

BULLETIN # 18

DATE: December 2, 2025

TO: ITG
Attn: Isac Tabib

CC: Chaker Maghak, Hill Intl.

FROM: Sarah Dirsa, AIA LEED AP
KG+D Architects, PC

PROJECT: Harrison Recreation & Community Center – PHASE 2
Harrison, NY

RE: AVT Cabling



Message:

Please review the enclosed documents depicting work required for cabling to be installed related to the Audio/Video/Television System.

Cc: File

Encl: AVV System Conduit and Wiring Plans
AVT Cabling Specification – Excerpt

KG+D Architects, PC

285 Main Street, Mount Kisco, New York 10549
914.666.5900 kgdarchitects.com

HARRISON RECREATION & COMMUNITY CENTER

New Construction - Phase 2
Town / Village of Harrison
270 Harrison Avenue
Harrison, NY 10528

KG+D ARCHITECTS, PC
285 MAIN STREET • MOUNT KISCO, NEW YORK 10549
P:914.686.5900 KGDARCHITECTS.COM

CONSTRUCTION DOCUMENTS



NOTE: ALL IDEAS, DESIGNS, ARRANGEMENTS AND ANNOTATIONS OR REFERENCED BY THIS DRAWING ARE OWNED BY AND ARE THE PROPERTY OF KG+D ARCHITECTS, PC AND SHALL REMAIN THE PROPERTY OF KG+D ARCHITECTS, PC AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF KG+D ARCHITECTS, PC.

IF ANY PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF KG+D ARCHITECTS, PC, THE USER SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY PERMISSIONS FROM THE ORIGINAL COPYRIGHT OWNER.

ALTERNATION BY ANY PERSON IN ANY WAY OF ANY ITEM CONTAINED ON THIS DRAWING SHALL BE THE RESPONSIBILITY OF THE USER. THE ARCHITECT ASSUMES NO LIABILITY FOR ANY ERRORS OR OMISSIONS IN THIS DRAWING OR FOR ANY CONSEQUENCES ARISING FROM THE USE OF THIS DRAWING. THE ARCHITECT'S LIABILITY IS LIMITED TO THE PROFESSIONAL SEAL AND THE ARCHITECT'S LIABILITY IS LIMITED TO THE PROFESSIONAL SEAL AND THE ARCHITECT'S LIABILITY IS LIMITED TO THE PROFESSIONAL SEAL.

Professional Seal

No.	Date	Issue
3	12/03/2025	Bulletin No.
2	08/05/2024	Issued for Bid
1	02/14/2024	Progress

Sheet Title	
AVV System Conduit & Wiring 1st Floor Plan	
Job No.	Date
2020-1005	02/06/24
Scale	Drawn / Checked
AS NOTED	Author Checker
Sheet Number	

