TECHNICAL DESIGN SERVICES, INC.
Telecommunications / Network Infrastructure Design & Consulting

Village of Oak Park
Village Hall
123 Madison Street
Oak Park, IL 60302

AUDIOVISUAL SCHEMATIC DESIGN SCOPE

Presented in this document is a preliminary design concept resulting from interviews with the Owner's stakeholders, who shared their interpretation of the spaces which should include audiovisual technology, and how the identified spaces should function to serve the needs of the village. The information gleaned from these discussions was combined with owner provided architectural drawings and 3D laser scans of the facility. Additionally, a technology demonstration at an audiovisual equipment manufacturer to demonstrate how current technology operates, validated the preliminary design discussion's audiovisual requirements.

It is presumed that this report is intended to be a living document and will benefit from active review and editing. The purpose of this exercise is to both establish a working foundation of understanding, from which to build an accurate basis of design, as well as to help the Owner understand the potential costs associated with the desired solutions.

The following report is organized in such a way that the first information to be presented is in a graphic that represents a high-level, at-a-glance function list for each space. From there, utilizing floor plans, maps are included to help the reader understand the scope of work areas. Following the identified scope of work areas are additional room layout plans that identify key audiovisual devices for each space that to help the reader visually understand what technology is being placed into the spaces to serve the requirements of each room or area.

From there, the report provides a plain-language functional narrative, describing the general functional capabilities of each space.

Finally, the report will conclude with a cost estimate matrix that roughly accounts for the components and integration services required to provide the defined functionality.

Phase two TDSi costs to design the solutions will be provided once the overall design intent is established and agreed upon.

FUNCTIONALITY MATRIX

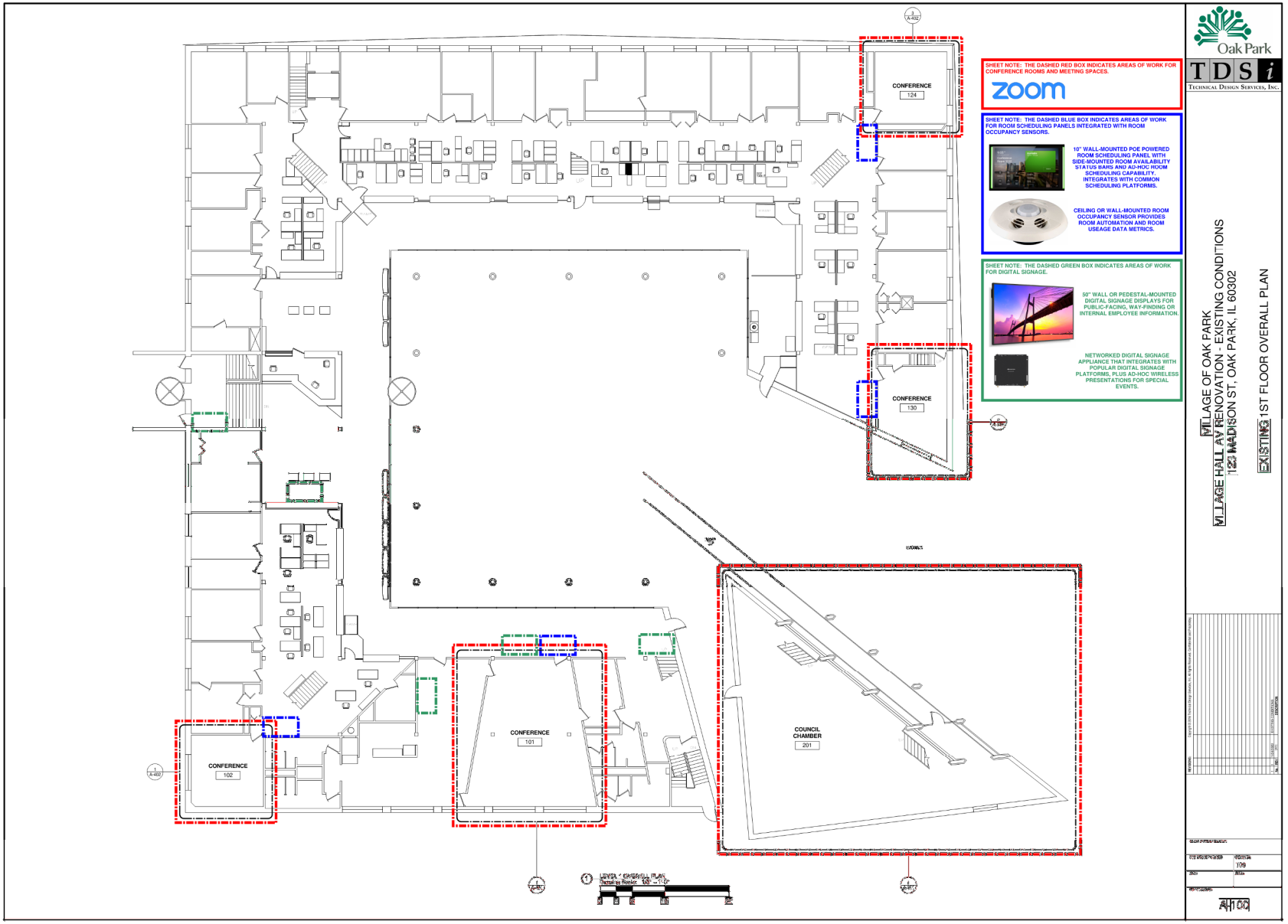
Room Name	Networked Solid State Audio Recorder	Audio Press Feed For TV Media	Assistive Listening System	Assistive Listening Via WiFi Network	Ceiling/Pendant Loudspeakers	Dais/Lectern Mini-Speakers	Display Speakers	SoundBar/Microphone/Camera Combo	Tabletop Speakerphone	Monitor Loudspeakers	Wireless Microphones	Wired Gooseneck Microphones	Ceiling Microphone Array	Digital Audio Mixing Console	Auxiliary Audio Inputs/Outputs	Audio DSP & Power Amplifier(s)	Wired HDMI Laptop Input	Wireless Presentation Interface	Digital Signage Player	Digital Signage Creation Cloud-Based Application	Wall-Mounted Zoom Camera	Character/Graphics Generator
Council Chambers/Boardroom		✓	✓	✓	✓	✓					✓	✓	✓			✓	✓	✓	✓			
Video Production Room	✓									✓		✓		✓	✓	✓	✓			✓		✓
Large Meeting Room 101	✓	✓	✓	✓	✓						✓		✓			✓	✓	✓				
Typical Traditional Conference Room							✓		✓								✓	✓			✓	
Atypical Conference Room							✓	✓									✓	✓				
Room Schedulers																						
Digital Signage																		✓	✓			

