

University of Toronto CQIQC  
Suite and QIS Lab -  
P078-24-109

AUDIO VISUAL DRAWING SET

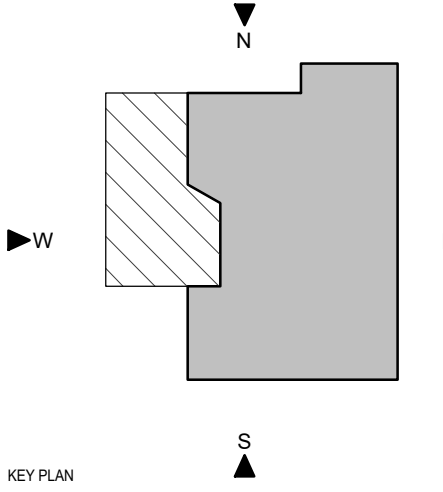
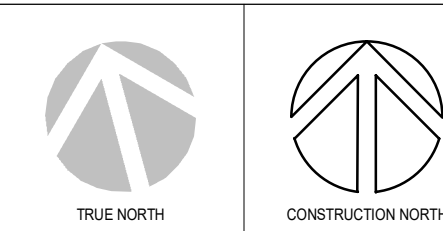
AUDIO VISUAL DRAWING LIST	
SHEET NUMBER	SHEET NAME
AV001	AUDIO VISUAL LEGEND & GENERAL NOTES
AV002	AUDIO VISUAL DIVISION OF RESPONSIBILITY
AV003	AUDIO VISUAL SPECIFICATIONS - 17 41 10 - AV GENERAL REQ.
AV004	AUDIO VISUAL SPECIFICATIONS - 27 41 16 - AV SYSTEMS
AV001	LEVEL 3 - AUDIO VISUAL FLOOR PLAN
AV401	AUDIO VISUAL FUNCTIONAL DIAGRAM
AV402	AUDIO VISUAL FUNCTIONAL DIAGRAM
AV501	AUDIO VISUAL RISER DIAGRAMS
AV601	AUDIO VISUAL ELEVATION DIAGRAMS
AV701	AUDIO VISUAL RACK DETAIL

GENERAL NOTES	
NUMBER	NOTE
1	GENERAL NOTES
1.1	AUDIO VISUAL CONTRACTOR SHALL INSPECT ALL DRAWINGS AND NOTIFY THE CONSULTANT SHOULD ANY DISCREPANCIES ARISE.
1.2	PROVIDE IR EMITTERS FOR ALL EQUIPMENT SHOWN WITH IR CONTROL.
1.3	AV CONTRACTOR SHALL COORDINATE EXACT POWER, DATA AND BACK BOX LOCATIONS FOR DISPLAY MONITOR AND MOUNT CONFLICTS.
2	REFERENCE DOCUMENTS
2.1	REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
2.2	REFER TO ELECTRICAL DRAWINGS FOR POWER LOCATIONS AND DETAILS.
2.3	REFER TO ELECTRICAL/COMMUNICATIONS DRAWINGS FOR DATA LOCATIONS AND DRAWINGS.

CABLE SCHEDULE				
TYPE	SYSTEM	DESCRIPTION	PRODUCT	O.D.
C6A	CATEGORY 6A UTP	4X 23/2C UTP	4X 23/2C UTP	0.300"
SERIAL	SERIAL COMMUNICATIONS	SHIELDED 2PR-22C SHDL	BELDEN 9535	0.189"

AUDIO VISUAL LEGEND	
SYMBOL	DESCRIPTION
	EQUIPMENT RACK "X" DENOTES RACK TYPE "Y" DENOTES RACK FINISH
	ROTATING EQUIPMENT RACK "X" DENOTES RACK TYPE "Y" DENOTES RACK FINISH
	DESK/TABLE/ELECTERN MOUNT INPUT/OUTPUT DEVICE LOCATION "X" DENOTES AV PLATE ID
	WALL MOUNT INPUT/OUTPUT DEVICE LOCATION "X" DENOTES AV PLATE ID
	CEILING MOUNT INPUT/OUTPUT DEVICE LOCATION "X" DENOTES AV PLATE ID
	FLOOR MOUNT DISPLAY MONITOR "X" DENOTES DISPLAY TYPE "Y" DENOTES DISPLAY MOUNT TYPE
	FLOOR BOX "X" DENOTES FLOOR BOX TYPE "Y" DENOTES FLOOR BOX CONFIGURATION
	DESK/TABLE/ELECTERN MOUNT MICROPHONE "X" DENOTES MICROPHONE TYPE "Y" DENOTES MICROPHONE MOUNT
	TABLE BOX "X" DENOTES TABLE BOX TYPE "Y" DENOTES TABLE BOX CONFIGURATION
	WALL MOUNT DISPLAY MONITOR "X" DENOTES DISPLAY TYPE "Y" DENOTES DISPLAY MOUNT TYPE
	CEILING MOUNT MICROPHONE "X" DENOTES MICROPHONE TYPE "Y" DENOTES MICROPHONE MOUNT
	DESK/TABLE/ELECTERN MOUNT USER INTERFACE "X" DENOTES AV CONTROL PANEL TYPE
	WALL MOUNT USER INTERFACE "X" DENOTES AV CONTROL PANEL TYPE
	STATIC CAMERA "X" DENOTES CAMERA TYPE "Y" DENOTES MOUNT TYPE
	PTZ CAMERA "X" DENOTES CAMERA TYPE "Y" DENOTES MOUNT TYPE
ADDITIONAL GENERAL NOMENCLATURE	
M	MICROPHONE
LS	LOUDSPEAKER
DM	DISPLAY MONITOR
PS	PARTITION SENSOR
TB	TABLE BOX (SQUARE ONLY)
FB	FLOOR BOX (SQUARE ONLY)
ES	ELECTRIC SCREEN
MS	MANUAL SCREEN
MP	MANUFACTURER PLATE
VB	VIDEO BAR
OFCI	OWNER SUPPLIED FURNISHING, CONTRACTOR INSTALLED
OFOI	OWNER SUPPLIED FURNISHING, OWNER INSTALLED
Pxx	PROFESSIONAL SERIES DISPLAY MONTIER WITH SIZE
MP01	MANUFACTURER PLATE - HDMI
TPxx	TOUCH PANEL WITH SIZE

PROJECT LOGO



KEY PLAN

6	ISSUED FOR TENDER	2025-11-27
5	ISSUED FOR 100% CD	2025-11-21
4	ISSUED FOR 90% CD	2025-10-17
3	ISSUED FOR 100% DO R1	2025-09-19
2	ISSUED FOR 100% DO	2025-07-10
1	ISSUED FOR 50% DO	2025-06-18
No.	DESCRIPTION	DATE

REVISIONS:

DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT / ENGINEER BEFORE PROCEEDING.  
ONLY FIGURED DIMENSIONS MUST BE USED.  
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SEAL

CONSULTANTS

**MULVEY & BANANI**  
AUDIO VISUAL

90 Sheppard Avenue East, Suite 505, Toronto, ON M2N 3A1  
416.751.2520 | MBI.COM

PROJECT:  
**University of Toronto  
CQIQC Suite and QIS Lab**

**University of Toronto,  
27 King's College Cir,  
Toronto, ON M5S 1A1**

DRAWING TITLE:  
**AUDIO VISUAL LEGEND &  
GENERAL NOTES**

SHEET SIZE:  
ARCH D (810x914)

SCALE:

PROJECT NO: **251016**

DRAWING NO.:

**AV001**

UNIVERSITY OF TORONTO CQIQC SUITE AND QIS LAB AND CQIQC SUITE AND QIS LAB  
P078-24-109 QIS Lab and CQIQC Suite and QIS Lab  
DATE: 2025-11-27  
DRAWN BY: MBI  
CHECKED BY: MBI  
APPROVED BY: MBI

DIVISION OF RESPONSIBILITIES

THE SCOPE OF WORK OF THE VARIOUS TRADES RELATED TO THE AUDIO VISUAL (AV) SYSTEMS IS DESCRIBED IN THE FOLLOWING TABLE.  
P = PROVIDE (SUPPLY AND INSTALL), S = SUPPLY, I = INSTALL, C = COORDINATE, N/A = NOT APPLICABLE

Item	Scope	Owner	Base Building	Gen.Ctr. / Const.Mgr.	AV Contractor	Comm. Contractor	Elec. Contractor	Furniture Vendor	NOTES
1.00	Blocking and Support								
1.01	Support Blocking/Backing for AV Devices			P					
1.02	Supplimental Support (i.e. Unistrut)				P				
1.03	Engineered Structural Supports			P					
1.04	AV Rack(s) Plinths				P				
2.00	Equipment								
2.01	AV Equipment & Components				P				
2.02	CATV/SATV Receivers (Set-Top Box)	S		C	I				
2.03	Owner Furnished Equipment - Digital Signage player	S		C	I				
2.04	Floor Boxes			C	C		P		
2.05	Table Boxes			C	C			P	
2.06	Projection Screens & Lifts				P				
2.07	Projector Mounts				P				
2.08	Display Monitor Mounts				P				
2.09	AV Related Routers, Switches, Firewalls & Border Controllers	C			P				
3.00	Equipment Racks								
3.01	A/V Racks				P				
4.00	Loudspeakers								
4.01	Loudspeakers				N/A				
5.00	Millwork and Furniture								
5.01	Integration of AV Equipment within Millwork & Furniture			P	C				
5.02	Cut-outs for AV Devices with Millwork & Furniture			P	C				
5.03	Lecturns / Podiums							P	
6.00	Miscellaneous								
6.01	Fire Alarm Interconnect		P		C				
6.02	Video Conference Licensing		P						
6.03	Support for AV Related IT after Commissioning		P		C				
7.00	Power								
7.01	Power for AV equipment				C		P		
7.02	Equipment rack power distribution				P				
8.00	Programming								
8.01	Programming of Lighting Control at AV Control Panels				P		C		
8.02	Control System Programming				P				
8.03	Programming of Lighting Controllers				C		P		
8.04	IP Address Provisioning and VLAN Configuration	P			C				
8.05	Telephone and Data Services	P							

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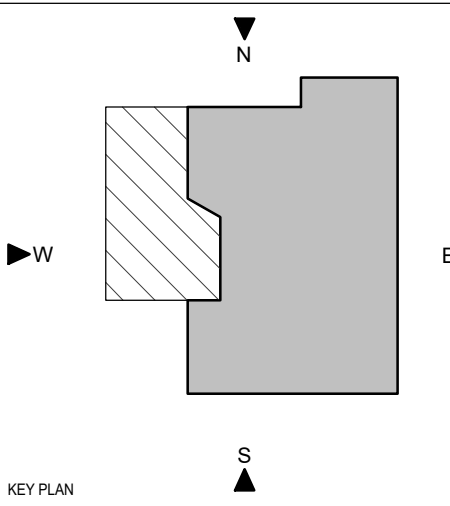
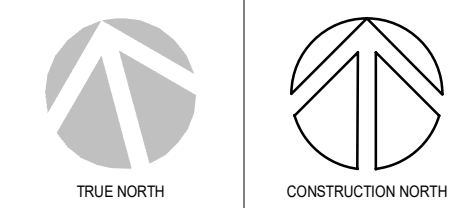
DIVISION OF RESPONSIBILITIES (CONTINUED)

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Item	Scope	Owner	Base Building	Gen.Ctr. / Const.Mgr.	AV Contractor	Comm. Contractor	Elec. Contractor	Furniture Vendor	NOTES
9.00	Wire, Cable & Infrastructure								
9.01	AV Wire and Cables				P				
9.02	AV Wire & Cable Termination				P				
9.03	Conduit, Pull Boxes, Standard Boxes, etc for AV				C		P		
9.04	Specialty Enclosures (Excl. loudspeaker)				S		I		
9.05	Wire/Cable(s) for Control or LV Interface (i.e Window Shades, etc)						P		
9.06	Voice/Data Cable & Connectivity					P			
9.07	CATV/Satellite Cable & Connectivity					P			
10.00	Content								
10.01	Content Creation	P							
10.02	Content Installation / Configuration	P							
11.00	Networking								
11.01	Configuration of AV device network related settings	C			P				
11.02	Configuration of Network settings (switches, ports, firewall, etc.)	P			C				

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PROJECT LOGO



KEY PLAN

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PROJECT:  
**University of Toronto**  
**CQIC Suite and QIS Lab**

**University of Toronto,**  
**27 King's College Cir,**  
**Toronto, ON M5S 1A1**

DRAWING TITLE:  
**AUDIO VISUAL DIVISION OF RESPONSIBILITY**

SHEET SIZE:  
ARCH D (810x914)

SCALE:

PROJECT NO.:  
**251016**

DRAWING NO.:

**AV002**

DATE: 2025-11-27  
DRAWN BY: P1078-34-109 QIS Lab and CQIC Suite  
PLOT DATE: 2025-11-27 08:34:08 AM



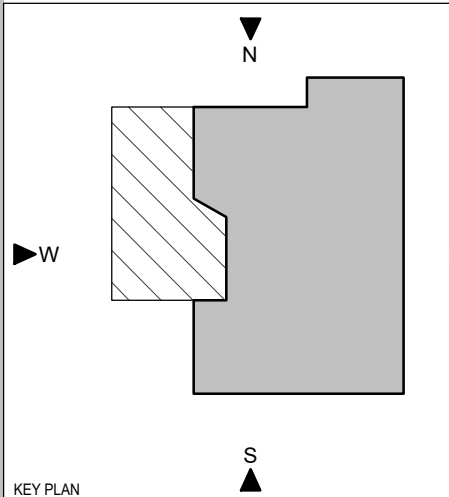
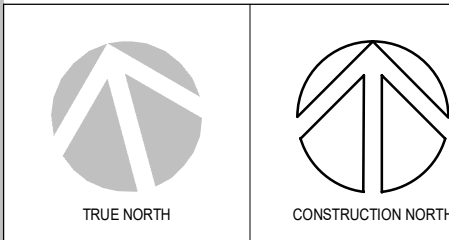
AUDIO VISUAL SPECIFICATION SECTION 27 41 10