AVV101

01 FLOOR PLAN
LEVEL 01
AV101.00 1/8" = 1'-0"

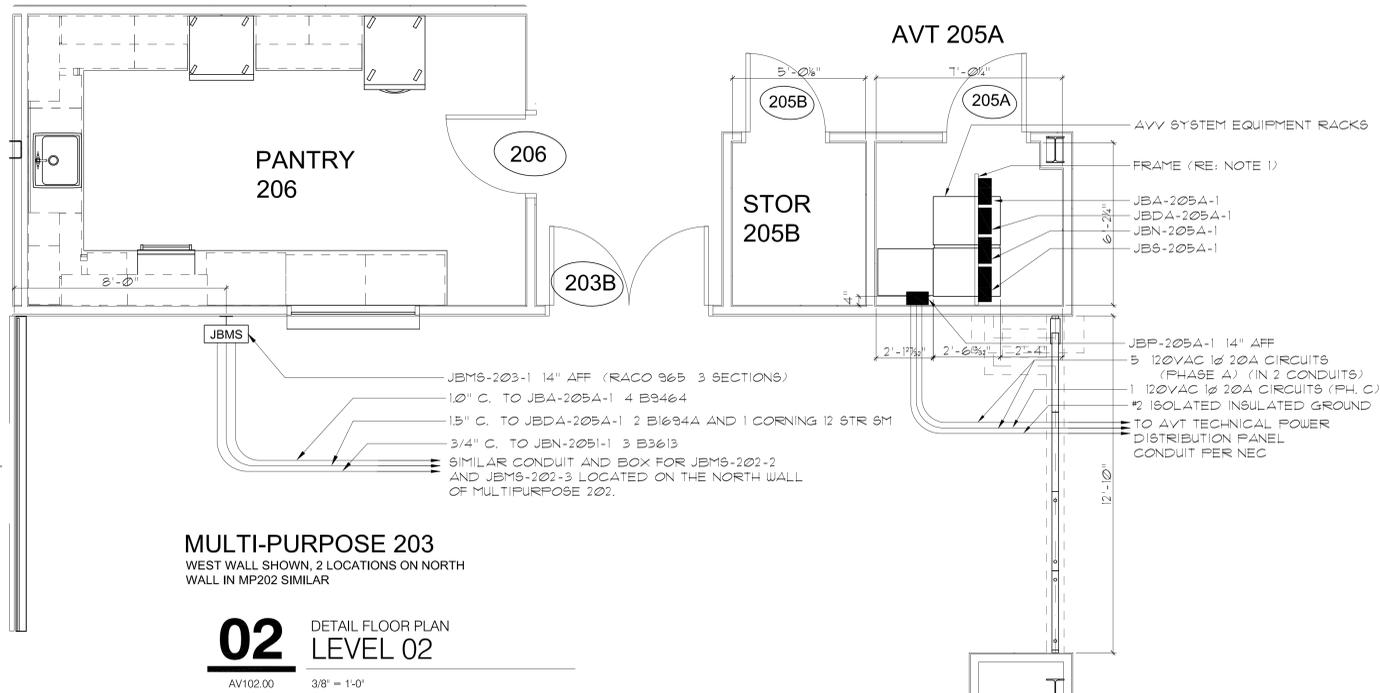
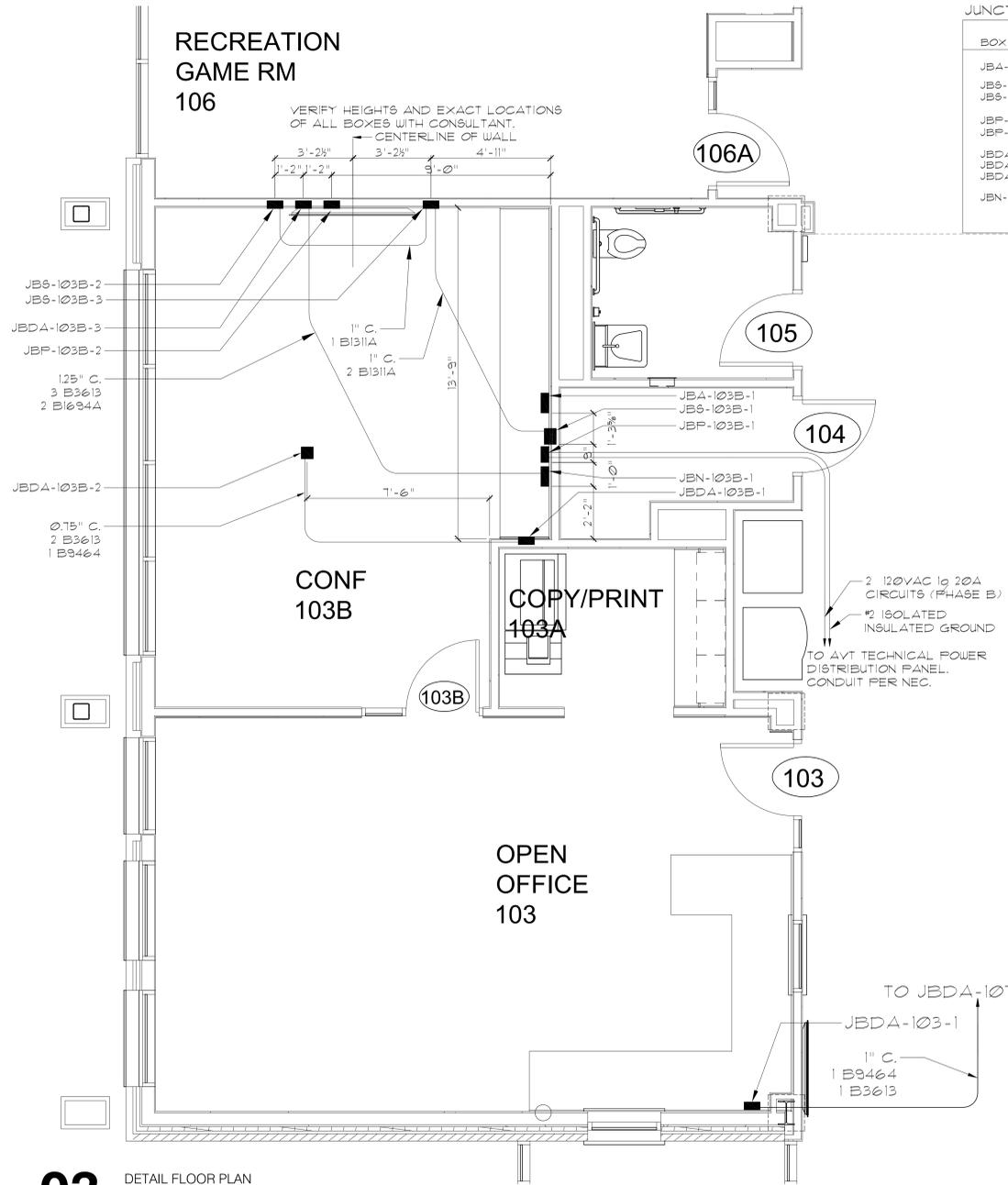
JUNCTION BOX SCHEDULE - CONFERENCE ROOM

BOX	WIDTH, IN.	HEIGHT, IN.	DEPTH, IN.	MTG HGT	MTG STYLE	MFR	MODEL	NOTES
JBA-103B-1	10"	10"	4"	14"	SURFACE	HOFFMAN	A-1010SC	
JBS-103B-1	8"	10"	6"	14"	SEMI-RECESSED FLUSH	HOFFMAN	A-10086SC	
JBS-103B-2, 3	2 GANG	-	-	11-0"	-	-	696	
JBP-103B-1	8"	10"	4"	10"	SEMI-RECESSED FLUSH	HOFFMAN	A-10085C	
JBP-103B-2	2 GANG	-	-	6'-6"	-	RACO	696	VERIFY LOCATION
JBDA-103B-1	8"	10"	6"	14"	SEMI-RECESSED FLUSH	HOFFMAN	A-10086SC	
JBDA-103B-2	2 GANG	-	-	ABOVE CLG	SURFACE	RACO	696	
JBDA-103B-3	2 GANG	-	-	14"	FLUSH	RACO	696	
JBN-103B-1	10"	10"	4"	14"	SURFACE	HOFFMAN	A-1010SC	

JUNCTION BOX SCHEDULE AV205A

BOX	WIDTH, IN.	HEIGHT, IN.	DEPTH, IN.	(BOT AFF) MTG HGT	MTG STYLE	MFR	MODEL	NOTES
JBP-205A-1	10"	10"	6"	14"	SURFACE	HOFFMAN	A-1010SC	
JBA-205A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH
JBDA-205A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16126	NOTE 1. DOOR FACES NORTH
JBN-205A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH
JBS-205A-1	16"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH

RECREATION GAME RM 106



03 DETAIL FLOOR PLAN LEVEL 01
 AV102.00 3/8" = 1'-0"

NOTES - GENERAL

- INSTALL WOOD OR TREX INSULATING BASE UNDER AUDIO/VIDEO/TELEVISION AND NETWORK EQUIPMENT RACKS, EXCEPT FOR THOSE IN MILLWORK SUCH AS CONF 103B. REFER TO SPECIFICATIONS.
- IF ANY WALL MOUNTED BACKBOARDS ARE SHOWN, FURNISH BIRCH VENEER HARDWOOD PLYWOOD, FIRE RATED, PRIMED AND PAINTED TWO COATS FLAT GREY ENAMEL PAINT. INSTALL USING STAINLESS STEEL HARDWARE.
- ALL HARDWARE IN THE AV/T SYSTEM EMPLOYED FOR ANY PURPOSE SHALL BE STAINLESS STEEL.
- VERIFY WITH AND OBTAIN THE APPROVAL OF THE CONSULTANT FOR ALL CONDUIT ROUTING.
- JUNCTION BOX MOUNTING HEIGHTS ARE TO THE BOTTOM OF THE BOX, UNLESS OTHERWISE NOTED.

