

HUSD Networking Standards

1. DATA / FIBER CABLE PATHWAYS- CONDUITS & SURFACE MOUNT RACEWAY

GENERAL CONDITIONS

- a. It shall be the responsibility of the electrical and low voltage contractors to ensure compliance with the following. Deviations shall be addressed before installation.
- b. No data cable shall exceed 90 meters in distance from the face of the jack at the patch panel to the face of the jack at the station end including service loops. This is known as or referred to as the "Permanent Link".
- c. The Permanent Link is the distance from the face of the jack at the patch panel to the face of the jack at the wall plate. This distance includes required service loops, drops into the rack/cabinets and conduit pathways.
- d. Conduit or raceway pathways shall accommodate this requirement.
- e. Mid- Point junction boxes shall be no further than 100 feet apart on long runs and shall be sized to allow for adequate access.
- f. Where existing pathways are to be reused, sizing and distance limitations shall be accounted for and pathways shall be modified or added to accommodate these requirements.
- g. No conduit or raceway containing data cables shall have fireproofing putty, foam, caulking or other material installed. Only CSFM approved STI EZ-Path or approved equal by HUSD shall be used. Installation of these compounds will void the data cable warranty.
- h. Cables shall be protected from paint, moisture exposure or chemical overspray as this will void the cable warranty.
- i. Cable J-Hooks, where used, shall be Category 6A rated, shall not exceed fill capacity and spaced at 4'-0" centers

2. CONDUITS

- a. Conduit pathways should be planned to comply with the 90 Meter cable distance limitation.
- b. Conduit pathways supporting the entire room and the entire building shall be sized at 40% fill capacity.
- c. Exterior junction boxes shall be weather tight rated.
- d. Fiber and Data runs shall be installed in sweep type fittings and shall not be installed in LB type fittings. Bend radius requirements of the data and fiber must be maintained.

3. SURFACE MOUNT RACEWAY

- a. Where deemed a practical solution in lieu of running conduits. PANDUIT surface mount raceways should be utilized.
- b. Raceway pathways supporting the entire room and the entire building shall be sized at 40% fill capacity.

- c. PANDUIT Raceways range in size from a .21Sq. In. (LD3) to 5.15 Sq. In. (T-70) and can include dividers to support running power, data and/or Fire Alarm depending on the size chosen.
- d. Raceways shall have the appropriate covers, bend-radius turn fittings, transition fittings, outlet center offset boxes, inside/outside or sweep fittings, entrance fittings, etc.
- e. A complete list of available fittings is on the PANDUIT website, www.panduit.com under Wire Routing, Management & Protection- Surface Raceway Systems.
 - i. Multi-Channel Raceway-
https://www.panduit.com/en/products/wire-routing-management-protection/surface-raceway-systems/multichannel-raceway.html#sort=%40mpt_weight%20descending%3B%40mpt_rev_rank%20ascending
 - ii. Single Channel Raceway-
https://www.panduit.com/en/products/wire-routing-management-protection/surface-raceway-systems/single-channel-raceway.html#sort=%40mpt_weight%20descending%3B%40mpt_rev_rank%20ascending
 - iii. Surface Raceway Receptacles-
https://www.panduit.com/en/products/wire-routing-management-protection/surface-raceway-systems/surface-raceway-receptacles.html#sort=%40mpt_weight%20descending%3B%40mpt_rev_rank%20ascending
 - iv. Snap-On Faceplates-
https://www.panduit.com/en/products/wire-routing-management-protection/surface-raceway-systems/surface-raceway-snap-on-faceplates.html#sort=%40mpt_weight%20descending%3B%40mpt_rev_rank%20ascending
- f. Wiremold type raceway should not be used as fittings for proper cable bend radius are not fully supported.

4. EXISTING DEVICE LOCATIONS

- a. Networked devices such as security cameras, wireless access points, clock-speakers, food service point-of-sale terminals, restroom vape detectors, etc. not in construction shall be maintained in an operational state during the course of construction or cables replaced as a part of construction.
- b. Where an MDF or IDF location is being altered, new Cat 6A cabling shall be installed to all new and existing devices or locations and terminated per the standards that follow.
- c. Where fiber optic cables pass through an area of construction, protection must be provided or an alternate pathway created and the fiber replaced back to the MDF.
- d. Where an existing IDF is cross-connected to another IDF and that IDF is taken down due to construction, a new fiber must be installed to the affected IDF from the MDF prior to demolition.

5. ROOM CONDITIONS- GENERAL

- a. All MDF and IDF spaces need to have adequate 24/7/365 ventilation and cooling not under EMS control capable of maintaining the space at no more than 70 degrees Fahrenheit.
- b. Do not install a MDF or IDF in rooms that have electrical transformers installed.
- c. Where a split system is installed, the room should be completely sealed with no venting and doors should be gasketed on all 4 edges.
 - i. Ventilation should be designed to avoid dust/ dirt collection and avoid security risks.
 - ii. Use of transfer grills between adjoining spaces is not permitted.
 - iii. Use of ventilation grills on doors, interior or exterior walls is not permitted.
- d. Where make-up air is required, filter grills must be used.
- e. Room shall have adequate lighting installed.
- f. The floor should be sealed or have VCT installed prior to rack, cabinet or equipment installation.

6. MDF & IDF ELECTRICAL AND GROUNDING REQUIREMENTS

- a. At the rack or cabinet, install 1 to 3- 30A120VAC (L5-30R) dedicated circuit twist lock receptacles. 1 twist lock receptacle is required per UPS. Verify quantity with HUSD as the quantity is determined by the number of UPS's to be installed.
 - i. Wall mount cabinet - location is directly atop the wall mounted cabinet.
 - ii. Free-standing rack or cabinet the location is on the back wall behind the rack at +18" AFF.
- b. At the rack or cabinet, install 1- quad 20A110VAC (5-20R) dedicated circuit.
 - i. Wall mount cabinet - location is directly atop the wall mounted cabinet.
 - ii. Free-standing rack or cabinet the location is on the back wall behind the rack at +18" AFF.
- c. MDF and IDF's shall be provided with a dedicated Telecommunications Grounding Bus Bar (TMGB) bonded to the building single point of grounding (SPG). A Separately Derived Grounding (SDG) point such as an isolated driven grounding rod is not permitted.
- d. All cabinets or racks shall be bonded to the TMGB with a #6 AWG Green w/Yellow stripe and identified as a communications ground.
- e. Grounding conductors shall be terminated with two-hole, long barrel compression lugs.
- f. When attached to a rack, the point of attachment shall not interfere with the installation of network equipment.
- g. Attachment points shall have paint or coatings removed prior to installation.

7. MDF LOCATION

- a. Room must be sized to accommodate two full data racks or cabinets with 3 feet of rear clearance, 4 feet of front clearance and 5 feet of clearance on at least one side.
- b. Room must have a secured entry door.
- c. All conduit entries must be behind the data racks.

