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ABBREVIATIONS

ABF	AIR BLOWN FIBER
OSP	OUTSIDE PLANT
OS1	OPTICAL SINGLEMODE FIBER (LEGACY STANDARD)
OS2	OPTICAL SINGLEMODE FIBER (LATEST STANDARD)
PHH	PHYSICAL HAND HOLE
POP	POINT OF PRESENCE
SMFO	SINGLE MODE FIBER OPTICS
TDR	TELECOMMUNICATIONS DISTRIBUTION ROOM
TR	TELECOMMUNICATIONS ROOM

SCOPE OF WORK

PURPOSE:

THE PURPOSE OF THIS DRAWING IS TO FURTHER DESCRIBE THE PROJECT SCOPE AND TO IDENTIFY DESIGN AREAS OF SCOPE THAT ARE EITHER INCOMPLETE OR ANTICIPATED TO CHANGE. THIS DRAWING IS INTENDED TO ENHANCE THE CONTRACTOR'S UNDERSTANDING OF THE SCOPE AND IS NOT MEANT TO BE ALL INCLUSIVE. THE CONTRACTOR'S SCOPE IS BASED ON THE DRAWINGS AND SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT AN RFI TO RESOLVE ANY DISCREPANCIES BETWEEN THIS SCOPE OF WORK DRAWING AND ANY OTHER CONTRACT DOCUMENTS. IN THE EVENT THE CONTRACTOR DOES NOT SUBMIT AN RFI, THE GREATER QUANTITY AND/OR THE SCOPE WITH THE HIGHER ASSOCIATED COST SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

GENERAL:

THE SCOPE OF WORK INCLUDES INSTALLATION & TESTING OF A COMPLETE OUTSIDE PLANT STRUCTURED CABLING SYSTEM (REDUNDANT SIDE B). IN ADDITION, THIS SCOPE INCLUDED THE REPLACEMENT OF ALL EXISTING OS1 AND UPGRADE TO OS2 OPTICAL FIBER WITHIN THE BUILDINGS AS INDICATED. THIS WORK INCLUDES HORIZONTAL AND VERTICAL CABLING, UNDERGROUND AND IN-BUILDING PATHWAYS, PATHWAYS, RACKS, CABINETS, CABLE TRAY, TERMINATION HARDWARE, GROUNDING AND BONDING, ETC.

INCOMING TELECOMMUNICATIONS SERVICE PROVISIONS:

PATHWAY FOR SERVICE PROVIDER IS INCLUDED IN THE CONTRACTOR'S SCOPE OF WORK. SERVICE PROVIDER CABLING AND ELECTRONICS IS NOT.

DESIGN INTENT:

1. INCOMING SERVICE TO THE SITE SHALL BE PLANNED FOR A SECONDARY DIVERSE AND REDUNDANT PATHWAY.
2. INCOMING PATHWAY SHALL CONSIST OF TWO (2) 4" CONDUITS INSTALLED TO THE PROPERTY LINE.
3. SERVICE PROVIDER 4" CONDUITS SHALL EACH CONTAIN THREE (3) 1" 20' INNERDUCTS AND ONE (1) 1" INNERDUCT. EACH INNERDUCT SHALL CONTAIN A PULL STRING PER VA STANDARDS AND SPECIFICATIONS.
4. IT IS COMMON (AND INTENTIONAL) FOR THE OWNER TO INSTALL SPARE CONDUITS TO THE PROPERTY LINE IN EXCESS OF WHAT THE SERVICE PROVIDERS BRING. THESE SPARE CONDUITS ARE TO BE CAPPED, TAGGED, AND BURIED FOR FUTURE USE PER DRAWINGS AND SPECIFICATIONS.

TELECOMMUNICATIONS PATHWAYS:

1. ALL UNDERGROUND PVC, METALLIC CONDUIT, PLASTIC INNER DUCT, CONDUIT SPACERS, UNDERGROUND MATERIALS, EMT, CABLE TRAYS, OUTLET STUB-UP AND BACK BOXES, J-HOOKS AND OTHER CABLE CONTAINMENT SYSTEMS SHOWN ON THE TELECOMMUNICATIONS DRAWINGS ARE THE PART OF CONTRACTOR'S SCOPE OF WORK. THESE PATHWAYS MIGHT BE REPRESENTED ON OTHER TRADE DRAWINGS FOR REFERENCE ONLY. TELECOMMUNICATIONS DRAWINGS SHOULD BE USED FOR EXACT SIZE AND QUANTITIES.
2. TELECOMMUNICATIONS PATHWAYS MUST CONFORM WITH THE REQUIREMENTS OF VA SPECIFICATIONS INCLUDING:
 - 2.A. 27 05 26 - GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS
 - 2.B. 27 05 13 - CONDUITS AND BACKBOXES FOR COMMUNICATIONS SYSTEMS
 - 2.C. 27 05 53 - IDENTIFICATION FOR COMMUNICATIONS SYSTEMS
 - 2.D. 27 10 00 - STRUCTURED CABLING
 - 2.E. 27 11 19 - COMMUNICATIONS TERMINATION BLOCKS AND PATCH PANELS
 - 2.F. 27 13 23 - COMMUNICATIONS OPTICAL FIBER BACKBONE CABLING
 - 2.G. 27 15 13.13 - COMMUNICATIONS OPTICAL FIBER CABLE SPLICING AND TERMINATIONS
 - 2.H. 27 16 19 - COMMUNICATIONS PATCH CORDS, STATION CORDS, AND CROSS CONNECT WIRE
 - 2.I. 28 05 41 - UNDERGROUND ELECTRICAL CONSTRUCTION
 - 2.J. 31 20 11 - EARTHWORK SHORT FORM
 - 2.K. 32 05 23 - CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS
 - 2.L. 32 12 16 - AS-BUILT DRAWING

TELECOMMUNICATIONS CABLING:

1. INSIDE/OUTSIDE RATED SMFO OS2 IS SPECIFIED FOR ALL APPLICATIONS WHERE THE PATHWAY TRANSITS AN OUTSIDE PLANT PATH.
2. BUNDLING AND CONDUITING BUNDLES CONSISTING OF MULTIPLES OF SUB-BUNDLES (SUBUNITS) OR 12 STRANDS OF FIBER ARE SPECIFIED. CABLES SHALL BE DIELECTRIC AND LOOSE-TUBE GEL-FILLED OS2 EXCEPT AIR BLOWN FIBER (ABF).
3. COMPLY WITH SPECIFIC DRAWINGS AND SPECIFICATIONS FOR ABF AND TRADITIONAL FIBER.

MANUFACTURER'S EXTENDED WARRANTIES:

1. PROVIDE TWENTY-FIVE (25) YEAR CABLE MANUFACTURER'S EXTENDED WARRANTY TO THE OWNER.
2. A COPY OF CERTIFICATION BY THE MANUFACTURERS FOR ALL PRODUCTS LISTED IN THIS SPECIFICATION IS TO BE PROVIDED AS AN ATTACHMENT TO THE BID RESPONSE.
3. PRIOR TO COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL SUBMIT DOCUMENTATION DEMONSTRATING THE PROJECT HAS BEEN REGISTERED WITH THE CABLE MANUFACTURER.
4. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER THE ISSUANCE OF A FULL WARRANTY ON THE ENTIRE COPPER AND FIBER OPTIC CABLE PLANT INCLUDING THE HORIZONTAL CABLING FOR BOTH PARTS AND LABOR. THE CABLING CONTRACTOR AT HIS SOLE EXPENSE WILL CORRECT ANY DEFICIENCIES DETERMINED BY THE MANUFACTURER. PER THE CONTRACT DOCUMENTS, THE OWNER MAY ELECT TO WITHHOLD FINAL PAYMENT UNTIL THE FULL EXTENDED WARRANTY IS RECEIVED.
5. CONTRACTOR SHALL TRANSMIT TO THE OWNER INSTRUCTIONS FOR PROCESSING A WARRANTY CLAIM FOR YEARS 2 THROUGH 25 OF THE EXTENDED WARRANTY.

