, architects and general contractors begins. Fabrication,

programming and testing takes place at AVI Systems fabrication labs. Equipment is wired into racks, programmed and tested to ensure a smooth and fully functional field installation.

The onsite installation and system launch includes placement of all structured power, cable and hardware, monitoring of displays and audio reinforcement. All audio, video and control is programmed, tested and agreed upon before Acceptance of Substantial Completion is signed.

With the implementation process completed, AVI Systems is committed to providing clear instructions on how to use each system. Training will provide operational and maintenance staff with information on how to operate the system on a daily basis. Further adjustments and additional training often occur during the first year of operation. PRO Integration delivers:

- Execution of scope of work.
- Outlined time frames.
- Dedicated project manager.
- Industry-trained and certified integration team.
- Control system programming.
- System commissioning and certification.
- System operational training.
- 90-day warranty.

### STEP 4: PRO SUPPORT

From on-the-spot technical assistance to parts replacement and equipment repair, AVI Global PRO Support specialists, technicians and engineers are on call 24/7/365. Unlimited onsite and phone support enables us to diagnose, repair and maintain your entire system economically and efficiently. Count on AVI to provide clear instructions on how to use each system and for further adjustments and additional training as needed during the first year of operation. PRO Support delivers:

- Unlimited onsite support calls.



- Unlimited operator training and retraining.
- Unlimited telephone support.
- Repair or replacement of equipment failures guaranteed.
- Unlimited support for user error.
- Priority response guarantee: onsite within 8 business hours.
- Biannual system re-certification.
- Asset tracking.
- End-of-life reporting.
- Certified recycling.
- Upgrade options for multiple-year coverage.
- Annual account review.

## PRELIMINARY SCOPE OF WORK

Lake County Government  
10<sup>th</sup> floor TV control room and Boardroom

### TV Control Room

The next step in the AVI proven process is to design the systems. Below is a preliminary scope of services that would go into the deployment stage

#### **Breakdown of Labor Activities**

1. Remove and re-integrate 5 OFE Panasonic Pan Tilt HD Cameras
2. Remove and re-integrate Ross Carbonite switcher and Xpression dual channel graphics generator with monitoring
3. Remove all equipment and cables from AV racks not marked for use in the new system design.
4. Per the AV design, provide and install a new HD routing platform
5. Per the AV design, provide and install new terminal equipment such as monitors, waveform monitors, frame syncs, scan converters and distribution amplifiers
6. Per the AV design, provide and install three new digital video recorders
7. Per the AV design, provide and install a new HD video server and redeploy one of the existing servers as a back up.
8. Per the AV design, provide and install a new digital audio mixer and link via Dante network to the existing Biamp audio DSP
9. Per the AV design, provide and install all rack mounting hardware to support the equipment. Client to supply the AV racks and power distribution/battery backup as required.
10. Client to provide all existing computer for application control or provide new.
11. Client to provide network access.



12. Per the AV design, provide and install a new managed switch for all AV communication control and product configuration.
13. Comcast & AT&T will be responsible to remove and re-install their modulators/encoders

## Boardroom

### **Breakdown of Labor Activities**

1. Per the AV design, provide and install a new 16x16 digital video router to manage presentation sources from the boardroom
2. Per the AV design, provide and install up to six HDMI transmission points within the boardroom. Dais, wall or floorbox mounted.
3. Per the AV Design, provide two wireless connectivity receivers for BYOD devices such as Laptops, phones, or tablets
4. Per the AV design, provide and install a new HD document camera
5. Per the AV design, provide and install two new HD laser projectors and wall mounted electric screens.
6. Per the AV design, provide and install seven new microphones at the Dais and up to 24 channels of wireless mics for use in the open seating area.
7. Per the AV design, remove and re-install a existing Biamp audio DSP with an additive new frame unit.
8. Provide Audio Teleconferencing function with a touch panel driven dialing interface
9. Per the AV design, provide and install new line array speakers for voice lift within the room.
10. Per the AV design, provide and install up to four new wired touch panel interfaces

The preliminary scope of work does not include the following areas.

- Assembly Room AV Level 2
- Chairman Office AV Level 1
- (3) 4 Person Meeting Rooms AV Level 1
- (3) Signage Displays



## IDENTIFICATION OF STAKEHOLDERS

### Stakeholder Information:

**Jonathan Joy**  
Facilities & Construction Services

**Jeff Carlstone**  
Multi-Media Specialist

**Jennie Vana**  
Chief Communications Officer

## POTENTIAL CONCERNS FOR DESIGN PHASE

- Ceiling height in the mail boardroom will likely preclude the use of ceiling microphones to capture audio
- Location of TV control room in the basement will limited TV control room operators access to the Boardroom and make servicing the system more difficult.
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## PROJECT TIMELINE

The design effort if Lake County stakeholders are active participants in the exchange of information is estimated to be 90 days. This time frame can change if required design criterion is delayed.

<p><b>Pro Design</b> AVI Systems completes full assessment of owner equipment. AVI Systems completes CAD drawings, Bill of Materials, Total Project Costs, and Sales Agreement</p>	Completed by September 2020
<p><b>Final approval and contracting</b> Client account is set-up Client completes and signs all paperwork Project developer submits system order to AVI</p>	Pre-project
<p><b>Equipment ordering, Project Coordination</b> Project paperwork is processed by AVI Equipment is ordered and availability confirmed Project turnover to Project Manager with client</p>	Week 1
<p><b>Equipment arrival and staging begins, On-site verification and scheduling</b> Receive equipment and stage in AVI warehouse PM performs site verification PM confirms equipment shipments for arrival</p>	Week 4
<p><b>Equipment and staging continues, On-site cable placement</b> On-site cable to be installed for a/v infrastructure Cable termination begins Pre-installation hardware and fixture mounting</p>	Week 6
<p><b>Rack Integration and Control Programming, On-site readiness confirmed</b> Rack assembly and equipment mounting/integration Control programming is completed and tested Schedule confirmation based on site readiness to receive system</p>	Week 7
<p><b>On-site installation and Tuning</b> Installation begins per AVI standards and procedure As stages of installation are completed, each is tuned for final testing Report on rate of completion to meet deadline</p>	Week 9
<p><b>On-site installation, Testing and Proof of Performance</b> Final installation stage and cleanup</p>	Week 11



Testing on system for proof of performance  
Schedule client Orientation and Training

## NEXT STEP IS PRO DESIGN