- d. Side walls must have room for other services such as a FACP, EMS/BMS systems and other communication equipment and shall not interfere with access to the data racks.
- e. Walls where equipment is installed shall have ¾" plywood painted WHITE.
- f. Room must have a 24/7/365 air conditioner or split system installed.
- g. Required conduits to supply AT&T services from the street must be installed. Conduits must comply with AT&T guideline documents obtained from AT&T.
- h. Room shall have adequate lighting front and rear.
- i. Racks shall be PANDUIT **R2P** or **R4P** as specified by HUSD EIT.

8. IDF LOCATIONS

- a. IDF's shall not be located in classrooms, offices or occupied spaces so noise does not bother people studying or working in the space.
- b. A dedicated space with limited traffic is desirable.
- c. Data cabinets that are wall mounted shall be no higher than 7'-0" above the finish floor to the top of the cabinet.
- d. Wall mounted cabinets shall not be installed on a common wall with a classroom or office space.
- e. A condensate drain or condensate pump with power shall be provided below each IDF cabinet with an air conditioning pack installed.
- f. Where a free-standing rack or cabinet is installed, room shall be sized to allow for installation of the rack or data cabinet with 3 feet clear from the back of the rack or free-standing cabinet to the wall and 4 feet clear from the front of the rack or cabinet.
- g. IDF's shall have one or more L5-30R dedicated receptacles and 1 or more 5-20R Quad outlet. Quantity to be determined by HUSD based on the size of the IDF and number of UPS's being installed.
- h. There shall be a dedicated Telecommunications Grounding Busbar installed bonded back to the building Single Point of Grounding with a #4 copper conductor.
- i. Racks, cabinets, cable trays, metallic conduits, shall be bonded to the TMGB with a #6 copper conductor.

9. IDF RACK/CABINET SIZING

- a. See the included rack/cabinet elevation as a guide for determining the rack or cabinet sizing.
- b. Determine the total number of data ports in the building including spaces that are not being renovated or altered, security cameras, wireless access points, other networked devices and clock-speakers.
- c. Data racks or cabinets must also include space for Fiber optic enclosures, UPS's, battery packs, IP-Clock-speaker devices, communication devices, servers or other rack mounted devices.
- d. Identify the number of rack units needed beyond standard equipment, i.e. IP Clock Speaker equipment, intrusion, etc. In general, the following rules apply.

- i. Port Count <48- 24" wall cabinet.
- ii. Port Count >48 and <96- 36" wall cabinet,
- iii. Port count >96 and <144- 48" wall cabinet.
- iv. Port count >144 and <288- 84" free-standing floor cabinet or rack.
- e. As a guide, in addition to data patch panels and equipment, UPS requirements are based on two data switches per UPS. Each UPS requires 2RU of rack space
- f. In high-capacity rack/cabinets, a UPS Battery pack PER UPS will be added requiring another 2RU of rack space each.

10. WALL MOUNTED DATA CABINETS OR FLOOR RACKS

- a. Wall mounted cabinet top height shall not exceed 7'-0" AFF.
- b. Cabinet shall be secured to the wall allowing for up to 700 pounds dead weight without sagging or deformation and in compliance with code and seismic requirements.
- c. Racks shall be secured to the back or side wall with a cable tray using approved manufacturer tray mounting hardware.
- d. Cable waterfall devices shall be installed at locations where the data cable drops down into the rack from the cable tray.
- e. Cable service loops shall be managed and secured on the cable tray or back wall above a cabinet, not on the rack or in the cabinet.
- f. Where a cabinet is provided by HUSD, the cabinet shall be installed according to manufacturer specifications or seismic requirements. Contractor is responsible for retaining all shipping and mounting hardware and keys for installation of the cabinet. Leave contents in a zip-lock bag in the cabinet.
- g. Where cables exit horizontal conduit(s) into a room, waterfall devices shall be installed
- h. All cable entry points into the cabinet shall have protective bushings installed.

11. DATA RACKS AND CABINETS

- a. 2 post data rack- Panduit **R2P** (45RU) Load rating 1000 lbs.
- b. 4 post data rack- Panduit **R4P** (45RU) Load rating 2500 lbs.
- c. 24" high data cabinet- PANDUIT **PZWMC1230W (12RU)** with **PZWMCFKHF Fan Kit** Load rating 250 lbs.
- d. 36" high data cabinet- PANDUIT **PZWMC1830W (18RU)** with **PZWMCFKHF Fan Kit** Load rating 300 lbs.
- e. 48" high data cabinet- PANDUIT **PZWMN2630W (26RU)** with **PZWMCFKHF Fan Kit** Load rating 350 lbs.
- f. 24" high data cabinet with air conditioner pack- Hoffman **PTHW242430G4A (12RU)** Load rating 250 lbs.
- g. 36" high data cabinet with air conditioner pack- Hoffman **PTHW362430G4A (18RU)** Load rating 300 lbs.
- h. 48" high data cabinet with air conditioner pack- Hoffman **PTHW482430G4A (26RU)** Load rating 350 lbs.

- i. Hoffman ProLine S1 Cabinet Part number **PS1C2178B** 85.14" floor standing cabinet- load capacity 3000 lbs.
- j. Full height cabinets shall include combo locking handles on the front and rear doors, Part number- **NCLH**.
- k. Provide condensate drain or condensate pump with power to each cabinet with an air conditioner pack.
- l. Provide a cable runway to the wall behind the free-standing rack or cabinet.
- m. Special circumstances may require a different rack or cabinet be installed from the ones specified. Any substitution must be specified and approved by HUSD EIT before installation.

12. RACK OR CABINET DATA EQUIPMENT MOUNTING DETAILS

- a. Follow the provided rack/cabinet elevation drawing and mounting details.
- b. Patch panels shall be populated in final room number numerical order.
- c. The fiber enclosure shall always be at the top of the stack followed by 2RU of empty space below. Leave 1RU blank space above the fiber enclosure.
- d. Each 24-port patch panel will service 3 rooms.
- e. Data patch panels shall be arranged next in the stack with a 24-port panel, a blank 1RU space for the data switch and another 24-port patch panel.
- f. Leave a 1RU blank space between the next cluster of patch panel, switch, patch panel.
- g. All **YL** Clock-Speakers jacks shall be terminated on their own patch panel(s).
- h. All **GR** Security Camera jacks shall be terminated on their own patch panel(s).
- i. All **RD** restroom Vape Detector, fire alarm, intrusion detection, EMS, BMS network devices can be installed to the right side on the security camera patch panel.
- j. Clock Speaker and Security Camera panels shall be arranged in the same fashion- patch panel, switch, patch panel, 1RU blank space.
- k. 1 UPS is required for every 2 switches.
- l. Every data port on the patch panel shall be connected to the switch with a 1-foot patch cord. (ONE TO ONE patching)

