D60–COMMUNICATIONS – UniFormat to MasterFormat Conversion Chart

D60 Communications	MasterFormat No.	Title
D6090.10	27 05 00	Communications Supplementary Components
	27 05 36	Cable Trays
	27 05 39	Raceways

D60 Communications

27 00 00 COMMUNICATIONS RACEWAY/ CABLING SYSTEM

A. Purpose:

1. The general purpose of each Facilities Standard is to provide minimal criteria for construction materials at University facilities regarding code compliance, warranty, approved products, execution and uniformity.
2. To protect the health and safety of patients, visitors, students, faculty and staff, in addition to protecting non-project UAB property, all construction must be in accordance with: NFPA 241 safeguarding construction, alteration and demolition operations; Standard Building Code, Chapter 33, regarding site work, demolition and construction; NFPA 101 Life Safety Code.
3. Construction safety is the responsibility of the contractor in accordance with the regulations and codes of the agency having jurisdiction, and according to the guidelines adapted by OSHA.
4. The **Communications Raceway/Cabling System Facilities Standard** establishes a series of guidelines for specifying this particular item on any construction project at the University. *This Facilities Standard is not to be regarded as a specification.*

B. General:

1. Communications Raceway System consisting of conduit, raceways, outlet boxes, pull boxes, riser conduits, cable tray, terminal backboards, and service entrance conduit from the property line shall be specified as follows for all hospital buildings and non-hospital buildings classified as follows: High Rise Occupancy, Business Occupancy not Class B, and Institutional Occupancy with fire/smoke rated walls. For other smaller buildings without fire/smoke rated walls, the Architect or Engineer shall review the Building Code and the NEC Article 725 before eliminating the raceway to determine the wiring method.

2. When Fiber Risers and/or Copper Riser/Ties Cabling Facilities are required, UAB IT/ Telecommunications shall furnish and install the Riser Cabling Systems as required under a separate contract. (UAB Master Contract.)
3. All projects will require data station cabling/ station wiring. The Contractor shall install, test continuity for opens and shorts of all station cables/conductors in compliance with the attached UAB_CAT6/6A/DATA document. (Dated 06/06/2019.)

4. The Contractor shall provide the labor and material of the cable placement only, UAB IT/ Telecommunications shall furnish and install the Jack Modules, end terminations, testing and labeling/identifying- stenciling as required under a separate contract. (UAB Master Contract.)

5. The Contractor shall test all cables to ensure end-to-end continuity of all conductors in each cable. After cables are terminated, UAB Communications shall test for conductor opens, tip and ring reversal and shorts, grounds and cable transposition, and test results shall be included with the closeout documents.

6. In general UAB IT/Telecommunications designates the use of CAT6/6A wiring for all areasand projects. The Contractor shall also provide conduit and station outlet boxes.

7. Fire/Smoke wall and floor penetration seals shall be specified and the Contractor shall obtain UAB Penetration Permits as required to ensure all codes and standards. Penetrations are not to be left open after the workday is completed.
8. Cables shall not be installed in existing signaling raceways unless investigated and found with the same noise susceptibility level as recommended by IEEE Standard 518-1982, have spare capacity, and are approved by the Engineer.

9. The Engineer shall specify a Data/Outlet- D2 Station at each Chiller and HVAC equipment locations that will be controlled from the Central Automation Monitoring System.

10. The Engineer shall specify a Data/Outlet- D2 Station at each Fire Alarm equipment locations that will be controlled from the Central Automation Monitoring System.

11. The Engineer shall specify a Data/Outlet- D2 Station at each Area of Rescue equipment locations that will be controlled from the Central Automation Monitoring System.

C. Products:

1. See Attachment "UAB_CAT6/6A/DATA" and Typical Homerun Conduit Details (Attachment 1Through 5) by UAB IT/Telecommunications. (Dated 06/06/2019.)

2. Floor Boxes and/or Poke-Thru:
   We recommend the Architect and Electrical Engineering Consultant- Design Floor Boxes and/or Poke-Thru Units for the Electrical Wiring Circuits and the Data IT-Telecom Low Voltage Cabling due to the cable number and cable diameters sizes as required. These are Approved Equivalent.

   Hubbell Floor Boxes:
   - Pt. # HBLUABFBKIT1 (6-Gang Power/DATA)
   - Pt. # HBLUABFBKIT2 (6-Gang Power/DATA/AV)
   - Pt. # HBLUABFBKIT3 (4-Gang Power/DATA)
   - Pt. # HBLUABFBKIT4 (4-Gang Power/DATA/AV)

   Hubbell Poke Through's:
   - Pt. # HBLUABFRPTKIT1 (6 IN Power/DATA)
   - Pt. # HBLUABFRPTKIT2 (8 IN Power/DATA/AV)
   - Pt. # HBLUABFRPTKIT3 (6 IN Furniture Feed)

3. AV Wall Boxes (TV Locations): We recommend the Architect and Electrical Engineering Consultant- Design Wall Boxes for the Electrical Wiring Circuits and the Data IT-Telecom Low Voltage Cablingdue to the cable number and cable diameters sizes as required.
   Such as: These are Approved Equivalent.