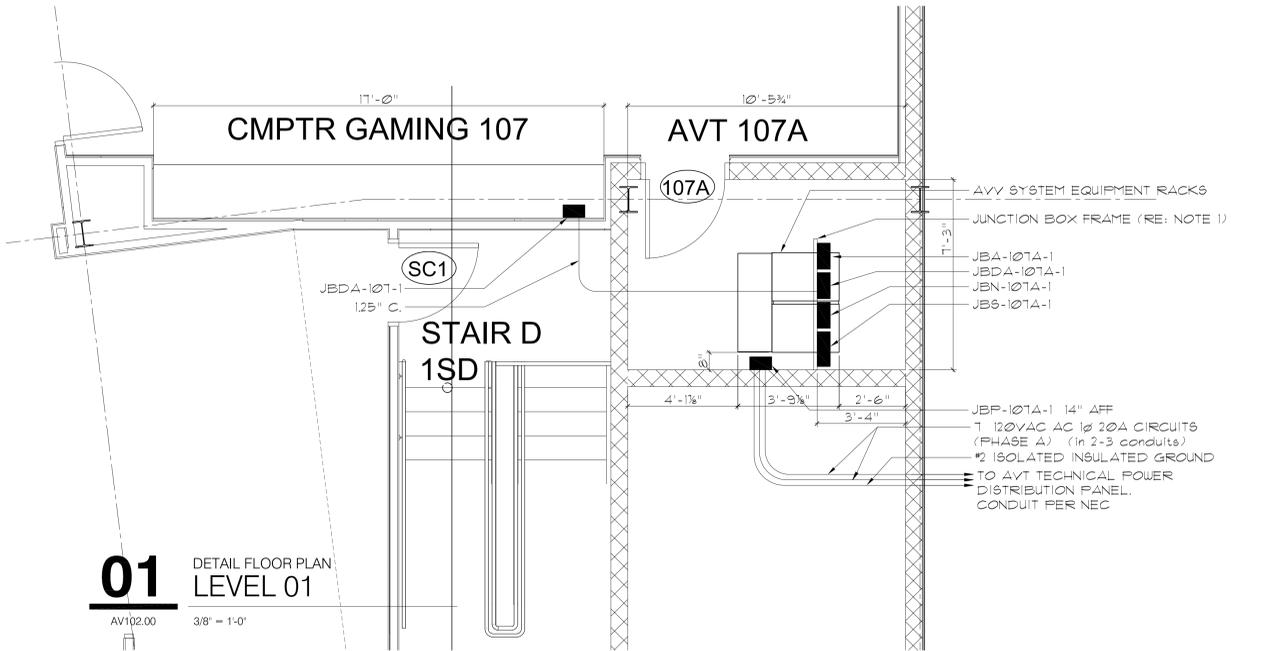
NOTES - JUNCTION BOXES

- INSTALL BOX ON FRAME OF UNISTRUT OR KINDORF CONSTRUCTION CHANNEL SUPPORTED TO STRUCTURE, FASTENED TO SIDES AND BACK OF BOX ONLY. LEAVE TOP AND BOTTOM OF BOX CLEAR FOR BUILDING CONDUIT ENTRY AND WATERTIGHT FLEXIBLE CONDUIT TO RACKS, RESPECTIVELY. IN SOME CASES, SUCH AS AC POWER BOXES, CONDUITS COME INTO THE SIDE OF THE BOX AS WELL.
- INSTALL BOX ON FRAME OF UNISTRUT OR KINDORF CONSTRUCTION CHANNEL.
- CUSTOM BOX WITH THREE FULLY ENCLOSED SECTIONS.
- SIZE ALL AC POWER CONDUIT SHOWN ON THIS DRAWING ACCORDING TO THE NEC AND THE ELECTRICAL SPECIFICATIONS, WITH SPARE CAPACITY IN ADDITION. PROPOSE SIZES FOR REVIEW ON THE SUBMITTAL DRAWINGS.
- VERIFY WITH ARCHITECT.
- VERIFY WITH CONSULTANT.
- SEE AVV 104 FOR LEGENDS AND NOTES PERTAINING TO TELEVISION DISTRIBUTION SYSTEM

JUNCTION BOX SCHEDULE AV107A

BOX	WIDTH, IN.	HEIGHT, IN.	DEPTH, IN.	(BOT AFF) MTG HGT	MTG STYLE	MFR	MODEL	NOTES
JBP-107A-1	10"	10"	6"	14"	SURFACE	HOFFMAN	A-1010SC	
JBA-107A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH
JBDA-107A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16126	NOTE 1. DOOR FACES NORTH
JBN-107A-1	12"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH
JBS-107A-1	16"	16"	6"	1'-8"	FRAME	HOFFMAN	C-SD16166	NOTE 1. DOOR FACES NORTH
JBDA-107-1	16"	10"	6"	14"	SURFACE IN CABINET	HOFFMAN	C-SD16106	NOTE 1. DOOR FACES WEST

02 DETAIL FLOOR PLAN LEVEL 02
 AV102.00 3/8" = 1'-0"



01 DETAIL FLOOR PLAN LEVEL 01
 AV102.00 3/8" = 1'-0"

NOTE: ALL IDEAS, DESIGNS, ARRANGEMENTS AND AREAS INDICATED OR REFERENCED BY THIS DRAWING ARE OWNED BY AND ARE THE PROPERTY OF KG+D ARCHITECTS, PC AND SHALL BE KEPT CONFIDENTIAL AND NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF KG+D ARCHITECTS, PC.