1. REFERENCE
- 1.1. THIS SECTION SUPPLEMENTS "THE GENERAL CONDITIONS" AND ANY OTHER DOCUMENTS INCLUDED IN THE "TENDER, AND FORMS PART OF EVERY SECTION OF DIVISION 27
2. RELATED SECTIONS
- 2.1. COMPLY WITH RELEVANT SECTIONS OF THIS AND OTHER DIVISIONS OF THIS SPECIFICATION.
3. CLEANING
- 3.1. THE AV CONTRACTOR SHALL PROVIDE TEMPORARY PROTECTIVE COVERING ON ALL ELECTRICAL AND SENSITIVE COMPONENTS EXPOSED TO CONSTRUCTION DUST. PROTECT ALL COMPONENTS WHERE REQUIRED DURING CONSTRUCTION PROCESS.
- 3.2. UPON COMPLETION, CLEAN ALL PROJECTORS AND LENSES, SPEAKERS, COMPONENTS AND OTHER SURFACES, AS PER MANUFACTURER'S RECOMMENDATIONS THAT HAVE BEEN EXPOSED TO CONSTRUCTION DUST AND DIRT.
- 3.3. CLEAN THE INSIDES AND OUTSIDES OF JUNCTION BOXES, PULL BOXES, EQUIPMENT RACKS AND OTHER AUDIO VISUAL EQUIPMENT, AND COMPLETELY REMOVE ALL DEBRIS AND TOOLS FROM THE PROJECT
- 3.4. INCLUDED IN THE WORK UNDER THIS CONTRACT, THE AV CONTRACTOR SHALL KEEP ALL WORK AREAS TIDY AND COLLECT ALL DEBRIS AND RECYCLABLE MATERIALS. THE AV CONTRACTOR SHALL COMPLY WITH THE OWNERS WASTE POLICIES AND PROCEDURES.
4. CODES AND STANDARDS
- 4.1. COMPLETE THE INSTALLATION OF THE WORK IN ACCORDANCE WITH LATEST EDITIONS OF THE ONTARIO BUILDING CODE, ONTARIO ELECTRICAL SAFETY CODE, C.S.A., U.L.C., N.F.P.A., O.S.H.A. OR OTHER CODES, AS REQUIRED.
- 4.2. COMPLY WITH O.E.S.C. ELECTRICAL AND BUILDING CODE(S) BULLETINS IN FORCE AT TIME OF BID SUBMISSION. WHILE NOT IDENTIFIED AND SPECIFIED BY NUMBER IN THIS DIVISION, THEY ARE TO BE CONSIDERED AS FORMING PART OF RELATED STANDARDS.
- 4.3. ABBREVIATIONS FOR ELECTRICAL TERMS ARE AS PER C.S.A. Z86.
- 4.4. LEED® CANADA REFERENCE GUIDE FOR GREEN BUILDING DESIGN AND CONSTRUCTION 2009.
5. COMPLETION OF CONTRACT
- 5.1. ALL THE EQUIPMENT MUST BE CLEANED AND TESTED, BEFORE FINAL ACCEPTANCE BY THE CONSULTANT.
- 5.2. FROM THE DATE OF ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL PERFORMANCE", ALL EQUIPMENT, MATERIALS AND WORKMANSHIP, OTHER THAN LAMPS, MUST BE UNCONDITIONALLY WARRANTED FOR NOT LESS THAN 3 (THREE) YEARS INCLUDING, MAINTENANCE AND REPLACEMENT FOR ALL DEVICES.
- 5.3. REPLACEMENT AT NO COST, ALL PROJECTOR LAMPS/LIGHT ENGINES BURNED OUT DURING THE FIRST 90 (NINETY) DAYS AFTER DATE OF THE SUBSTANTIAL PERFORMANCE OF THE WORK.
- 5.4. DEFECTS AND DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR REPLACED, AT NO COST.
- 5.5. IF, DURING THE WARRANTY PERIOD, NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE OWNER. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE TO THE OWNER.
- 5.6. ON OR ABOUT TIME OF ACCEPTANCE OF THE SYSTEM, THE AV CONTRACTOR SHALL PRESENT TO THE OWNER AVAILABLE EXTENDED WARRANTIES AND/OR PREVENTATIVE MAINTENANCE PROGRAMS OFFERED BY MANUFACTURERS AND/OR BY THE AV CONTRACTOR. THE OWNER SHALL RESERVE THEIR RIGHT TO EVALUATE THE MERITS OF THE EXTENDED WARRANTIES AND/OR PREVENTATIVE MAINTENANCE PROGRAMS. THE OWNER AT THEIR DISCRETION RESERVES THEIR RIGHTS TO ACCEPT OR REJECT THE EXTENDED WARRANTIES AND/OR PREVENTATIVE MAINTENANCE PROGRAMS.
6. COMPONENT FINAL LOCATIONS
- 6.1. THE OWNER AND CONSULTANT RESERVE RIGHT TO RELOCATE AUDIO VISUAL COMPONENTS SUCH AS SPEAKERS, INPUTS, OUTPUTS, DISPLAYS, PROJECTORS, TOUCH PANELS, ETC. AT A LATER DATE, BUT PRIOR TO INSTALLATION, WITHOUT ADDITIONAL COST TO THE OWNER. IF RELOCATION PER COMPONENTS DO NOT EXCEED 3M (10') FROM ORIGINAL LOCATION, NO CREDITS WILL BE ANTICIPATED WHERE RELOCATION PER COMPONENTS OF UP TO AND INCLUDING 3M (10') REDUCES MATERIALS, PRODUCTS AND LABOUR.
- 6.2. SHOULD RELOCATIONS EXCEED 3M (10') FROM ORIGINAL LOCATION, ADJUST THE CONTRACT PRICE FOR THAT PORTION BEYOND 3M (10') IN ACCORDANCE WITH PROVISIONS FOR CHANGES IN CONTRACT DOCUMENTS.
7. CONTRACT DRAWINGS
- 7.1. THE DRAWINGS FOR THE AUDIO VISUAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE LOCATION OF EQUIPMENT, AND THE APPROXIMATE SIZES AND LOCATIONS OF EQUIPMENT AND DEVICES. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, MECHANICAL OR STRUCTURAL DETAILS.
- 7.2. DO NOT SCALE OR MEASURE THE DRAWINGS TO OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS, FROM THE DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS, OR BY SITE MEASUREMENTS. FOLLOW THE AUDIO VISUAL DRAWINGS FOR LAYING OUT THE WORK, AND VERIFY SUITABLE SPACES EXIST, IN WHICH THE EQUIPMENT WILL BE INSTALLED.
- 7.3. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMNS, ETC.).
- 7.4. ALTER, AT NO ADDITIONAL COST, THE LOCATION OF MATERIALS AND/OR EQUIPMENT AS DIRECTED, PROVIDED THAT THE CHANGES ARE MADE BEFORE INSTALLATION, AND DO NOT NECESSITATE ADDITIONAL MATERIALS.
- 7.5. INSTALL CEILING MOUNTED COMPONENTS (SUCH AS, PROJECTORS, LOUDSPEAKERS, ANTENNAS ETC.) IN ACCORDANCE WITH DIMENSIONED REFLECTED CEILING DRAWINGS, PREPARED BY THE (ARCHITECTURAL) CONSULTANT.
- 7.6. LEAVE SPACE CLEAR, AND INSTALL EQUIPMENT TO ACCOMMODATE FUTURE MATERIALS AND/OR EQUIPMENT AS INDICATED OR SPECIFIED IN THE CONTRACT DOCUMENTS, OR TO ACCOMMODATE EQUIPMENT AND/OR MATERIALS SUPPLIED UNDER THE WORK OF OTHER SPECIFICATION SECTIONS.
- 7.7. VERIFY THAT THE SPACES IN WHICH THE EQUIPMENT IS TO BE INSTALLED IS SUFFICIENT AND INSTALL ALL EQUIPMENT TO MAINTAIN HEAD ROOM AND CLEARANCES, TO CONSERVE SPACE, COORDINATE WITH ACCESS, AND TO PROVIDE ADEQUATE SPACE FOR FUTURE SERVICES.
- 7.8. CONFIRM AT THE SITE, THE EXACT LOCATION OF EQUIPMENT, OUTLETS AND FIXTURES, AND THE LOCATION OF OUTLETS FOR EQUIPMENT SUPPLIED UNDER THE WORK OF OTHER SECTIONS, BEFORE INSTALLATION.
8. COORDINATION DRAWINGS
- 8.1. ALL DRAWINGS SHALL BE PREPARED IN AMPLE TIME FOR REVIEW AND IMPLEMENTATION. FAILURE TO DO SO, AND ANY PROBLEMS THAT ARISE, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 8.2. SHOULD THE CONTRACTOR NEGLECT OR OTHERWISE FAIL TO PROVIDE CO-ORDINATION DRAWINGS, IT SHALL ASSUME THE COST OF ANY AND ALL RELOCATION WORK THAT COULD HAVE BEEN AVOIDED THROUGH THE SUBMISSION OF CO-ORDINATION DRAWINGS.
9. COORDINATION OF INFRASTRUCTURE, POWER AND DATA
- 9.1. THE AV CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE POWER, DATA AND INFRASTRUCTURE REQUIREMENTS WITH THE CLIENT AND/OR THEIR RELATED SUB-CONTRACTOR(S) FOR EACH SPACE.
10. CUTTING AND PATCHING
- 10.1. ALL CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF NEW EQUIPMENT AND FOR SURFACE RESTORATION AFTER THE REMOVAL OF EXISTING EQUIPMENT SHALL BE BY THE CLIENT.
- 10.2. IN EXISTING WORK, AND WORK ALREADY FINISHED, CUTTING AND PATCHING WILL BE CARRIED OUT BY THE CLIENT AT THEIR EXPENSE.
- 10.3. BE AWARE OF FIRE RATED PARTITIONS, MINIMIZE THE AREA AFFECTED BY THE WORK, AND RETURN ALL SURFACE TO A CONDITION ENCOUNTERED BEFORE THE WORK. ACCEPTANCE OF THE FINISHED WORK IS AT THE SOLE DISCRETION OF THE CONSULTANT.
- 10.4. PAINTING OF FINISHED SURFACES WILL BE BY THE CLIENT TO MATCH ADJACENT SURFACES.
11. DISCONTINUED EQUIPMENT AND PRODUCTS
- 11.1. PRODUCTS DISCONTINUED BETWEEN BID AWARD AND FINAL INSTALLATION SHALL BE REPLACED WITH CURRENT MODEL AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND NEGOTIATING THIS WITH THE RESPECTIVE MANUFACTURER.
- 11.2. SHOULD THE MANUFACTURER NOT MAKE A REPLACEMENT PRODUCT, THE CONTRACTOR SHALL SUGGEST APPROPRIATE PRODUCTS WITH PREFERENCE GIVEN TO COST NEUTRAL SUBSTITUTIONS FROM REPUTABLE MANUFACTURERS.
- 11.3. ALL REPLACEMENTS WILL BE FORMALLY ACCEPTED BY THE WAY OF SITE INSTRUCTION OR CHANGE NOTICE ACCORDINGLY.
12. DEFINITIONS
- 12.1. WHEREVER THE WORDS "EQUAL", "APPROVED", OR "APPROVED EQUIVALENT" ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "EQUAL", "APPROVED", OR "APPROVED EQUIVALENT" IN THE OPINION OF THE CONSULTANT ONLY.
- 12.2. WHEREVER THE WORDS "INSTALL", "PROVIDE", OR "SUPPLY AND INSTALL", ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "PROVIDE AND INSTALL, INCLUSIVE OF ALL LABOUR, MATERIALS, INSTALLATION, TESTING, AND CONNECTIONS" FOR THE ITEM TO WHICH REFERRED.
- 12.3. "CONCEALED" IS DEFINED AS "OUT OF SIGHT" IN "NORMAL" VIEWING CONDITIONS, AND INCLUDES BURIED IN CONCRETE, ABOVE ACOUSTIC TILE OR GYPSUM BOARD CEILINGS, WITHIN MASONRY OR GYPSUM BOARD CONSTRUCTED WALLS, WITHIN CABLE TRAYS OR BELOW RAISED ACCESS FLOORS.
- 12.4. "CFO" IS DEFINED AS "OWNER FURNISHED, CONTRACTOR INSTALLED" AND SHALL INCLUDE COORDINATION BETWEEN CONTRACTOR AND OWNER FOR DELIVERY AND RECEIPT OF EQUIPMENT. ONCE RECEIVED, THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR SAID EQUIPMENT INCLUDING BUT NOT LIMITED TO THEFT OR DAMAGE.
- 12.5. "CFO" IS DEFINED AS "OWNER FURNISHED, OWNER INSTALLED" AND SHALL INCLUDE COORDINATION BETWEEN CONTRACTOR AND OWNER AS REQUIRED FOR SUCCESSFUL INSTALLATION AND IMPLEMENTATION.
- 12.6. "CFO" IS DEFINED AS "CONTRACTOR FURNISHED, OWNER INSTALLED" AND SHALL INCLUDE COORDINATION BETWEEN CONTRACTOR AND OWNER FOR DELIVERY AND RECEIPT OF EQUIPMENT. ONCE RECEIVED, THE CONTRACTOR SHALL CONTINUE COORDINATION AS REQUIRED FOR SUCCESSFUL INSTALLATION AND IMPLEMENTATION BY THE OWNER.
- 13.1. ELECTRONIC COPIES (AUTOCAD FORMAT RELEASE 2022) OF ALL DRAWINGS WILL BE MADE AVAILABLE TO THE ELECTRICAL CONTRACTOR BY THE CONSULTANT AT A COST AS OUTLINED IN THE "DRAWING REQUEST FORM" FOUND AT THE END OF SECTION 27 41 01. REFER TO THE "DRAWING REQUEST FORM" FOR TERMS AND CONDITIONS OF USE.
14. EXISTING CONDITIONS
- 14.1. VISIT THE SITE AND EXAMINE THE EXISTING CONDITIONS AFFECTING THE WORK OF THIS DIVISION.
- 14.2. NO CLAIM FOR EXTRA PAYMENT SHALL BE MADE FOR EXTRA WORK MADE NECESSARY BY CIRCUMSTANCES ENCOUNTERED DUE TO CONDITIONS WHICH WERE VISIBLE UPON, OR REASONABLY INFERRABLE FROM AN EXAMINATION OF THE SITE PRIOR TO SUBMISSION OF THE BID.
15. EXPEDITING
- 15.1. CONTINUOUSLY CHECK AND EXPEDITE DELIVERY OF ALL MATERIALS AND EQUIPMENT REQUIRED FOR THE SUCCESSFUL EXECUTION OF THE WORK.
- 15.2. IF REQUESTED BY THE CONSULTANT, INSPECT AT THE SOURCE OF MANUFACTURE, TO CONFIRM STATUS, AND SUBMIT AN ITEMIZED FLOW CHART OF EQUIPMENT ORDER AND DELIVERY DATES.
- 15.3. CONTINUOUSLY CHECK AND ENSURE THAT THE NECESSARY INFORMATION IS COMMUNICATED TO ALL PARTIES INVOLVED.
16. FIELD INSTALLATION DRAWINGS
- 16.1. UTILIZE AUTOCAD FORMAT DRAWINGS FOR FIELD INSTALLATION DRAWINGS. OBTAIN THEM AS NOTED IN ELECTRONIC DRAWINGS ARTICLE OF THIS SPECIFICATION SECTION. PREPARE A COMPLETE AND SEPARATE SET OF WHITE PRINTS TO KEEP ON THE SITE AT ALL TIMES.
- 16.2. THESE PRINTS SHALL BE MARKED UP TO RECORD CLEARLY, NEATLY, ACCURATELY AND PROMPTLY, ALL LOCATIONS OF THE AUDIO VISUAL WORK, DEVIATIONS FROM AND CHANGES TO THE "ISSUED FOR CONSTRUCTION" DOCUMENTS.
- 16.3. THE ACCURATE LOCATIONS, DEPTH, SIZE AND TYPE OF EACH UNDERGROUND UTILITY AND SERVICE LINE SHALL BE RECORDED BEFORE CONCEALMENT, TO ENSURE ACCURATE AND FUTURE DIRECT ACCESS TO THESE BURIED SERVICES.
- 16.4. THE FIELD INSTALLATION DRAWINGS WILL BE REVIEWED AT REGULAR INTERVALS BY THE CONSULTANT, AND WILL BE TAKEN INTO CONSIDERATION WHEN REVIEWING THE MONTHLY APPLICATIONS FOR PROGRESS PAYMENT.
- 16.5. AFTER THE DATE OF THE SUBSTANTIAL PERFORMANCE OF THE WORK, INCORPORATE ALL CHANGES MADE TO THE BUILDING THROUGH CHANGE ORDERS AND THE CONSULTANT'S INSTRUCTIONS. UTILIZE NORMAL RECOGNISED DRAFTING PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY, WHETHER CAD OR HAND DRAWN. TRANSFER ALL RECORDINGS FROM THE FIELD INSTALLATION DRAWINGS TO THE DISCS, AND SUBMIT 3 (THREE) SETS OF PRINTS TOGETHER WITH THE ORIGINALS IN DISC FORMAT, TO THE CONSULTANT FOR REVIEW AND PRESENTATION TO THE OWNER.