   - Hubbell AV Wall Box, Pt # NSAV62M/ NSAV6C (2-gang)
   - Hubbell AV Wall Box, Pt # NSAV124M/ NSAV12C (4-gang)
   - Legrand-New Evolution Series Wall Box, Pt. # EFSB2 (2-gang)
   - Legrand-New Evolution Series Wall Box, Pt. # EFSB4 (4-gang)

D. Execution:

1. The awarded general contractor shall provide complete IT-Telecom/Data CER's (Telecommunications Equipment Rooms) for all Levels, Data Riser Conduits, Communication Grounding System, Cable Tray System and Station Outlet & Conduit Systems, as well as Data Station Cabling System as directed in these comments in the construction project bid.
   All CER's and facilities shall/ must be finished, ninety (90) days prior to the completion date for the building (construction project bid). Please include this requirement within the contract document.
   Due to the growing requirements for Electronic Data Equipment, the rooms provided will be solely for the UAB IT-Telecommunications Department use only. Note: Alarm Terminal Backboards, Cabinets, Fire Alarm, Intercom Systems, CATV, Security Panels etc., shall not be located in these rooms unless coordinated through the IT-Telecommunications Department and specific space has been allocated.

2. Entrance Conduits System:
   a) There shall be four (4) 4" entrance conduits placed with pull cords, from the Main IT-Telecommunication Equipment ER/MDF- CER Room out to the nearest UAB IT-Telecom Underground Maintenance/Manhole/Vault System.
   b) UAB IT/ Information Technology- Telecommunications Services Engineering Operations will provide the Maintenance/Manhole/Vault for routing and connection.
   c) There shall be three (3) 4" entrance conduits placed with pull cords and capped for future connection at the far end, from the Main IT-Telecommunication Equipment ER/MDF- CER Room for AT&T/CATV/Service Provider out to the nearest property line as directed by UAB IT/ Information Technology- Telecommunications Services Engineering Operations.
   d) **NOTE:** If flooding in the plant project area is prone to specific grade levels the architects and engineers must incorporate proper safeguards to prohibit sudden intrusion into the buildings.

3. Risers Conduit System:
   a) There shall be six (6) 4" conduits with pull cords, from the Main IT-Telecommunication

Equipment Room to each level TR-CER, routed to all levels establishing a Data Riser Conduit System.

b) All riser conduits need to be aligned so that all Data conduits are positioned against the wall. These conduits must be sequenced from left to right 1, 2, 3, 4, 5, and 6; See Attachments.
c) Riser conduits must be positioned next to the backboards, not out in the middle of the room. Also, the riser conduits shall be cut off even at all locations, from top of bushing to floor shall be 6" and from the top of backboard to bottom of the bushing shall be 6".
d) The placement of the riser conduit system should be positioned as not to be in conflict with any structural beams. It is preferred for the riser conduit system to be positioned on the long wall/ side-wall working from left to right starting in the corner, if the structural beam is in conflict adjust the conduits position to be on the short wall/ end-wall starting from left to right in a corner.
e) All conduits shall run from backboard to backboard secured with Unistrut. Not just sleeves through the floors, this is not acceptable. Provide "Unistrut" channel around the top and bottom edge of all backboards for securing conduits.

4. Riser Diagram:
   a) Single Line Riser Diagram for the Data and Ground Riser Conduit Systems shall be designed per Attachment. (See Attachment 1 of 5, Dated 06/06/2019.)

5. Grounding:
   a) There shall be a Ground Riser conductor (#2/0 Insulated/Green or Black) placed through all ER and TR's CER's and then terminated on a Ground Bus Terminal (Hubbell # HBBB14420 or Approved Equivalent/ TMGB/TGB- 4"H x ¼"W x 20"L in size) in the top right corner of the backboard or as indicated.
   b) The ground terminal shall be mounted on the backboard at 8'0" in height above the finished floor. The ground riser should be run to the Main Telecommunication Equipment Room and terminated. Connect to Main Building MGN #4/0 Insulated/Green or Black) (Main Ground/Neutral Bond) and Building Structural Grounding System.

6. Cable Tray:
   a) In major renovations or new construction projects, there shall be a Cable Tray System be installed on all floors over the corridors/hallways.
   b) The Cable Tray System should be WBT/Shaped Wire Mesh/ Basket Type white or black painted power-coated with WBTForm side and bottoms or Approved Equivalent above the ceiling and /or (Color to match the Open Ceiling Areas, and/or Ceiling-Clouds Design as indicate in the drawing documents to be designed by the Architect and Engineer) with 4" sidewalls, 24" in size. (Sized adequately for the proper load and number of cables and future growth capacity.)
   c) Cable tray systems shall not be proposed over hard ceiling areas. Cable tray installations over hard ceiling areas are strongly discouraged. Where hard ceilings are proposed it is recommended to run conduit over the hard ceiling areas and connect the cable tray system on each side.
      i. WBT Basket Shared Cable Tray Part# WBT4x24S (BL and WH) Black or White.
      ii. WBTForm Bottom/Sides Part# WBTForm4x24 (BL and WH) Black or White. (Color to match the Open Ceiling Areas, Ceiling-Clouds Design as indicate in the drawing

documents to be designed by the Architect and Engineer.) Or Approved Equivalent.