13. CLASSROOM DATA DROPS, ACCESS POINTs, CLOCK SPEAKERS, SECURITY CAMERAS

- a. Data Jacks shall be PANDUIT **CJ6X88TG**** Cat 6A. ** equals color- **BU** - Blue- **WH** - White, **YL** - Yellow, **GR** - Green, **RD**- Red
- b. Faceplates shall be sloped entry White, **WH**, in color **CFPSL2WHY**
- c. Each classroom shall consist of 6-2-1 (9 total) data drops distributed as follows.
 - i. 2 Drops at the teacher location, jacks shall be **BLUE**.
 - ii. 2 Drops at the back corner of the classroom, jacks shall be **BLUE**.
 - iii. 2 Drops located behind the TV in the AV Cabinet, jacks shall be **BLUE**.
 - iv. 2 Drops at the Access Point location, jacks shall be **WHITE**.
 - v. 1 Drop located at the IP Clock-Speaker location, jacks shall be **YELLOW** at the patch panel.

Security Camera locations-

- vi. 1 Drop located at each security camera location, jacks shall be **GREEN** at the patch panel.
- d. At security cameras, Vape Detectors and IP Clock-Speaker locations, the cable end shall be terminated with PANDUIT **FP6X88MTG** Field Plug.
- e. Classroom Data Locations
 - i. At the teacher location, data faceplates shall be located 5'-6" from the cabinets, wall or structure assemblies behind the location and +18" AFF.
 - ii. Desk location shall be opposite of the entry door and next to the teaching wall location.
 - iii. Desk location shall not be located next to HVAC equipment.
 - iv. Back corner/Wall locations shall be +18" AFF.
 - v. TV location- data jack shall be terminated adjacent to the AV Equipment cabinet located behind the TV allowing for installation of AV equipment.
 - vi. Access Point locations-
 - 1. Standard location is on the side wall centered in the room mounted at 8'-0" AFF
 - vii. Clock-Speaker and Outside/Indoor speaker- located within the backbox.
 - viii. Security Camera Locations
 - 1. All Security Cameras locations shall have a Cat 6A data cable, jacks shall be **GREEN** at the patch panel.
- f. Where cameras are to be installed at a later date, conduit shall be installed to the location with a rain-tight junction box installed on the end. Leave 10 feet of Cat 6A data cable able to extend to the camera coiled in the junction box and labeled to match the patch panel label. Use self-laminating labels. Verify conduit size, typically $\frac{3}{4}$ " depending on the camera model, to the location with HUSD EIT prior to installation.

14. CAT 6A DATA CABLE

- a. All Data Cable to be PANDUIT CAT 6A, **PUR6AV04BU-G** Riser Rated or **PUP6AV04BU-G** Plenum Rated where the installation of Plenum Cable is required.
- b. Where outside or underground runs are required, use PANDUIT **PFO6X04BL-CEG** Cat 6A OSP Cable
- c. All data cable to Classroom, Office, Printer/Copier, Phone, Access Points, IP Clock Security Cameras, Access Control, EMS/BMS Systems Locations shall be PANDUIT Cat 6A rated for the installed environment.
- d. Each station location shall have two data drops.
- e. Each data cable shall be labeled at each end with the corresponding location number using self-laminating labels. See **LABELING SECTION** below.
- f. NO **PERMANENT LINK** cable (distance from the faceplate termination in the room to the face of the jack on the MDF/IDF patch panel at the data rack location) INCLUDING SERVICE LOOPS shall exceed 90 meters or 297 feet.

- g. Where cables exit horizontal conduit(s) into a room, waterfall devices shall be installed
- h. If a space is not under renovation in the project scope of work, all existing data for users, IP clock-speakers, interior/exterior paging speakers, wireless access points and security cameras must be re-cabled to the new MDF/IDF.
- i. J-Hooks or Cable Hangers must be Cat 6A rated and shall not exceed the rated number of cables and spaced no more than 4'-0" apart.

15. FIBER OPTIC CABLE

- a. Each IDF shall be serviced by a 12 Strand OS2 SINGLE MODE Indoor/Outdoor rated cable assembly.
- b. Each fiber cable shall be loose tube, 12 strand fiber, PANDUIT **FSCR912Y**.
- c. Fiber cable can be either MPO Pre-Terminated or Cut Fiber.
- d. Where Cut Fiber is used, each fiber end shall be terminated in a PANDUIT HD FLEX LC SPLICE CASSETTE part number **FHS9N-12-10P**.
- e. At the MDF end, fibers shall be terminated **A/B** in the splice cassette.
- f. At the IDF end, fibers shall be terminated **B/A** in the splice cassette.
- g. If MPO fiber is being installed, in the **MDF install 1- FHC9N-12-10AS** and in the **IDF install 1- FHC9N-12-10AS**.
- h. At the IDF, Install 1- **FLEX1U06** fiber enclosure.
- i. At the MDF, if the total HD-FLEX fiber cassette count installed is 12 or less, use fiber enclosure **FLEX1U06** enclosure.
- j. At the MDF, if the total HD-FLEX fiber cassette count installed is 12 or less, use fiber enclosure **FLEX2U06** enclosure.
- k. At the MDF, if the total HD-FLEX fiber cassette count installed is 48 or less, use fiber enclosure **FLEX4U06** enclosure.
- l. Fiber cables shall be labeled at each end with the MDF/IDF identification being served. Use self-laminating labels EX: MDF-200IDF

16. PATCH PANELS

- a. Patch panels shall be 24 port all metal construction.
- b. Panduit part number- **CPP24FMWBLY**.
- c. Where switches or other devices are to be installed, Installer shall ensure a full 1RU of space is maintained so the device will install without modification to the patch panel mounting by others.
- d. Each patch panel shall have a Panduit **SRB19D5BL** cable support bar installed behind each patch panel to support cables and prevent obstructions in the areas where switches, servers or other devices are to be installed.

17. DATA JACKS

- a. Data Jacks shall be PANDUIT **CJ6X88TG**** Cat 6A. ** equals color-
 - i. **BU** - Blue- All standard data locations.
 - ii. **WH** - White- All Access Point locations.

- iii. **YL** - Yellow- All IP Clock-Speaker, IP Speaker or Exterior/Hallway speaker locations.
- iv. **GR** - Green- All Security Camera locations.
- v. **RD**- Vape detectors, fire, intrusion, EMS, BMS, devices.

18. FIELD TERMINATED PLUGS

- a. PANDUIT **FP6X88MTG** Field Plugs shall be used at clock-speaker, vape detector and security cameras device locations.