17. FIELD SUPERVISION AND WORKMANSHIP
- 17.1. THROUGHOUT THE CONSTRUCTION OF THE PROJECT, A PROPERLY QUALIFIED AUDIO VISUAL SUPERINTENDENT MUST BE AVAILABLE AT ALL TIMES. THE SUPERINTENDENT WHO STARTS THE WORK MUST NOT BE CHANGED UNLESS REQUESTED BY THE CONSULTANT, OR BY THE CONTRACTOR WITH WRITTEN PERMISSION FROM THE CONSULTANT.
- 17.2. IN ADDITION, PROVIDE PROPER OFFICE SUPERVISION OF THE WORK. THE PERSON RESPONSIBLE FOR OFFICE SUPERVISION MUST VISIT THE SITE AS OFTEN AS NECESSARY, TO ENSURE THE WORK IS PROPERLY PERFORMED, AND ATTEND MEETINGS WHEN SO REQUESTED.
- 17.3. SUBMIT RESUME OF PROPOSED SUPERVISION STAFF WHEN CALLED UPON TO DO SO BY THE CONSULTANT.
- 17.4. WORKMANSHIP THROUGHOUT THE CONSTRUCTION OF THE INSTALLATION INCORPORATING ALL CHANGES FROM THE RECORD DRAWINGS, IN THE FORM OF AUTOCAD RELEASE ON CD.
18. IDENTIFICATION
- 18.1. IDENTIFY ALL AUDIO VISUAL EQUIPMENT AND WIRING.
- 18.2. WORKING ON NAMEPLATES AND LABELS TO BE APPROVED BY THE CONSULTANT SHALL BE IN ENGLISH.
- 18.3. USE NAMEPLATES FOR:
- 18.3.1. AUDIO VISUAL EQUIPMENT RACKS (BACK OF HOUSE) AND MISCELLANEOUS SYSTEM AND OTHER EQUIPMENT, INDICATING SYSTEM.
- 18.4. NAMEPLATES SHALL BE LAMINATED, 3MM (1/8") THICK, WITH A FACE COLOUR TO MATCH THE COLOUR OF THE EQUIPMENT ON WHICH IT IS MOUNTED, AND A CONTRASTING (BLACK OR WHITE) CORE.
- 18.5. NAMEPLATES SHALL BE MECHANICALLY ATTACHED TO EQUIPMENT, BY MEANS OF RIVETS OR SELF-TAPPING SCREWS.
- 18.6. USE LABELS FOR CONDUITS, AUDIO VISUAL CABLES AND CONDUCTORS INDICATE THEIR FULL CIRCUIT NUMBER, AND FOR INDICATION OF EQUIPMENT CONNECTED TO UNINTERRUPTED POWER SUPPLIES (UPS).
- 18.7. LABELS SHALL BE OF THE MYLAR/CLOTH SELF-ADHESIVE TYPE, BLACK LETTERING ON WHITE BACKGROUND, FOR AUDIO VISUAL CONDUITS, CABLES AND EQUIPMENT AT EACH END OF THE RUN AND AT JUNCTION AND PULL BOXES AND RED LETTERING ON A WHITE BACKGROUND FOR EQUIPMENT ON UPS READING "CAUTION - DEVICE CONNECTED TO UNINTERRUPTED POWER SUPPLY".
- 18.7.1. AUDIO VISUAL LABELLING
- 18.7.2. IDENTIFY ALL AUDIO, VIDEO, CONTROL AND ASSOCIATED WIRING WITH APPROPRIATE COMPUTER GENERATED LABELLING SCHEME AS APPROVED BY THE CONSULTANT. LABELLING DEVICES THAT PRINT ON HEAT SHRINK SUCH AS BRADY AND RHINO LABEL MAKERS ARE PREFERRED. SHOULD A STANDARD LABEL MAKER BE USED, TRANSPARENT HEAT SHRINK SHALL EXTEND A MINIMUM OF 6MM (1/4") PAST THE LABEL AT EACH END.
- 18.7.3. LABELLING SCHEME SHALL BE LOGICAL AND CONSISTENT THROUGHOUT THE PROJECT WITH IDENTICAL IDENTIFIERS AT OPPOSING CONNECTION POINT. LABELS SHALL BE EQUALLY IDENTIFIED ON ALL AS-BUILT TECHNICAL DRAWINGS.
- 18.7.4. ALL WIRABLE CONTROL POINTS SHALL BE LOGICALLY IDENTIFIED AND LABELLED USING APPROPRIATE LABELLING METHODS. LABELLING SHALL BE EXECUTED IN A NEAT AND MEANINGFUL MANNER, SQUARED AND CENTRED WHEREVER POSSIBLE.
- 18.7.5. WHERE IT IS NOT POSSIBLE TO LABEL USER CONTROLS NEATLY WHILE MAINTAINING LEGIBILITY, LABELS MAY BE PLACED ON A BLANK RACK PANEL ABOVE DESIGNATED EQUIPMENT FOR PROPER PLACEMENT OF LABELS.
- 18.7.6. APPROPRIATE IDENTIFICATION TAGS AND CONVENTIONS SHALL BE APPLIED IN ALL SOFTWARE CONFIGURATION FILES.
- 18.7.7. THIS SHALL INCLUDE ALL INPUTS, OUTPUT AND CONTROL LOCATIONS.
- 19.1. PROVIDE HANGERS, SLEEVES AND SUPPORTS AS REQUIRED.
- 19.2. INSERTS ARE TO BE OF LEAD SHIELD TYPE.
- 19.3. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL, MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.
20. INTENT
- 20.1. TO THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED.
- 20.2. WHERE DIFFERENCES OCCUR, THE MAXIMUM CONDITION SHALL GOVERN.
- 20.3. ANY MISCELLANEOUS ITEMS, HANGWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE CONTRACT PRICE.
21. LOCATION OF OUTLETS
- 21.1. CHANGE LOCATION OF DEVICES AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3M (10 FT.) AND INFORMATION IS GIVEN BEFORE INSTALLATION.
- 21.2. CHANGE DEVICES TO BE ADJACENT TO ONE ANOTHER IN PLAN BUT OCCUR AT DIFFERENT ELEVATIONS, THEY SHALL BE VERTICALLY ALIGNED.
22. MATERIALS AND EQUIPMENT
- 22.1. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, C.S.A. CERTIFIED, AND MANUFACTURED TO THE STANDARDS SPECIFIED.
- 22.2. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT C.S.A. CERTIFIED, OBTAIN SPECIAL APPROVAL FROM THE ARCHITECT AND THE CONSULTANT.
- 22.3. INDICATE WHICH MANUFACTURER IN THE COLUMN TITLED "BASE AND APPROVED EQUIVALENT" IS CARRIED IN THE BID, ON THE SUPPLEMENTARY TENDER FORM. IF THIS IS NOT INDICATED, THE SPECIFIED "BASE" EQUIPMENT (THE FIRST NAME IN THE LIST) SHALL BE ASSIGNED TO HAVE BEEN CARRIED.
- 22.4. IF "SUBSTITUTE" MANUFACTURER'S EQUIPMENT IS SUBMITTED FOR APPROVAL/COST SAVINGS, THE CONSULTANT RESERVES THE RIGHT TO CHARGE A FAIR AND REASONABLE FEE TO REVIEW AT THE CONTRACTOR EXPENSE.
- 22.5. ACCEPTANCE OF "SUBSTITUTE" MANUFACTURER'S EQUIPMENT SHALL BE BASED UPON THE CONSULTANT'S REVIEW AND RECOMMENDATION. SHOULD SUCH EQUIPMENT NOT MEET THE DESIGN INTENT, THE CONSULTANT RESERVES THE RIGHT TO REJECT THIS EQUIPMENT.
- 22.6. "SUBSTITUTE" MANUFACTURER'S EQUIPMENT MUST BE EQUAL IN INTENT, CONSTRUCTION AND PERFORMANCE, IN EVERY RESPECT, AS DEFINED BY THE CONSULTANT, OR WILL BE REJECTED BY THE CONSULTANT AT THE TIME OF SHOP DRAWING SUBMITTAL, THE CONTRACTOR TO PROVIDE THE "BASE" EQUIPMENT AS SPECIFIED.
- 22.7. INTO THE SPACES TO THE ABOVE REQUIREMENT.
- 22.8. IF A SINGLE ITEM IS SPECIFIED, THE SPECIFIED ITEM SHALL FORM THE BASIS OF THE BID, WITH NO SUBSTITUTES ALLOWED. THE CONTRACTOR HOWEVER, SHALL HAVE THE OPTION OF OFFERING A "DEDUCTION" FROM THE BID, BY SUGGESTING A "SUBSTITUTION" IN THE SUPPLEMENTARY AUDIO VISUAL TENDER FORM.
- 22.9. IF A MANUFACTURER IS NOTED BY THE CONTRACTOR IN THE SUBSTITUTION COLUMN ONLY, THAT MANUFACTURER WILL BE CONSIDERED AS A SUBSTITUTE, AND A SAVINGS FROM THE BASE BID PRICE MUST BE SHOWN. THE BASE BID PRICE MUST INCLUDE THE BASE AND "APPROVED EQUIVALENT" MANUFACTURERS ONLY.
23. MEETINGS
- 23.1. THE CONTRACTOR SHALL ATTEND ALL REQUIRED SITE MEETING AND/OR CONFERENCE CALLS AS REQUESTED BY THE OWNER AND/OR CONSULTANT.
- 23.2. AT A MINIMUM, THE CONTRACTOR SHALL ALLOW FOR WEEKLY SITE MEETINGS AND CONFERENCE CALLS DURING THE INSTALLATION PHASE OF WORK DEFINED BY THIS DIVISION.
24. MEETING MINUTES
- 24.1. THE CONTRACTOR SHALL MINUTE ALL MEETINGS.
- 24.2. DRAFT MINUTES SHALL BE CIRCULATED WITHIN 24 HOURS EXCLUDING WEEKENDS AND HOLIDAYS. FINAL MINUTES SHALL BE ISSUED WITHIN 48 HOURS OF THE MEETING.
- 24.3. MINUTES SHALL BE SENT TO ALL PRESENT AND ANY KEY STAKEHOLDER INCLUDING BUT NOT LIMITED TO THE CONSULTANT AND KEY OWNER STAKEHOLDERS.
- 25.1. MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTRE LINE OF EQUIPMENT UNLESS SPECIFIED OR INDICATED OTHERWIS.
- 25.2. MOUNTING HEIGHT OF EQUIPMENT IS NOT INDICATED, VERIFY WITH THE CONSULTANT BEFORE PROCEEDING WITH INSTALLATION.
26. NOISE AND VIBRATION
- 26.1. AUDIO VISUAL EQUIPMENT SHALL OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.
- 26.2. VIBRATION ISOLATORS SHALL BE PROVIDED WHERE REQUIRED. THIS INCLUDES TO MINIMIZE ANY BUILDING OR MECHANICAL VIBRATIONS THAT NEGATIVELY IMPACT THE AUDIO VISUAL EXPERIENCE. SUCH DEVICES THAT TYPICALLY REQUIRE ISOLATION INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWINGS:
- 26.2.1. CAMERAS AND DISPLAY ON OR NEAR CORE WALLS
- 26.2.2. PROJECTORS
- 26.2.3. EQUIPMENT LIFTS (CAMERA, PROJECTOR, ETC.)
27. OWNERS EQUIPMENT
- 27.1. WHERE SPECIFIED IN THE CONTRACT DOCUMENTS INSTALL ALL EQUIPMENT PROVIDED BY THE OWNER.
- 27.2. RECEIVE, STORE AND INSTALL EQUIPMENT, AND ACCEPT FULL RESPONSIBILITY FOR IT AND ITS CORRECT OPERATION.
28. OWNERS INSTRUCTION AND TRIAL USAGE
- 28.1. INSTRUCT THE OWNERS OPERATING PERSONNEL IN THE STARTUP, OPERATION, CARE AND MAINTENANCE OF ALL THE EQUIPMENT. ALL EQUIPMENT TO BE TESTED AND OPERATIONAL BEFORE INSTRUCTION. PROVIDE SHEETS FOR SIGNATURES OF THE OWNERS REPRESENTATIVE AND OPERATING PERSONNEL PRESENT AT EACH INSTRUCTION PERIOD.
- 28.2. PROVIDE THESE SERVICES FOR SUCH PERIOD, AND FOR AS MANY VISITS AS NECESSARY TO ENSURE THAT THE OWNERS OPERATING PERSONNEL ARE CONVERSANT WITH ALL ASPECTS OF ITS CARE AND OPERATION.
- 28.3. SINCE COMMISSIONING IS INCLUDED IN THE CONTRACT:
- 28.3.1. PRIOR TO ANY INSTRUCTION SESSIONS, COMMISSIONING COORDINATOR SHALL SUBMIT CHECK LISTS OF EACH SYSTEM OR EQUIPMENT INDICATING THEIR OPERATION STATUS FOR ACCEPTANCE BY THE OWNER.
- 28.3.2. COORDINATE ALL INSTRUCTION SESSIONS TO SUIT THE OWNERS OPERATION PERSONNEL SCHEDULE. SUBMIT PROPOSED INSTRUCTION SESSION SCHEDULE C/W TRAINING AGENDA (1) ONE MONTH PRIOR TO SESSION START DATE TO THE OWNER FOR REVIEW.
- 28.3.3. UPON COMPLETION OF EACH TRAINING SESSION, SUBMIT RECORD OF INSTRUCTION INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- 28.3.3.1. DATE/TIME OF SESSION.
- 28.3.3.2. DURATION.
- 28.3.3.3. TRAINING SESSION TITLE.
- 28.3.3.4. NAME AND ATTENDANCE LIST OF THE OWNERS REPRESENTATIVES, INSTRUCTOR(S) AND ALL OTHER PERSONNEL ATTENDING.
- 28.4. THE OWNERS OPERATING PERSONNEL MUST BE PERMITTED TO OPERATE THE SYSTEMS UNDER THE CONTRACTORS SUPERVISION FOR A REASONABLE PERIOD OF TIME PRIOR TO THE SUBSTANTIAL PERFORMANCE OF THE WORK. THIS USE SHALL NOT BE MISCONSTRUED AS ACCEPTANCE OF THE EQUIPMENT.
29. PERMITS AND FEES
- 29.1. THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE ALL COSTS ASSOCIATED WITH ANY PERMITS, FEES AND ENVIRONMENTAL CHARGES AS REQUIRED.
- 29.2. THE CONSULTANT WILL PROVIDE UPON REQUEST, AT THE CONTRACTORS COST, THE REQUIRED QUANTITY OF DRAWINGS AND SPECIFICATIONS.
- 29.3. ARRANGE FOR THE TIMELY INSTALLATION OF THE PERMANENT ELECTRICAL SERVICE, AND COMPLY WITH ALL OF THE AUTHORITIES REQUIREMENTS.
- 29.4. PROVIDE CERTIFICATE(S) OF ACCEPTANCE FROM THE AUTHORITIES INSPECTION DEPARTMENT, UPON COMPLETION OF THE WORK.
30. PROGRESS PAYMENTS
- 30.1. SUBMIT A COMPLETE BREAKDOWN OF THE CONTRACT WITH EACH PROGRESS BILLING, INDICATING PERCENTAGE OF THE WORK COMPLETE, IN A FORM ACCEPTABLE TO THE OWNER/CONSULTANT.
31. PROJECT PHOTOGRAPHS AND REFERENCES
- 31.1. THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM THE OWNER TO TAKE AND USE PHOTOGRAPHS FOR ANY PURPOSE.
- 31.2. THE CONTRACTOR SHALL NOT USE THE OWNER OR PROJECT TEAM AS REFERENCES WITHOUT PRIOR WRITTEN PERMISSION FROM THE RESPECTIVE PARTY.

32. PROTECTION
- 32.1. PROTECT EXPOSED LIVE EQUIPMENT DURING CONSTRUCTION FOR PERSONNEL SAFETY.
- 32.2. TAKE ALL REASONABLE STEPS TO PROTECT AUDIO VISUAL EQUIPMENT, TOOLS AND MATERIALS FROM DUST, DAMAGE AND THEFT INCLUDING BUT NOT LIMITED TO SECURE STORAGE, DUST COVERS, IMPACT PROTECTION, ETC.
- 32.3. THE GENERAL CONTRACTOR SHALL INSTALL DOORS FOR TEMPORARY STORAGE ROOMS CONTAINING THE CONTRACTORS NON-INSTALLED AUDIO VISUAL EQUIPMENT. KEEP THESE DOORS LOCKED, EXCEPT WHEN UNDER DIRECT SUPERVISION OF AN AUDIO VISUAL SUPERINTENDENT.
33. SUBMITTALS - AS-BUILT DRAWINGS - AUDIO VISUAL
- 33.1. PROVIDE AS-BUILT DRAWINGS OF THE INSTALLATION INCORPORATING ALL CHANGES FROM THE RECORD DRAWINGS, IN THE FORM OF AUTOCAD RELEASE ON CD.
- 33.2. PROVIDE PDF FORMAT DRAWINGS ON SOLID STATE MEDIA AND ONE (1) FULL SIZE HARD COPY SET FOR REVIEW.
- 33.3. AS PART OF THE AUDIO VISUAL OPERATION AND MAINTENANCE MANUALS, THE FOLLOWING AS-BUILT DRAWINGS SHALL BE PROVIDED FOR ALL AUDIO VISUAL SYSTEMS AS NOTED IN DIVISION 27 CONTRACT DOCUMENTS.
- 33.3.1. COVER PAGE INCLUDING LEGEND, NOTES AND ALL OTHER PERTINENT INFORMATION.
- 33.3.2. DEVICE PLANS INDICATING THE FINAL LAYOUT AND LOCATION OF ALL AUDIO VISUAL EQUIPMENT, DEVICES, INFRASTRUCTURE, ACCESS HATCHES, AND INSTALLED COMPONENTS.
- 33.3.3. DEVICE CONNECTIVITY (WIRING DIAGRAMS) SHOWING THE FINAL CONNECTIONS BETWEEN EQUIPMENT, CABLE COLOUR CODING AND NUMBERING OF ALL EQUIPMENT ASSEMBLIES AND TERMINAL CABINETS.
- 33.3.4. DEVICE DETAILS FOR ALL MOUNTING CONFIGURATIONS INCLUDING ALL HARDWARE USED FOR MOUNTING TO STRUCTURE. TYPICAL DETAILS MAY BE USED TO DEMONSTRATE MOUNTING METHODS WHERE FIELD IMPLEMENTATION VARIES SLIGHTLY (IE. LCD MOUNT WHERE HEIGHTS AFF MAY VARY).
34. SUBMITTALS - SHOP DRAWINGS - AUDIO VISUAL
- 34.1. SUBMITTED SHOP DRAWINGS MUST INDICATE DETAILS OF CONSTRUCTION, DIMENSIONS, SCALE, CAPACITIES, WEIGHTS AND ELECTRICAL PERFORMANCE CHARACTERISTICS OF EQUIPMENT OR MATERIALS, AS WELL AS A REFERENCE TO SPECIFICATION SECTION NUMBER, AND PROJECT NAME.
- 34.2. SHOP DRAWINGS SHALL BE PROVIDED IN THE FORM OF 1 (ONE) ORIGINAL AND 3 (THREE) COPIES, WITH SUFFICIENT SPACE ON THE FRONT FOR ALL CONSULTANT'S AND CONTRACTOR'S "REVIEW" STAMPS.
- 34.3. WORK AFFECTED BY SUBMITTAL SHALL NOT PROCEED UNTIL REVIEW IS COMPLETE.
- 34.4. REVIEW SUBMITTALS PRIOR TO SUBMISSION TO THE CONSULTANT. THIS REVIEW REPRESENTS THAT NECESSARY REQUIREMENTS HAVE BEEN DETERMINED AND VERIFIED, OR WILL BE, AND THAT EACH SUBMITTAL HAS BEEN CHECKED AND COORDINATED WITH REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS AND BEARS STAMP OF THE CONTRACTOR.
- 34.5. CHANGES MADE TO THE SHOP DRAWINGS BY THE CONSULTANT WILL NOT AFFECT THE CONTRACT PRICE.
- 34.6. COMPLETE AND COMPREHENSIVE BILL OF MATERIALS ON A PER ROOM BASIS.
- 34.7. DETAILED LINE DIAGRAM INDICATING EVERY PIECE OF EQUIPMENT LOCATION, ETC.
- 34.8. SPECIFICATION (CUT) SHEETS FOR ALL MATERIAL AND EQUIPMENT REFERRED TO IN CONTRACT DOCUMENT. CATALOG SHEETS ARE NOT ACCEPTABLE.
- 34.9. FINISH COORDINATION SCHEDULE (IF REQUIRED)
- 34.10. ALL CUSTOMIZABLE GRAPHICAL USER INTERFACES (GUI)
35. SUBMITTALS - OPERATION AND MAINTENANCE MANUALS - AUDIO VISUAL
- 35.1. PROVIDE THREE (3) SETS OF OPERATION AND MAINTENANCE MANUALS. PROVIDE SEPARATE BINDERS FOR EACH TRADE.
- 35.2. UPON SUBSTANTIAL COMPLETION, THE CONTRACTOR SHALL COMPLETE AND SUBMIT SYSTEM MANUALS TO THE CONSULTANT FOR REVIEW. UPON APPROVAL, MANUALS SHALL BE PRESENTED TO THE OWNER AT TIME OF TRAINING. MANUALS SHALL BE USED AS A RESOURCE MATERIAL DURING THE TRAINING PROCESS TO MAKE THE OWNER AWARE OF THE CONTRACTORS SYSTEMS AND STATEMENT.
- 35.3. REVIEW INFORMATION PROVIDED IN THE MATERIAL INSTRUCTIONS AND MANUALS WITH THE OWNERS OPERATING PERSONNEL TO ENSURE A COMPLETE UNDERSTANDING OF ALL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.
- 35.4. AS PART OF THE AUDIO VISUAL OPERATION AND MAINTENANCE MANUALS, THE FOLLOWING SHALL BE PROVIDED FOR ALL AUDIO VISUAL SYSTEMS AS NOTED IN DIVISION 27 CONTRACT DOCUMENTS:
- 35.4.1. COVER PAGE SHALL INCLUDE THE FOLLOWING:
- 35.4.1.1. OWNER NAME INCLUDING LOGO IF APPLICABLE
- 35.4.1.2. PROJECT NAME INCLUDING LOGO IF APPLICABLE
- 35.4.1.3. CONSULTANT'S CONTACT INFORMATION INCLUDING LOGO
- 35.4.1.4. CONTRACTORS' CONTACT INFORMATION INCLUDING LOGO IF APPLICABLE
- 35.4.1.5. DATE OF ISSUANCE
- 35.4.2. DETAILED INDEX OF THE CONTENTS OF THE OPERATION AND MAINTENANCE MANUALS
- 35.4.3. COMPLETE STEP BY STEP OPERATING INSTRUCTIONS
- 35.4.4. EQUIPMENT AND COMPONENTS OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS
- 35.4.5. LOUDSPEAKER TAP CONNECTIONS ON ALL TRANSFORMERS, IMPEDANCE OF ALL SPEAKER CIRCUITS AND DETAILS OF IMPEDANCE MATCHING NETWORKS (ON A SEPARATE SHEET).
- 35.4.6. DESIGNATIONS AND SETTINGS OF ALL SIGNAL PROCESSING EQUIPMENT, ZONE, GAIN AND OTHER CONTROLS (ON A SEPARATE SHEET).
- 35.4.7. CONNECTIONS TO ALL AMPLIFIERS AND THE OUTPUT VOLTAGE OF ALL AMPLIFIERS DURING NORMAL OPERATION (ON A SEPARATE SHEET).
- 35.4.8. PERFORMANCE DATA ON THE COMPLETED SYSTEM AS SPECIFIED UNDER PERFORMANCE TESTING.
- 35.4.9. WARRANTY CERTIFICATE AND STATEMENT
- 35.4.10. CERTIFICATES FROM INSPECTION AUTHORITIES (IF APPLICABLE).
- 35.4.11. LIST OF ORIGINAL EQUIPMENT MANUFACTURER (OEM) WARRANTIES
- 35.4.12. TROUBLESHOOTING GUIDE OF MOST COMMON SYSTEM FAILTS INCLUDING STEP BY STEP REMEDY PROCEDURES.
- 35.4.13. DETAILED STEP BY STEP PROCEDURES FOR PREVENTATIVE MAINTENANCE OF ALL USER MAINTAINABLE EQUIPMENT.
- 35.4.14. STATEMENT OF COMPLETION
- 35.4.15. LIST OF KEY CONTACTS FOR FURTHER SALES AND SERVICE RELATING SPECIFICALLY TO THE PROJECT AS OUTLINED HEREIN. CONTACT INFORMATION SHALL INCLUDE 24/7 CONTACT NUMBERS FOR SERVICE.
- 35.4.16. EACH OPERATION AND MAINTENANCE MANUALS SHALL INCLUDE A COMPLETE SOFT COPY ON EITHER CD OR DVD AS REQUIRED. DIGITAL MEDIA SHALL BE FORMATTED AS SUCH TO BE ACCESSIBLE ON BOTH WINDOWS® AND MACINTOSH® OPERATING SYSTEMS. ALL DOCUMENTS SHALL BE IN PDF FORMAT FOR UNIVERSAL VIEWING.
- 35.5. AS-BUILT DRAWINGS
- 35.6. SUGGESTED SAVINGS
- 36.1. COMPLETE, AS PART OF THE SUPPLEMENTARY TENDER FORM, A LIST OF POSSIBLE DEDUCTIONS FROM THE BID PRICE FULLY APPRECIATE THAT THE ACCEPTANCE OF THESE SAVINGS SHALL BE AT THE DISCRETION OF THE OWNER AND CONSULTANT.
37. TENDER FORM
- 37.1. ATTACHED AT THE FRONT OF THIS DOCUMENT IS THE AUDIO VISUAL TENDER FORM.
- 37.2. ENSURE ALL INFORMATION REQUESTED IS PROVIDED. INCOMPLETE INFORMATION MAY RENDER THIS BID AS NULL AND VOID.
38. TEMPORARY SERVICE
- 38.1. PROVIDE EXTENSION CORDS, EXTENSION LIGHTING AND EQUIPMENT REQUIRED FOR THE WORK OF THIS TRADE. THE COST OF THIS WORK SHALL BE INCLUDED IN THE BID PRICE.
39. VALUATION OF CHANGES
- 39.1. REFER TO AND CONFORM TO THE REQUIREMENTS SET OUT IN DIVISION 1 AND SUPPLEMENTARY AUDIO VISUAL TENDER FORM.
- 39.2. SUBMISSIONS WILL BE SORTLIZED BY THE CONSULTANT AND THEREFORE REQUIRE COMPLETE DETAILED ITEMIZATION OF ALL MATERIAL, LABOUR, UNIT PRICES AND OVER-HEAD AND PROFIT MARK-UPS.
- 39.2.1. LUMP SUM COSTS SUBMITTED FROM SUBCONTRACTORS WILL NOT BE ACCEPTED. ALL COSTS SHALL HAVE COMPLETE DETAILED ITEMIZATION AS DESCRIBED ABOVE.
40. WARNING SIGNS
- 40.1. PROVIDE WARNING SIGNS, AS SPECIFIED TO MEET REQUIREMENTS OF MINISTRY OF LABOUR SAFETY INSPECTION, INSPECTION DEPARTMENT, AUTHORITIES HAVING JURISDICTION AND THE CONSULTANT.
- 40.2. USE DECAL SIGNS, IN ENGLISH AS REQUIRED BY AUTHORITIES.
41. WIRE PULLING LUBRICANT
- 41.1. LUBRICANT TO BE NON-CORROSIVE AND CSA APPROVED FOR THE TYPE OF CABLE USED.
- 41.2. LUBRICANTS TO BE SOAP OR WAX BASED, DEPENDING UPON APPLICATION. USE SOAP BASED FOR SHORT RUNS AND FOR SEMI-CONDUCTING INSULATED WIRES, AND WAX BASED FOR LONG RUNS.
42. WORK IN RENOVATED AREAS
- 42.1. WHEN SELECTING AND/OR MAKING SAFE EXISTING WORK, ENSURE THAT IT INCLUDES ALL UNNECESSARY WIRING.
- 42.2. ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS TO BE REMOVED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND TO MEET THE APPROVAL OF THE AUTHORITIES HAVING JURISDICTION.
- 42.3. ALL EXISTING AUDIO VISUAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.
- 42.4. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF THE CONSULTANT.
- 42.5. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.
- 42.6. PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE OWNERS PERMISSION FOR THE USE OF ELECTRICAL, PLUMBING OR DRAINAGE OUTLETS.
- 42.7. PROVIDE DAILY CLEAN-UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN, PERFECT CONDITION.