d) UAB Cat6/6A Cable is Green in color and cannot be painted, it will void the warranty. This is not acceptable
e) Open Cabling with J-hooks for support is not approved/ acceptable.
f) Subject to compliance with requirements, provide WBT; Wire Mesh Basket Cable Trays. (Under Division 260000)
    i. Configuration: Wires are formed into a standard 2-by-4-inch (50-by-100-mm) wire mesh pattern with intersecting wires welded together. Mesh/Basket Sections must have at least one bottom longitudinal wire along entire length of section.
    ii. Materials: High-strength-steel longitudinal wires with no bends.
    iii. Sizes: Straight sections shall be factory finished, powder-coated black, furnished in standard 118-inch (3000-mm) lengths. Wire-Mesh Depth – Above Ceiling: 4-inch (100-mm) usable loading depth by 24 inches wide.
    iv. Connector Assemblies: Listed snap-in couplers or factory assembled bolted couplers that mechanically join adjacent tray wires to splice sections together or to create horizontal fittings.
    v. Finish: Black and/or White Powder-coat paint to match the above ceiling area with open ceiling and/or Ceiling Clouds.
    vi. Powder-Coat: Cable tray manufacturer's recommended primer and corrosion-inhibiting treatment, with factory-applied powder-coat paint
    vii. **NOTE:** The Cable Tray System cannot pass through Fire Walls. The Cable Tray shall be stopped and place (6)4" EZ-Path 44+ Units or Approved Equivalent, these items shall be placed through the Fire Walls. The Cable Tray System shall start again on the other side of the firewall.
    viii. **NOTE:** There shall be home run Conduit placed from the Outlet Locations to above the false/ lay-in drop ceiling and out to the corridors/hallways terminating at the Cable Tray System located in the corridor/hall ceiling on each floor as designed. Station Outlet Conduits shall be minimum 1" with pull cords, home run back to the Cable Tray System.

7. Station Conduit System:
    a) Station location outlets shall have a minimum of 1" conduit stub-outs either home-run back to the IT-Telecomm. Room CER/ER/TR's or to a Cable Tray System with cabling run to the CER/ ER and TR IT-Telecommunications Equipment Room (CER) backboard on the same floor.
    b) Station conduit shall be radially/homerun installed from junction boxes to the station outlet back-boxes. Do not connect station outlet boxes in series. Install pull cords in all empty conduits.
    c) Home Run Conduit System to the cable tray shall be proposed as follows:
    Conduit sizing to UAB standards:
        i. (1) Outlet 1" Conduit
        ii. (2) Outlets 1.25" Conduit
        iii. (3) Outlets 1.50" Conduit
        iv. (4) Outlets 2" Conduit
        v. (5) Outlets 2.50" Conduit- *Five (5) Outlets max per conduit.
    d) See Attachments 1-5 for the Ground Riser System, Home-run and Cable-tray System Documents Layout Drawings. (Dated: 06-06-2019)
    e) Station outlets shall be set up to house voice/data needs, using a double gang outlet

box (411/16"X411/16"X21/2") with a (5/8") single gang adapter Sheet-rock/Gypsum-board plate (Mounted Vertical). Modify for other sizes gypsum boards.

f) There shall be a 1" Conduit with Pull Cord run to all Passenger, Service, Loading Dock, etc. Elevator Equipment Cabinets back to the CER serving that floor and area. Please refer to UAB Facilities Standard for Elevators (Standard #14280 or 24280) and Elevator Emergency Telephones (Standard #16753 or 26753). This must be included in all Project Documents.

8. Station Conduit Grounding:
   a) The station conduits from the outlet location, shall be terminated and grounded to the cable tray with a harness strap and the station feeder conduits running from the cable tray system to the communication equipment room shall be grounded on both ends (to the tray and the ground terminal bus within the CER), as well as the riser conduit systems must be bonded and grounded vertically throughout the building back to the main communication grounding bus in the Main Communication Equipment Room.

9. Station Cabling Requirements:

The Architect and Electrical Engineering Consultant shall include design requirements for the awarded general contractor the make provisions in the contract document for the electrical subcontractor to furnish and install all Data station cabling. UAB Telecommunications will specify cable type (CAT 6/6A) per project design requirements.

Cable and installation shall be as follows:
All D6, D4, D2, D1, ELEV/D2, HVAC/D2, AOR/D2, FA/D2, CAM/D2 and WAP/D2 stations will be cabled with the following, when placed in Non-Plenum, Plenum and Indoor/Outdoor-OSP Type Cable areas

10. Approved Cables:
    a. Hitachi
        - Plenum Part # 30303-8-GR3
        - Non-Plenum Part # 30304-8-GR3
        - Plenum Part # 30183-8-YE3
        - Non-Plenum Part # 30212-8-YE3

    b. Siemon
        - Plenum Part # 9U6P4-A5-07-R1A
        - Non-Plenum Part # 9U6R4-A5-07-R1A
        - Plenum Part # 9C6P4-E4-07-RBA
        - Non-Plenum Part # 9C6R4-E4-07-RBA

    c. Berk-Tek
        - Plenum Part # 11083158
        - Non-Plenum Part # 11085549
        - Plenum Part # 10032089
        - Non-Plenum Part # 10032460

    d. All Data Stations
        i. D6 (6-Port Data Outlet)
            - Data (1): Cat6/6A Cable
            - Data (2): Cat6/6A Cable

- Data (3): Cat6/6A Cable
- Data (4): Cat6/6A Cable
- Data (5): Cat6/6A Cable
- Data (6): Cat6/6A Cable

ii. D4 (4-Port Data Outlet)

- Data (1): Cat 6/6A Cable
- Data (2): Cat 6/6A Cable
- Data (3): Cat 6/6A Cable
- Data (4): Cat 6/6A Cable

iii. WAP/D2 & D2 (2-Port Data Outlets and Wireless Access Point)

- Data (1): Cat 6/6A Cable
- Data (2): Cat 6/6A Cable

iv. D1 (1-Port Data Outlet)

- Data (1): Cat 6/6A Cable

All pay stations, elevators, help-phone and single stations will be cabled with the following, when placed in all areas:

v. Data (1): Cat 6/6A Cable

e. All in slab station cabling shall/ must be Cat-6/6A Indoor/Outdoor- OSP Type Cable. Communications, Indoor/Outdoor-OSP Rated: Type OSP Cable. As Required for In-Slab/ Wet Conditions. All in-slab, below slab and in outdoor installs are considered "Wet Conditions" and shall/ must be OSP Type Cat-6/6A Station Cable as the project requires.