Room Name	Wall-Mounted Auto-Tracking PTZ Camera(s)	PTZ Camera Controller	Video Production Switcher	Video Matrix Switcher	Dedicated Wired PC Input	Dais Video Monitor	Large Screen Display	Medium Digital Signage Display	Video Production Video Monitor	Granicus Recording/Archiving	Cable-Cast Server	Zoom Recording	Zoom UC Conferencing Appliance	Control System Processor	Table-Top Touch Screen User Interface	Wall-Mounted Touch Screen User Interface	Dais Flush-Mounted Touch Screen User Interface	Room Scheduling Panel Wired POE/WiFi	Room Occupancy Sensor	Audiovisual Equipment Cabinet	Audiovisual Credenza	Real-Time Multi-Lingual Closed Captioning
Council Chambers/Boardroom	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓		✓
Video Production Room		✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓					✓		✓
Large Meeting Room 101	✓			✓	✓		✓					✓	✓	✓	✓	✓		✓	✓		✓	
Typical Traditional Conference Room					✓		✓					✓	✓		✓			✓				
Atypical Conference Room					✓		✓					✓	✓		✓			✓	✓			
Room Schedulers																		✓				
Digital Signage								✓														

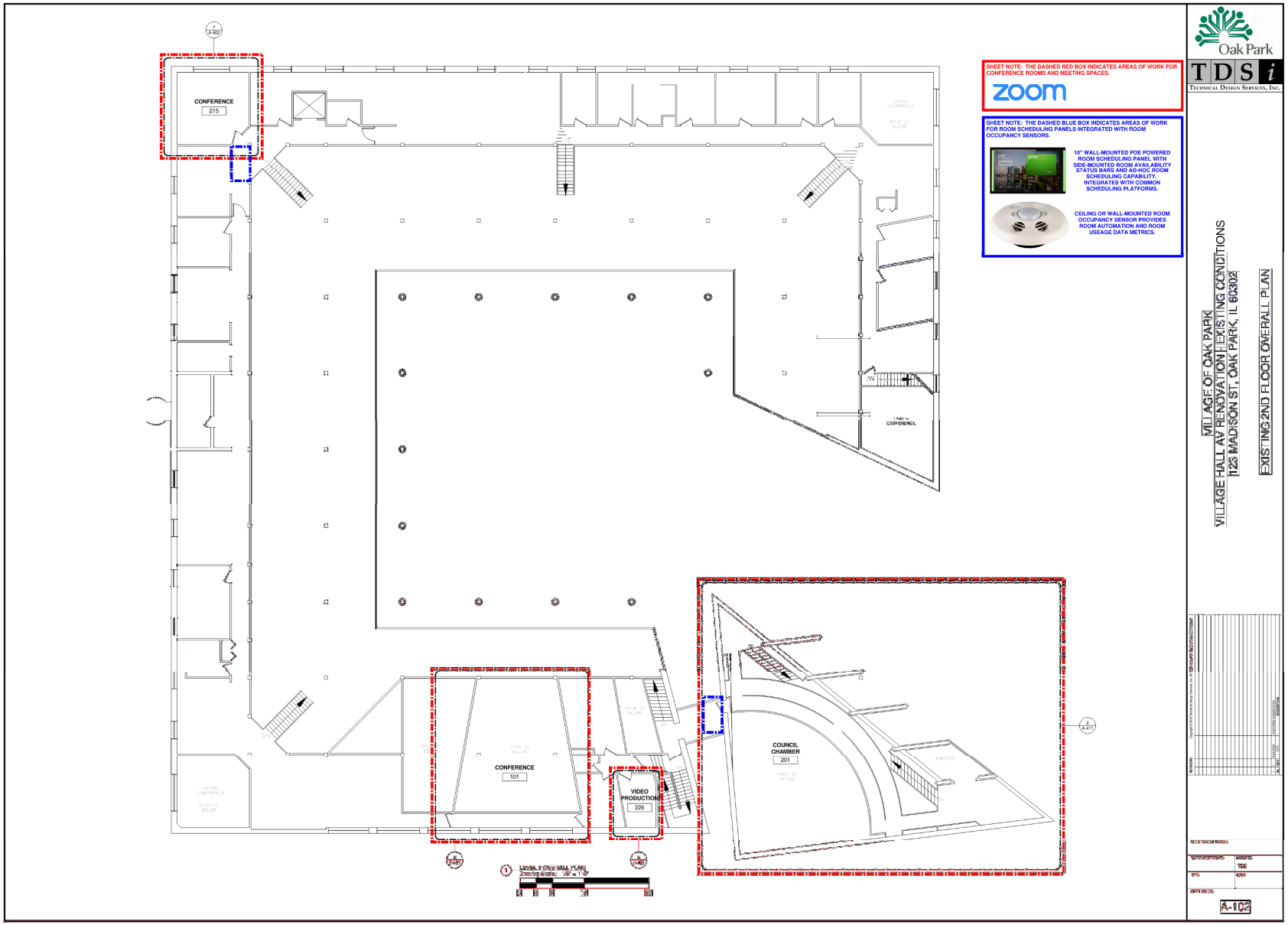
DRAWINGS EXPLANATION

The following drawings are snippets from full size drawings. To better read and review the information on the drawings, please review the separately attached drawing set. Drawings are best viewed on a computer or large screen display.