19. FACEPLATES

- a. Faceplates shall be sloped entry, 2 port or 4 port plates (with blanks installed in unused openings) in White (**WH**) in color.
- b. PANDUIT part numbers- **CFPSL2WHY** or **CFPSL4WHY** with **CMBWH-X** blanks, if required.
- c. Where stainless steel faceplates are required, use Panduit **CFPL2SY** 2-port or **CFPL4SY** 4-port.
- d. Decora Module frames- used at the combination Atlona AV input plate and two data jacks at the teacher location, PANDUIT part number- **CFG2WH**.
- e. At the joint AV/Data location, a standard 2-gang Decora faceplate is installed over the Atlona input plate and the Decora data module.
- f. Where existing Wiremold raceway is being re-used, use a PANDUIT **CHI2MBL-X** Wiremold Frame and PANDUIT **CJ6X88TG**** data jack with LEFT/RIGHT wire caps PANDUIT **CJLRCAPBU-X** to prevent excessive cable bend in the raceway.

20. OFFICE AND OTHER LOCATIONS

- a. Each location shall have 2 data drops and jack colors shall be **BLUE**.
- b. Where an Access Point is to be installed, install 2 data with jack colors to be **WHITE**. Access Point to be located in the center of the area accessible from an 6-foot step ladder. If access is greater than 6 feet, the Access Point shall be installed on a sidewall in the center of the area.
- c. Where an IP Clock- Speaker is to be installed, install 1 data drop with jack color to be **YELLOW**.
- d. 1 Drop located at each security camera location; jacks shall be **GREEN**.

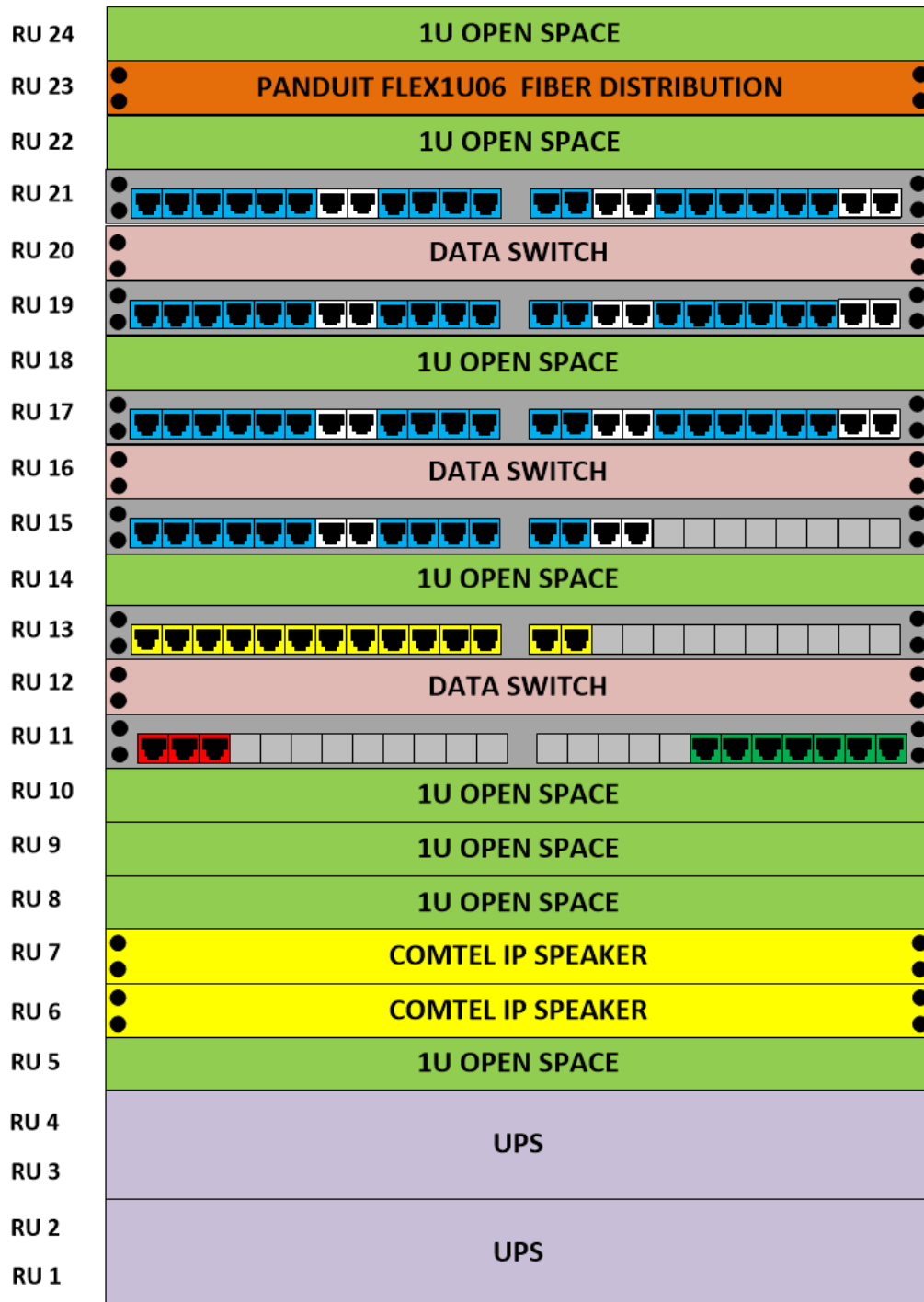
21.

- a. Other Spaces
 - i. Offices and other spaces shall be identified by the **FINAL APPROVED** room number, not architectural number starting with ******-01 for Data, AP1, AP2 for Access Point, CS for Clock-speaker and SC for Security Cameras.
- b. All FIBER OPTIC cables shall be identified at each end with MDF-IDF** using self-laminating labels with (******) being the IDF identifier.