PROJECT LOGO



KEY PLAN

6	ISSUED FOR TENDER	2025-11-27
6	ISSUED FOR 100% CD	2025-11-21
2	ISSUED FOR 100% CD	2025-07-06
3	ISSUED FOR 100% DO R1	2025-09-19
2	ISSUED FOR 100% DO	2025-07-10
1	ISSUED FOR 10% DO	2025-06-18

Revisions

No.	DESCRIPTION	DATE
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DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT / ENGINEER BEFORE PROCEEDING.

ONLY FIGURED DIMENSIONS MUST BE USED.

THE CONTRACTOR MUST CHECK THE DIMENSIONS ON SITE.

THE DRAWING IS PROTECTED BY COPYRIGHT.

ALL DIMENSIONS ARE SHOWN IN MILLIMETERS.

DO NOT SCALE THE DRAWINGS.

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PROJECT:

University of Toronto  
CQIC Suite and QIS Lab

UNIVERSITY OF TORONTO  
27 King's College Cir,  
Toronto, ON M5S 1A1

DRAWING TITLE:

**AUDIO VISUAL  
SPECIFICATIONS - 27 41 10 -  
AV GENERAL REQ.**

SHEET SIZE: ARCH D (840x1144)

PROJECT NO: 251016

DRAWING NO: AV003

DATE: 2025-11-27 09:40 AM

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# AUDIO VISUAL SPECIFICATION SECTION 27 41 16

## 1. GENERAL

### 1.1. SUMMARY

- 1.1.1. SECTION INCLUDES
- 1.1.2. LOCALIZED AUDIO SYSTEMS
- 1.1.3. LOCALIZED VIDEO SYSTEMS
- 1.2. RELATED SECTIONS
- 1.2.1. COMPLY WITH RELEVANT SECTIONS OF THIS AND OTHER DIVISIONS OF THIS SPECIFICATION
- 1.2.2. READ AND BE GOVERNED BY SECTION 27 41 01 - AUDIO VISUAL GENERAL REQUIREMENTS
- 1.3. REFERENCES - CODES AND STANDARDS

### 1.3.1. REFERENCES DOCUMENTS

- 1.3.1.1. INFOCOMM
- 1.3.1.2. AV INSTALLATION HANDBOOK
- 1.3.1.3. AUDIO VISUAL BEST PRACTICES

### 1.3.2. BROADCASTING AND COMMUNICATIONS

- 1.3.2.1. CANADIAN STANDARDS ASSOCIATION (CSA)
- 1.3.2.2. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- 1.3.2.3. NFPA 70, ARTICLE 517, NATIONAL ELECTRIC CODE
- 1.3.2.4. NFPA 101, LIFE SAFETY CODE
- 1.3.2.5. ELECTRONIC INDUSTRIES ASSOCIATION (EIA)
- 1.3.2.6. REC 1204, POWER SUPPLIES
- 1.3.2.7. REFERENCE STANDARDS
- 1.3.2.8. CANADIAN STANDARDS ASSOCIATION (CSA INTERNATIONAL)
- 1.3.2.9. CSA C22.1-08, CANADIAN ELECTRICAL CODE, PART 1 (11TH EDITION) SAFETY STANDARD FOR ELECTRICAL INSTALLATIONS
- 1.3.2.10. CAN/CSA-C22.3-M0-14M7 (R1997), OVERHEAD SYSTEMS
- 1.3.2.11. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- 1.3.2.12. NFPA 70, NATIONAL ELECTRIC CODE
- 1.3.2.13. UNDERWRITERS LABORATORIES OF CANADA (ULC)
- 1.3.2.14. ULC-S517-1996, INSTALLATION AND CLASSIFICATION OF CLOSED CIRCUIT VIDEO EQUIPMENT (CCVC) SYSTEMS FOR INSTITUTIONAL AND COMMERCIAL SECURITY SYSTEMS
- 1.3.2.15. INDUSTRY CANADA
- 1.3.2.16. CS-05-1996, TELECOMMUNICATION APPARATUS COMPLIANCE SPECIFICATION, ISSUE 8
- 1.3.2.17. GOVERNING BODIES
- 1.3.2.18. THE AUDIO VISUAL SYSTEMS SHALL CONFORM TO THE HIGHEST QUALITY STANDARDS. THE FOLLOWING LIST PROVIDES A GENERAL INDICATION OF THE INDUSTRY ORGANIZATIONS WITH PUBLISHED TECHNICAL STANDARDS, AND IS NOT INTENDED TO BE ALL-INCLUSIVE.
- 1.3.2.19. AES - AUDIO ENGINEERING SOCIETY
- 1.3.2.20. EBU - EUROPEAN BROADCAST UNION
- 1.3.2.21. EIA - ELECTRONIC INDUSTRY ASSOCIATIONS
- 1.3.2.22. IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
- 1.3.2.23. INFOCOMM INTERNATIONAL
- 1.3.2.24. NAB - NATIONAL ASSOCIATION OF BROADCASTERS
- 1.3.2.25. NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
- 1.3.2.26. NSCA NATIONAL SYSTEMS CONTRACTORS ASSOCIATION
- 1.3.2.27. NTSC NATIONAL TELEVISION STANDARDS COMMITTEE
- 1.3.2.28. SMPTE - SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS
- 1.3.2.29. SCSE & SYSTEMS DESCRIPTIONS
- 1.3.2.30. 1.4.1. REFER TO SYSTEM LINE ON THE AV-401 SERIES DRAWINGS.
- 1.3.2.31. 1.4.1.1. THIS AV-OVERVIEW PRESENTS PROVIDES USB-C BYOD CONFIGURING IN THE MEETING ROOM VIA A LOGITECH SWITCH EXTENDER AND HDMI BYOD PRESENTATION ONLY IN THE COLLABORATION HUB, WITH UNIFIED ROUTING AND THE ABILITY TO MIRROR ANY INPUT ACROSS BOTH DISPLAYS. IN THE MEETING ROOM, USERS CONNECT THEIR LAPTOP USING A SINGLE USB-C CABLE. THE LOGITECH SWITCH EXTENDER RECEIVES THE LAPTOPS VIDEO, AUDIO AND USB DATA AND OUTPUTS HDMI TO AN AV ENCODER MOUNTED BEHIND THE 85" DISPLAY MONITOR, ENABLING FULL INTERACTION WITH THE RALLY BAR AND TABLE MOUNTED MIC FOR CONFERENCING. IN THE COLLABORATION HUB, HDMI WALL PLATE PROVIDES A SECOND AV ENCODER MOUNTED BEHIND THE 65" DISPLAY MONITOR, BOTH DISPLAYS ARE ALSO TAKING HDMI FEED IN/AV DECODER, BOTH AV ENCODERS, BOTH AV DECODERS, THE TOUCH PANEL AND THE CONTROL PROCESSOR ARE CONNECTED TO THE AV NETWORK SWITCH FOR VIDEO, AUDIO, CONTROL AND REMOTE COMMUNICATION. THE RALLY BAR IS CONNECTED TO THE CLIENT NETWORK FOR CONFERENCING AND THE CONTROL PROCESSOR IS ALSO CONNECTED TO THE CLIENT NETWORK FOR NETWORK CONTROL AND MONITORING. THE CLIENT PROVIDED DIGITAL SIGNALS MINIPAC CONNECTS TO THE CLIENT NETWORK AND OUTPUTS DIRECTLY TO THE 70" DISPLAY MONITOR. INDEPENDENT OF THE AV NETWORK, A TOUCH PANEL LOCATED BELOW THE DISPLAY IN THE MEETING ROOM PROVIDES SYSTEM CONTROL, ALLOWING USERS TO SELECT ANY SOURCE AND MIRROR IT TO EITHER OR BOTH DISPLAYS. ALL COMPONENTS OPERATE TOGETHER TO PROVIDE A UNIFIED AV OVER IP ENVIRONMENT WITH FULL CONFERENCING CAPABILITY VIA BYOD IN THE MEETING ROOM AND PRESENTATION FUNCTIONALITY IN THE COLLABORATION HUB. THE AV SYSTEM DOES NOT INCLUDE INTEGRATION WITH LIGHTING, SHADOWBLINDS, HVAC OR FIRE ALARM SYSTEMS.
- 1.3.2.32. 1.4.1.2. TYPE B - QIS LAB (ROOM - 337)
- 1.3.2.33. 1.4.1.2.1. THIS SYSTEM PROVIDES A SIMPLE BYOD PRESENTATION SOLUTION USING A SINGLE WIRED HDMI PATH FROM THE USER'S LAPTOP TO THE FRONT OF ROOM DISPLAY MONITOR. A CRESTRON MPWP-152 HDMI INPUT/OUTPUT WALL PLATE IS INSTALLED BELOW THE TABLE. THE HDMI CABLE FROM THE UNDER TABLE PLATE IS ROUTED UP TO THE TABLETOP THROUGH THE FURNITURE VENDOR PROVIDED TABLE BOX, WHICH FUNCTIONS AS A PASS THROUGH ONLY. FROM THERE, THE HDMI SIGNAL TRAVELS VIA INWALL CABLING TO THE WALL MOUNTED DISPLAY. THE SYSTEM PROVIDES A UNIFIED AV OVER IP ENVIRONMENT WITH FULL CONFERENCING CAPABILITY VIA BYOD IN THE MEETING ROOM AND PRESENTATION FUNCTIONALITY IN THE COLLABORATION HUB. THE AV SYSTEM DOES NOT INCLUDE INTEGRATION WITH LIGHTING, SHADOWBLINDS, HVAC OR FIRE ALARM SYSTEMS.
- 1.3.2.34. 1.5. SYSTEM SOFTWARE CONFIGURATION
- 1.3.2.35. 1.5.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A COMPLETE AND WORKING SYSTEM IN THE PROVISION OF SOFTWARE PROGRAMMING.
- 1.3.2.36. 1.5.2. ALL SOFTWARE PROGRAMMING SHALL BE INCLUDED IN THE SCOPE OF THE CONTRACTOR'S WORK. NO PORTION MAY BE OMITTED FROM THE SCOPE OF CONTRACTORS WORK.
- 1.3.2.37. 1.5.3. THE CONTRACTOR SHALL SUPPLY SYSTEM SOFTWARE AS SPECIFIED INTO THE SCOPE OF WORK.
- 1.3.2.38. 1.5.4. ALL SOFTWARE SHALL BE REGISTERED AND/OR LICENSED IN THE NAME OF THE OWNER.
- 1.3.2.39. 1.5.5. ALL PROGRAMMING CODES AND CONFIGURATIONS SHALL REMAIN PROPERTY IN CLEAR TITLE OF THE OWNER. THIS INCLUDES BUT IS NOT LIMITED TO ALL SOURCE CODES FOR AUDIO AND CONTROL SYSTEMS AND SHALL NOT BE PASSWORD PROTECTED IN PART OR WHOLE.
- 1.3.2.40. 1.5.6. THE GUI INTERFACE SHALL BE REVIEWED AND APPROVED BY BOTH THE CONSULTANT AND OWNER PRIOR TO IMPLEMENTATION.
- 1.3.2.41. 1.5.7. THE CONTRACTOR SHALL SUPPLY A COMPLETE SET OF SYSTEM SOFTWARE AND DOCUMENTATION AS FOLLOWS:
- 1.3.2.42. 1.5.7.1. IN THE CASE OF COMMERCIAL SOFTWARE, A COMPLETE SET OF SOFTWARE, INCLUDING THE LICENSE AND DOCUMENTATION FOR ALL DEVICES, UTILITIES, AND TOOLS USED IN THE OPERATION AND MAINTENANCE OF THE AUDIO VISUAL / PA SYSTEM.
- 1.3.2.43. 1.5.7.2. IN THE CASE OF NON-COMMERCIAL, OR CUSTOM SOFTWARE, A COMPLETE SET OF SOFTWARE IS REQUIRED, INCLUDING LICENSE (IF APPLICABLE) AND DOCUMENTATION FOR ALL DEVICES, UTILITIES, AND TOOLS USED IN THE OPERATION AND MAINTENANCE OF THE AUDIO VISUAL / PA SYSTEM.
- 1.3.2.44. 1.5.7.3. DOCUMENTATION SHALL BE PRESENTED IN SUCH A WAY AS TO ALLOW THE OWNER THE ABILITY TO PERFORM UNASSISTED OPERATION, MAINTENANCE, TROUBLESHOOTING AND PROGRAMMING.
- 1.3.2.45. 1.6. TRAINING
- 1.3.2.46. 1.6.1. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TRAINING SESSIONS TO REPRESENTATIVES NAMED BY THE OWNER AS OUTLINED BY THE TRAINING MODELS AND QUANTITIES DEFINED BELOW.
- 1.3.2.47. 1.6.2. TRAIN THE TRAINER: SUPPORT PROVIDE A MINIMUM OF TWO (2) TRAINING SESSIONS OF NO LESS THAN TWO (2) HOURS EACH. A MINIMUM OF ONE (1) TRAINING SESSION SHALL OCCUR PRIOR TO THE FINAL ACCEPTANCE OF THE SYSTEM. SCOPE SHALL INCLUDE INSTRUCTION FOR SYSTEM OPERATION, ADVANCED TROUBLESHOOTING AND SYSTEM MAINTENANCE. SESSIONS MAY BE COMPLETED AT ANY TIME WITHIN THE FIRST YEAR AFTER FINAL TESTING AND ACCEPTANCE.
- 1.3.2.48. 1.6.3. A TRAINING AGENDA SHALL BE SUBMITTED TO BOTH THE OWNER AND CONSULTANT FOR REVIEW IN ADVANCE OF THE SCHEDULED TRAINING SESSION AS PART OF THE CO-ORDINATION EFFORT.
- 1.3.2.49. 1.6.4. A DRAFT SUMMARY OF OPERATION SHALL BE PROVIDED DURING THE TRAINING SESSION TO ALL ATTENDEES OF THE TRAINING SESSION.
- 1.3.2.50. 1.6.5. THE FINAL OPERATIONS GUIDE SHALL BE PROVIDED AS PART OF THE MANUAL AS SPECIFIED UNDER OPERATION AND MAINTENANCE MANUALS.
- 1.3.2.51. 2. PRODUCTS
- 1.3.2.52. 2.1. GENERAL
- 1.3.2.53. 2.1.1. ALL PRODUCT MAKES AND MODELS ARE SPECIFIED WITHIN THE DRAWING PACKAGE. ANY ALTERNATES SHALL MEET OR EXCEED SPECIFIED PRODUCT PERFORMANCE AND BE LISTED ON THE TENDER FORM AS EQUIVALENTS. SHOULD A MANUFACTURER NOT BE LISTED AS AN EQUIVALENT, PRE-APPROVAL IS REQUIRED FROM THE AV CONSULTANT.
- 1.3.2.54. 2.2. HARDWARE
- 1.3.2.55. 2.2.1. GENERAL
- 1.3.2.56. 2.2.1.1. ALL MOUNTING HARDWARE SHALL BE APPROPRIATELY RATED. UNRATED HARDWARE SHALL NOT BE ACCEPTABLE.
- 1.3.2.57. 2.3. LOUSPEAKERS
- 1.3.2.58. 2.3.1. GENERAL
- 1.3.2.59. 2.3.1.1. ALL LOUSPEAKERS SHALL HAVE SAFETY CABLES SECURELY FASTENED TO THE LOUSPEAKER AND STRUCTURE.
- 1.3.2.60. 2.3.1.2. RATED HARDWARE SHALL BE USED WITH SPECIFIC ATTENTION GIVEN TO INSTALLATION ORIENTATION AND POTENTIAL SHEER FORCES.
- 1.3.2.61. 2.3.1.3. LOUSPEAKERS INSTALLED IN RECESSED CEILINGS SHALL UTILIZE ANCHORS INDEPENDENT OF THE CEILING ANCHORS.
- 1.3.2.62. 2.3.1.4. WHERE HOOKS ARE USED ON LOUSPEAKERS FOR HANDING OR SAFETY PURPOSES, LOC-TITE OR SIMILAR THREAD LOCK SHALL BE USED.
- 1.3.2.63. 2.3.1.5. TIE BRIDGES AND PRE-INSTALLATION KITS SHALL BE PROVIDED WHERE REQUIRED.
- 1.3.2.64. 2.3.1.6. WIRE, CABLE AND FIBRE - PREFABRICATED (PATCH CORDS)
- 1.3.2.65. 2.4.1. GENERAL
- 1.3.2.66. 2.4.1.1. ALL WIRE AND CABLE SHALL BE PLENUM RATED WHERE REQUIRED BY CODE.
- 1.3.2.67. 2.4.1.2. PREFABRICATED PATCH CABLES MAY BE USED WHERE DESIRED. ANY EXCESS CABLE WHEN USING PATCH CORDS SHALL BE NEATLY MANAGED. SPILT EXCESS CABLE BETWEEN EACH END UNLESS EXCESS CABLE WOULD BECOME AN EYE-SORE OR CAUSE INSTALLATION OR SERVING ISSUES. FOR EXAMPLE, AN EXPOSED PROJECTOR, WALL PLATE WITH BACK BOX OR COMPACT EQUIPMENT RACK.
- 1.3.2.68. 2.4.1.3. ALL CABLES USED IN APPLICATIONS WHERE FLEXIBILITY IS REQUIRED, INCLUDING BUT NOT LIMITED TO PROJECTOR LIFTS, CAMERA LIFTS AND ARTICULATING LIFTS SHALL HAVE STRANDED CONDUCTORS. SOLID CORE CONDUCTORS SHALL NOT BE PERMITTED.
- 1.3.2.69. 2.4.1.4. PROVIDE ALL PATCH CABLES WHERE REQUIRED.
- 1.3.2.70. 2.4.2. HDMI
- 1.3.2.71. 2.4.2.1. HDMI CABLES SHALL BE RATED TO SUPPORT THE FOLLOWING
- 1.3.2.72. 2.4.2.2. HDMI 2.1
- 1.3.2.73. 2.5. WIRE, CABLE AND FIBRE - RAW
- 1.3.2.74. 2.5.1. GENERAL
- 1.3.2.75. 2.5.1.1. ALL WIRE AND CABLE SHALL BE PLENUM RATED WHERE REQUIRED BY CODE.
- 1.3.2.76. 2.5.1.2. FIBRE
- 1.3.2.77. 2.5.1.3. FIELD TERMINATED CONNECTORS SHALL HAVE LESS THAN 75 DB LOSS AND -40 DB OF RETURN LOSS (REFLECTANCE).
- 1.3.2.78. 2.5.1.4. TESTING SHALL BE CONDUCTED USING AN OTHER RATHER THAN A POWER METER.
- 1.3.2.79. 2.5.1.5. FUSION SPLICING PIGTAILS SHALL BE USED OVER FIELD TERMINATION WITH A MINIMUM OF 0.05 DB LOSS AND 70 DB OF RETURN LOSS (REFLECTANCE).
- 1.3.2.80. 2.5.1.6. FUSION TERMINATIONS SHALL BE DONE USING A CORE ALIGNED SPLICER WITH A CLADDING ALIGNED SPLICER.
- 1.3.2.81. SMPTE/ELMO CONNECTORS SHALL BE USED WITH A 0.5 DB LOSS PER FIBRE CONTACT.