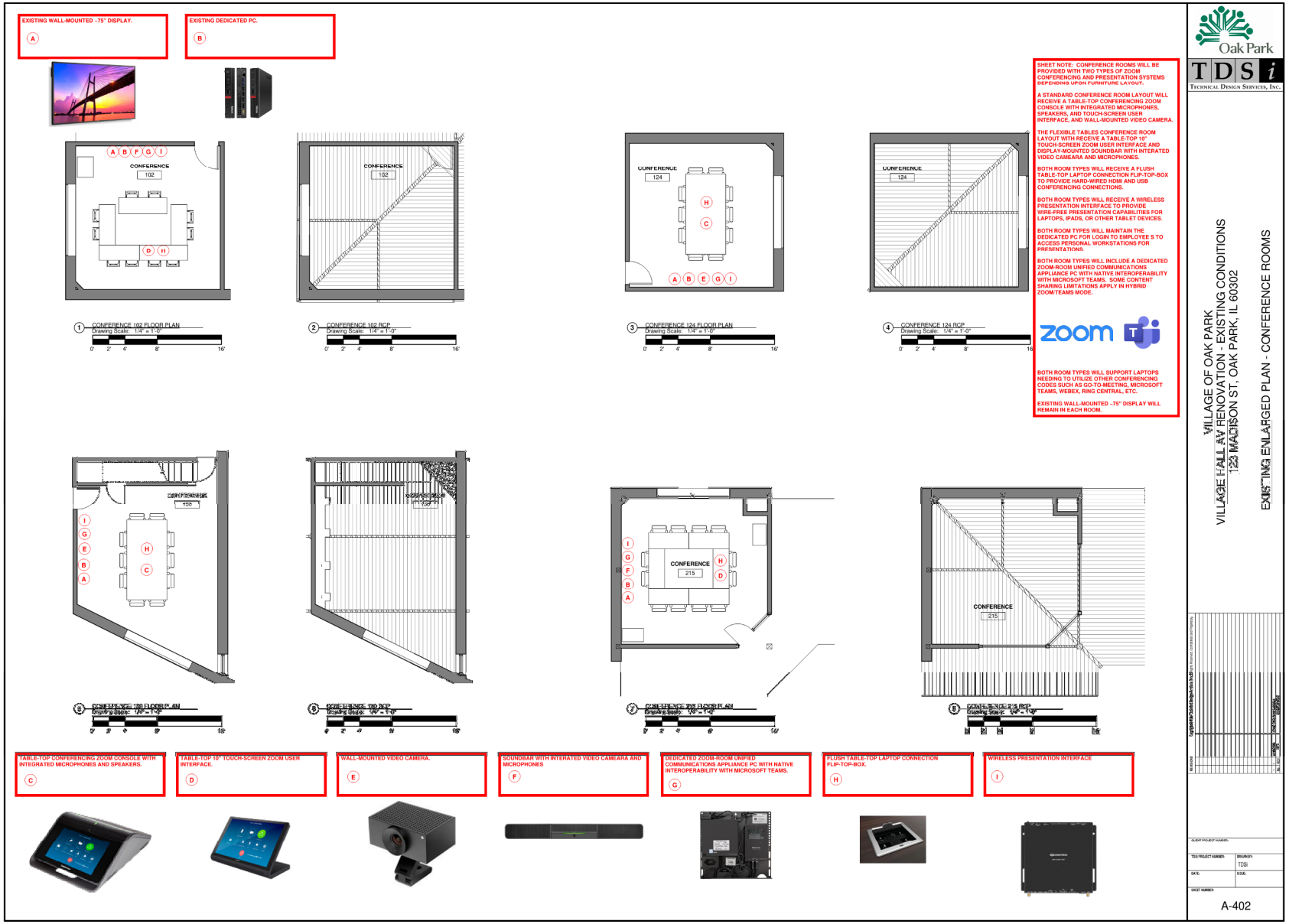
SCOPE OF WORK MAP - 1ST FLOOR CONFERENCE ROOMS & MEETING SPACES – ROOM SCHEDULERS – DIGITAL SIGNAGE



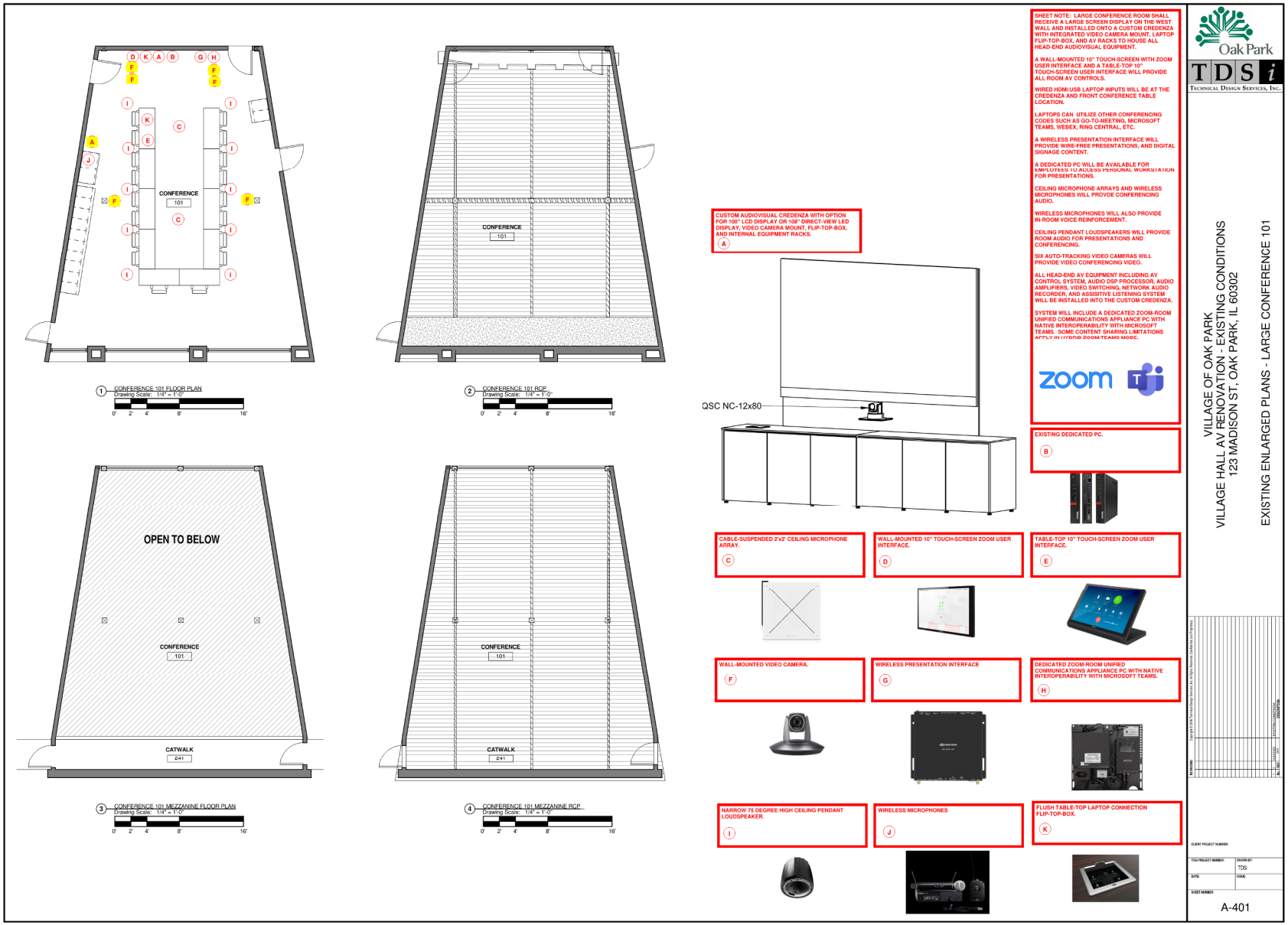
SCOPE OF WORK MAP – 2ND FLOOR CONFERENCE ROOMS & MEETING SPACES – ROOM SCHEDULERS