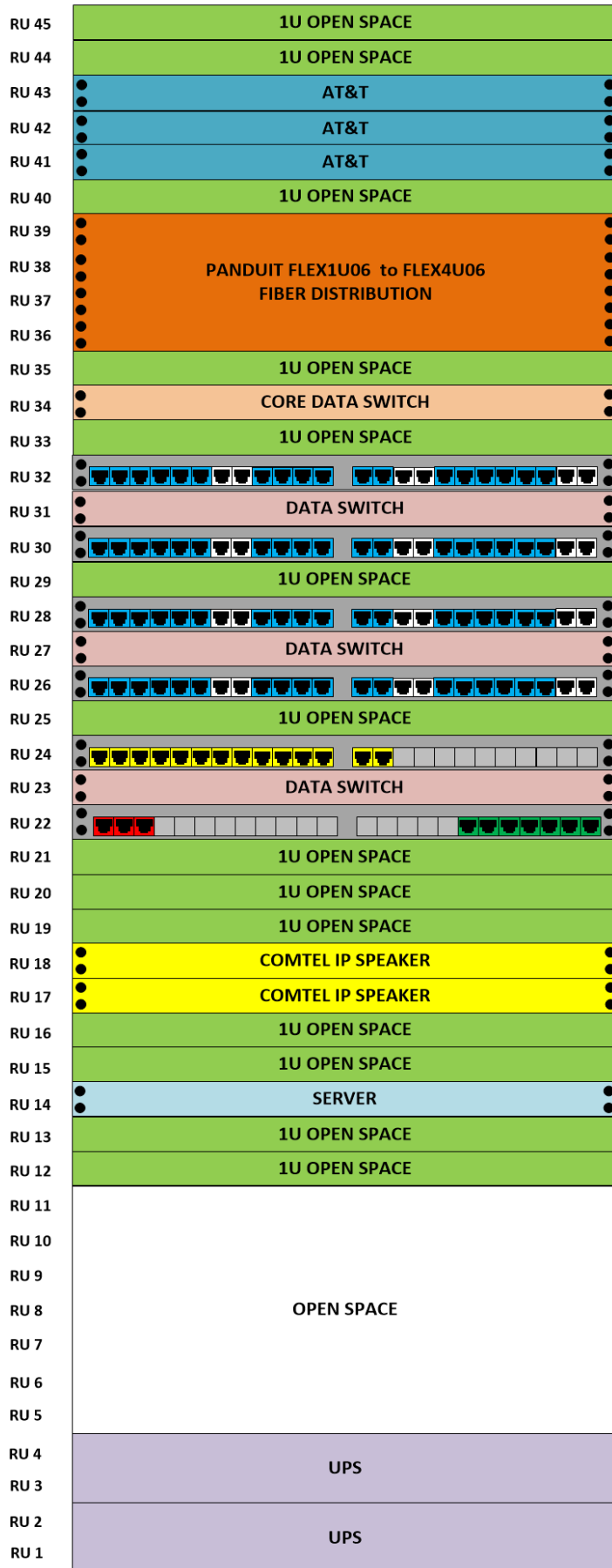
22. TESTING, CERTIFICATIONS AND WARRANTY

- a. Project must be pre-registered with Panduit prior to start of work. Registration requirements must be fully completed.
- b. 100% of all cables must pass testing. *PASS results will not be accepted.
- c. All testing shall be completed on the final installed cable, not a pre-test before closeup.
- d. All test results shall be submitted to the HUSD EIT Department in Fluke Linkware electronic format (*flw) such that the results can be reviewed in Linkware and Linkware Stats prior to warranty application. PDF submission will not be accepted.
- e. Prior to warranty application all copper cabling shall be tested using a Fluke Versiv cable tester that has been calibrated within the last year.
- f. Prior to warranty application all fiber optic cabling shall be tested using a Fluke Versiv cable tester that has been calibrated within the last year.
- g. Once HUSD EIT has reviewed and accepted the test results, results shall then be sent in for warranty application.
- h. All cable test results shall be identified by the corresponding room number / jack number.
- i. All fiber test results shall be identified by the MDF to IDF being served and strand number.

HUSD TYPICAL IDF ELEVATION



HUSD TYPICAL MDF ELEVATION



AUDIO VISUAL STANDARDS

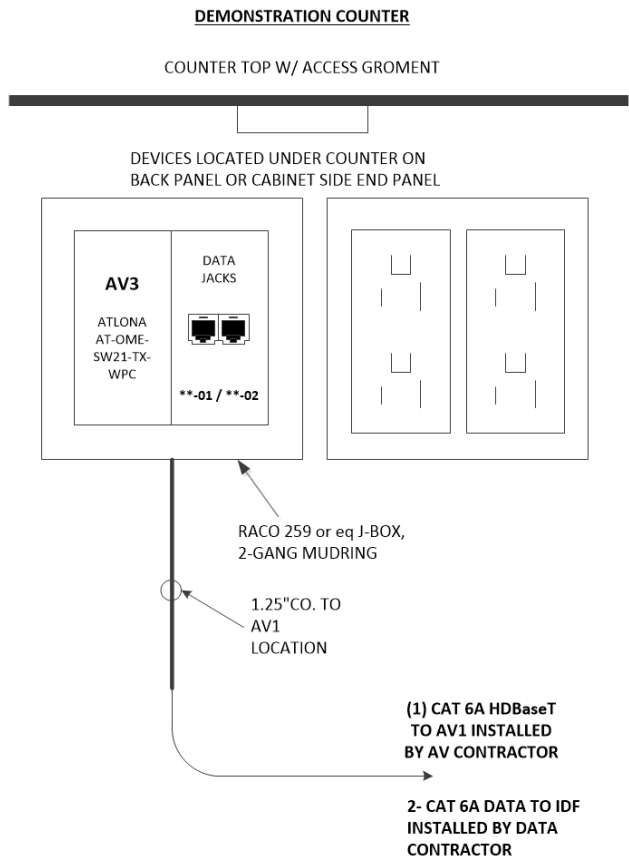
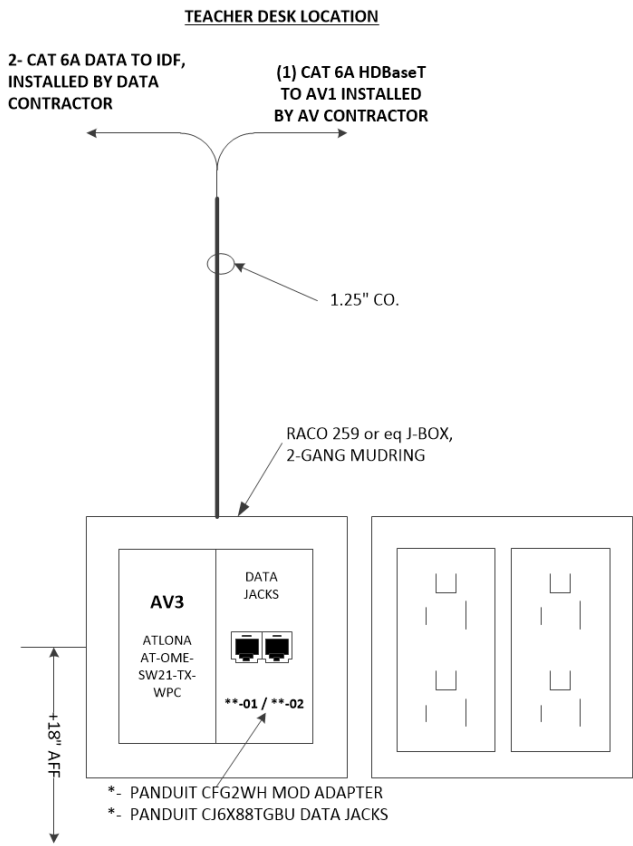
1. Teacher Desk location
 - a. Teacher **AV3** Input plate and data location should be an oversized 4-11/16" box with a 2 gang cover to support the Atlona USB-C/ HDMI transmitter and two data jacks mounted in the Decora frame.
 - b. Atlona Wall Plate Part Number located at the **AV3** location- **AT-OME-SW21-TX-WPC**
 - c. The Cat 6A data cable from the Atlona wall plate must extend to the **AV1A** equipment location behind the TV. This is for the HDBase-T connection. The data cables extend to the MDF/IDF.
 - d. Input plate and data should be mounted +18" AFF next to a single gang electrical outlet.
 - e. Placement should not interfere with cabinet or drawer opening.