## 3. EXECUTION

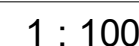
### 3.1. GENERAL

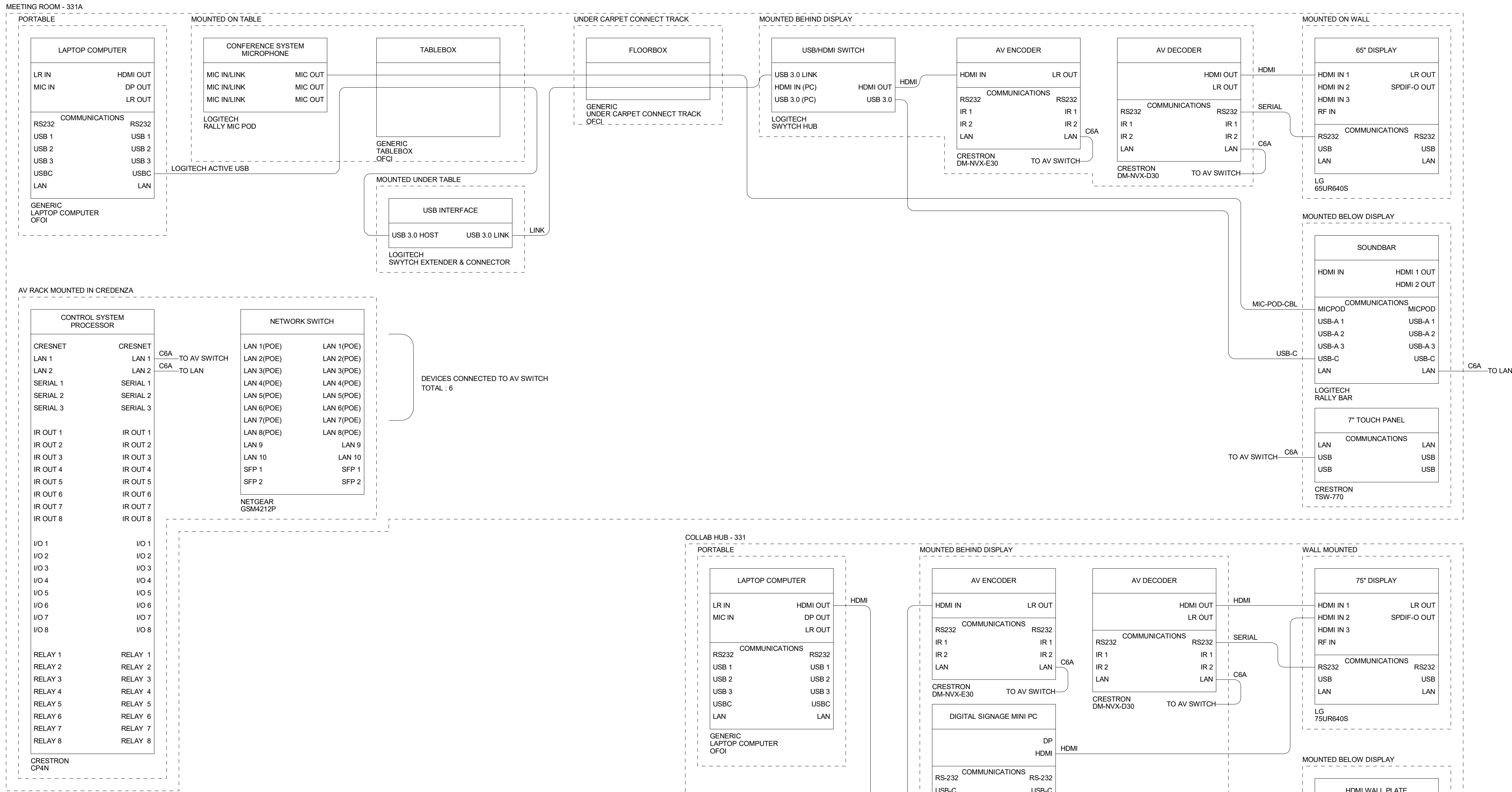
- 3.1.1. AV CONTRACTOR SHALL INSTALL CLIENT PROVIDED ASSET TAG AND DOCUMENT DEVICE MAKE, MODEL, SERIAL AND TAG IDENTIFIER.
- 3.1.2. CABLE SHALL BE DESCRIBED BY THE INSTALLER IN WRITING TO AVOID DAMAGE TO CABLES AND EQUIPMENT. ALL AV AND CONTROL CABLES REQUIRED TO THE SYSTEM DESCRIBED HEREIN SHALL BE SUPPLIED BY THE SYSTEM INTEGRATOR AND INSTALLED BY AUDIO VISUAL CONTRACTOR. THE SYSTEM INTEGRATOR SHALL VERIFY ALL WIRING AND CONNECTIONS SHALL BE MADE WITH PROPER MULTI-CORE SOLDER OR WITH MECHANICAL CRIMP CONNECTORS APPROVED BY THE CONSULTANT. ALL WIRING SHALL BE EXECUTED IN STRICT ADHERENCE TO PROFESSIONAL BROADCAST PRACTICE AND STANDARDS.
- 3.1.3. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ELECTROMAGNETIC AND ELECTROSTATIC INTERFERENCE (HUM, BUZZ, ETC.) AND THE COMPLETED SYSTEM SHALL BE ENTIRELY FREE OF NOISE OF THIS NATURE.
- 3.1.4. ALL CABLES SHALL BE SECURELY MARKED IN ACCORDANCE WITH THE FOLLOWING: AT EACH END BY MEANS OF A WEDGED ON SLEEVE, LAMINATED MARKER OR OTHER MEANS APPROVED BY THE CONSULTANT. THIS IDENTIFICATION SCHEME SHALL BE CORRELATED TO THE INFORMATION ON THE WIRING DIAGRAMS WHICH ARE PART OF BOTH THE SHOP AND AS-BUILT DRAWING PACKAGES.

### 3.2. SIGNAL TYPES

- 3.2.1. THE SIGNAL TYPE AND INFRASTRUCTURE IS INTEGRAL TO ALL INTEGRATED AUDIO VISUAL AND CONTROL SYSTEMS. THE CONTRACTOR SHALL ADHERE TO ALL SIGNAL TYPE CABLEING INFRASTRUCTURE IS IDENTIFIED ON AV DRAWINGS. IF NOT NOTED ON AV SYSTEM DRAWINGS THE CONTRACTOR SHALL NOTIFY CONSULTANT FOR CLARIFICATION AND DIRECTION.
- 3.2.2. THE CONTRACTOR SHALL PROVIDE THE REQUIRED CONNECTORS OF PROFESSIONAL QUALITY AND CONNECTION PROTOCOLS AS ESTABLISHED BY VARIOUS INDUSTRY ORGANIZATIONS AND REGULATORY BODIES.
- 3.2.3. ALL SIGNAL TYPE CABLEING INFRASTRUCTURE IS IDENTIFIED ON AV DRAWINGS. IF NOT NOTED ON AV SYSTEM DRAWINGS THE CONTRACTOR SHALL NOTIFY CONSULTANT FOR CLARIFICATION AND DIRECTION.
- 3.2.4. SIGNAL TYPES SHALL BE SEPARATED ACCORDING TO INDUSTRY STANDARDS BY SIGNAL TYPE AND LEVEL. INCLUDING BUT NOT LIMITED TO MIC, LINE, LOUSPEAKER, VIDEO, CONTROL AND POWER.
- 3.2.5. THE FOLLOWING ARE RECOGNIZED AUDIO, VIDEO, CONTROL, MULTI-MEDIA AND MISCELLANEOUS SIGNAL TYPES AND STANDARDS:
- 3.2.6. AUDIO
- 3.2.6.1. ANALOG
- 3.2.6.2. LOW LEVEL - I.E. MICROPHONE (<20 DBM) BALANCED AND UNBALANCED
- 3.2.6.3. LINE LEVEL - I.E. CD PLAYER (>20 DBM TO >20 DBM) BALANCED AND UNBALANCED
- 3.2.6.4. HIGH LEVEL - I.E. LOUSPEAKER (>20 DBM)
- 3.2.6.5. DIGITAL
- 3.2.6.6. DANTE™
- 3.2.6.7. COBRANE™
- 3.2.6.8. MADI™
- 3.2.6.9. ETHERSOUND™
- 3.2.6.10. SPDIF™
- 3.2.6.11. TOSLINK™
- 3.2.6.12. AES/EBU
- 3.2.6.13. ADAT™
- 3.2.6.14. TDF™
- 3.2.6.15. MLAN
- 3.2.6.16. MISCELLANEOUS PROPRIETARY PROTOCOLS (BALLUNS)
- 3.2.7. VIDEO
- 3.2.7.1. ANALOG
- 3.2.7.2. COMPOSITE VIDEO (CV)
- 3.2.7.3. S-VIDEO (Y/C)
- 3.2.7.4. COMPONENT (Y/Pb Pr, Y/Ub, Y/Vb)
- 3.2.7.5. RGBHV (VGA, SVGA, XGA, UXA, SXGA ETC.)
- 3.2.7.6. DVI
- 3.2.7.7. DVI-D
- 3.2.7.8. DVI-I
- 3.2.7.9. SDI
- 3.2.7.10. SDI-M
- 3.2.7.11. SDI-E
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- 3.2.7.316.