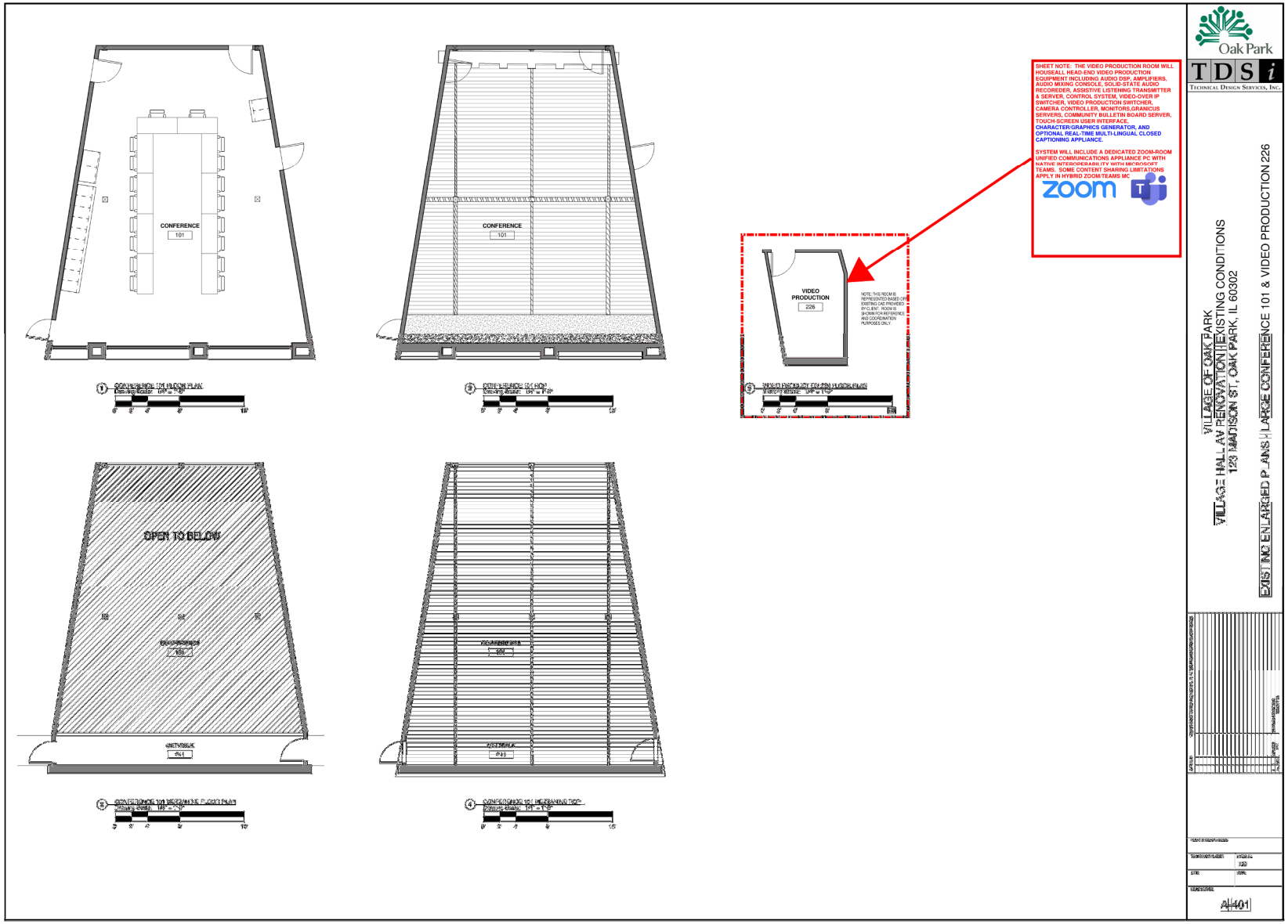
1ST & 2ND FLOOR CONFERENCE ROOMS - ROOM LAYOUTS & AUDIOVISUAL DEVICES



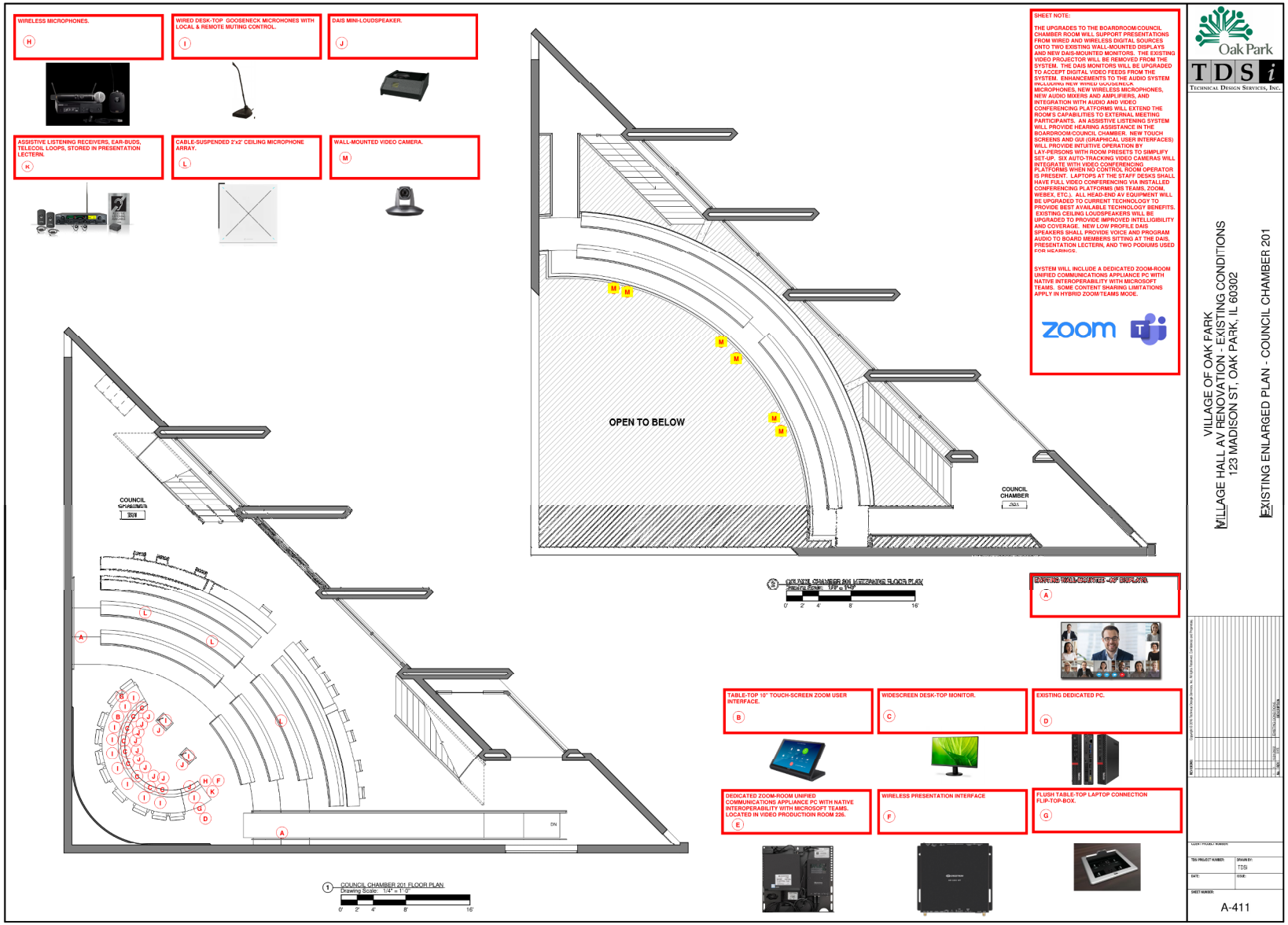
1ST LARGE CONFERENCE ROOM 101 - ROOM LAYOUT & AUDIOVISUAL DEVICES



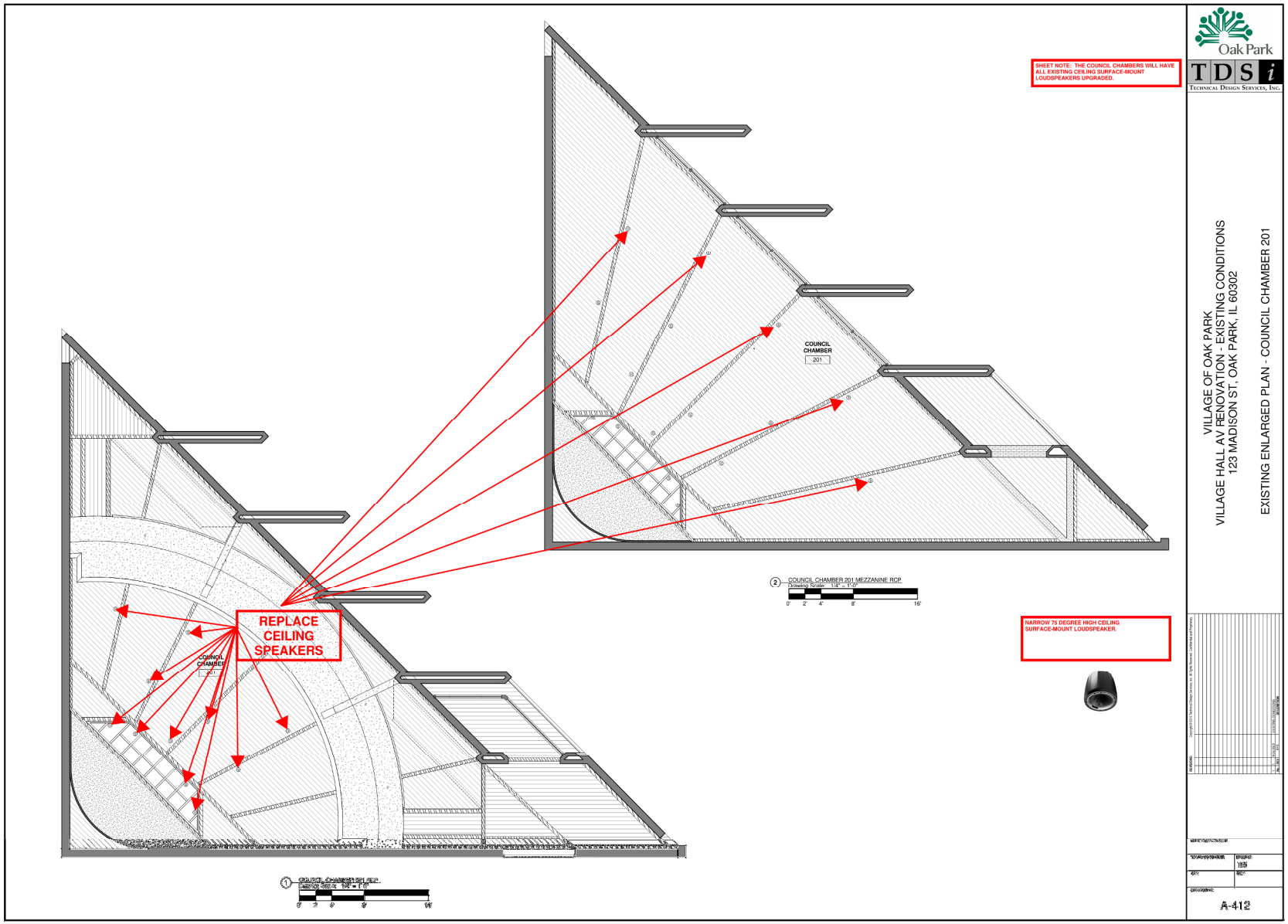
2ND FLOOR VIDEO PRODUCTION ROOM 226 - ROOM LAYOUT & AUDIOVISUAL DEVICES



2ND FLOOR COUNCIL CHAMBERS - ROOM LAYOUT & AUDIOVISUAL DEVICES



2ND FLOOR COUNCIL CHAMBERS - CEILING ROOM LAYOUT & AUDIOVISUAL DEVICES



FUNCTIONALITY NARRATIVES - COUNCIL CHAMBERS ROOM

The following space has been identified as potentially containing Audiovisual solutions. The space has been referenced either from the architectural names, or common names derived from their apparent function.

The current capabilities of the Boardroom/Council Chamber room will remain essentially as-is, however significant technology improvements are requiring a complete refresh of the audiovisual systems to address the limitations of the aging "legacy" analog systems. Some examples of where the current technology is impeding efficiency and productivity of the space are the capability to do digital presentations via HDMI video or wirelessly, hybrid video conferencing to support remote board members (a response to COVID-19), cumbersome and unreliable AV controls, failing microphones and audio mixers, incompatible desktop analog displays, and general aging of the audiovisual equipment.

The Boardroom/Council Chamber Room may benefit from some architectural and dais furniture upgrades to better facilitate hybrid meetings and Covid-19 restrictions. TDSi recommends engaging an architect to recommend and design updates to the room that enhance the room's functions, accessibility, and useability.

The Boardroom/Council Chamber Room will be used for monthly village council meetings where the public is invited to attend and participate in various community board meetings. In addition, the Boardroom/Council Chamber Room will be used for internal meetings and presentations vital to village functions and court hearings. The Boardroom/Council Chamber Room is inter-connected to the Video Production Room.

The Boardroom/Council Chamber Room will be outfitted with appropriate audiovisual equipment to support Video Production Operator controlled meetings as well as less complex self-serve meetings where less critical control is required of the video cameras and audio systems. In self-serve mode, staff will be able to hold hybrid Zoom meetings and presentations without an operator.