FIRESTOPPING:

1. REFER TO SECTION 27 06 37 FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL INSTALL FIRESTOP WHERE TELECOMMUNICATIONS EQUIPMENT AND/OR CABLE PENETRATES A FIRE-RATED CONSTRUCTION TO MAINTAIN FIRE RATING OF THAT WALL OR FLOOR.
3. FIRE-RATED PENETRATIONS FOR DIVISION 27 CABLING SHALL BE RE-ENTERABLE AND LISTED BY A NRTL RECOGNIZED BY THE AHJ.
4. FIRE-RATED PATHWAYS SHALL BE LISTED FOR USE FROM 0% TO 100% FILL WITHOUT THE USE OF ANY ANCILLARY MATERIALS UNLESS NOTED OTHERWISE.

TESTING:

1. ALL FIBER OPTIC BACKBONE MEDIA SHALL PASS ALL TIER 1 REQUIREMENTS (ATTENUATION WITH AN OPTICAL LOSS TEST SET OR OLTS, VERIFICATION OF CABLE LENGTH AND POLARITY) AND ALL TIER 2 REQUIREMENTS (CHARACTERIZATION BY AN OPTICAL TIME DOMAIN REFLECTOMETER OR OTDR RESULTING IN INDICATION OF THE UNIFORMITY OF CABLE ATTENUATION AND CONNECTOR INSERTION LOSS).

LOW-VOLTAGE CONTRACTOR'S FULL SCOPE OF WORK IS DEFINED BY THE CONTRACT DOCUMENTS PACKAGE CONSISTING OF THE PROJECT'S DRAWINGS AND SPECIFICATIONS.

1. COORDINATE WORK WITH OTHER TRADES.
2. PREPARE AND SUBMIT PRODUCT DATA, SHOP DRAWINGS, TEST REPORTS, ETC.
3. PROVIDE, INSTALL, TERMINATE, TEST AND TAG TELECOMMUNICATIONS CABLING.
4. PROVIDE, INSTALL AND TAG THE TELECOMMUNICATIONS GROUNDING AND BONDING SYSTEM.
5. PROVIDE, INSTALL AND TAG THE SPECIFIED CABLE PATHWAY DISTRIBUTION SYSTEM AND ASSOCIATED ANCILLARY COMPONENTS (EG. CONDUITS, CONDUIT SLEEVES, INNERDUCT, CABLE TRAYS, ETC.), AND NON-CONTIGUOUS CABLE SUPPORTS (EG. CABLE TRAY, J-HOOKS, ETC.) AS SPECIFIED.
6. PROVIDE, INSTALL AND TAG TELECOMMUNICATIONS EQUIPMENT (EG. RACKS, CABINETS, CABLE MANAGEMENT, ETC.) AS SPECIFIED.
7. CONVEY ANY DISCREPANCIES TO THE DESIGN CONSULTANT AND CONFIRM THE RESOLUTION IN AN RFI.

DESIGN STANDARDS

ON-SITE TELECOMMUNICATIONS WORK DONE BY CONTRACTOR TO ACCOMMODATE FIELD CONDITIONS SHALL COMPLY WITH THE CURRENT EDITION OF THE FOLLOWING DESIGN STANDARDS:

1. ANSII/TIA STANDARD 568 "COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING STANDARD"
2. ANSII/TIA STANDARD 569 "TELECOMMUNICATIONS PATHWAYS AND SPACES"
3. ANSII/TIA STANDARD 606 "ADMINISTRATIVE STANDARD FOR COMMERCIAL TELECOMMUNICATIONS INFRASTRUCTURE"
4. ANSII/TIA STANDARD 607 "TELECOMMUNICATIONS BONDING AND GROUNDING (EARTHING) FOR CUSTOMER PREMISES"
5. ANSII/TIA STANDARD 758 "CUSTOMER-OWNED OUTSIDE PLANT TELECOMMUNICATIONS INFRASTRUCTURE STANDARD"

SPECIFICATIONS

1. THE REFERENCED VA SPECIFICATIONS, IN ADDITION TO DIVISION 1 AND OTHER SECTIONS GOVERN THE WORK SHOWN ON THE DRAWINGS. COMPLIANCE WITH DIVISION 27 IS MANDATORY.
2. IN CASES WHERE THE DRAWINGS AND SPECIFICATIONS CONFLICT WITH THEMSELVES OR WITH CODE, PROVIDE THE GREATER QUANTITY, THE HIGHER QUALITY AND FOLLOW THE STRICTER REQUIREMENTS.

GENERAL NOTES

1. THE GENERAL CONTRACTOR AND THEIR SUBS SHALL NOT REVISE, MODIFY, ALTER OR OTHERWISE DEVIATE FROM THESE DESIGN DOCUMENTS WITHOUT WRITTEN AUTHORIZATION FROM THE CONSULTANT AND OWNER.
2. CONTRACTOR MUST REVIEW AND COMPLY WITH ALL REFERENCED SPECIFICATIONS.
3. CONTRACTOR TO COORDINATE AND OBTAIN WRITTEN AUTHORIZATION FROM VA COR PRIOR TO ANY INTERRUPTION OF ELECTRICAL OR TELECOMMUNICATIONS SERVICES.
4. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF DAMAGE TO FIREPROOFING, FINISHES OR STRUCTURE CAUSED BY LOW-VOLTAGE CONTRACTOR. RESTORATION SHALL BE TO SAME CONDITION AS BEFORE DAMAGE OCCURRED. LOW-VOLTAGE CONTRACTOR SHALL OBTAIN WRITTEN ACCEPTANCE OF RESTORATION FROM OWNERSHIP.
5. PHYSICAL LOCATION OF TELECOMMUNICATIONS COMPONENTS ARE APPROXIMATE AND SUBJECT TO CHANGE. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS.
6. FOR COMMUNICATIONS EQUIPMENT AND DEVICE MOUNTING, CONTRACTOR SHALL USE A FASTENING SYSTEM SUITABLE FOR THE ANTICIPATED LOADS AND THE STRENGTH OF THE SUPPORTING STRUCTURE. COORDINATE WEIGHT AND LOCATION OF EQUIPMENT TO BE MOUNTED TO STRUCTURE, ON WALLS, IN RACKS OR IN ENCLOSURES. LOW-VOLTAGE CONTRACTOR MUST CONSULT STRUCTURAL ENGINEER FOR RECOMMENDED FASTENING SYSTEM FOR CONDITIONS THAT DO NOT MATCH MANUFACTURERS RECOMMENDED INSTALLATION PRACTICES.
7. LABEL STRUCTURED CABLING AND DEVICES IN ACCORDANCE WITH SPECIFICATIONS AND ANSII/TIA 606C.
8. FOR PENETRATIONS THROUGH RATED WALLS AND FLOORS THROUGH WHICH COMMUNICATIONS CABLING OR INFRASTRUCTURE PASS, OPENINGS SHALL BE SEALED WITH MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMES, HOT GASSES AND SMOKE WHEN SUBJECTED TO THE REQUIREMENTS OF THE TEST STANDARD SPECIFIC FOR ALL APPLICABLE CODES. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. CONTRACTOR TO PROVIDE PREFABRICATED FIRE-RATED RE-ENTERABLE SLEEVES AT THE LOCATIONS AND SIZES SPECIFIED IN THE DRAWINGS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
10. WARNING TAPE: STANDARD, 4-MIL POLYETHYLENE 76 MM (3 INCH) WIDE TAPE DETECTABLE TYPE, ORANGE WITH BLACK LETTERS, AND IMPRINTED WITH "CAUTION BURIED FIBER OPTIC LINE BELOW".
11. CABLE TRAY ROUTING THROUGH ELECTRICAL ROOMS SHALL BE SEPARATED BY A 2-HOUR PARTITION.

AS-BUILT DRAWINGS

1. AS-BUILT CONSTRUCTION DRAWING SETS SHALL INCLUDE DRAWINGS DETAILING THE FACILITY/CAMPUS STRUCTURED CABLING SYSTEMS, INCLUDING:
 - 1.1. CABLE MEDIA PERFORMANCE CATEGORIES FOR EACH TYPE OF RUN.
 - 1.2. CABLING, CABLE TUBES, AND EQUIPMENT QUANTITIES AT EACH END POINT.
 - 1.3. ELEVATION DRAWINGS SHOWING CABLING, CABLE TUBES, AND EQUIPMENT PLACEMENT IN INDIVIDUAL ENCLOSURES.
 - 1.4. FULL INTERCONNECTION DIAGRAM FOR ALL STRUCTURED CABLING AND CABLE TUBES.
 - 1.5. PORT MAP AND CABLE, CABLE TUBE, AND HAND HOLE, AND TDU LABEL MATRICES.
 - 1.6. PHYSICAL CAMPUS MAP SHOWING EXACT ROUTING AND DEPTH.