IF ANY CHANGES OR MODIFICATIONS TO THIS DRAWING ARE NECESSARY, THE CONTRACTOR SHALL VERIFY ALL ACTUAL CONDITIONS AND CONDITIONS ON THE JOB AND THE ARCHITECT SHALL BE NOTIFIED BY ANY VARIATIONS FROM DIMENSIONS AND CONDITIONS SHOWN. SHOP DETAILS MUST BE SUBMITTED TO THE OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

ALTERNATION BY ANY PERSON IN ANY WAY OF ANY ITEM CONTAINED ON THIS DOCUMENT, UNLESS SETTING UNDER THE DIRECTION OF THE ARCHITECT, ARCHITECT IN CHARGE, PROFESSIONAL SEAL, IS APPROVED HEREIN, IS A VIOLATION OF TITLE 16, SECTION 1601 OF THE NEW YORK STATE LAW.

© COPYRIGHT KG+D ARCHITECTS, PC. ALL RIGHTS RESERVED.

Professional Seal

No.	Date	Progress	Issue
3	12/02/2025	Issued for Bid	
2	08/05/2024	Issued for Bid	
1	02/14/2024	Progress	

Sheet Title
AVT System Conduit & Wiring Plan Details

Job No.	Date
2020-1005	02/06/24

Scale	Drawn / Checked	Author / Checker
AS NOTED		

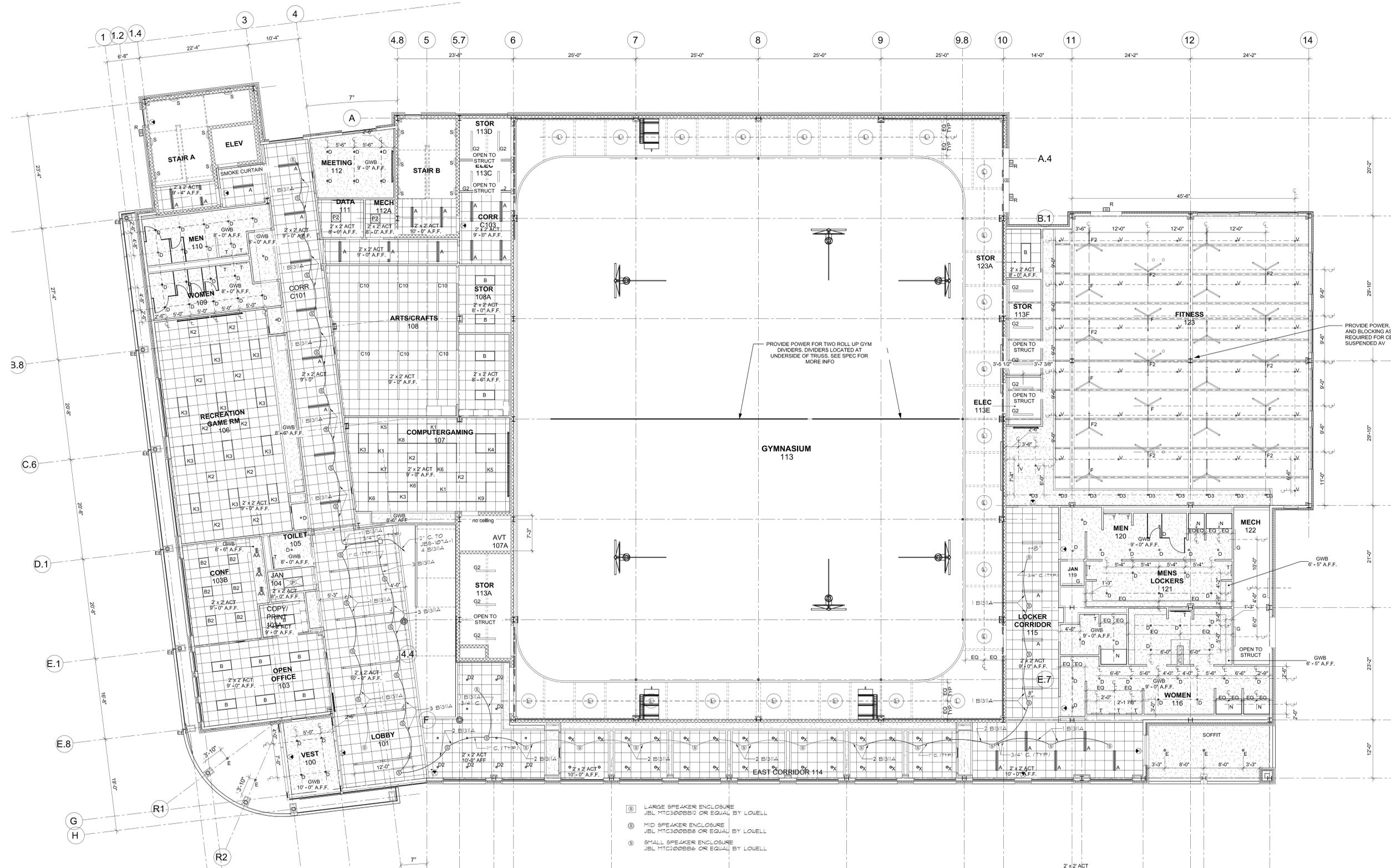
Sheet Number
AVV102

**HARRISON
RECREATION &
COMMUNITY
CENTER**

New Construction - Phase 2
Town / Village of Harrison
270 Harrison Avenue
Harrison, NY 10528

KG+D ARCHITECTS, PC
285 MAIN STREET • MOUNT KISCO, NEW YORK 10549
P:914.686.5900 KGDARCHITECTS.COM

CONSTRUCTION DOCUMENTS



- ⑧ LARGE SPEAKER ENCLOSURE
JBL MTC300BB2 OR EQUAL BY LOWELL
- ⑦ MID SPEAKER ENCLOSURE
JBL MTC300BB3 OR EQUAL BY LOWELL
- ⑥ SMALL SPEAKER ENCLOSURE
JBL MTC100BB6 OR EQUAL BY LOWELL