The upgrades to the Boardroom/Council Chamber Room will support presentations from wired and wireless digital sources onto two existing wall-mounted displays and new dais-mounted monitors. The existing video projector will be removed from the system. The Dais monitors will be upgraded to accept digital video feeds from the system. Enhancements to the audio system including new wired gooseneck microphones, new wireless microphones, new audio mixers and amplifiers, and integration with audio and video conferencing platforms will extend the room's capabilities to external meeting participants. An assistive listening system will provide hearing assistance in the Boardroom/Council Chamber. New touch screens and GUI (graphical user interfaces) will provide intuitive operation by lay-persons with room presets to simplify set-up. Six new auto-tracking video cameras will integrate with video conferencing platforms when no control room operator is present. Laptops at the staff desks shall have full video conferencing via installed conferencing platforms (MS Teams, Zoom, WebEx, etc.). All head-end AV equipment will be upgraded to current technology to provide the best available technological benefits. Existing ceiling

loudspeakers will be upgraded to provide improved intelligibility and coverage. New low profile Dais speakers shall provide voice and program audio to board members sitting at the Dais, presentation lectern, and two podiums used for hearings.

The upgrades to the audiovisual systems will provide following list of features or functionality:

- Two (2) existing wall-mounted displays to remain in the system
- Nine (9) New Dais monitors for board members that accept HDMI digital signals
- Twelve (12) new wired gooseneck microphones with muting functions and operator override shall provide voice reinforcement to the room speakers as well as conferencing
- Three (3) new ceiling microphone arrays to cover front audience area for conferencing only
- Two new FCC approved wireless microphone systems for voice reinforcement and conferencing
- Audio conferencing via room microphones, wireless microphones, and ceiling loudspeakers
- Replace existing ceiling loudspeakers
- Twelve (12) new low-profile Dais/lectern speakers
- Assistive listening system & receivers
- Assistive Listening Server to output assistive listening audio via a public WiFi network