EXISTING CONDITIONS NOTES

1. ANY EXISTING CABLING TO REMAIN, TO BE RELOCATED, REPLACED, OR DEMOLISHED MUST BE CONFIRMED WITH OWNER PRIOR TO COMMENCING WORK.
2. ANY CABLING THAT IS TO BE MOVED, REPOSITIONED, OR RELOCATED SHALL BE VISUALLY INSPECTED FOR SIGNS OF DAMAGE, RE-TESTED AND RE-CERTIFIED.
3. CABLES THAT FAIL TESTING SHALL BE VISUALLY INSPECTED FOR SIGNS OF DAMAGE AND IF NONE ARE VISIBLE, RE-TERMINATED AND RE-TESTED.
4. WHERE CABLES ARE TO BE REORGANIZED ON PATCH PANELS, CONTRACTOR TO PRODUCE NEW PULL SCHEDULES AND SEQUENTIALLY RE-LABEL CABLING.
5. REFER TO DIV 27 SPECIFICATIONS FOR RECOMMENDATIONS AND GUIDANCE ON RE-LABELING.

GROUNDING NOTES

1. GROUND AND BOND ALL TELECOMMUNICATIONS SYSTEM COMPONENTS PER NEC AND ANSII/TIA STANDARD 607, SECTIONS VA 26 05 26 AND VA 26 05 41.
2. PROVIDE AND INSTALL GROUNDING AND BONDING SYSTEM PER DRAWINGS AND SPECIFICATIONS.
3. LABEL GROUNDING AND BONDING COMPONENTS PER ANSII/TIA STANDARDS 606 AND 607.
4. GROUNDING CONDUCTORS SHALL HAVE A MINIMUM RADIUS OF EIGHT (8) TIMES THE CONDUCTOR OUTSIDE DIAMETER. SHARP BENDS SHALL NOT BE PERMITTED ANYWHERE IN THE GROUNDING SYSTEM.
5. MINIMUM BONDING CONDUCTOR SIZE SHALL BE #6 AWG.
6. GROUNDING AND BONDING CONDUCTORS SHALL BE TERMINATED WITH COMPRESSION TYPE CONNECTORS WITH A 2-HOLE BOLT PATTERN MATCHING THE BICI'S BUSBAR HOLE PATTERN.
7. APPLY APPROPRIATE TYPE OF LISTED, CONDUCTIVE ANTI-OXIDANT BETWEEN WIRE TERMINAL AND DEVICE. APPLY COPPER ENHANCED ANTI-OXIDANT COMPOUND BETWEEN COPPER, BRASS, BRONZE AND TIN-PLATED SURFACES. APPLY ZINC ENHANCED ANTI-OXIDANT COMPOUND BETWEEN STEEL, GALVANIZED STEEL, ZINC-CHROMATE STEEL, ALUMINUM AND TIN-PLATED SURFACES.
8. SECURE TERMINALS TO DEVICE OR SURFACE TO BE BONDED WITH STAINLESS STEEL BOLTS AND LOCK WASHERS.
9. TORQUE BOLTS TO MANUFACTURER'S SPECIFICATIONS.

TELECOMMUNICATION VAULTS AND HANDHOLES

1. VAULTS AND HANDHOLES SHALL BE SIZED PER THE CURRENT EDITION OF ANSII/TIA STANDARD 758: CUSTOMER-OWNED OUTSIDE PLANT TELECOMMUNICATIONS INFRASTRUCTURE STANDARD.
2. VAULTS AND HANDHOLES SHALL BE LOCATED IN NON-TRAFFIC AREAS TO THE MAXIMUM DEGREE POSSIBLE.
3. VAULTS AND HANDHOLES SHALL COMPLY WITH THE CURRENT EDITION OF ANSII/SCTE STANDARD 77: SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY.
4. VAULTS AND HANDHOLES SHALL HAVE A RATING OF TIER 22 TO ENSURE ADEQUATE SUPPORT FOR EMERGENCY VEHICLES.
5. VAULTS AND HANDHOLES SUBJECT TO DELIBERATE AND CONTINUOUS HIGHWAY TRAFFIC SHALL HAVE AN AASHTO HHS-20 RATING.
6. COMPLY WITH VA 26 05 41 UNDERGROUND ELECTRICAL CONSTRUCTION.
7. USE OPTION B HAND HOLE WHERE FOUR (4) 4" CONDUITS ARE REQUIRED. USE OPTION A HAND HOLE OTHERWISE.

CONDUIT

1. GROUND CONDUIT IN ACCORDANCE WITH THE NEC AND ANSII/TIA STANDARD 569.
2. COORDINATE INSTALLATION OF CONDUITS WITH EQUIPMENT INSTALLED BY OTHER TRADES.
3. PROVIDE AND INSTALL PULL-TAPE INSIDE BACKBONE CONDUITS AS SPECIFIED, MINIMUM OF 500 LB TENSILE, PRE LUBRICATED.
4. INSTALL PLENUM RATED PLASTIC BUSHING ON ALL CONDUITS AND FITTINGS.
5. THE TERM "CONDUIT" AS USED IN THIS CONTEXT ALSO INCLUDES GALVANIZED STEEL. CONTRACTOR TO INSTALL EMT OR RMC FOR TELECOMMUNICATIONS PATHWAYS IN PLACE OF EMT WHERE REQUIRED BY CODE OR AS SHOWN ON DRAWINGS.
6. DUCT PLUGS SHALL BE USED TO PREVENT PENETRATION OF LIQUIDS AND GASES AT ALL BUILDING PENETRATIONS.
7. CONTRACTOR TO PROVIDE PROTECTION BUSHINGS ON ALL COMMUNICATION CONDUITS AND WHERE CABLING ROUTES THROUGH METAL STUDS. BUSHINGS MUST BE RATED FOR THE ENVIRONMENTS THEY ARE INSTALLED IN.
8. ALL LOW-VOLTAGE CONDUIT LARGER THAN 2" SHALL HAVE A MINIMUM BEND RADIUS OF 10:1 OF THE INSIDE DIAMETER FOR ALL ELBOWS. ALL LOW-VOLTAGE CONDUIT 2" SMALLER SHALL HAVE A MINIMUM BEND RADIUS OF 6:1 OF THE INSIDE DIAMETER FOR ALL ELBOWS.
9. FOR AIR BLOWN FIBER RADIUS BENDS, COMPLY WITH DRAWINGS AND SPECIFICATIONS FOR FACTORY 40' SWEEPS.
10. CONDUITS 2" AND SMALLER GENERALLY DO NOT APPEAR ON DRAWINGS EXCEPT FOR SPECIFIC CONDITIONS, BUT ARE REQUIRED. REFER TO CONTRACT DOCUMENTS INCLUDING SCHEDULES, SHEET NOTES, DETAILS, KEYNOTES, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
11. COMPLY WITH INDUSTRY BEST PRACTICES FOR CONDUIT SWEEPS. SHOULD SITE CONDITIONS REQUIRE MORE THAN A SECOND 90 DEGREE BEND IN ANY SINGLE RUN BETWEEN HAND HOLES, INSTALL AN ADDITIONAL HAND HOLE AS REQUIRED. FOR AS-BUILT DRAWINGS AND LABELING, INDICATE THIS ADDITIONAL HAND HOLE AS A (i.e. IF THE HAND HOLE IS BETWEEN PHH.20 AND PHH.21, INDICATE THIS ADDITIONAL HAND HOLE AS 20.A).

CABLE AND CABLE TUBE DISTRIBUTION PATHWAYS

1. PROVIDE AND INSTALL A CABLE DISTRIBUTION PATHWAY SYSTEM PER THE DRAWINGS AND SPECIFICATIONS. INSTALL IN A NEAT AND WORKMAN-LIKE MANNER.
2. PATHWAYS SHALL COMPLY WITH ANSII/TIA 606.
3. MAINTAIN SEPARATION BETWEEN TELECOMMUNICATIONS CABLE PATHWAYS AND POWER CONDUCTOR PATHWAYS PER ANSII/TIA STANDARD 606.
4. ANY TIME A CABLE PROTRUDES THROUGH A WALL OR BARRIER, IT IS REQUIRED TO USE A CONDUIT, PRE-FABRICATED SLEEVE OR SIMILAR. IT IS NOT PERMITTED TO RUN CABLES THROUGH A HOLE IN THE BARRIER UNPROTECTED. REFER TO CONDITIONS TABLE BELOW.