PROJECT LOGO



KEY PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

3	ISSUED FOR TENDER	2025-11-27
2	ISSUED FOR 100% CD	2025-11-21
1	ISSUED FOR 60% CD	2025-10-17
No.	DESCRIPTION	DATE

REVISIONS:

DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT / ENGINEER BEFORE PROCEEDING.  
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AUDIO VISUAL

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416.751.2520 | MBI.COM

PROJECT:

University of Toronto  
CQIC Suite and QIS Lab

University of Toronto,  
27 King's College Cir,  
Toronto, ON M5S 1A1

DRAWING TITLE:

**AUDIO VISUAL FUNCTIONAL  
DIAGRAM**

SHEET SIZE:  
ARCH D (810x914)

SCALE:

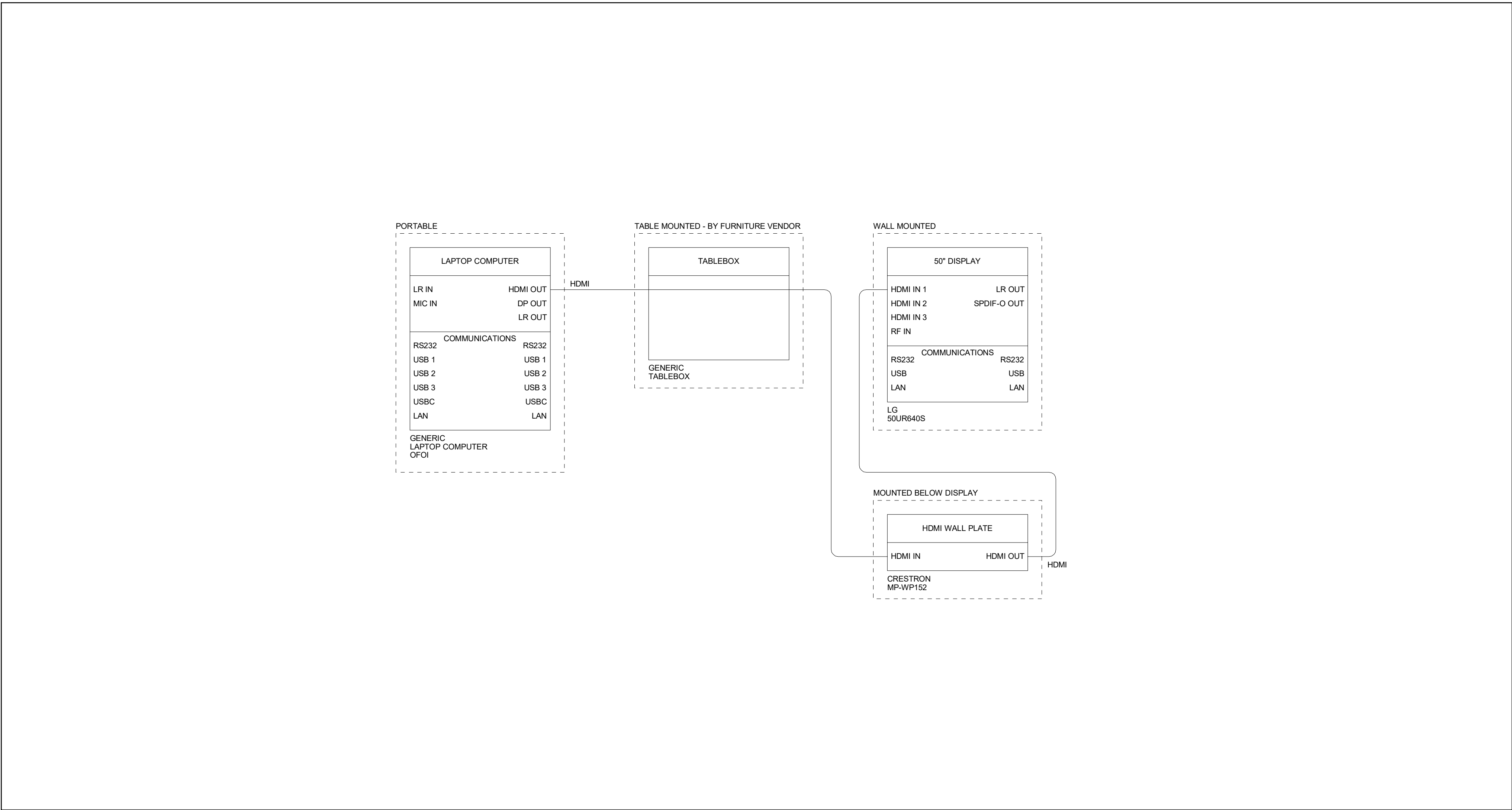
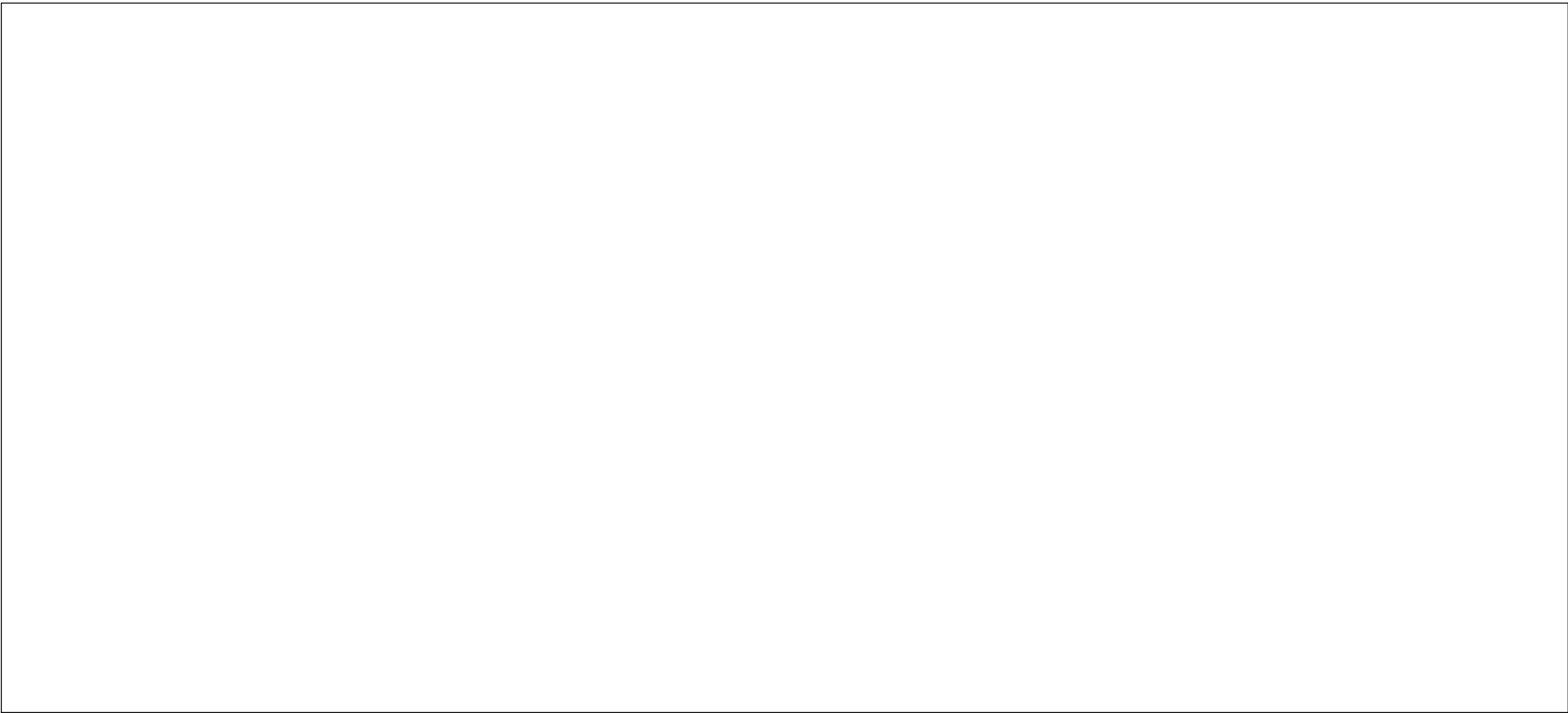
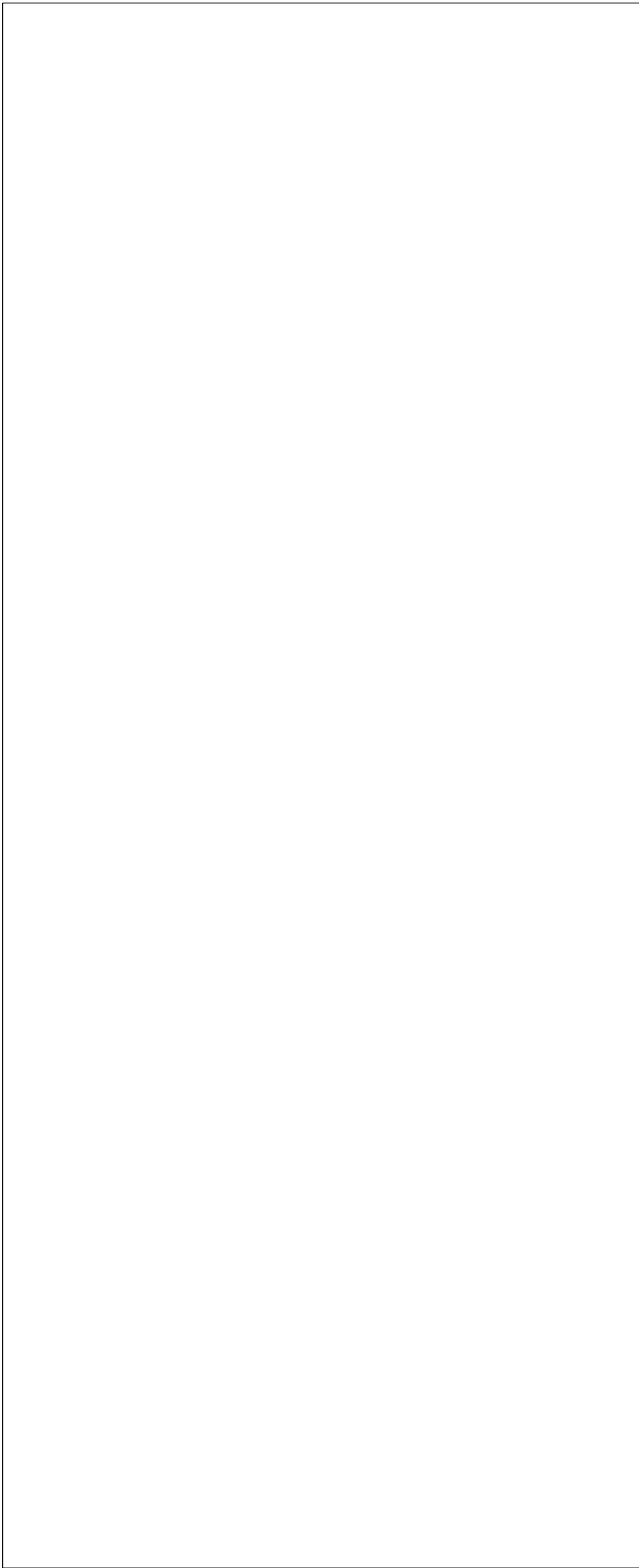
PROJECT NO.:  
**251016**

DRAWING NO.:

**AV401**

1  
AV401

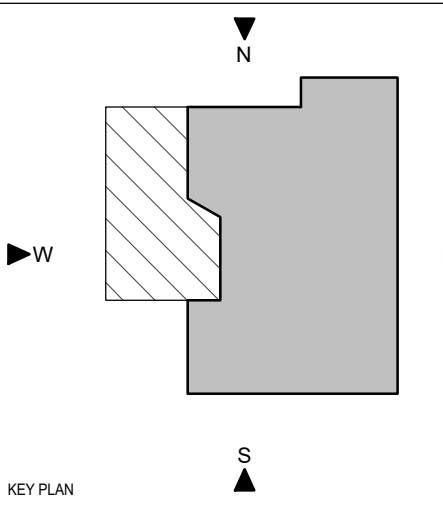
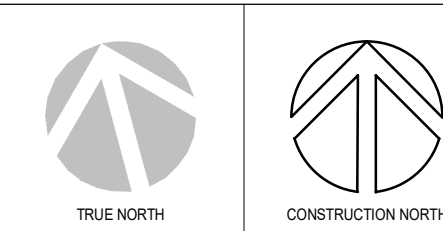
AV - TYPE A - CQIC - AUDIO VISUAL FUNCTIONAL DIAGRAM  
N.T.S.



1  
AV402

AV - TYPE B - QIS LAB\_AUDIO VISUAL FUNCTIONAL DIAGRAM  
N.T.S.

PROJECT LOGO



KEY PLAN

2	ISSUED FOR TENDER	2025-11-27
1	ISSUED FOR 10% CD	2025-11-27
No.	DESCRIPTION	DATE

REVISIONS:

DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT / ENGINEER BEFORE PROCEEDING.  
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PROJECT:  
**University of Toronto**  
**CQIC Suite and QIS Lab**

**University of Toronto,**  
**27 King's College Cir,**  
**Toronto, ON M5S 1A1**

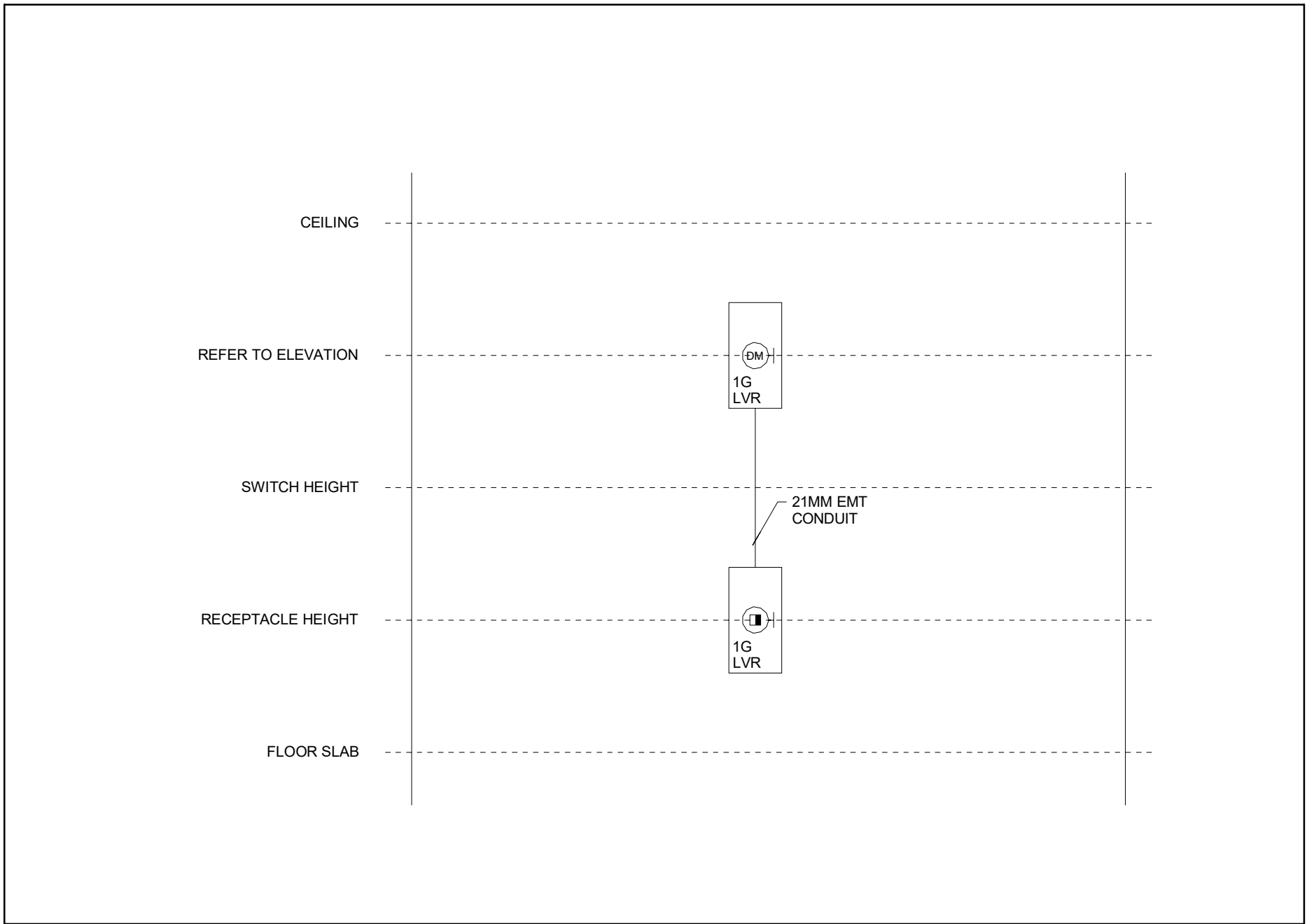
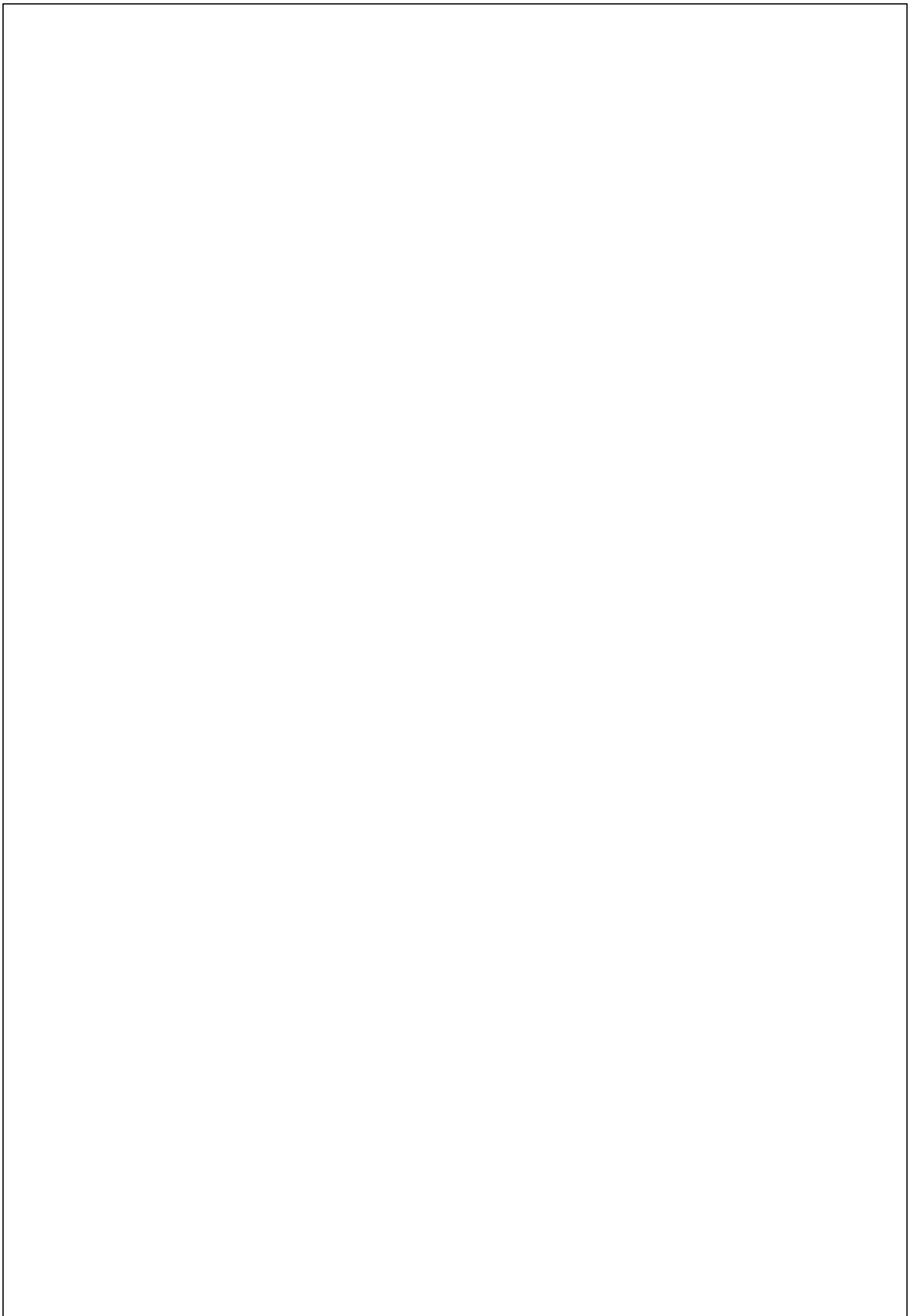
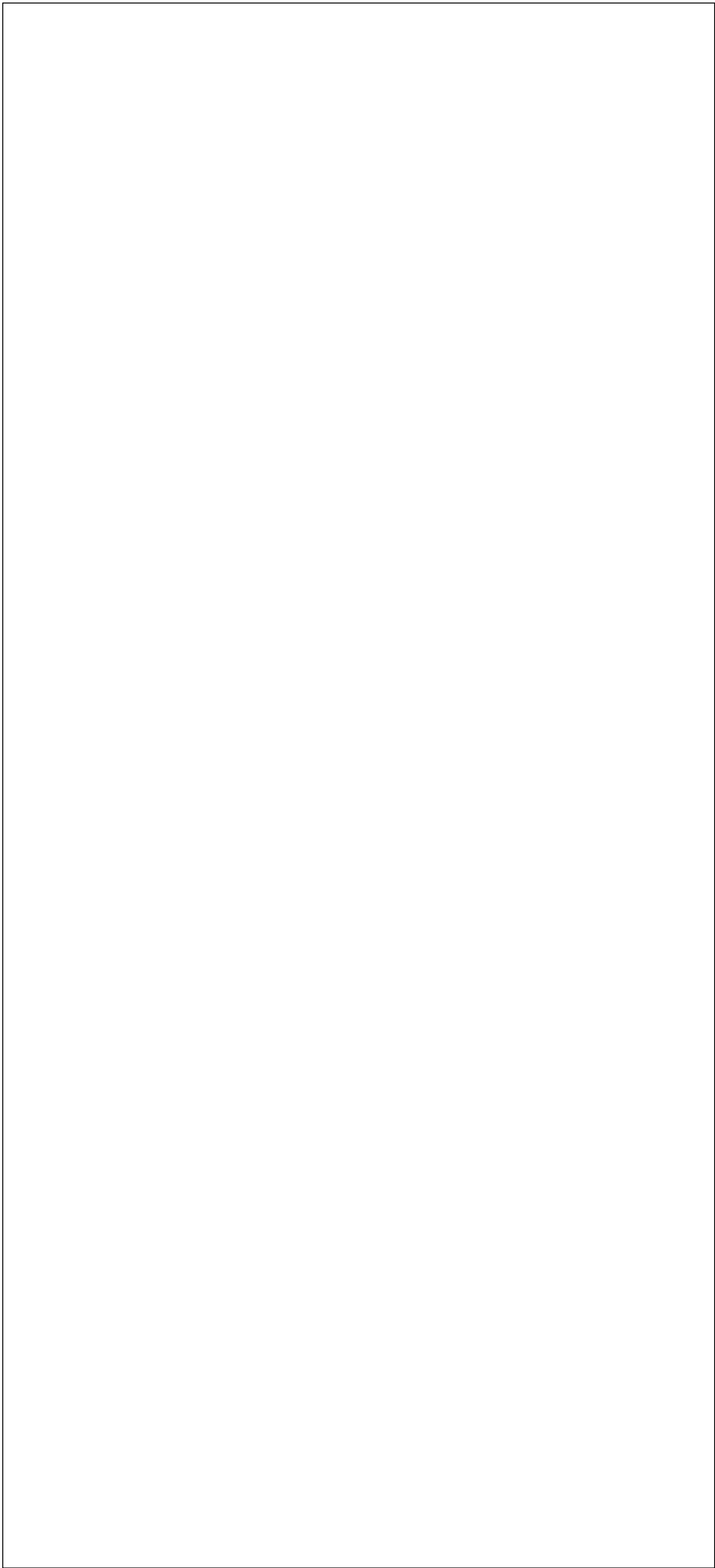
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**DIAGRAM**