- New wall-mounted press feed interface from Control Room audio system and Boardroom/Council Chamber audio system to allow media to capture audio from the room
- New wired HDMI inputs at Dais and presentation lectern
- Wireless presentation interface to provide wireless presentations from laptops, iPads, and tablets
- Dedicated Zoom UC (Unified Communications) system
- Zoom recording via license
- Six (6) auto-tracking video cameras will integrate with the control room video production system, video conferencing platforms, and laptops
- New AV control system and new wired touch screens for staff desk and control room with new GUI (graphical user interface) and intuitive layouts and room function presets, auto system shutdown programming
- Web interface that duplicates wired touch screens for control from PC or laptop or tablet (password protected)
- USB integration with audio system and video cameras to support BYOC (bring your own codec) video conferencing from dais and presentation lectern via laptops
- New AV head-end audiovisual equipment to bring the audiovisual system up to current technology including (audio amplifiers, Audio DSP processors, AV control system, AV switching/Interfacing)
- 4K video resolutions supported for presentations end-to-end, day-one will be set to 1080P (except for video conferencing platforms that typically support 720P or 1080P)
- Any existing wiring to/from the connected video production room will be removed and replaced with new cabling
- All old obsolete cabling shall be removed from the system

FUNCTIONALITY NARRATIVES - VIDEO PRODUCTION ROOM 226

The following space has been identified as potentially containing Audiovisual solutions. The space has been referenced either from the architectural names, or common names derived from their apparent function.

The Video Production Room 226 is inter-connected to the Boardroom/Council Chamber Room. Technology improvements are requiring a complete refresh of the audiovisual systems to address the limitations of the aging "legacy" analog systems. Some examples of where the current technology is impeding efficiency and productivity of the space are the capability to do digital presentations via HDMI video or wirelessly, hybrid video conferencing to support remote board members (a response to COVID-19), cumbersome and unreliable AV controls, analog audio mixers, incompatible desktop analog displays, and general aging of the audiovisual equipment.