CONDITION	SOLUTION
FIRE RATED WALL	METALLIC CONDUIT PER SPECIFICATIONS APPLICATION DIFFERS BASED ON PENETRATION TYPE
NON FIRE RATED WALL	FACTORY PRE-FABRICATED SMOKE AND ACOUSTICAL PATHWAY DEVICE

TRENCHING

1. REFER TO SECTION 31 20 11 EARTH MOVING (SHORT FORM) FOR TRENCHING, BACKFILLING, AND COMPACTION.
2. BEFORE PERFORMING TRENCHING WORK AT EXISTING FACILITIES, A GROUND PENETRATING RADAR SURVEY SHALL BE CAREFULLY PERFORMED BY A CERTIFIED TECHNICIAN TO REVEAL ALL EXISTING UNDERGROUND DUCTS, CONDUITS, CABLES, AND OTHER UTILITY SYSTEMS.
3. WORK WITH EXTREME CARE NEAR EXISTING DUCTS, CONDUITS, AND OTHER UTILITIES TO AVOID DAMAGING THEM.
4. CUT THE TRENCHES NEATLY AND UNIFORMLY.
5. FOR CONCRETE-ENCASED DUCTS, COMPLY WITH VA 26 05 41 UNDERGROUND ELECTRICAL CONSTRUCTION.
6. CONTRACTOR TO RESTORE ALL SITE WORK FOR DUCTBANK TRENCH ROUTE TO ORIGINAL CONDITION AND PER VA COR SHALL BE RESTORED AND PLANTED TO ENSURE VEGETATION IS ESTABLISHED. PAVEMENT AND CONCRETE AREAS ARE TO BE RESTORED IN KIND MATCHING THE EXISTING ASPHALT OR CONCRETE SECTION. SAWCUT LINES SHALL BE NEAT AND STRAIGHT TO ENSURE A SMOOTH FINISHED SURFACE.

Revisions:	Date:

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Michael Carson
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Management



U.S. Department
of Veterans Affairs

Drawing Title
**SHEET INDEX AND
GENERAL NOTES**

Approved:

Phase
**CONSTRUCTION
DOCUMENTS**

FULLY SPRINKLERED

Project Title
**EHRM INFRASTRUCTURE
UPGRADES**

Location
ST. LOUIS VA MEDICAL CENTER - JEFFERSON BARRACKS, MO

Issue Date
03/31/2022

Checked
Author

Drawn
Author

Project Number
657-21-701JB

Building Number

Drawing Number
C-001

04 OF 435

LEGEND

- T_x — EXISTING CONDUIT
- T — PROPOSED FIBER ROUTE
- PROPOSED HANDHOLE
- # BUILDING #

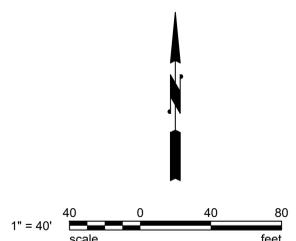
KEYNOTES

- ① INSTALL CONDUIT DUCTBANK, SEE DETAIL E3 C-500
- ② INSTALL HANDHOLE, SEE DETAIL F7 C-500
- ③ CONNECT TO BUILDING



MATCHLINE SEE SHEET C-102

MATCHLINE SEE SHEET C-103



Revisions:	Date:

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Drawing Title
SITE COMMUNICATIONS PLAN

Approved:

Phase
CONSTRUCTION DOCUMENTS

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Project Title
EHRM INFRASTRUCTURE UPGRADES

Location
ST. LOUIS VA MEDICAL CENTER - JEFFERSON BARRACKS, MO

Issue Date
03/31/2022

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Drawn
Author

Project Number
657-21-701JB

Building Number

Drawing Number
C-101

06 OF 435

LEGEND

- T_x — EXISTING CONDUIT
- T — PROPOSED FIBER ROUTE
- PROPOSED HANDHOLE
- ⊕ BUILDING #

KEYNOTES

- ① INSTALL CONDUIT DUCTBANK, SEE DETAIL E3
C-500
- ② INSTALL HANDHOLE, SEE DETAIL F7
C-500
- ③ CONNECT TO BUILDING

MATCHLINE SEE SHEET C-101



MATCHLINE SEE SHEET C-104

1" = 40'
scale 0 40 80 feet

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Project Title
EHRM INFRASTRUCTURE UPGRADES

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657-21-701JB

Building Number

Drawing Number
C-102

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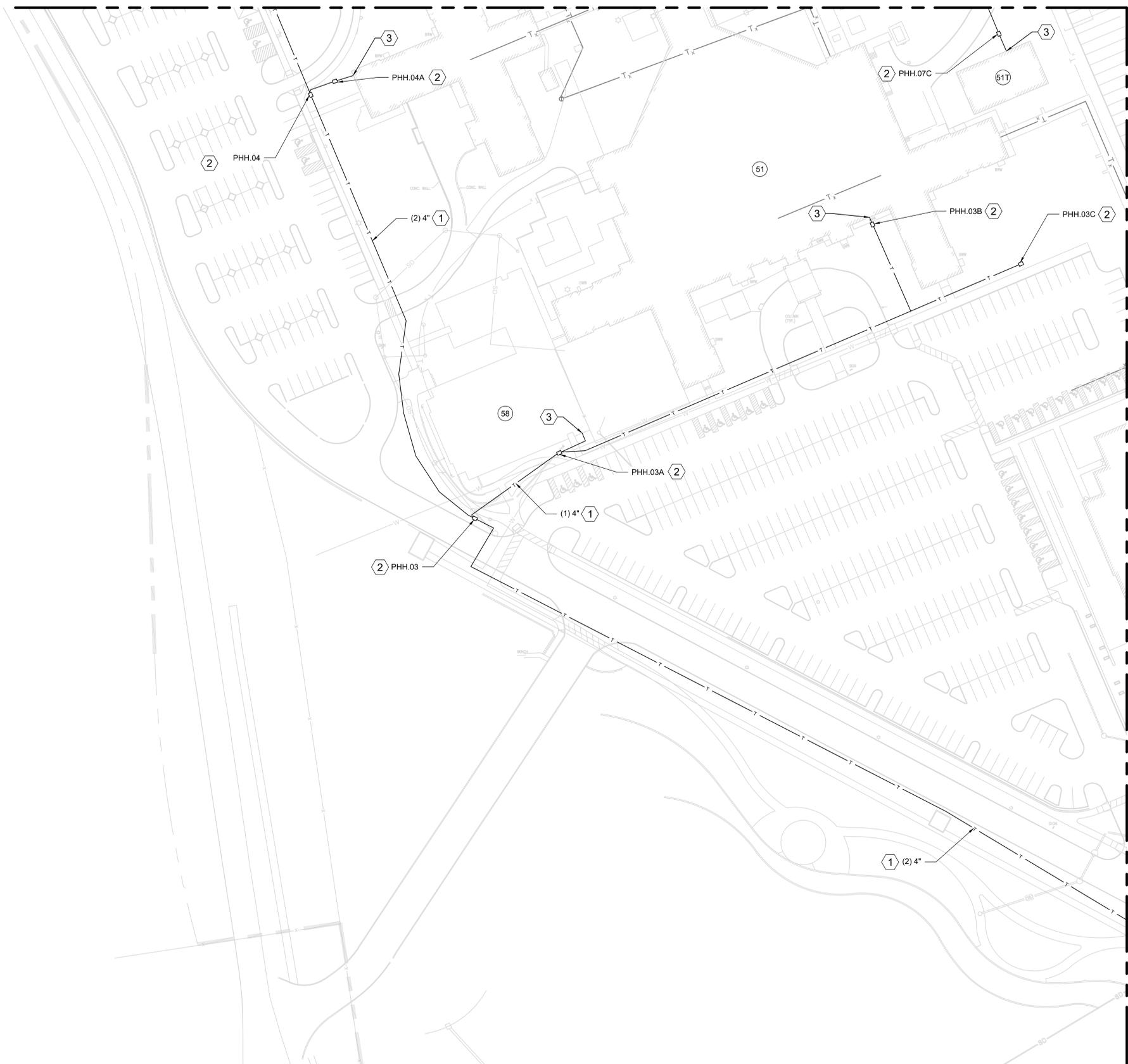
MATCHLINE SEE SHEET C-101