- Berk-Tek Cat6A Cable OSP Underground Part# 11094458
- Berk-Tek Cat6 Cable OSP Underground Part# 10139885
- Hitachi Cat6A Cable OSP Underground Part# 30348-8
- Hitachi Cat6 Cable OSP Underground Part# 30180-8
- Siemon Cat6A Cable OSP Underground Part# 9C6O4-A5-01-R1A
- Siemon Cat6 Cable OSP Underground Part# 9C6O4-E2-01-R1A
- (Black in Color)
- Hitachi DryBit Cat6A CMP/UTP Plenum Cable Indoor/Outdoor-OSP
- Part# 30323-8 (Black in Color)
- Hitachi DryBit Cat6 CMP/UTP Plenum Cable Indoor/Outdoor-OSP
- Part# 30315-8 (Black in Color)

11. Station Cabling Numbering:

a) The contractor shall identify and stencil all station cables as follows:

i. All station cables shall be designated with a unique Station Number (numerical) and Cable Types (HVAC/D2, AOR/D2, FA/D2, ELEV/D2, CAM/D2, WAP/D2, HP/EP, and DATA neatly with a Permanent Labeler/ Brother Labeler/ 3M Scotch code identification system, indicating letter and numbers.

ii. Label each Station Cable in Groups of Forty-eight (48) Unique Station Numbering: A1- A48 Starting at one corner/location and working through-out the Building Floor Level until completed. See Below: (One-1 CER Per Floor Level)

- A1, A2, A3, through A48 etc.
- B1, B2, B3, through B48 etc.
- C1, C2, C3, through C48 etc.
- D1, D2, D3, through D48 etc.
- Until all cables are labeled.

iii. If the floor levels have two-(2), three-(3), or four-(4) CER/ER/TR's which will have separate wiring-limits label as follows-

- CER-1: A1-1, A1-2, A1-3, through A1-48 etc.

- CER-2: A2-1, A2-2, A2-3, through A2-48 etc.
- CER-3: A3-1, A3-2, A3-3, through A3-48 etc.
- CER-4: A4-1, A4-2, A4-3, through A4-48 etc.
- CER-1: B1-1, B1-2, B1-3, through B1-48 etc.
- CER-2: B2-1, B2-2, B2-3, through B2-48 etc.
- CER-3: B3-1, B3-2, B3-3, through B3-48 etc.
- CER-4: B4-1, B4-2, B4-3, through B4-48 etc.
- CER-1: C1-1, C1-2, C1-3, through C1-48 etc.
- CER-2: C2-1, C2-2, C2-3, through C2-48 etc.

- CER-3: C3-1, C3-2, C3-3, through C3-48 etc.
- CER-4: C4-1, C4-2, C4-3, through C4-48 etc.
- CER-1: D1-1, D1-2, D1-3, through D1-48 etc.
- CER-2: D2-1, C2-2, D2-3, through D2-48 etc.
- CER-3: D3-1, C3-2, D3-3, through D3-48 etc.
- CER-4: D4-1, C4-2, D4-3, through D4-48 etc.
- Until all cables are labeled.

b) All Station Cables shall be 23-AWG cable. The Cables shall be color coded as follows: Data/4 pair- white/blue, white/orange, white/green, white/brown
c) Contractor shall test all cables to ensure end-to-end continuity in each cable.
d) Contractors shall leave 40' feet of slack at the backboard end and 3' feet of slack at the station-end outlet back-box for connection by UAB IT-Telecommunications Department (Master Contractor). The Contractor shall identify each Station Outlet with a Unique Station Number. See above for direction.
e) The Data Jacks shall be furnished, installed and terminated by UAB IT Telecommunications. After termination, UAB IT-Telecommunications shall test for conductor opens, tip and ring reversal and shorts, grounds and cable transposition/ CAT6/6A Testing. The Contractor, at no additional cost, shall replace any cables that failto meet published performance criteria.
f) The UAB-IT D1, HP/EP, HVAC/D2, AOR/D2, FA/D2, ELEV/D2, CAM/D2, WAP/D2, D2, D4, and D6 STATION CABLE SPECIFICATIONS Drawings (Dated 06-06-19) shall/ must be included on Electrical Drawings and in the Specifications.
g) The design of the system as indicated above shall be done in compliance with ANSI/TIA/EIA-568-A, 569, 606 and 607 standards.
h) All work must comply with ANSI/NFPA-70 (NEC) codes and standards.
i) Please reference UAB Facility Standards 14200 or 24200- Elevator Equipment, 16750 or 26750- Communications Raceway Cabling System, 16751 or 26751- Communications Equipment Room, 16752 or 26752- Emergency Help Station and 16753 or 26753- Elevator Telephones to obtain a copy of these documents.
j) These may be used for your convenience in preparing specification documents. Also our department may furnish a data file of all information that has been included in this review document to be used for the preparation of specification documents. You may contact our department to coordinate data file transmittal.