The Video Production Room 226 will include new digital audio head-end equipment, audio amplifiers, video matrix switcher, digital video production switcher, digital audio mixing console, monitor loudspeakers, video monitors, camera controller, character/graphics generator, auxiliary audiovisual inputs/outputs, and a dedicated Zoom UC (Unified Communications) system. Existing cable-cast and Granicus servers will be updated and integrated into the new system. Existing audio DSP and audio amplifier will be re-purposed into the new system. A shared control system (between the Boardroom/Council Chamber Room and Video Production Room) shall control both rooms and will include new a new touch screen. An optional real-time multi-lingual closed captioning appliance can display closed captioning in the council chambers as well on live TV broadcast feeds.

The upgrades to the audiovisual systems will provide following list of features or functionality:

- Rack-mounted networked solid-state digital audio recorder for recording meetings
- Auxiliary audio inputs and outputs on head-end AV rack
- Auxiliary HDMI video input on head-end AV rack
- Dedicated Zoom UC (Unified Communications) system
- Zoom recording via license
- PTZ Pan-Tilt-Zoom joy-stick controller
- Desktop video production switcher with USB interface for Zoom meetings, includes a limited video zoom feature to zoom in on source laptop content in the event the presenter is using small fonts etc.
- Desktop audio mixing console USB interface for Zoom meetings
- Integrate existing Granicus servers for recording
- Update existing Tightrope Cable-Cast server to current model (there is potential to displace Granicus systems here to save ongoing operations costs)
- Add onto existing audio DSP system with additional audio DSP devices to fulfill new audio system requirements
- Existing QSC touch screens to be re-purposed/re-programmed for audio only functions

- Monitor loudspeakers
- Video monitors
- Desktop touch screen
- New AV head-end audiovisual equipment to bring the audiovisual system up to current technology including (audio amplifiers, Audio DSP processors, AV control system, AV switching/Interfacing)
- New audiovisual equipment cabinet built to industry best-practices to house all head-end audiovisual equipment
- Back-Up UPS for critical components in head-end AV rack built to industry best-practices
- Existing audiovisual cabinet to be removed/recycled
- Re-purpose video production console furniture
- Any existing wiring to/from the connected Boardroom/Council Chamber will be removed and replaced with new cabling
- All old obsolete cabling shall be removed from the system
- Character/graphics generator for adding titles etc.
- Optional multi-lingual closed-captioning appliance

FUNCTIONALITY NARRATIVES - LARGE MEETING ROOM 101

The following space has been identified as potentially containing Audiovisual solutions. The space has been referenced either from the architectural names, or common names derived from their apparent function.

The Large Meeting Room 101 would benefit from architectural, acoustical, and lighting fixtures changes to provide better audiovisual presentations and hybrid meetings. TDSi recommends engaging an architect to recommend and design updates to the room that enhance the room's functions, accessibility, and useability.

The upgrades to the Large Meeting Room 101 will support presentations from a wired laptop, a dedicated PC, and wireless digital sources onto a 100" credenza-mounted LCD display mounted on the West wall and a second pedestal-mounted 100" LCD display on the South wall. Enhancements to the audio system including ceiling microphone array(s), ceiling or pendant loudspeakers, wireless microphones, audio DSP mixers and amplifiers, audio recording, and integration with audio and video conferencing platforms will extend the room's capabilities to external meeting participants. An assistive listening system will provide hearing assistance in the room. Wall-mounted and table-top touch screens and GUIs will provide intuitive operation by lay-persons with room presets to simplify set-up. Six auto-tracking video cameras will integrate with video conferencing platforms installed on a PC or laptop. A dedicated Zoom UC (Unified Communications) system with recording license will provide always-available conferencing capabilities in the room. All head-end AV equipment will be upgraded to current technology to provide best available technology benefits into an audiovisual credenza.

The upgrades to the audiovisual systems will provide following list of features or functionality:

- FCC approved wireless microphone systems for voice reinforcement and conferencing
- Ceiling microphone array(s) for audio and video conferencing
- Ceiling or pendant-mounted loudspeakers
- Rack-mounted networked solid-state digital audio recorder for recording meetings
- Assistive listening system & receivers
- Assistive Listening Server to output assistive listening audio via a public WiFi network
- 100” diagonal credenza-mounted LCD display mounted at West wall for viewing presentations, and video conferencing
- 100” diagonal pedestal-mounted LCD display mounted at West wall for viewing presentations, and video conferencing
- Wired laptop HDMI input at front West wall credenza
- Wireless presentation interface to provide wireless presentations from laptops, iPads, and tablets
- Dedicated owner furnished PC with wireless keyboard/mouse
- Dedicated Zoom UC (Unified Communications) system
- Zoom recording via license
- Six (6) wall-mounted auto-tracking video cameras will integrate with video conferencing platforms
- Front West wall USB integration with audio system and video camera to support video conferencing via laptops
- USB integration with audio system and video camera to support video conferencing via dedicated PC
- AV control system with wired touch screen on front West wall with intuitive touch screen page layouts and room function presets, auto system shutdown programming & occupancy sensing
- Portable table-top wired touch screen with intuitive touch screen page layouts and room function presets, auto system shutdown programming & occupancy sensing
- Web interface that duplicates wired touch screens for control from PC or laptop or tablet (password protected)
- New AV head-end audiovisual equipment to bring the audiovisual system up to current technology including (audio amplifiers, Audio DSP processors, AV control system, AV switching/Interfacing)
- New audiovisual credenza to house head-end audiovisual equipment
- 4K video resolutions supported for presentations end-to-end, day-one will be set to 1080P (except for video conferencing platforms that typically support 720P or 1080P)
- Optional multi-lingual closed-captioning appliance

FUNCTIONALITY NARRATIVES - TYPICAL CONFERENCE ROOM - QTY = 4

The upgrades to the typical conference room will support presentations from a wired laptop, a dedicated PC, and wireless digital sources onto an existing wall-mounted display. A dedicated Zoom UC (Unified Communications) system with recording license

will provide always available conferencing capabilities in the room. BYOC (bring your own codec) capabilities will be supported by the dedicated PC. Rooms with traditional conference table will utilize a wall-mounted camera and a combination touch-screen/microphone/speaker UC table-top device. Non-traditional conference rooms with u-shaped furniture will utilize a combination camera/microphone/soundbar and table-top touch screen. All head-end AV equipment and Zoom appliance will be installed behind the existing display. Cable pathways and table interfaces will be updated to provide a consistent user-experience in each of the "typical" conference rooms.