LEGEND

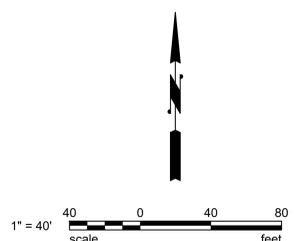
- EXISTING CONDUIT
- PROPOSED FIBER ROUTE
- PROPOSED HANDHOLE
- BUILDING #

KEYNOTES

- INSTALL CONDUIT DUCTBANK, SEE DETAIL
- INSTALL HANDHOLE, SEE DETAIL
- CONNECT TO BUILDING



MATCHLINE SEE SHEET C-104



A
B
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A
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Drawing Title
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Phase
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Project Title
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Location
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Project Number
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Building Number

Drawing Number
C-103

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MATCHLINE SEE SHEET C-102

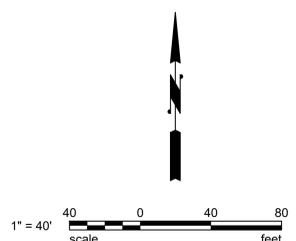
LEGEND

- EXISTING CONDUIT
- PROPOSED FIBER ROUTE
- PROPOSED HANDHOLE
- Ⓝ BUILDING #

KEYNOTES

- ① INSTALL CONDUIT DUCTBANK, SEE DETAIL E3 C-500
- ② INSTALL HANDHOLE, SEE DETAIL F7 C-500
- ③ CONNECT TO BUILDING

MATCHLINE SEE SHEET C-103



MATCHLINE SEE SHEET C-105

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Project Title
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Building Number

Drawing Number
C-104

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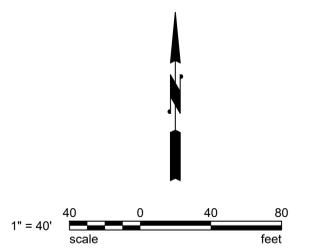
MATCHLINE SEE SHEET C-103

LEGEND

- EXISTING CONDUIT
- PROPOSED FIBER ROUTE
- PROPOSED HANDHOLE
- BUILDING #

KEYNOTES

- INSTALL CONDUIT DUCTBANK, SEE DETAIL
- INSTALL HANDHOLE, SEE DETAIL
- CONNECT TO BUILDING



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Building Number

Drawing Number
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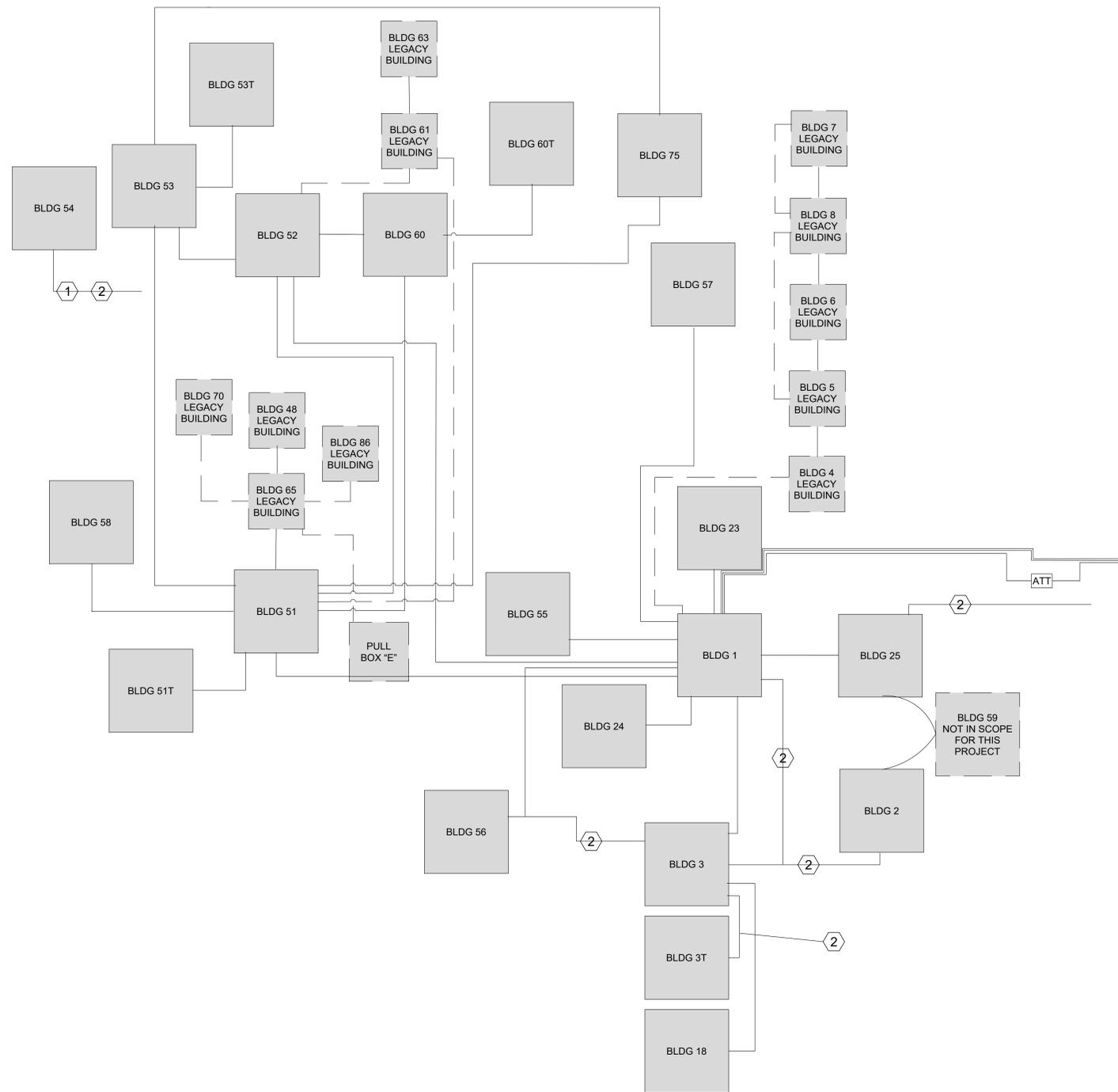
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SHEET NOTES

1. INFORMATION ON THIS SHEET IS FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY EXACT PATHWAYS.
2. THIS IS A SCHEMATIC LOGICAL DRAWING AND IS NOT TO SCALE.

KEYNOTES

- ① BUILDING 54 – THIS CONNECTION MAY BE TO BUILDING 53, 51, OR 1 VIA THE PEDESTRIAN TUNNEL
- ② COULD NOT BE CONFIRMED



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Drawing Title
LOGICAL FIBER DIAGRAM SIDE A

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Project Title
EHRM INFRASTRUCTURE UPGRADES