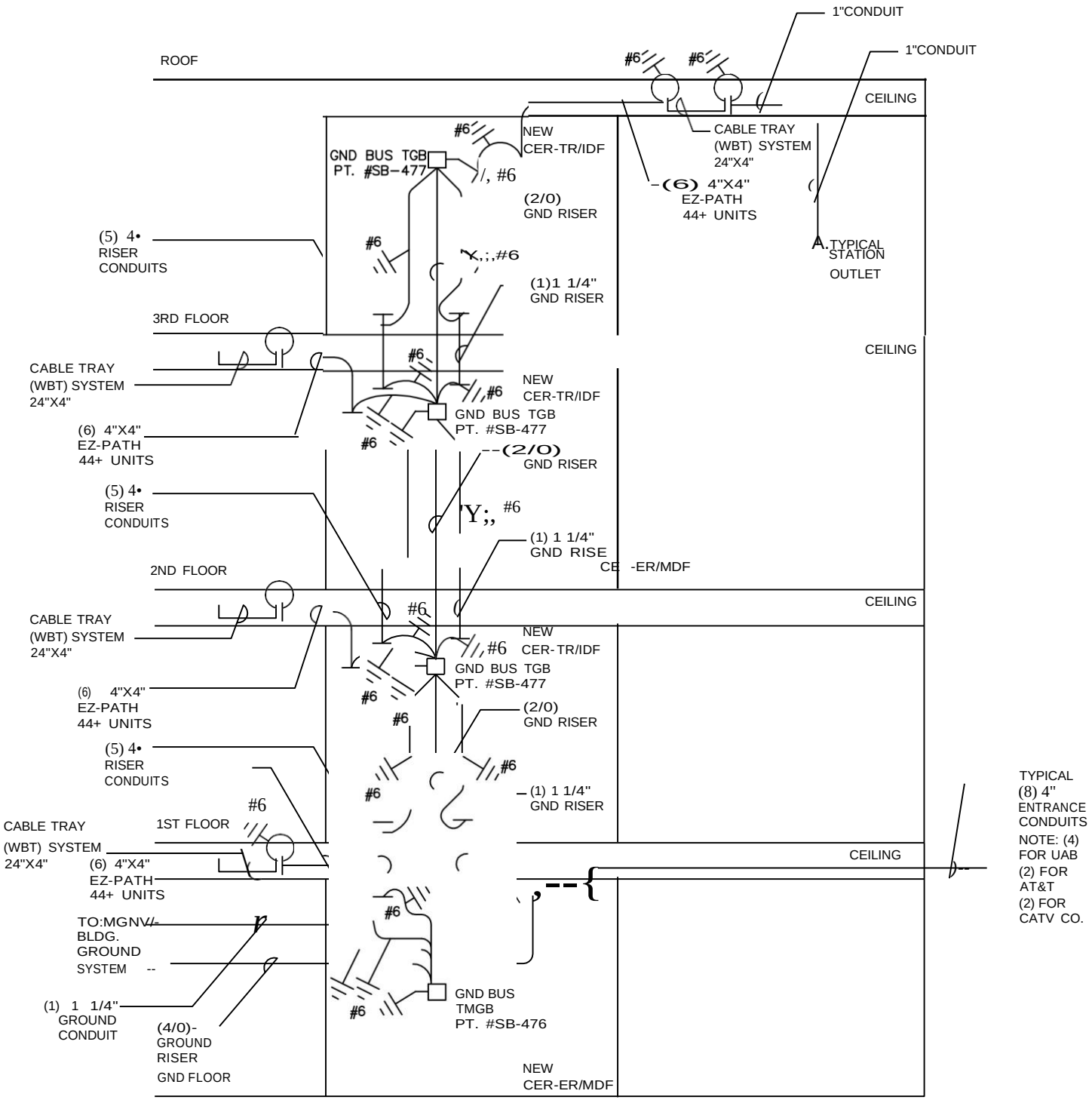
12. The Engineer shall consult UAB **Mr. Chris Waddell, RCDD (e-mail address: cwaddell2@uab.edu)** early in the design to verify the capacity and specific requirements for each project, and submit construction documents for review and approval. The Architect/Engineer Firm shall supply **the UAB IT/ Information Technology-Telecommunications Services Engineering Operations Department** with a data file showing all station outlets and locations so that unique Station Number can be assigned for records use by our department. The file format shall be AutoCAD Latest Release with no conversion required.

If there are any questions regarding these requirements, please contact:

- **Chris Waddell- RCDD IT-Engineering Manager**
  UAB IT/ Information Technology-
  Telecommunications Services Engineering Operations
  Ph. (205) 975-5379 Cell (205) 807-6362
  e-mail address: cwaddell2@uab.edu

- **Jason Teichmiller- Engineer/Designer** at:
  UAB IT/ Information Technology-
  Telecommunications Services Engineering Operations:
  Ph. (205) 934-9934 . Cell (205) 612-4812
  e-mail address: jasont325@uab.edu