The upgrades to the audiovisual systems will provide following list of features or functionality:

- Utilize existing wall-mounted LCD display for viewing presentations, video conferencing
- Wired laptop HDMI input at table
- Wireless presentation interface to provide wireless presentations from laptops, iPads, and tablets
- Dedicated owner furnished PC with wireless keyboard/mouse and USB interfacing for supporting various video conferencing platforms (MS Teams, Zoom, WebEx, Go-To-Meeting, Ring Central, etc.)
- Dedicated Zoom UC (Unified Communications) system
- Zoom recording via license
- Wall-mounted video camera or soundbar with integrated camera will integrate with video conferencing platforms
- Wired table-top touch screen or wired combination touch screen microphone/speaker UC table-top device

FUNCTIONALITY NARRATIVES - ROOM SCHEDULERS - QTY = 6

Potential rooms that would benefit from a room scheduling panel include the Boardroom/Council Chamber Room, large Meeting Room 101, and four typical conference rooms.

Room scheduling panels can improve room utilization, staff participation, reduce unintended interruptions, and reduce meeting room usage conflicts due to the inherent network visibility of the rooms. Visual indicators provide a simple verification that a room is in use. Ad-hoc meetings are supported and provide both visual and network visibility.

Depending on the level of integration, room usage and participant attendance or no-shows can provide valuable data about each room's use and staff participation. In the "corporate world", this is commonplace.

Each room will be outfitted with wall-mounted POE-powered 10" scheduling panel and connected via wired LAN or wireless access point.

The scheduling system will provide following list of features or functionality:

- 10" wall-mounted touch screen with side room status LED bars provides everything needed for scheduling applications in one compact unit that mounts over a standard electrical box or cutout. The touch screen offers high-speed Ethernet and

PoE/PoE+ connectivity, or, for deployments without access to Ethernet, it can be connected to the network over Wi-Fi® communications via a local wireless access point (WAP).

- Supports third-party scheduling applications
- Supports enterprise scheduling applications such as Microsoft Exchange Server® software (for users of Outlook® software and Office 365® software), the Google Calendar™ calendaring app (including G Suite™ software)
- Room can be reserved on the spot for an ad hoc meeting
- Room occupancy sensor can also be paired to the touch screen, allowing for occupancy status to be reported instantly to the scheduling app for no-shows and unscheduled room usage.
- Room occupancy sensor will be paired with in-room audiovisual system for automated system power on/off and automated display power on/off

FUNCTIONALITY NARRATIVES – DIGITAL SIGNAGE - QTY = 5

Potential areas or rooms that would benefit from a room scheduling panel include the Boardroom/Council Chamber Room, public hallways/corridors, staff break-room, and ad-hoc portable cart location.

The Boardroom/Council Chamber Room may require more than one digital signage display depending on how many entrances will be used.

Digital signage can provide a consistent message to the public that mirrors content on the village website or community access channel. Digital signage can enhance special events, voting procedures, Covid restrictions, or other timely information. Employee-only information can communicate important information regarding events, building updates, health and wellness, parking restrictions, Flu vaccines, etc. Digital signage can also provide wayfinding to the public allowing staff to focus on other day-to-day tasks.

An arbitrary number of five locations is included in this report.

The digital signage system will provide following list of features or functionality:

- A 50” wall-mounted or portable cart-mounted display
- Wireless presentation interface to provide wireless presentations from laptops, iPads, and tablets
- The wireless presentation interface includes integration with third-party digital signage applications over the network/internet
- Wayfinding via third-party digital signage applications
- Cloud-based digital signage application with three-year license (requires renewal every three years)

COST ESTIMATE

With the defined functionality above, an estimate of costs based on equipment required to provide the defined functionality can be calculated. Note that these costs are for the purposes of establishing a budget and do not necessarily represent the true, as-installed costs of a final solution. These estimates are calculated using MSRP for major components and are not based on fully designed or engineered solutions. Excluded from cost estimate is owner furnished equipment, software licensing, hardware or software maintenance or operational expenses, as well as costs that may be accounted for by other funding vehicles.

Room Name	Qty of each room type	Display Systems	Video Systems	Unified Communications	Audio Systems	Control Systems + Ancilliary	Room Scheduling	Total Equipment Cost	Installation Labor Estimate (35% multiplier)	AV Technology System Cost (EQ + Install)	OFE Install/Admin Related Costs	Consumables/Pro Services	Total Cost Per Room	Room Type Grand Total
Council Chambers	1	$4,104	$57,846	$0	$53,682	$6,160	$0	$121,792	$42,627	$164,419	$0	$12,000	$176,419	$176,419
Video Production Rm	1	$1,368	$22,429	$4,401	$20,365	$13,750	$0	$62,313	$21,810	$84,123	$0	$26,000	$110,123	$110,123
Large Meeting Rm 101	1	$48,934	$41,656	$4,401	$24,160	$8,160	$0	$127,311	$44,559	$171,870	$0	$12,000	$183,870	$183,870
Typical Meeting Rm	4	$0	$1,991	$9,930	$0	$500	$0	$12,421	$4,347	$16,768	$0	$0	$16,768	$67,073
Room Schedulers	6	$0	$0	$0	$0	$830	$2,200	$3,030	$1,061	$4,091	$0	$0	$4,091	$24,543
Digital Signage	5	$1,759	$3,991	$0	$0	$500	$0	$6,250	$2,188	$8,438	$0	$0	$8,438	$42,188
Multi-Lingual Closed Captioning	1	$0	$0	$0	$0	$53,000	$0	$53,000	$7,950	$60,950	$0	$0	$60,950	$60,950
Total Project Cost Estimate														**$665,166**

note - for the sake of efficiency, some base-buiding costs (display electrical enclosures) have been combined with equipment costs