2. Speaker locations
 - a. Drop ceiling - if the classroom has drop ceiling tiles, 4 speakers should be spread out according to the speaker placement guideline centered over the student seating area.
 - i. Teachlogic Ceiling Speaker- **SM-4011**
 - ii. Teachlogic ceiling tile speaker bridge- **TB-6.1**
 - b. Hard lid ceilings - 2 speakers should be wall mounted or ceiling hung on the left side and 2 speakers on the right side of the classroom according to the speaker placement guideline aiming down at the student seating.
 - i. Teachlogic wall speaker- **WM2**

3. TV and Mount
 - a. Newline QPro **TT-8621Q** series TV with attached USB C Camera
 - b. Triplite mount- **DWM60100XX**

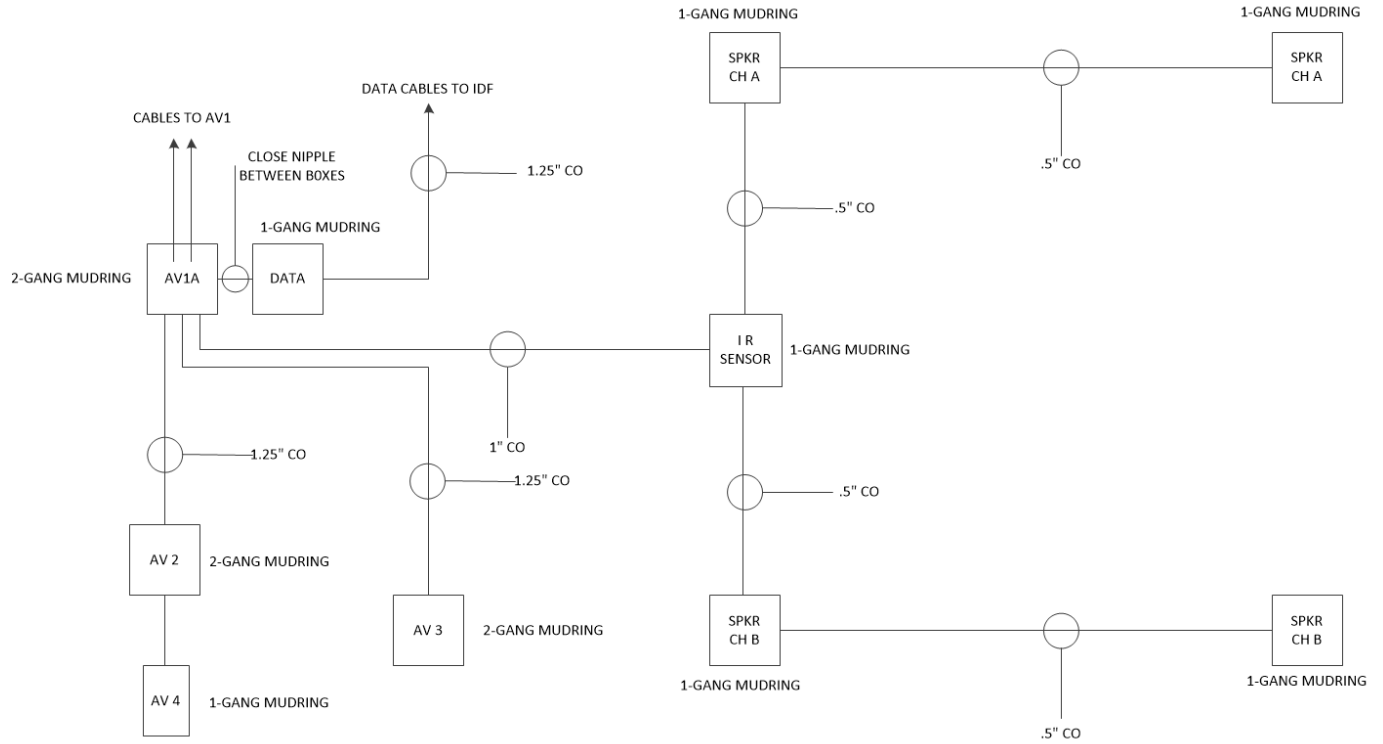
4. IR Sensor- Teachlogic ICS-55 includes a 50 FT RCA sensor cable. This is located in the ceiling between the two front speakers. Refer to AV SPEAKER AND IR SENSOR LAYOUT.

5. TV location
 - a. Leviton box with cover- **47605-E and 47605-D** below **AV1A**.
 - b. **AV2**- Double gang deep junction box for the Extron **MLC PLUS 100** controller should be placed on the back of the cavity to the side with easy access not blocked by the TV. Refer to DISPLAY CABINET ELEVATION Detail drawing.
 - c. **AV4**- Single gang box for Panduit USB - A and 3.5 audio jack module connected to the AV equipment box. Part Numbers- **CM35MSCWHY, CMUSBAAWH, CFPSL2WHY**
 - d. Single gang 5-20R electrical outlet for teacher's access to charge items.
 - e. Quad 5-20R electrical outlet located next to **AV1A** equipment cabinet.
 - f. 2 network drops located next to **AV1A** at the **AV1** equipment cabinet location.