NOTES - GENERAL

1. SIZE CONDUIT AS SHOWN WHERE SIZE IS NOT INDICATED CONDUIT SHALL BE 3/4". ALL INTERIOR CONDUIT WHAT'LL BE EXT UNLESS OTHERWISE NOTED.
2. IN SUSPENDED CEILING, SPEAKER LOCATIONS ARE DETERMINED IN RELATION TO THE CEILING TILE GRID AS DESIGNED BY THE ARCHITECT. IF ANY GRIDS ARE PROPOSED TO BE INSTALLED BY THE CONTRACTOR TO DIFFERENT DIMENSIONS AND/OR LOCATIONS, CEILING SPEAKER LOCATIONS MUST BE PROPOSED ON DRAWINGS AND APPROVED BY THE CONSULTANT.
3. ALL HARDWARE IN THE AV/T SYSTEM EMPLOYED FOR ANY PURPOSE SHALL BE STAINLESS STEEL.
4. VERIFY WITH AND OBTAIN THE APPROVAL OF THE CONSULTANT FOR ALL CONDUIT ROUTING.
5. FURNISH AND INSTALL ALL SPEAKER ENCLOSURE ACCESSORIES AND ASSOCIATED PARTS SUCH AS PENDANTS, BRACKETS, ETC. NEEDED FOR A COMPLETE, SECURE, AND SAFE INSTALLATION.

NOTE: ALL IDEAS, DESIGNS, ARRANGEMENTS AND/OR INDICATED OR REPRESENTED IN THIS DRAWING AND OWNED BY AND ARE THE PROPERTY OF KG+D ARCHITECTS, PC AND/OR ARE HERE CREATED FOR USE ON THE PROJECT HEREIN. NO DESIGN, ARRANGEMENTS OR LINE SHALL BE USED BY OR DISCLOSED TO ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF KG+D.

WRITTEN DIMENSIONS ON THIS DRAWING SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY ALL ACTUAL DIMENSIONS AND CONDITIONS ON THE JOB AND THE ARCHITECT SHALL BE NOTIFIED OF ANY VARIATIONS FROM DIMENSIONS AND CONDITIONS SHOWN. SHOP DETAILS MUST BE SUBMITTED TO THE OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

ALTERATIONS BY ANY PERSON IN ANY WAY OF ANY ITEM CONTAINED ON THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF THE ARCHITECT, ARCHITECT IN CHARGE, PROFESSIONAL SEAL, IS A VIOLATION OF TITLE 16, SECTION 1605 OF NEW YORK STATE LAW.

© COPYRIGHT KG+D ARCHITECTS, PC. ALL RIGHTS RESERVED.

Professional Seal

No.	Date	Issue
3	12/03/2025	Bulletin No.
2	06/05/2024	Issued for Bid
1	02/14/2024	Progress

**AVV System
Conduit & Wiring
1st FLOOR RCP**

Job No.	2020-1005	Date	02/06/24
Scale	AS NOTED	Drawn / Checked	Author / Checker
Sheet Number	AVV103		

01 REFLECTED CEILING PLAN
LEVEL 01
AV103.00 1/8" = 1'-0"

AVV103



NOTES - GENERAL

1. SIZE CONDUIT AS SHOWN; WHERE SIZE IS NOT INDICATED CONDUIT SHALL BE 3/4". ALL INTERIOR CONDUIT SHALL BE EMT UNLESS OTHERWISE NOTED.
2. IN SUSPENDED CEILING, SPEAKER LOCATIONS ARE DETERMINED IN RELATION TO THE CEILING TILE GRID AS DESIGNED BY THE ARCHITECT. IF ANY GRIDS ARE PROPOSED TO BE INSTALLED BY THE CONTRACTOR TO DIFFERENT DIMENSIONS AND/OR LOCATIONS, CEILING SPEAKER LOCATIONS MUST BE PROPOSED ON DRAWINGS AND APPROVED BY THE CONSULTANT.
3. ALL HARDWARE IN THE AV/T SYSTEM EMPLOYED FOR ANY PURPOSE SHALL BE STAINLESS STEEL.
4. VERIFY WITH AND OBTAIN THE APPROVAL OF THE CONSULTANT FOR ALL CONDUIT ROUTING.
5. FURNISH AND INSTALL ALL SPEAKER ENCLOSURE ACCESSORIES AND ASSOCIATED PARTS SUCH AS PENDANTS, BRACKETS, ETC. NEEDED FOR A COMPLETE, SECURE, AND SAFE INSTALLATION.

- ⑧ LARGE SPEAKER ENCLOSURE
JBL MTC300BB12 OR EQUAL BY LOUELL
- ⑨ MID SPEAKER ENCLOSURE
JBL MTC300BB8 OR EQUAL BY LOUELL
- ⑩ SMALL SPEAKER ENCLOSURE
JBL MTC200BB6 OR EQUAL BY LOUELL

01 REFLECTED CEILING PLAN
LEVEL 02
AV104.00 1/8" = 1'-0"

NOTE: ALL IDEAS, DESIGNS, ARRANGEMENTS AND INDICATED OR REPRESENTED IN THIS DRAWING AND OWNED BY AND ARE THE PROPERTY OF KG+D ARCHITECTS, PC AND SHALL REMAIN THE PROPERTY OF THE PROJECT. NO PART OF THIS DRAWING, ARRANGEMENTS OR INDICATED SHALL BE USED BY OR DISCLOSED TO ANY PARTY WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF KG+D.

WRITTEN DIMENSIONS ON THIS DRAWING SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY ALL ACTUAL DIMENSIONS AND CONDITIONS ON THE JOB AND THE ARCHITECT SHALL BE NOTIFIED OF ANY VARIATIONS FROM DIMENSIONS AND CONDITIONS SHOWN. SHOP DETAILS MUST BE SUBMITTED TO THE OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

ALTERATIONS BY ANY PERSON IN ANY WAY OF ANY ITEM CONTAINED ON THIS DOCUMENT, UNLESS AUTHORIZED UNDER THE DIRECTION OF THE REGISTERED ARCHITECT (PROFESSIONAL SEAL IS AFFIXED HERETO), IS A VIOLATION OF TITLE 16, SECTION 1601 OF THE GENERAL BUILDING LAW.