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ST. LOUIS VA MEDICAL CENTER - JEFFERSON BARRACKS, MO

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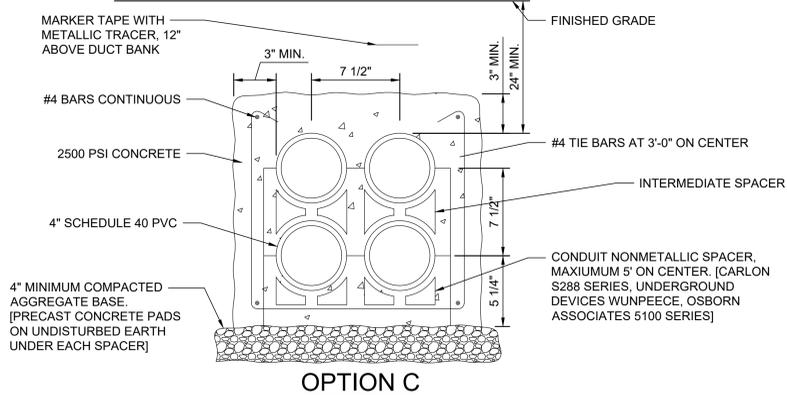
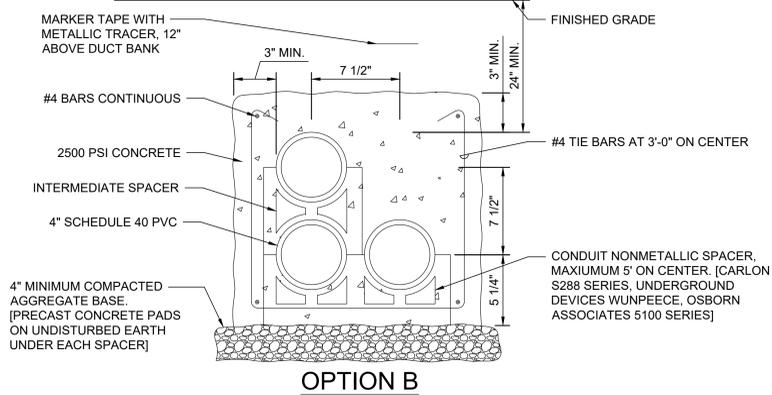
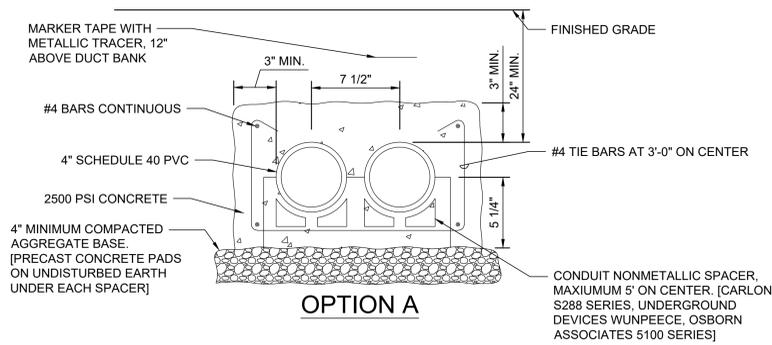
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Author

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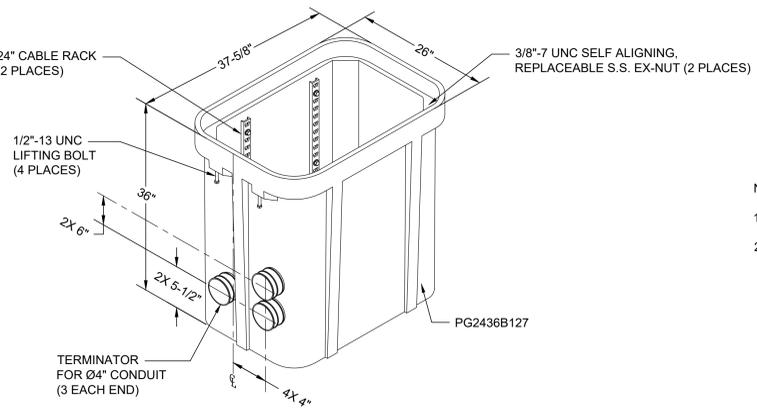
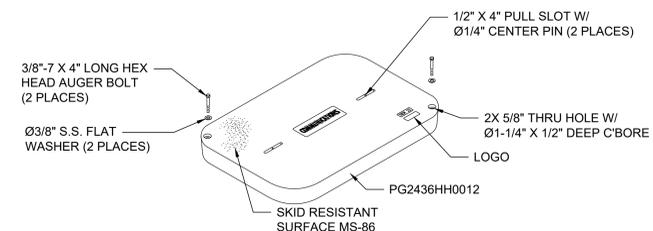
Drawing Number
C-200

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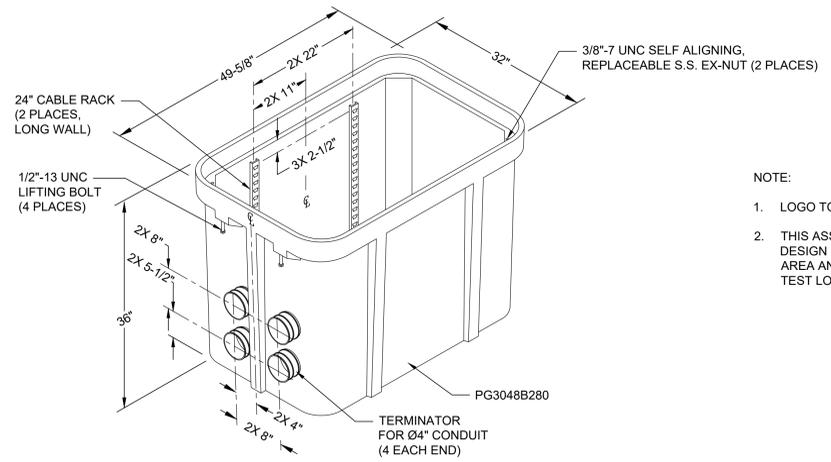
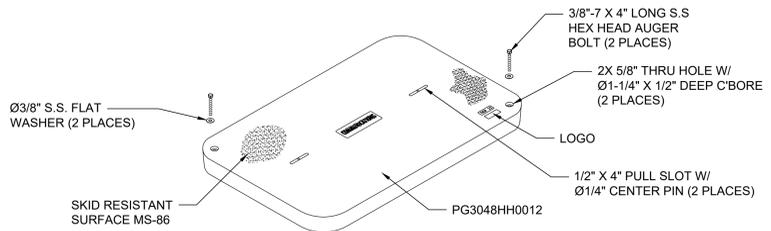
E3
C-500 **DUCT BANK DETAIL**
SCALE: NTS

- NOTES:
1. INSTALL 2000 LB TENSILE STRENGTH BRAIDED POLYPROPYLENE PULL CORD IN ALL CONDUITS.
 2. TRENCHING AND BACKFILL ACCORDING TO SPECIFICATIONS.
 3. MINIMUM OF 4'-0" CLEAR BETWEEN ADJACENT DUCT BANKS.



OPTION A

- NOTE:
1. LOGO TO BE SPECIFIED: **COMMUNICATIONS**
 2. THIS ASSEMBLY IS RATED FOR A STATIC DESIGN LOAD OF 22,500 LBS OVER A 10" X 20" AREA AND MUST PASS A MINIMUM STATIC TEST LOAD OF 33,750 LBS.