TYPICAL NEW BUILDING VOICE/ DATA, AND GROUND RISER CONDUIT SYSTEM

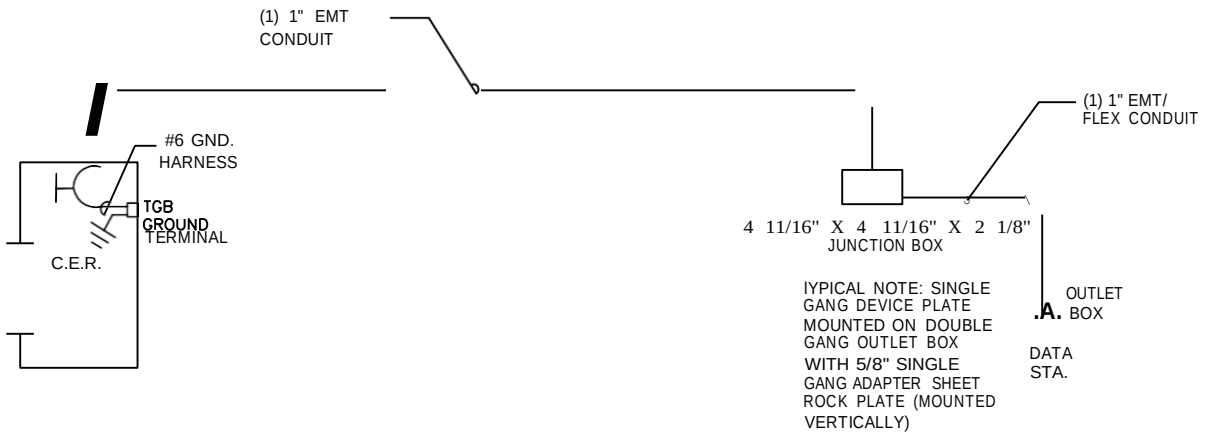


NEC
318, 800,
250,-96,-102-122

DATED: 6-06-2019
ATTACHMENT 1 OF 5

HOME RUN CONDUIT TO COMM. EQMT. ROOM (CER)

(1) STATION OUTLET



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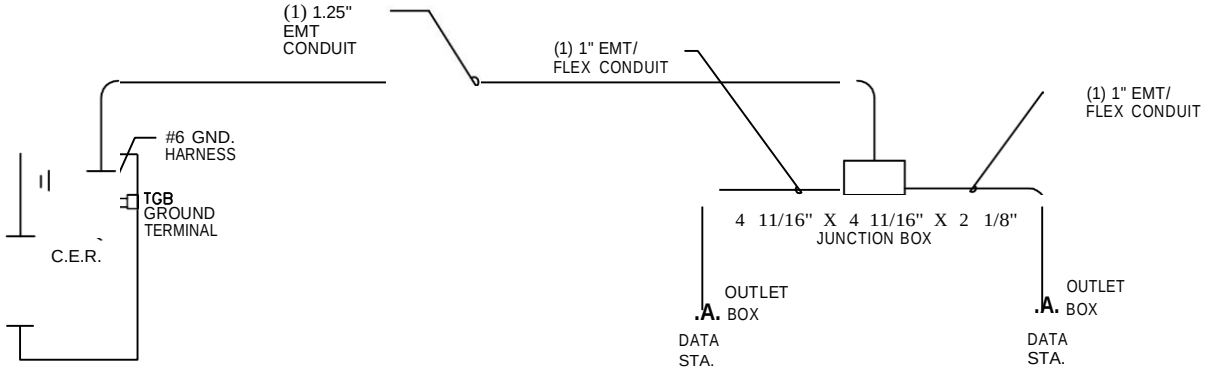

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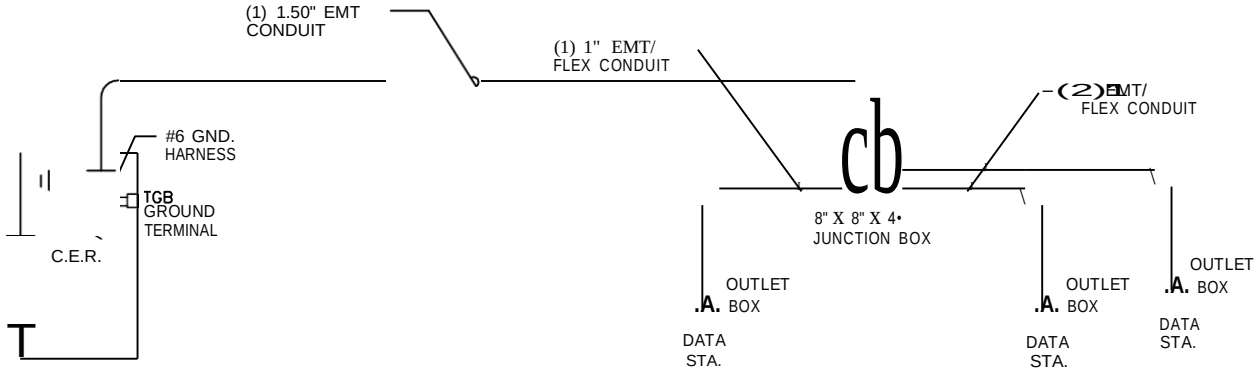
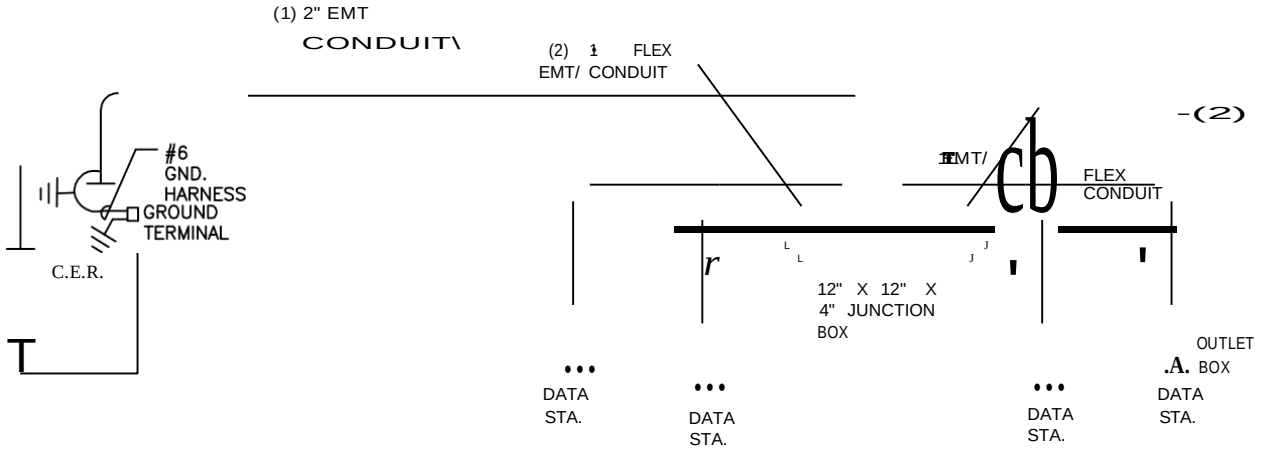