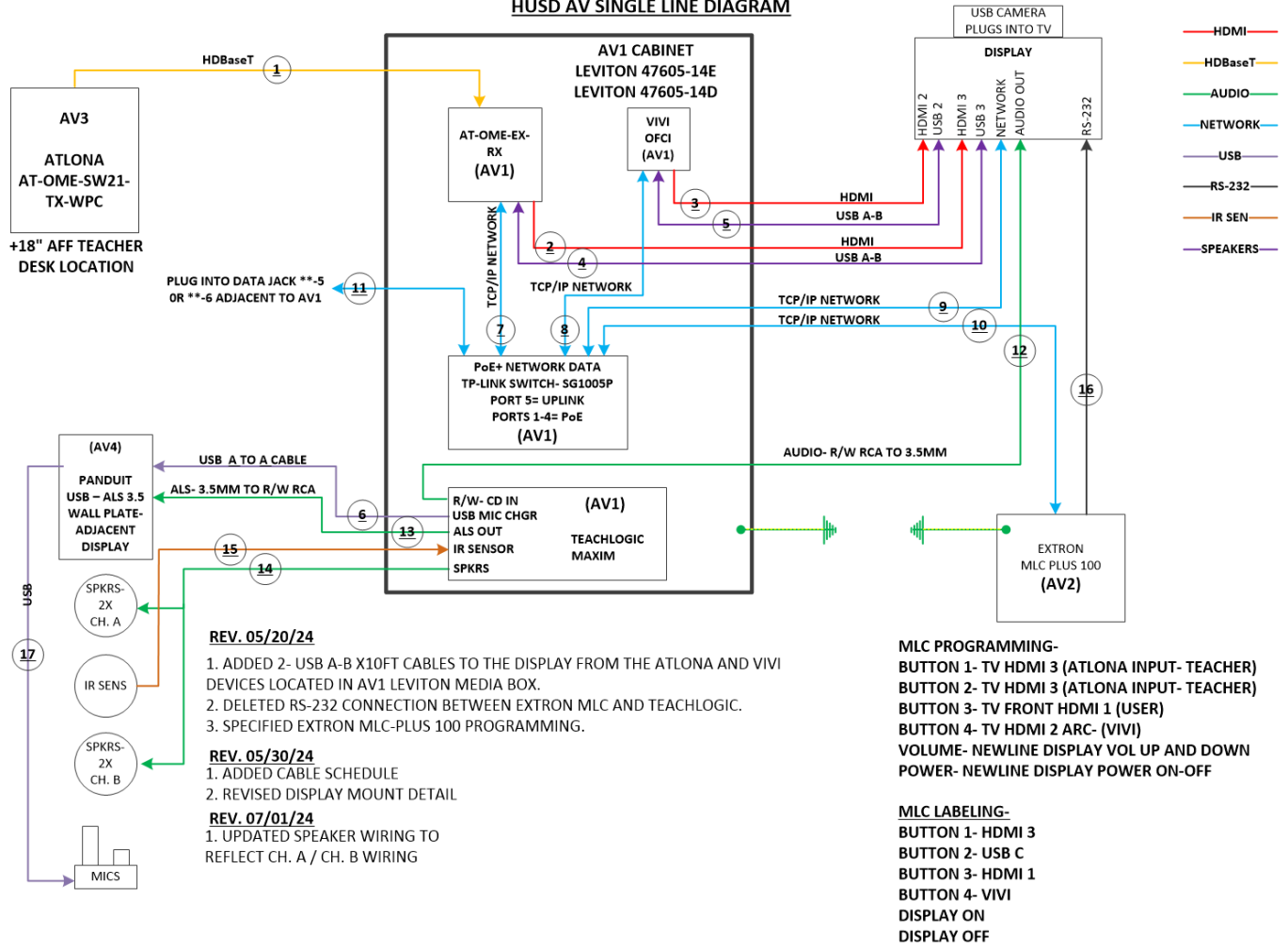


AT COMBINED AV3 AND DATA LOCATIONS USE RACO 259 or eq. 4-11/16" X 4- 11/16" JUNCTION BOX WITH 2-GANG MUDRING
 AT THE DEMONSTRATION COUNTER- OPTIONAL MOUNTING WOULD BE CENTERED IN THE FACIA ON THE TEACHER SIDE IF
 UNDERNEATH DOES NOT ACCOMMODATE THE DEVICES AND POWER

HUDS SUGGESTED AV CONDUIT AND JUNCTION BOX LAYOUT



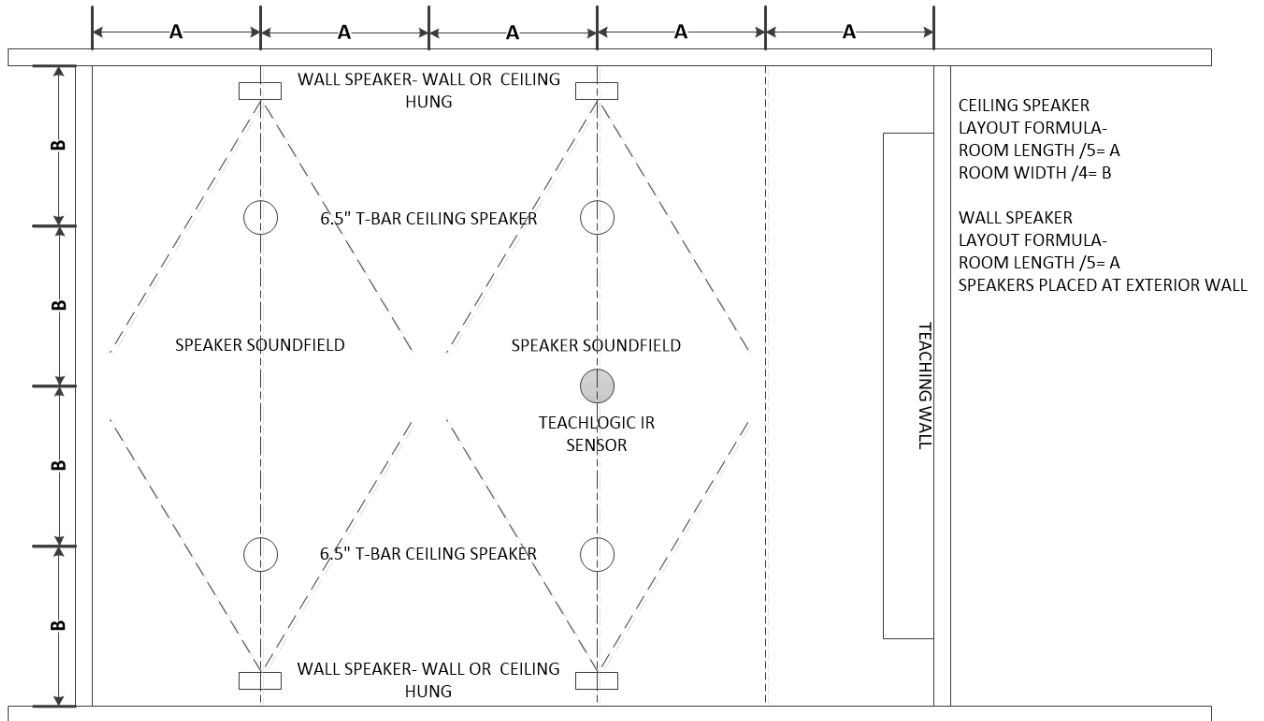
HUSD AV SINGLE LINE DIAGRAM



HUSD AV Cable Schedule and Types								
NUMBER	FUNCTION	MANUFACTURER	CABLE TYPE	LENGTH	FROM		TO	
1	HDBaseT	PANDUIT	CAT 6A	AS REQ	AV 1	AT-OME-EX-RX HDBaseT IN	AV 3	AV3-AT-OME-SW21-TX-WPC
2	HDMI		HDMI	10 FT	AV 1	AT-OME-EX-RX HDMI OUT	DISPLAY	NEWLINE HDMI 3 IN
3	HDMI		HDMI	10 FT	AV 1	VIVI HDMI OUT	DISPLAY	NEWLINE HDMI 2 IN
4	IFP TOUCH CTRL		USB 3.0 A-B	10 FT	AV 1	AT-OME-EX-RX USB A OUT	DISPLAY	NEWLINE HDMI 3 USB 3.0 IN