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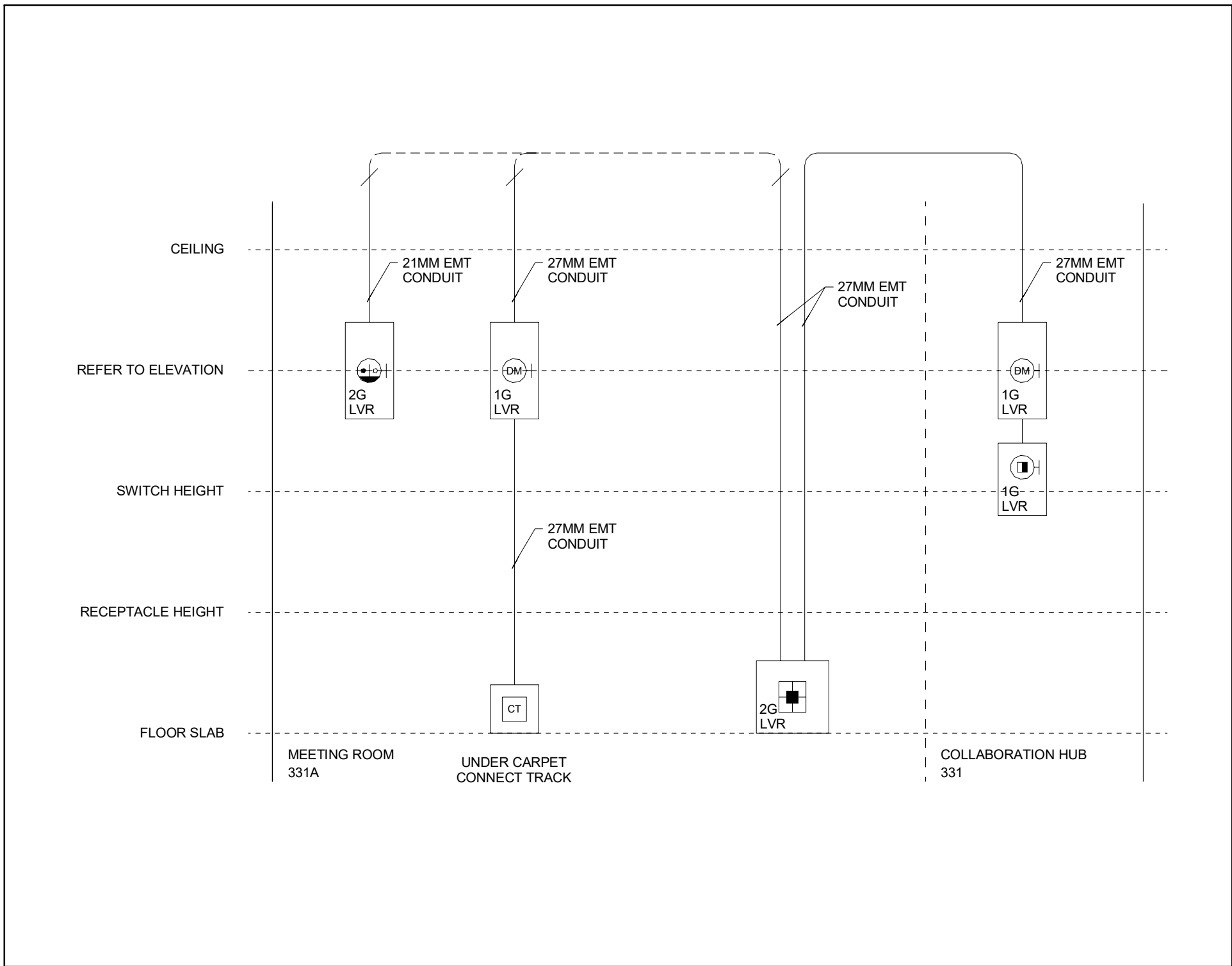
PROJECT NO: **251016**

DRAWING NO: **AV402**

DATE: 2025-11-27  
DRAWN BY: P1078-34-109 QIS Lab and CQIC Suite  
PLOT DATE: 2025-11-27 08:34:59 AM



2 AV501 AV - TYPE B - QIS LAB\_AUDIO VISUAL RISER DIAGRAM  
N.T.S.



1 AV501 AV - TYPE A - CQIQC SUITE\_AUDIO VISUAL RISER DIAGRAM  
N.T.S.

1.0 GENERAL INFRASTRUCTURE NOTES

THESE NOTES APPLY TO ALL INFRASTRUCTURE RISERS SHOWN IN THE AV-500 SERIES.

1.1 ALL CONDUIT SHALL BE 19mm UNLESS OTHERWISE NOTED.

1.2 ALL CONDUITS SHALL BE TERMINATED TO EQUIPMENT RACKS AND BACKBOXES WITH NON-CONDUCTIVE PVC FITTINGS.

1.3 ALL CONDUITS TERMINATING AT A LOCATION WITHOUT A BACK BOX OR EQUIPMENT RACK SHALL BE TERMINATED WITH AN INSULATED THROAT, NON-CONDUCTIVE PVC, OR ARLINGTON BUSHING.

1.4 ALL JUNCTION BOXES / PULL BOXES SHALL BE SIZED BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE SPECIFIED.

1.5 LOCATIONS NOTED "FUTURE" SHALL BE PROVIDED WITH COVER PLATE BY ELECTRICAL CONTRACTOR.

1.6 FREE AIR CABLING TO ADDITIONAL LOUDSPEAKERS AS REQUIRED.

2.0 REFERENCED INFRASTRUCTURE NOTES

THESE NOTES APPLY TO ALL INFRASTRUCTURE RISERS SHOWN IN THE AV-500 SERIES ONLY WHEN REFERENCED.

2.1 FREE AIR CABLE TO EACH ADDITIONAL LOUDSPEAKER AS SHOWN ON PLAN.

2.2 CONDUIT PROVIDED TO EACH AV DEVICE BY ELECTRICAL CONTRACTOR TO BE COORDINATED WITH ICT DRAWINGS REFERENCING AV DATA DROPS

SIGNAL PATH ILLUSTRATED  
FREE AIR CABLE

CONDUIT STUBBED AT DEVICE  
OR INTO CAVITY AS SPECIFIED

SEPERATE CONDUITS

CONDUITS MAY BE CONSOLIDATED  
THROUGH SEPARATE JUNCTION BOX

SAMPLE NOMENCLATURE

PB = PULL BOX SIZED BY ELECTRICAL CONTRACTOR

1G = 1 GANG BOX

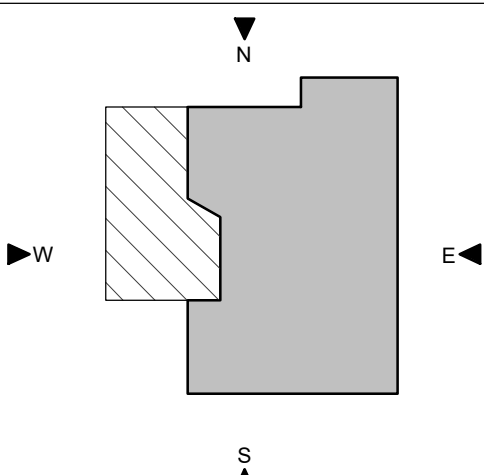
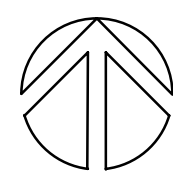
2GLVR = 2 GANG LOW VOLTAGE RING

FB = FLOOR BOX AS PER ELECTRICAL PACKAGE

2G/AV = 2 GANG AVAILABLE FOR AV

A AV501 AUDIO VISUAL RISER LEGEND AND NOTES  
N.T.S.

PROJECT LOGO



KEY PLAN

No.	DESCRIPTION	DATE
5	ISSUED FOR TENDER	2025-11-27
4	ISSUED FOR 100% CD	2025-11-21
3	ISSUED FOR 90% CD	2025-10-17
2	ISSUED FOR 100% DD R1	2025-09-19
1	ISSUED FOR 100% DD	2025-07-10

REVISIONS:

DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ARCHITECT / ENGINEER BEFORE PROCEEDING.

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416.751.2520 | MBI.COM

PROJECT:

**University of Toronto**  
**CQIQC Suite and QIS Lab**

**University of Toronto,**  
**27 King's College Cir,**  
**Toronto, ON M5S 1A1**

DRAWING TITLE:

**AUDIO VISUAL RISER**  
**DIAGRAMS**

SHEET SIZE:

ARCH D (810x914)

SCALE:

PROJECT NO:

**251016**

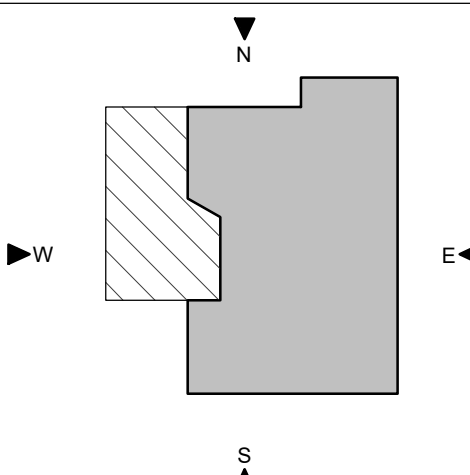
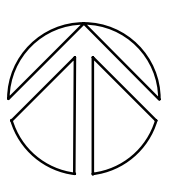
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**AV501**

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PROJECT LOGO



KEY PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

No.	DESCRIPTION	DATE
3	ISSUED FOR TENDER	2025-11-27
2	ISSUED FOR 100% CD	2025-11-21
1	ISSUED FOR 60% CD	2025-10-17

REVISIONS:

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416.751.2520 | MBI.COM

PROJECT:  
**University of Toronto**  
**CQIC Suite and QIS Lab**

UNIVERSITY OF TORONTO  
27 King's College Cir,  
Toronto, ON M5S 1A1

DRAWING TITLE:  
**AUDIO VISUAL ELEVATION**  
**DIAGRAMS**

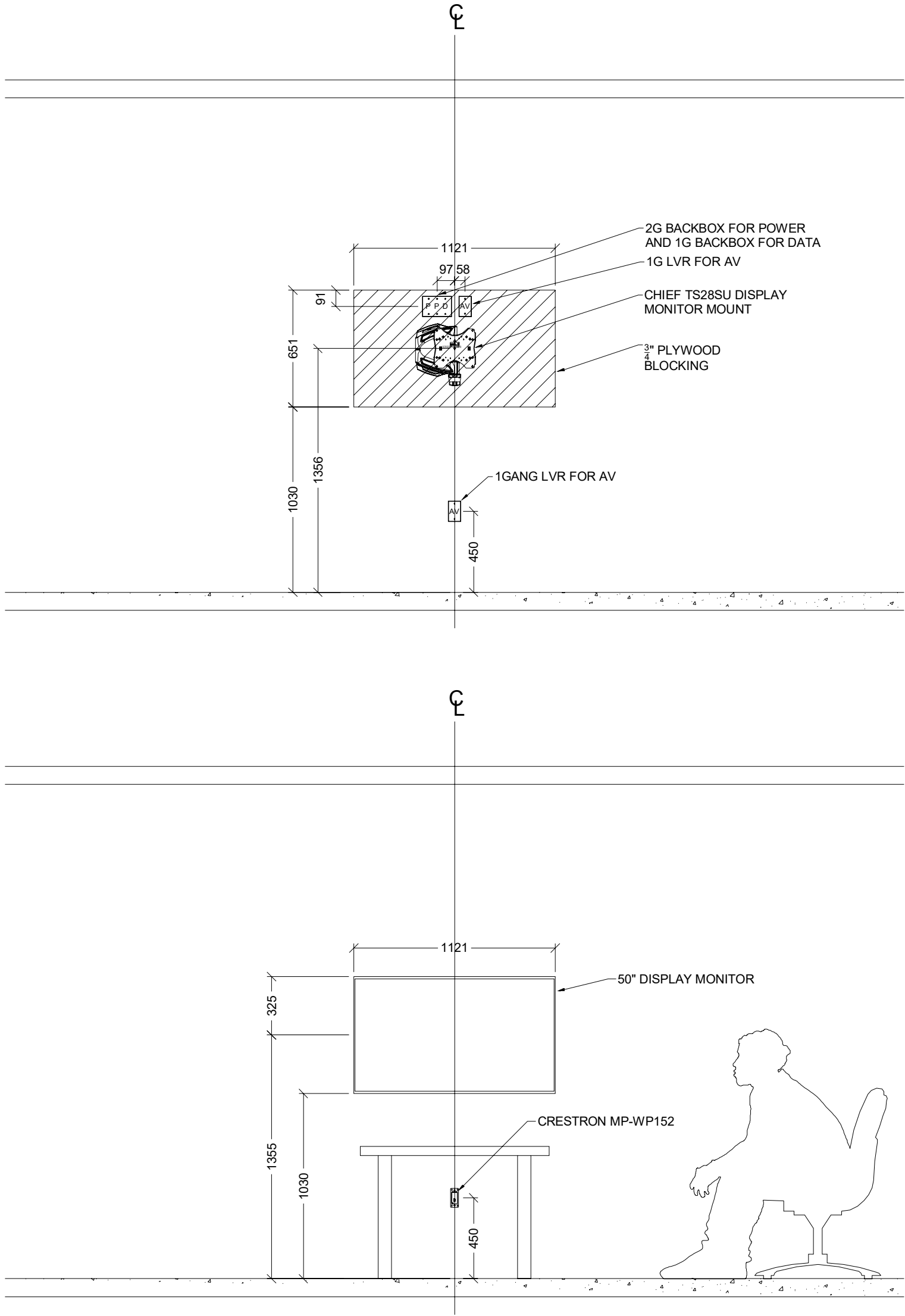
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SCALE:

PROJECT NO:  
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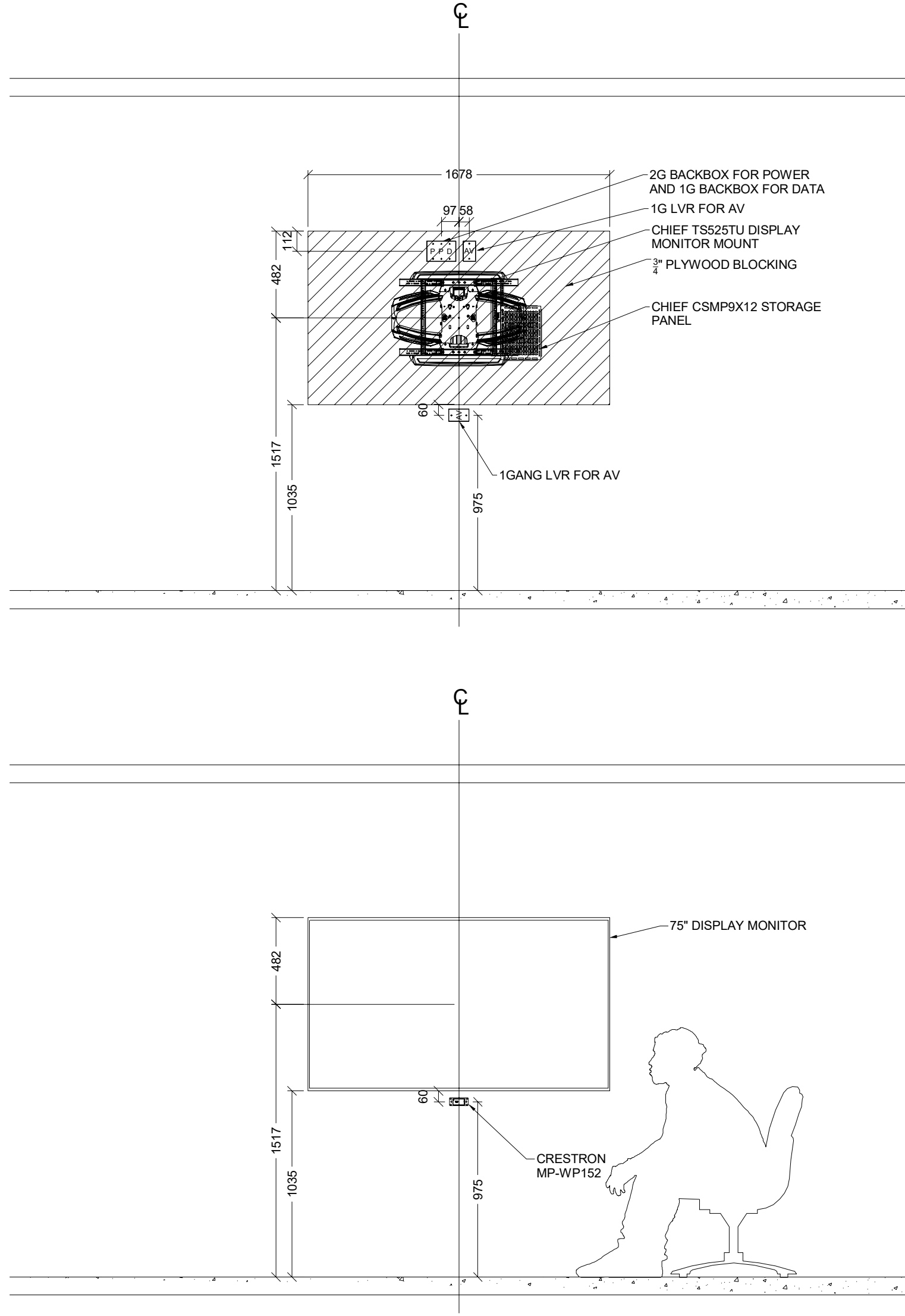
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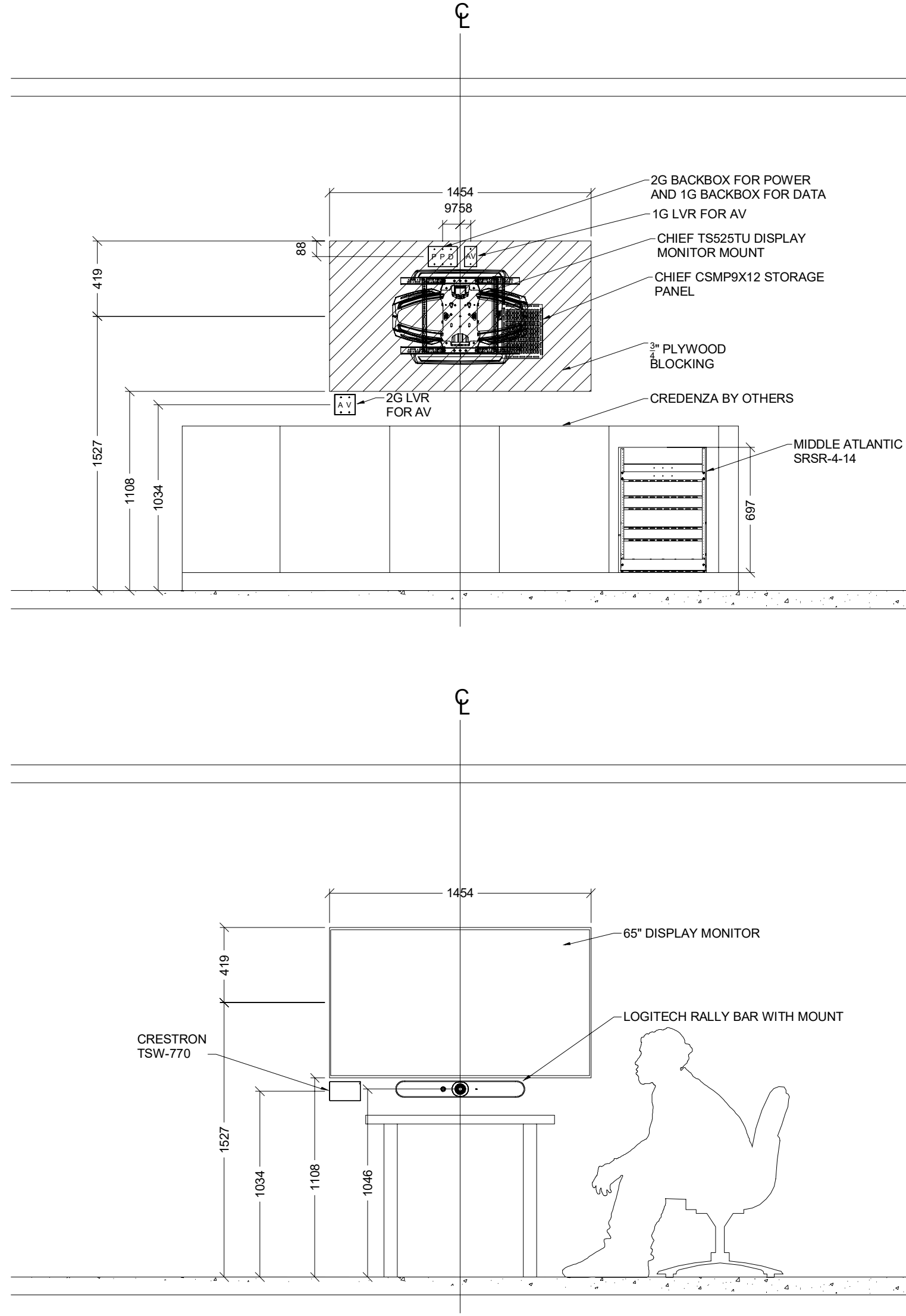
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AV601

AV - TYPE B - QIS LAB - AUDIO VISUAL ELEVATION DIAGRAM  
N.T.S.

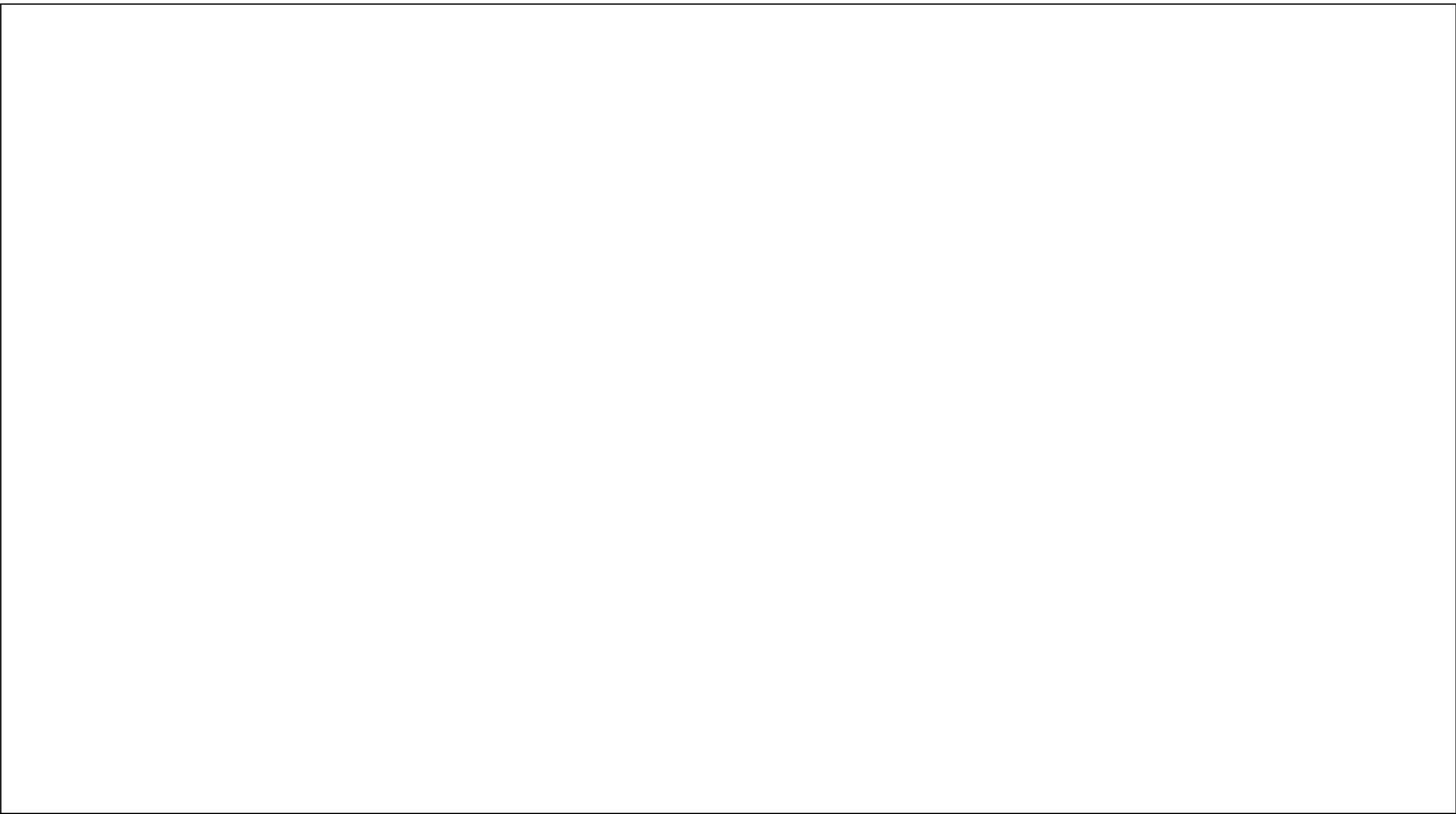
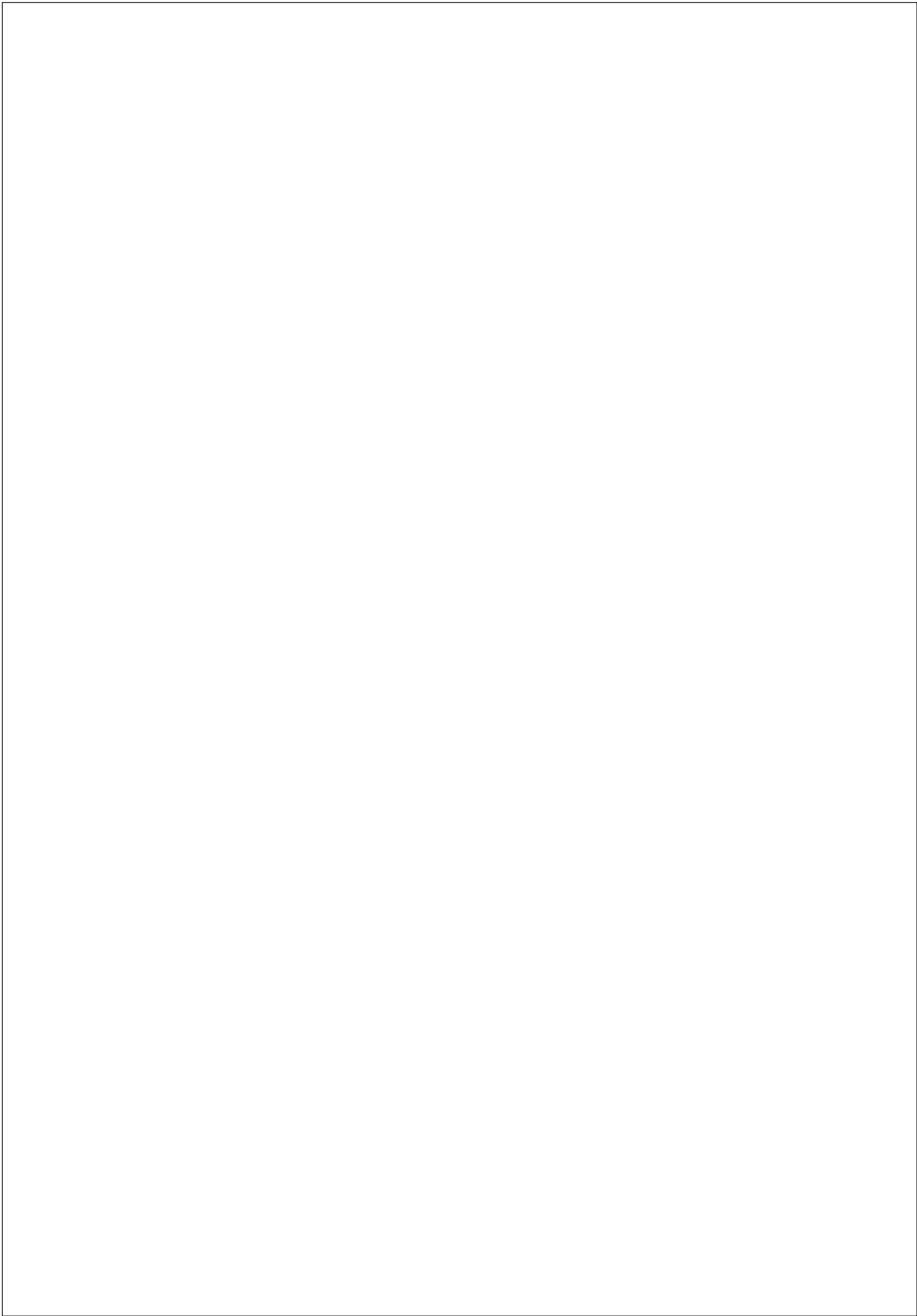


1  
AV601

AV - TYPE A - CQIC - AUDIO VISUAL ELEVATION DIAGRAM  
N.T.S.



MEETING ROOM - 331 A



RU

14	MIDDLE ATLANTIC EB-1
13	NETGEAR M4250-10G2XF-POE+ (GSM4212P)
12	MIDDLE ATLANTIC EB-1
11	CRESTRON CP4N
10	MIDDLE ATLANTIC EB-1
9	MIDDLE ATLANTIC PD-915R
8	MIDDLE ATLANTIC EB-1
7	MIDDLE ATLANTIC EB-1
6	MIDDLE ATLANTIC EB-1
5	MIDDLE ATLANTIC EB-1
4	MIDDLE ATLANTIC EB-1
3	MIDDLE ATLANTIC EB-1
2	MIDDLE ATLANTIC EB-1
1	MIDDLE ATLANTIC EB-1

MIDDLE ATLANTIC SRSR-4-14  
TOTAL POWER: 320 WATTS.  
MAXIMUM DEVICE DEPTH: 8.75".

1  
AV701

AV - TYPE A- CQIQC (MEETING ROOM - 331A) - AUDIO VISUAL RACK ELEVATION  
N.T.S.

PROJECT LOGO

KEY PLAN

2	ISSUED FOR TENDER	2025-11-27
1	ISSUED FOR 100% CD	2025-11-27
No.	DESCRIPTION	DATE

REVISIONS:

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PROJECT:  
University of Toronto  
CQIQC Suite and QIS Lab

University of Toronto,  
27 King's College Cir,  
Toronto, ON M5S 1A1

DRAWING TITLE:  
AUDIO VISUAL RACK DETAIL

SHEET SIZE:  
ARCH D (810x914)

SCALE:

PROJECT NO:  
251016

DRAWING NO.:  
AV701

PROJECT: P1078-34-109 QIS Lab and CQIQC Suite  
DATE: 2025-11-27  
DRAWN BY: MBI