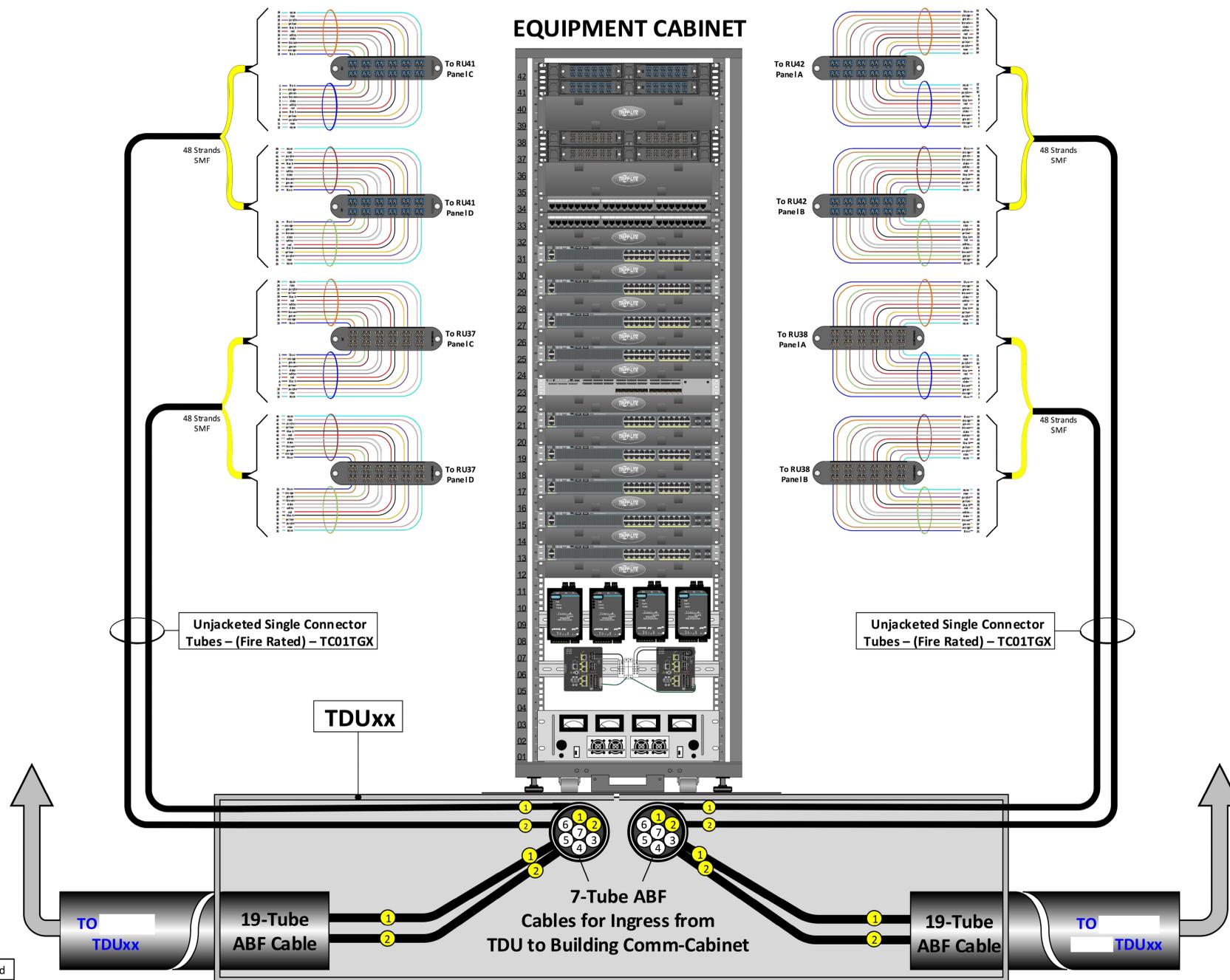


OPTION B

- NOTE:
1. LOGO TO BE SPECIFIED: **COMMUNICATIONS**
 2. THIS ASSEMBLY IS RATED FOR A STATIC DESIGN LOAD OF 22,500 LBS OVER A 10" X 20" AREA AND MUST PASS A MINIMUM STATIC TEST LOAD OF 33,750 LBS.

F7
C-500 **EXTERIOR HANDHOLE BOX DETAILS**
SCALE: NTS

Revisions:	Date:	CONSULTANT	ARCHITECT/ENGINEER OF RECORD	STAMP	Office of Construction and Facilities Management VA U.S. Department of Veterans Affairs	Drawing Title	Phase	Project Title	Project Number		
		ENGINEERING DISCIPLINE:	A/E:			COMMUNICATIONS DETAILS	CONSTRUCTION DOCUMENTS	EHRM INFRASTRUCTURE UPGRADES	657-21-701JB		
		WSP WSP USA Inc. 33301 9th Avenue South Suite 300 Federal Way, WA 98003-2600 TEL: (206) 431-2300 FAX: (206) 431-2250	SPEESDESIGNBUILD 625 1ST AVE, STE 301 SEATTLE, WA 98104 (206) 590-2118 RAY SPEES	Bicsi Michael Carson BICSI ID # 357798 EXPIRES 12-31-23 RCDD	Approved:	FULLY SPRINKLERED	Location	Issue Date	Checked	Drawn	Drawing Number
						ST. LOUIS VIA MEDICAL CENTER - JEFFERSON BARRACKS, MO	03/31/2022	Author	C-500	13 OF 435	



The Assembled Cabinet shall be UL60950 rated

F4 TUBE DISTRIBUTION UNIT (TDU) TO FIBER PATCH PANEL (FPP) DETAIL
C-501 SCALE: NTS

Revisions:	Date:

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Drawing Title
COMMUNICATIONS DETAILS

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Phase
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Project Title
EHRM INFRASTRUCTURE UPGRADES

Location
ST. LOUIS VA MEDICAL CENTER - JEFFERSON BARRACKS, MO

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Author

Project Number
657-21-701JB

Building Number

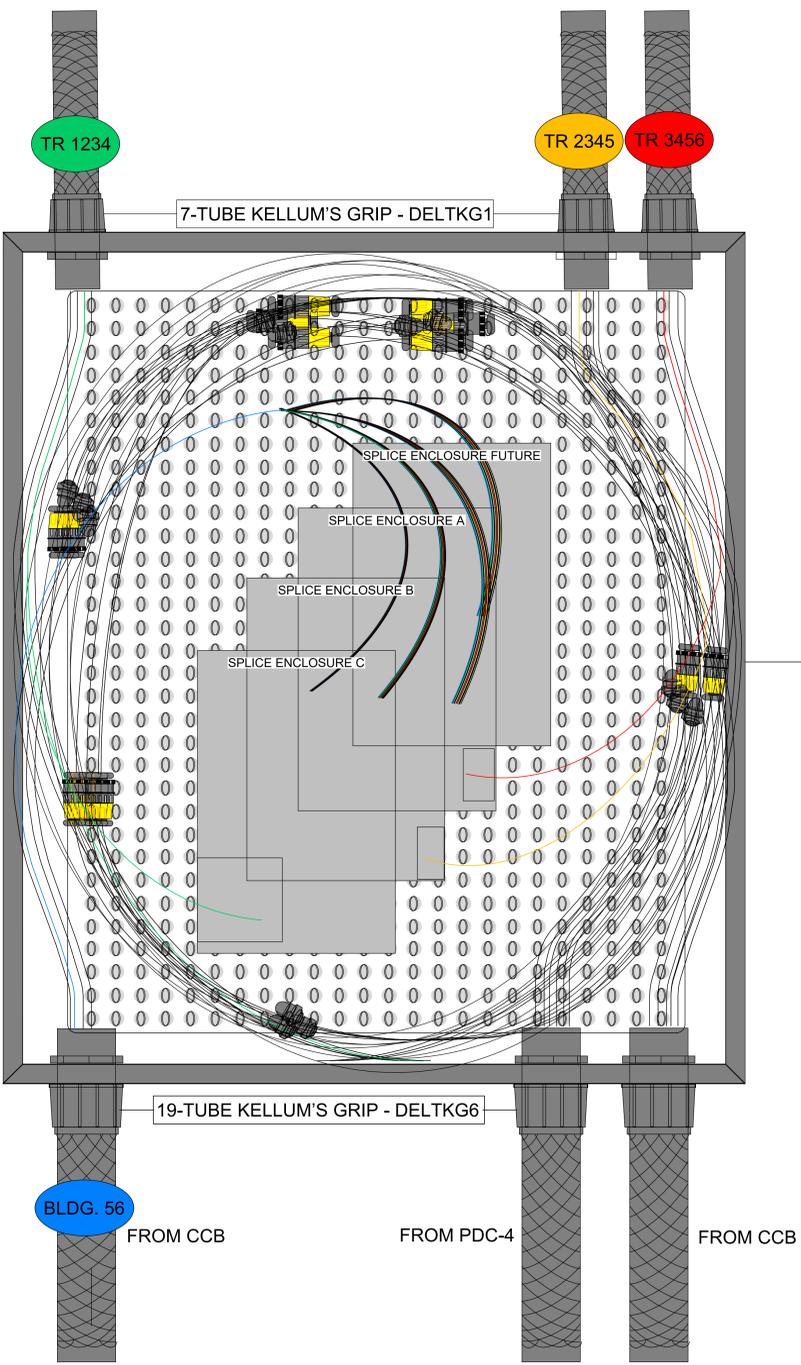
Drawing Number
C-501

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A
B
C
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- 48 STRANDS OF OS2 FIBER FROM BUILDING 56 IS SEPARATED INTO 4 GROUPS OF 12 STRANDS AT THE DESTINATION BUILDING AND 3 OF THE 4 12 STRAND GROUPINGS ARE THEN FUSION SPLICED TO BUILDINGS A,B,C WITH 1 GROUP OF 12 BEING PROTECTED AND SPARED FOR FUTURE USE.
- 12 STRANDS (1-12) ARE FURCATED, COILED AND PROTECTED IN THE SPLICE CASE AND FUSION SPLICED TO THE 12 STRAND OS2 FIBER BUNDLE GOING TO TR 1234 (EXAMPLE).
- 12 STRANDS (13-24) ARE FURCATED, COILED AND PROTECTED IN THE SPLICE CASE AND FUSION SPLICED TO THE 12 STRAND OS2 FIBER BUNDLE GOING TO TR 2345 (EXAMPLE).
- 12 STRANDS (25-36) ARE FURCATED, COILED AND PROTECTED IN THE SPLICE CASE AND FUSION SPLICED TO THE 12 STRAND OS2 FIBER BUNDLE GOING TO TR 3456 (EXAMPLE).
- SPARE FIBER 12 STRANDS (37-48) ARE COILED WITHIN THE TDU AND PROTECTED FOR FUTURE USE IN SPARE SPLICE CASE READY FOR USE WHEN NEEDED.