© COPYRIGHT KG+D ARCHITECTS, PC. ALL RIGHTS RESERVED.

Professional Seal

No.	Date	Issue

**AVV System
Conduit & Wiring
2nd FLOOR RCP**

Job No. 2020-1005	Date 02/06/24
Scale AS NOTED	Drawn / Checked Author Checker

Sheet Number
AVV104

2.11 AVT CABLING

A. Cable, copper. High purity stranded copper cable; insulation dielectric appropriate to signal and code requirements; foil or braid shield. Install in metallic conduit, wireway, or watertight flexible conduit, unless otherwise noted or instructed. No substitutions are allowable without specific written approval. All cable for a given wiring category shall be consistent; i.e., if Belden 9464 is chosen for line level wiring, *all* line level wiring shall be done with this cable. Molded cable/connectors are not acceptable for any purpose except computer signal interconnection and AC power cords. All equipment must be provided with signal and/or control cabling, whether or not specifically shown on the conduit and wiring drawings. The overall cable diameter is shown in inches. Not all cables specified herein may be employed in the system.

1. Loudspeaker lines. Oxygen free high conductivity bare copper conductors, stranded; polyolefin insulated, PVC jacket, unshielded two conductor twisted pair. Furnish 50 ft sample of 1311A to the Consultant before beginning installation. Each mini-cluster is served by a specific combination of these cables matching the various drivers, including color coding by frequency range or purpose— refer to the Audio System Schematic drawing.

Acceptable: Belden 1313A (10 gauge, 259x34; 0.428")
 Belden 1311A (12 gauge, 168x34; 0.352")

2. Microphone and line level audio circuits, single pair. Tinned copper conductors, 20 AWG (7x28) and 18 AWG (16x30), polyethylene insulated (black and clear), twisted pair; foil aluminum-polyester shield, 18 or 20 AWG stranded tinned copper drain wire; PVC jacket. Nominal capacitance between conductors, 27-30 pF/ft.

Acceptable: Belden 9464 20 AWG (0.214")
Acceptable: Belden 8760 18 AWG (0.222")

3. Microphone and line level audio circuits, single pair, plenum rated. Tinned copper conductors, 18 AWG (19x30), ethylene-propylene insulated (black and clear), twisted pair; foil aluminum-polyester shield, 18 or 20 AWG stranded tinned copper drain wire; Flamarrrest or Teflon jacket. Nominal capacitance between conductors, 35 pF/ft.

Acceptable: Belden 82760 or 88760 18 AWG (0.153") (for in cable tray)

4. Microphone audio circuits, special. Tinned copper 24 AWG conductors, irradiated polyethylene insulated; double twisted pair; tinned copper aluminum tape shield with drain wire for 100% shield coverage; PVC jacket. Nominal impedance, 37 ohms.

Acceptable: Canare L-4E6AT (20 AWG equivalent, 0.244")
 Canare L-4E5AT (22 AWG equivalent, 0.197")

5. Individually Shielded Multipair, 22 gauge, CMP rated. Tinned copper 22 gauge stranded conductors, teflon insulated, twisted pairs; each pair individually shielded with aluminum polyester shield for 100% coverage, 24 AWG stranded copper drain wire; red teflon jacket. Nominal impedance, 40 ohms (2 pair), 50 ohms (3 and 6 pair); velocity of propagation, 69%; nominal capacitance, 35 pF/ ft (2 pair), 31 pF/ft (3 and 6 pair). Two-pair cable is acceptable for production communication systems.

Acceptable: Belden 88723 (2 pair, 0.150" dia)
 Belden 88777 (3 pair, 0.226" dia)
 Belden 88778 (6 pair, 0.306" dia)

6. Individually Shielded and Jacketed Multipair, 22 gauge. Tinned copper 22 gauge stranded conductors, datalene insulated, twisted pairs; each pair individually shielded with aluminum polyester shield for 100% coverage, 24 AWG stranded copper drain wire; each air individually jacketed with PVC; overall matte black PVC jacket. Nominal impedance, 70 ohms; velocity of propagation, 78%; nominal capacitance, 19 pF/ ft.

Acceptable: Belden 1217B (4 pair, 0.458")
 Belden 1218B (6 pair, 0.578")
 Belden 1220B (12 pair, 0.760")

7. Individually Shielded and Jacketed Multipair, 22 gauge. Tinned copper 22 gauge stranded conductors, polyolefin insulated, twisted pairs; each pair individually shielded with aluminum polyester shield for 100% coverage, 24 AWG stranded copper drain wire; each air individually jacketed with PVC; overall matte black PVC jacket. Nominal impedance, 50 ohms; velocity of propagation, 66%; nominal capacitance, 31 pF/ ft.

Acceptable: Belden 1814B (2 pair, 0.330")
 Belden 1815B (4 pair, 0.384")
 Belden 1816B (6 pair, 0.462")
 Belden 1817B (8 pair, 0.503")
 Belden 1818B (12 pair, 0.625")

8. Individually Shielded and Jacketed Multipair, 24 gauge, CM rated. Tinned copper 24 gauge stranded conductors, polyolefin insulated, twisted pairs; each pair individually shielded with aluminum-polyester shield and a 24 AWG stranded copper drain wire; each pair individually jacketed with PVC; overall black PVC jacket. Nominal capacitance between conductors, 31 pF/ft.; nominal impedance, 50 ohms; velocity of propagation, 66%.

Acceptable: Belden 1408B (4 pair, 0.346")
 Belden 1409B (6 pair, 0.412")

9. Production Communication system cable. Individually shielded multipair. Tinned copper gauge conductors, polypropylene insulated, twisted pairs; each pair individually shielded with aluminum polyester shield, 22 AWG stranded copper drain wire; chrome PVC jacket.

Acceptable: Belden 8723 (2 pair, 22 gauge, 0.165")

10. Computer Cables, overall shielded multipair. Tinned copper 24 gauge stranded conductors, datalene insulated, twisted pairs; overall foil/polyester shield with stranded 24 AWG copper drain wire; chrome PVC jacket. Nominal capacitance, 12.5 pF/ft; velocity of propagation, 78%; nominal impedance, 100 ohms. NEC CM rated. Suitable for RS-232 and RS-422 applications.