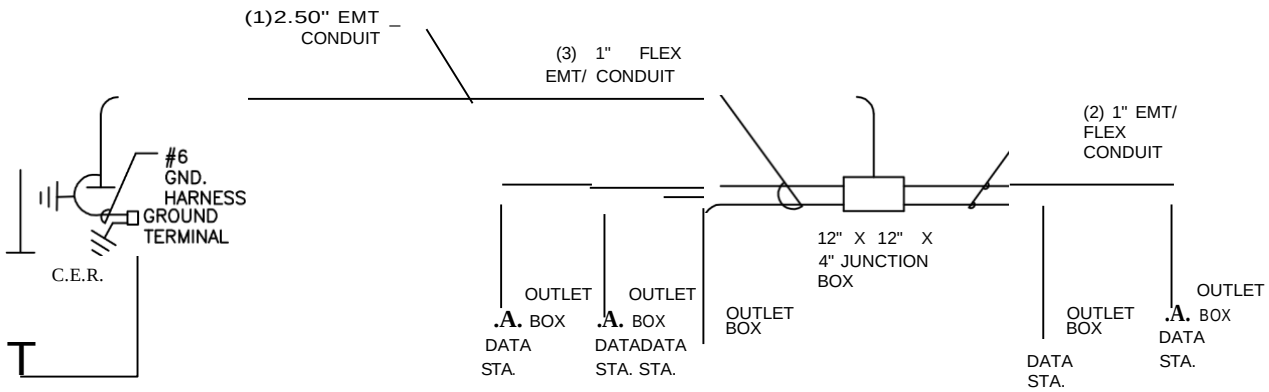
DATED: 6-06-19

HOME RUN CONDUIT TO
COMM. EQMT. ROOM (CER)