- 48 STRANDS OS2 FIBER - TUBE 1 OF 19 - FROM BLDG. 56
- 12 STRANDS OS2 FIBER - TUBE 1 OF 7 - TO BUILDING TR 1234
- 12 STRANDS OS2 FIBER - TUBE 1 OF 7 - TO BUILDING TR 2345
- 12 STRANDS OS2 FIBER - TUBE 1 OF 7 - TO BUILDING TR 3456



NOTE: THIS DRAWING IS A HIGH LEVEL OVERVIEW OF HOW THE FIBERS SHALL BE DISTRIBUTED FROM A TUBE DISTRIBUTION UNIT (TDU). ALL FIBERS SHALL BE FURCATED, PROTECTED, NEATLY COILED WITH STRAIN RELIEF PROTECTION TO ENSURE THE FIBER GROUPS WERE SECURED IN SUCH A WAY THAT THEY WILL NOT BE DAMAGED OR DISTURBED DURING ROUTINE MAINTENANCE OR FUTURE WORK PERFORMED INSIDE OF THE TDU. THE SPLICE ENCLOSURES (CASES) SHALL BE PROPERLY STACKED ON TOP OF EACH OTHER, NEATLY LABELED AND TIGHTLY SECURED, THE SAME WOULD APPLY TO THE USED AND UNUSED TUBES WITHIN THE ENCLOSURE.

F4 C-502 TUBE DISTRIBUTION UNIT (TDU) LAYOUT TYPICAL DETAIL SCALE: NTS

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RCDD

Office of Construction and Facilities Management

U.S. Department of Veterans Affairs

Drawing Title
COMMUNICATIONS DETAILS

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EHRM INFRASTRUCTURE UPGRADES

Location
ST. LOUIS VA MEDICAL CENTER - JEFFERSON BARRACKS, MO

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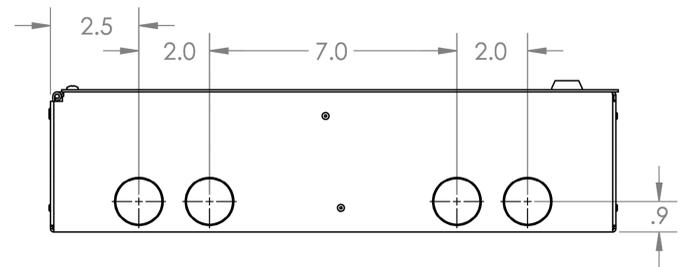
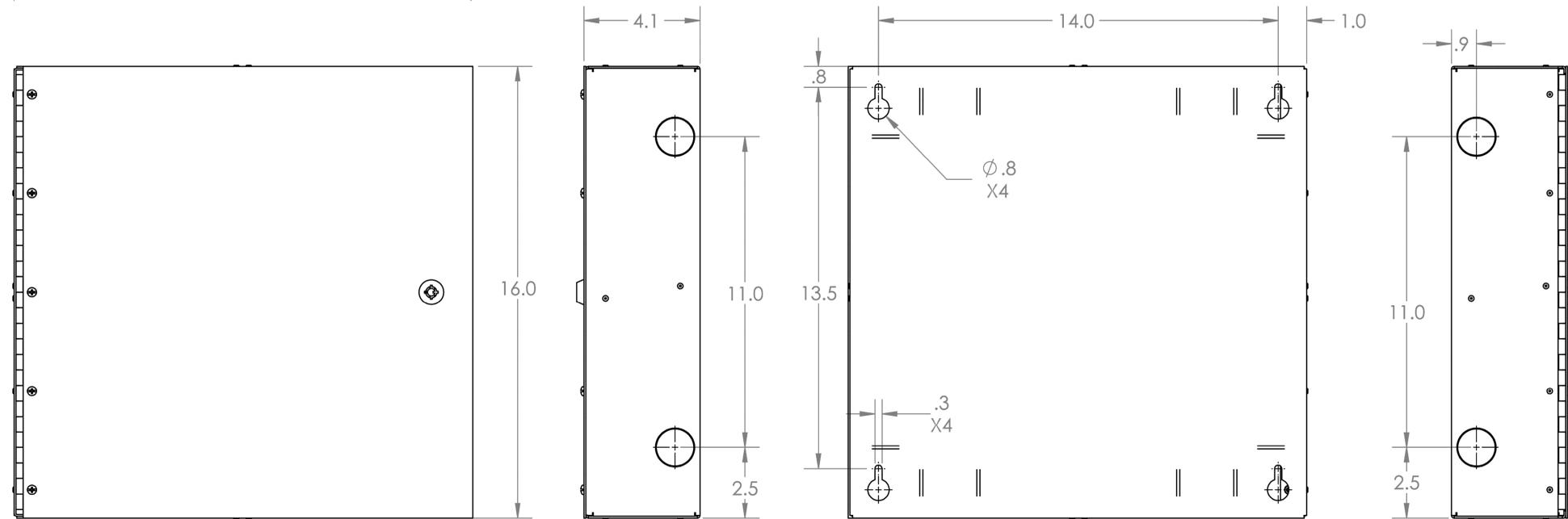
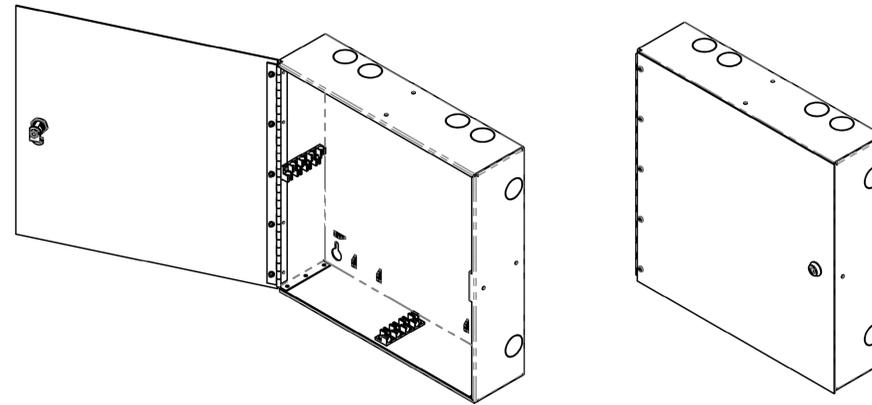
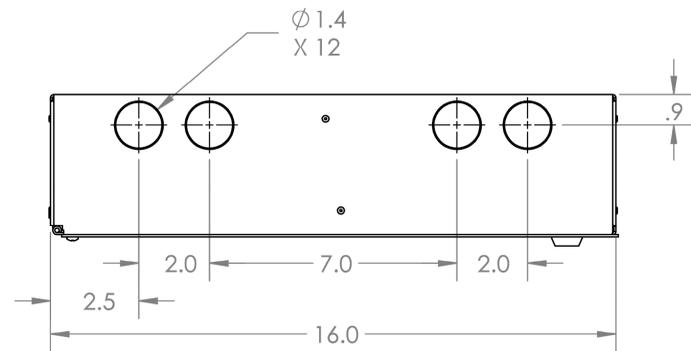
Project Number
657-21-701JB

Building Number

Drawing Number
C-502

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DE06MDU - TUBE DISTRIBUTION UNIT - MODULAR, INDOOR



F4 TUBE DISTRIBUTION UNIT (TDU) TYPICAL DETAIL
C-503 SCALE: NTS

Revisions:	Date:

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