Acceptable: Belden 8102 (2 pair, 0.270")
Acceptable: Belden 8103 (3 pair, 0.283")
Acceptable: Belden 8104 (4 pair, 0.302")
Acceptable: Belden 8106 (6 pair, 0.341")
Acceptable: Belden 8108 (8 pair, 0.370")

11. Digital Audio. Tinned copper 22 gauge conductors, polypropylene insulation, twisted pair; overall foil/polyester shield for 100% coverage; 24 AWG tinned copper drain wire; overall matte PVC jacket. Nominal characteristic impedance, 110 ohms. Nominal capacitance, 13.0 pf/ft between conductors; 26 pf/ft between conductor and shield.

Acceptable: Belden 1696A (0.234")

12. Precision Digital Video Cable. Solid bare copper 18 AWG conductor, polyethylene dielectric, tinned copper double braid shield for 95% coverage and foil shielding for 100% coverage, PVC jacket. Nominal capacitance, 16.2 pF/ft; nominal impedance, 75 ohms; velocity of propagation, 820%; attenuation at 270 MHz, 3.1 dB/100 ft; at 360 MHz, 3.65 dB/100 ft. Use red, green, blue, white, white, yellow, and black insulation colors to code R, G, B, S, HS, VS, and composite video circuits respectively.

Acceptable: Belden 1694B (0.275")
 13. Precision Video Cable, plenum. Solid bare copper 18 AWG conductor, foam FEP dielectric, tinned copper double braid shield for 95% coverage, black fluorocopolymer jacket. Nominal capacitance, 16.2 pF/ft; nominal impedance, 75 ohms; velocity of propagation, 82%; attenuation at 1500 MHz, 9.2 dB/100 ft.

Acceptable: Belden 1695A (0.271")
 14. Digital Control Buss. Low capacitance shielded twisted pair cable specifically approved by the manufacturer for the application and length. Use ferrites and/or other special wiring devices or methods, if requested by the manufacturer for rf suppression or needed to meet FCC requirements.

Acceptable: Gepco 6104 two pair
Gepco 6108 four pair
 15. Hybrid Camera Power Cable. Two shielded twisted pairs for power to hybrid camera connectors.

Acceptable: Gepco HDP221 and HDP221P (plenum) (0.242")
or
Belden
 16. Power supply, DC, and general non-audio hookup: Belden 83009 (18 gauge), and Belden 83008 (20 gauge). Contactor control cable: #12 THHN.
 17. Polyolefin Tubing. Used to insulate individual cables in a multipair cable when the outer jacket is removed. White. Acceptable: Panduit.
- B. Unshielded CAT6 Twisted Pair Data Cable, plenum. Cable consisting of four twisted pairs, with cruciform isolator uniformly separating the pairs and an overall outer jacket. High purity solid copper wire, 23 AWG; pair insulation, FEP; outer jacket, flame retardant PVC. Nominal impedance: 100 ohms \pm 13 ohms, 1 – 100 MHz; \pm 20 ohms, 100-350 MHz. Capacitance: 4.4 nF/100 m. Nominal velocity of propagation: 72%. DC resistance: 9.38 ohms/100 meters. Outer jacket color: blue. Tested and certified for application in high performance fast ethernet computer networks, exceeding the performance specifications of ANSI/TIA/EIA 568-B Category 6. Test report furnished with each reel; turn over to the Owner.
- Acceptable: Belden Gigabit 3613 004A1000 nonbonded
or
BerkTek LANmark-1000 Category 6 10032093 (0.226")
or
Commscope Systimax 71E Gigaspeed XL
- Quantity: as required

PART III EXECUTION

3.01 GENERAL

- A. Coordinate work with all other trades to avoid causing delays in the construction schedule. Expedite the delivery of equipment and materials, and provide additional labor, if required to meet the construction schedule.
- B. The process of acceptance testing may necessitate the moving or adjustment of certain components; perform without claim for additional payment. Controls not user operated will generally be covered or locked after final adjustment; provide and install all locks and covers where directed by the Consultant.
- C. All installation work shall be performed by experienced technicians, skilled and practiced in the proper techniques required for each activity involved.

3.02 MECHANICAL

- A. All equipment and enclosures shall be aligned, matched, true, plumb, and square. Level and align racks in all directions before tightening equipment into final position. All equipment, except portable equipment, shall be permanently attached and held securely in place. Supports shall be designed to support loads with a safety factor of at least five, without sag or deflection.
- B. Install all equipment into racks, cabinets, frames, and furniture consoles, and fully wire and test, before delivery to the job site. If it is impractical to ship certain items installed in a console or rack, assemble, wire, and test the system in the shop; then remove, ship separately, and reassemble on site. Permanently mount all equipment; no equipment shall be installed loose or secured or suspended only by signal or power cables, tie wraps, or velcro. Panels, equipment, or cable bundles mounted to the rear or side rack rails shall not block clear access to the rear of any front mounted components or their wiring.
- C. Mount racks on a base of 1.25 inch thick black phenolic sheet and hardwood plywood, prime and paint the plywood two coats flat latex enamel paint. Level before installation of racks with a method approved by the Consultant.
- D. Provide ventilation adequate to keep the temperature within the rack(s) furniture, or millwork below 90° F. Provide an approved low noise ventilation fan only if the temperature in the rack or furniture rises above 90° F when powered continuously for five hours.
- E. Cover edges of cable pass-through holes in plates, panels, chassis, racks, boxes, enclosures, etc., with rubber grommets or Brady GRNY nylon grommetting.
- F. Vacuum and dust rack interiors and equipment on a continuing basis throughout assembly so the racks are completely free of dust, dirt, and assembly debris.