(4) STATION OUTLETS

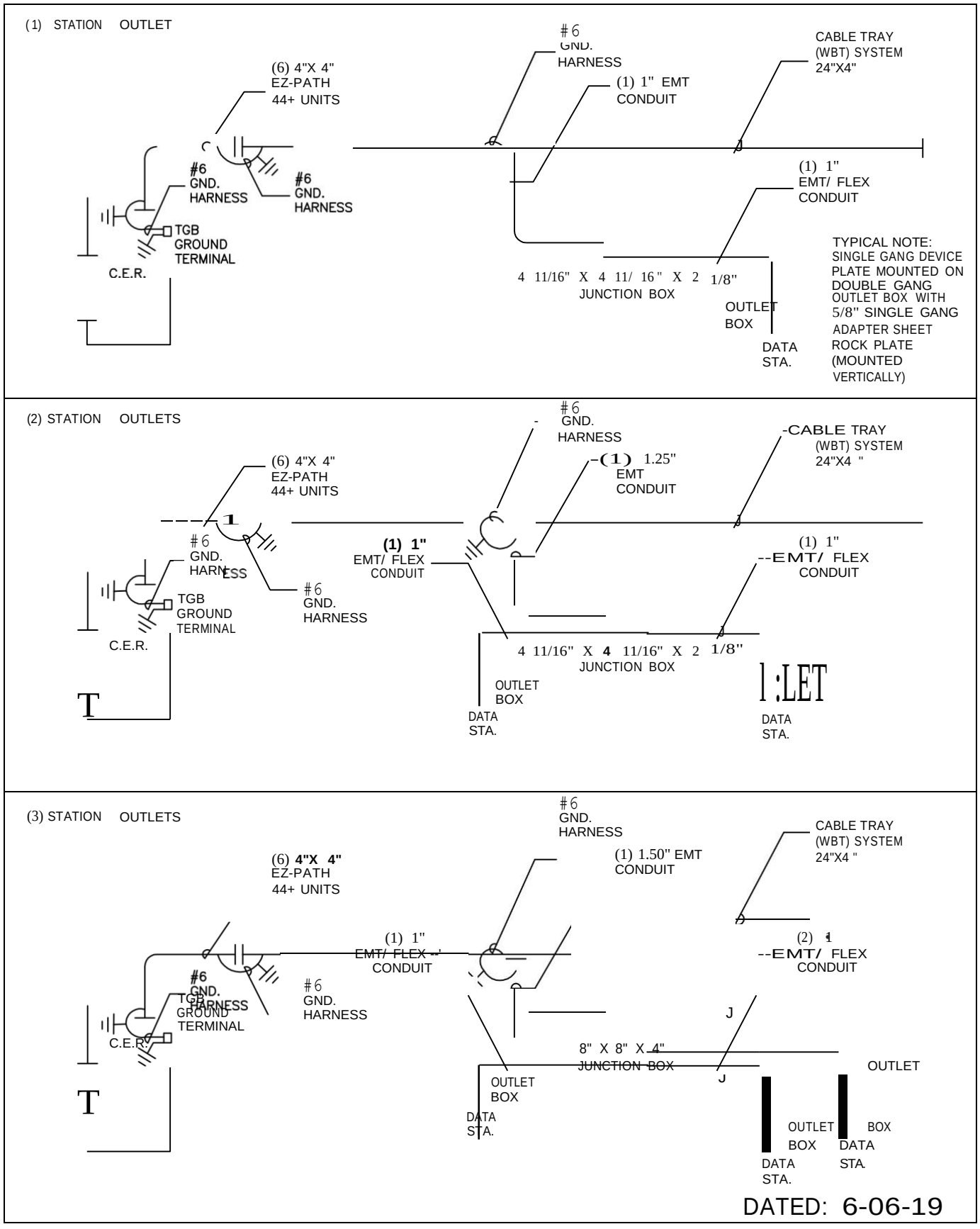


(5) STATION OUTLETS



DATED: 6-06-19

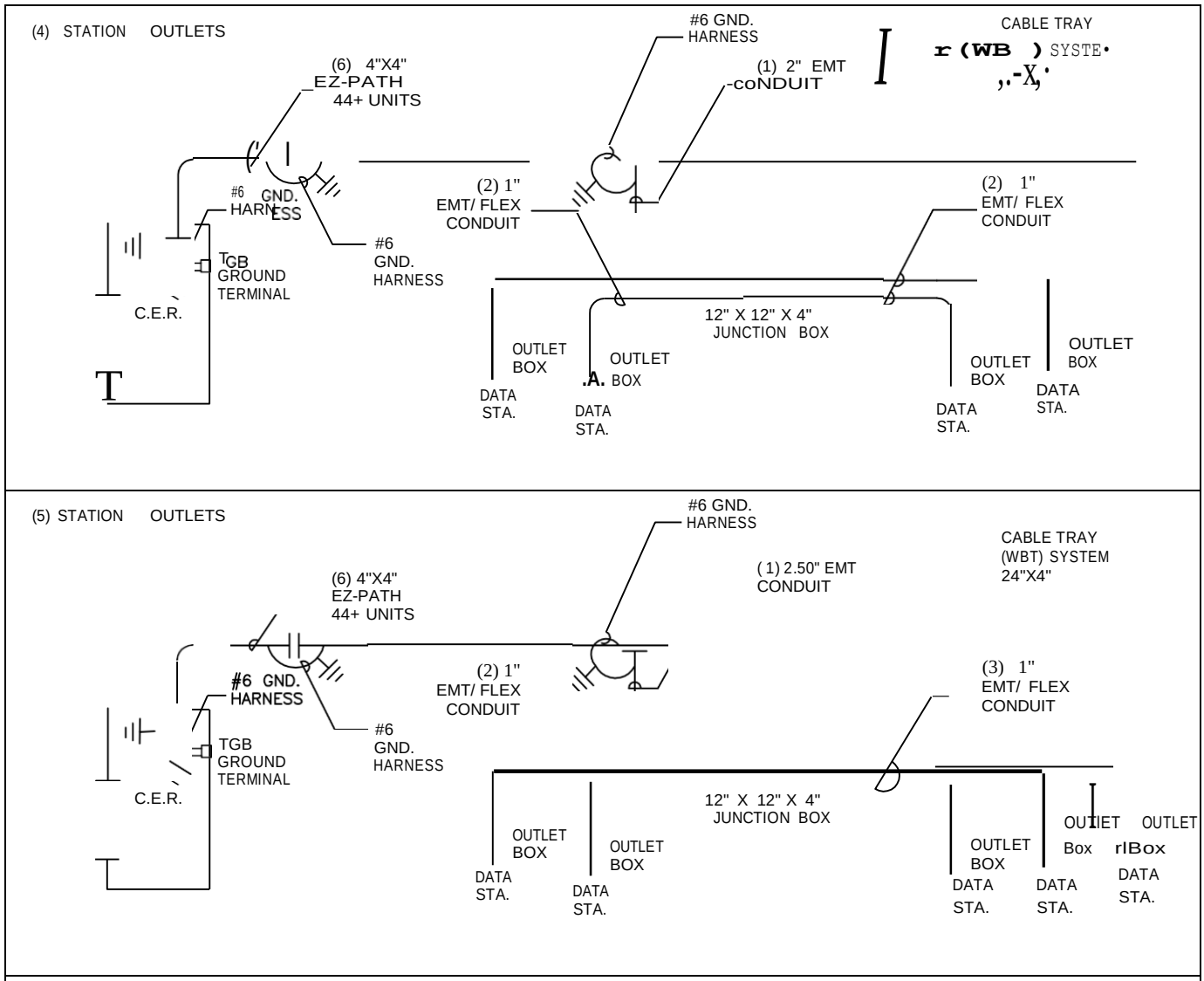
HOME RUN
CONDUIT TO CABLE
TRAY



DATED: 6-06-19

ATTACHMENT 3 OF 5

HOME RUN
CONDUIT TO CABLE
TRAY



DATED: 6-06-19

ATTACHMENT 5 OF 5

Revision Request Form – Communications Raceway/Cabling

Date: _____ Project Number & Name: _____

Requestor: _____ Department/Consultant: _____

_____

EXISTING COMMUNICATIONS RACEWAY/ CABLING STANDARD

Section Number & Name:

_____

Section Revision Number:

_____ Section Paragraph:_____

(ENTER CURENT SECTION LANGUAGE BELOW)

REQUESTED REVISION REQUEST

(ENTER REVISION SECTION LANGUAGE BELOW)- **Identify if request will be permanent to standards or for the referenced project.**

JUSTIFICATION FOR REVISION

FOR UNIVERSITY OF ALABAMA AT BIRMINGHAM USE ONLY

UAB Staff Requestor: _____

Authorized UAB Approval Personnel:_____Date:_____

Status:_____Rejected_____Accepted

_____ Revise and Resubmit (see attachment)