5	IFP TOUCH CTRL		USB 3.0 A-B	10 FT	AV 1	VIVI USB A OUT	DISP LAY	NEWLINE HDMI 2 USB 3.0 IN
6	MIC CHARGER		USB A-A	INC IN TEACHLOGIC KIT	AV 1	TEACHLOGIC USB A OUT	AV 4	USB A COUPLER
7	NETWORK	PANDUIT	CAT 6A	1 FT	AV 1	TP-LINK	AV 1	AT-OME-EX-RX NETWORK
8	NETWORK	PANDUIT	CAT 6A	1 FT	AV 1	TP-LINK	AV 1	VIVI NETWORK
9	NETWORK	PANDUIT	CAT 6A	10 FT	AV 1	TP-LINK	DISP LAY	NEWLINE NETWORK
10	NETWORK	PANDUIT	CAT 6A	AS REQ	AV 1	TP-LINK	AV 2	EXTRON MLC 100 PLUS
11	NETWORK	PANDUIT	CAT 6A	AS REQ	AV 1	TP-LINK		DATA NETWORK JACK
12	AUDIO		3.5MM - R/W RCA	10 FT	DISP LAY	NEWLINE AUDIO OUT	AV 1	TEACHLOGIC CD IN
13	AUDIO		3.5MM - R/W RCA	AS REQ	AV 1	TEACHLOGIC ASST LIST OUT	AV 4	3.5MM COUPLER
14	AUDIO		18/2	INC IN TEACHLOGIC KIT	AV 1	TEACHLOGIC SPEAKER OUT		CEILING/WALL SPEAKERS
15	MIC IR SENSOR	TEACHLOGIC	RCA	INC IN TEACHLOGIC KIT	AV 1	TEACHLOGIC IR SENSOR		CEILING IR DOME
16	RS-232 CONTROL		20/3 DB9 TO 3.5mm	15 FT	AV1	MLC 100 PLUS COMM		DISPLAY RS-232
17	"Y" POWER SPLITTER	AMAZON	5-15P to 5-15R + C13 + C5					

TEACHLOGIC AUDIO SYSTEM SPEAKER AND IR SENSOR PLACEMENT



NOTES

TEACHLOGIC KITS COME COMPLETE WITH MAXIM AMPLIFIER, IR SENSOR, 50 FT RCA SENSOR CABLE, SPEAKERS, TILE BRIDGE (IF REQ), PENDANT AND HANDHELD MICS WITH DUAL CHARGING BASE, 100 FT 18/2 SPEAKER CABLE

INTENT OF SPEAKER SOUNDFIELD IS TO CENTER OVER STUDENT SEATING AREA

- * WALL MOUNTED SPEAKERS CAN BE WALL OR CEILING HUNG (SP-2000) (4- SPEAKER KIT- WM-4) (COMPLETE TEACHLOGIC MAXIM KIT- IRM-6650/WM4)
- * CEILING SPEAKERS COME WITH OPTIONAL TILE BRIDGE (4- SP-628 W/ TB-6.1) (COMPLETE TEACHLOGIC MAXIM KIT- IRM-6650/CS4)
- * LAY-IN CEILING SPEAKER IS ALSO AVAILABLE (SP-628L) (4- SPEAKER KIT- LS-4) (COMPLETE TEACHLOGIC MAXIM KIT- IRM-6650/LS4)
- * IR SENSOR IS CENTERED BETWEEN FIRST SET OF SPEAKERS (ICS-55)
- * IR SENSOR ATTACHES TO T-BAR WITH INCLUDED CLIP OR A JUNCTION BOX WITH T-BAR CLIP REMOVED

Ric Johanson, RTEJ Corp.
HUSD IT Consultant 07/30/24

CLASSROOM AV SYSTEM- T-BAR CEILING SPEAKERS		
Leviton Surface Mount Multi-Media Box	1	47605-14E
Leviton Surface Mount Multi-Media Box Cover	1	47605-14D
TeachLogic Maxim T-Bar Ceiling Mount Kit	1	IRM-6650/CS4
Kit Includes the following items		
Receiver Amplifier	1	IRM-540
Saphire IR Pendent Mic	1	IRT-60N
Handheld Mic	1	IRH-35
Rechargeable batteries for IRH-35	1	BR-AA4
Drop-In Mic Charger	1	BRC-60
IR Dome Sensor	1	ICS-55

TeachLogic Ceiling Speaker	4	SP-628
TeachLogic Ceiling Speaker Tile Bridge	4	TB-6.1
18ga Speaker Wire- 100 ft / kit	100	SWIR-18/2-PL
TeachLogic Shelf Mount Bracket- Not Incl in Kit	1	SM-4011
Extron MLC Controller	1	MLC PLUS 100
TP-Link 5 Port PoE+ Switch	1	TL-SG1005P
Atlona HDMI Over HDBaseT Receiver	1	AT-OME-EX-RX
Atlona HDBaseT TX Wallplate	1	AT-OME-SW21-TX-WPC-G
VIVI Wireless Presenter (OFCl)	1	Vivi
REQUIRED CABLES- SEE CABLE CHART		
CLASSROOM AV SYSTEM- WALL OR CEILING HUNG SPEAKERS		
Leviton Surface Mount Multi-Media Box	1	47605-14E
Leviton Surface Mount Multi-Media Box Cover	1	47605-14D
TeachLogic Maxim T-Bar Ceiling Mount Kit	1	IRM-6650/WM4
Kit Includes the following items		
Receiver Amplifier	1	IRM-540
Saphire IR Pendent Mic	1	IRT-60N
Handheld Mic	1	IRH-35
Rechargeable batteries for IRH-35	1	BR-AA4
Drop-In Mic Charger	1	BRC-60
IR Dome Sensor	1	ICS-55
TeachLogic Wall Speaker	4	SP-2000
18ga Speaker Wire- 100 ft / kit	100	SWIR-18/2-PL
TeachLogic Shelf Mount Bracket- Not Incl in Kit	1	SM-4011
Extron MLC Controller	1	MLC PLUS 100
TP-Link 5 Port PoE+ Switch	1	TL-SG1005P
Atlona HDMI Over HDBaseT Receiver	1	AT-OME-EX-RX
Atlona HDBaseT TX Wallplate	1	AT-OME-SW21-TX-WPC-G
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REQUIRED CABLES- SEE CABLE CHART		