3.03 WIRING

- A. Coordinate the final connection of power and ground wiring from the P-0x box(es) or distribution panel to the entry point in the equipment racks. Power and ground wiring shall be hardwired directly to power contactors and ground busses to ensure uninterrupted operation.
- B. Execute wiring in strict adherence to standard professional audio practice, as described in "Recommended Wiring Practices," Broadcast Audio Equipment for AM, FM, Television (5th

Edition), Radio Corporation of America (RCA), Camden, N.J. 1962; "Recommended Wiring Practices", Sound System Engineering (2nd Edition), Davis and Davis, Howard W. Sams, 1987; and A Clean Audio Installation Guide, Allen H Burdick, Benchmark Media Systems. Installation, termination of connectors, wiring, and cable management, shall be performed to the highest standards of industry and professional practice.

- C. Take whatever precautions are necessary to prevent and guard against electromagnetic and electrostatic hum. For line level audio signals, float cable shields at the output of the source device and ground at the input of the destination device.
- D. All audio wire, after being cut and stripped, shall have the wire strands twisted back to their original lay and terminated by approved soldered or mechanical means. No bare wire ends are acceptable. Fold shields not connected back over the cable jacket and cover with heat shrinkable tubing; do not cut off unused shields. Dress the shield or drain wires with Teflon™ tubing, and install heat shrinkable tubing over the junction of the fanout and outer jacket.
- E. Exercise care in assembly and wiring; damage to cables or equipment will not be accepted.
- F. Separate cables of different signal types or levels, and separate, organize, bundle, and route cabling to prevent crosstalk or feedback oscillation in any amplifier section. In all cases, organize the wiring for microphone signals, line level audio signals, speakers, digital audio, analog video, digital video, fibre optic cable, control, computer network, DC power, and AC power into separated groups.
- G. Rack Wiring. Looking at the rack from the rear, locate AC power, RF, DC control, and speaker wiring on the left; microphone, line level audio, and other low level analog wiring on the right. Place bundles of digital audio and video cabling where logical in the particular rack. Run wiring vertically in a planned bundling and cable support system to maintain a clear and organized appearance. Neatly tie horizontally routed wiring to equipment in manageable bundles, with cable lengths cut to minimize excess but sufficient to allow ready service, testing, or the replacement of connectors. Provide a horizontal support bar system for large bundles. Do not employ 'all-thread' rod for cable support. Route AC cords directly to the side of the rack, under or over the equipment chassis, and then back to the power outlets, tying the excess cord only at the side of the rack. Organize cabling so that signal and AC power cords are in the least possible proximity.
- H. All wiring and connections shall be completely visible and labelled in the rack. Resistors employed in the system external to equipment shall be metal film 1% tolerance, wattage as required for the application (but in no case less than 1/2 watt). Any passive networks shall be fully enclosed in metal boxes or connectors which are clearly identified as to their contents.
- I. No splices shall exist in any length of cable run, unless specifically shown on the contract drawings at a designated junction enclosure *and* specifically approved in writing by the Consultant. All cables shall originate and terminate at active or passive devices. Where several devices are in close proximity, such as RF system passives, utilize approved housing-to-housing connectors and adapters; all such adapters shall be rotational.
- J. Do not wire any cables with a polarity reversal between connectors, end for end, unless required by the manufacturer for correct operation. Connect all loudspeakers electrically in phase and of consistent polarity, using the same wire color code for speaker wiring throughout the project. Note that different manufacturers employ differing color coding conventions for driver terminals. Wire all drivers and systems – whether cone, compression, full range, or any other type - so that a positive voltage at the power amplifier "+" terminal causes a positive acoustic pressure out of the driver/enclosure system.

- K. For cables terminating at an interface or connection plate mounted on or in an enclosure, dress the cables so as to allow removal of the plate from the enclosure and sufficient cable length for service or retermination.
- L. Install cables without sharp bends, crimps, or distortion. Where limited clearance prevents the manufacturer's recommended minimum bend radius from being observed, such as in small junction boxes, provide a right angle or similar connector where approved by the Consultant. Wiring with sharp bends or any evidence of crimping will be rejected.
- M. Form expansion loops, where required, using approved cable forming tools. Loops formed by hand will be rejected, and deemed cause for replacement of the entire span of cable.
- N. In pulling cable, do not bend to less than the manufacturer's recommended radius or exceed the manufacturer's tension specification. Employ temporary guides, sheaves, rollers, or other tools to prevent excessive tension or abrasion to the cable(s). Pull cable with tensions, tools, and lubricants recommended by the cable manufacturer. Thoroughly clean the cable exposed out of conduit at each end of a pull; pull out needed cable length plus an additional 8-10 feet, and cut off and discard this additional 8-10 ft of the cable at the pulling grip.
- O. In a limited number of areas with a drop ceiling, AVT cabling may be shown on the drawings to be run exposed and supported by J-hooks and clamps. The two types of cabling included are TVD drop cables and 70v speaker cabling. Assemble cabling of like signals, such as TVD drop cables, into bundles and support at close intervals. If more than one signal type is in proximity, separate by at least 2 ft. In areas with no drop ceiling, AVT wiring must be run in conduit to the nearest drop ceiling, cable tray, or rack room, as shown on the drawings. Speaker wiring in open ceiling areas must be run in conduit from speaker to speaker, or to junction boxes above the speaker and then in watertight metallic flexible conduit to the speaker enclosure.
- O. Where applicable, match cable lengths between like paths to minimize timing errors, and, to the maximum extent possible, utilize precisely cut cables to achieve correct timing and phasing. Achieve the specified digital audio or video timing and phasing performance using the fewest delay lines, delay distribution amplifiers, and other delay devices possible.
- P. Cable provided and installed under this contract for future use shall be installed with 12 ft (3.66 m) of spare at the location of the future equipment item in a rack or console. Similarly, if the destination is the rack or console generally, provide 20 ft (6 m); if the destination is no more defined than the equipment room, provide 80 ft (24 m). Identify and bundle the cables, and neatly store in a manner to prevent accidental damage. Replace all pull lines in all conduits.
- R. Label all cables at both ends with pulling numbers.
- S. Test all audio and video cables for continuity and characteristic impedance. Test all network cables to meet the manufacturer's standards and specifications for bandwidth, insertion loss, ACR, NEXT, and return loss. Submit a report summarizing all tests and results to the Consultant for review.