

EXPEDITED
MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	7051 Carroll Ave., Takoma Park	Meeting Date:	1/6/2021
Resource:	Non-Contributing Resource Takoma Park Historic District	Report Date:	12/30/2020
Applicant:	Ryan Fitzgerald	Public Notice:	12/23/2020
Review:	HAWP	Tax Credit:	n/a
Permit No.:	933861	Staff:	Dan Bruechert
Proposal:	Roof Antennas – removal and addition		

STAFF RECOMMENDATION

☒ Approve
☐ Approve with conditions

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Non-Contributing Resource to the Takoma Park Historic District
STYLE: Modern
DATE: c.1950-1970s



Figure 1: 7051 Carroll Ave.

PROPOSAL

The applicant proposes removing three (3) of the existing communication antennae from the roof of the 12-story building and installing two new antennae and additional hardware. Staff finds that the minor visual changes to the roof of the subject property will not have a substantial impact on the character of the Non-Contributing Resource or the character of the surrounding district.

APPLICABLE GUIDELINES

Policy On Use of Expedited Staff Reports for Simple HAWP Cases

IV. The Expedited Staff Report format may be used on the following type of cases:

2. Modifications to a property, which do not significantly alter its visual character.

Montgomery County Code; Chapter 24A-8

- (b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:
 - (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
 - (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or
- (d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (*Ord. No. 9-4, § 1; Ord. No. 11-59.*)

Secretary of Interior's Standards for Rehabilitation

The Secretary of the Interior defines rehabilitation as “the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.” The relevant *Standards* are as follows:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

STAFF RECOMMENDATION

Staff recommends that the Commission **approve** the HAWP application under the Criteria for Issuance in Chapter 24A-8(b)(1), (2), and (d), having found that the proposal will not substantially alter the exterior

features of the historic resource and is compatible in character with the district and the purposes of Chapter 24A;

and with the *Secretary of the Interior's Standards for Rehabilitation #2, 9, and 10*;

and with the general condition that the applicant shall present the **3 permit sets of drawings, if applicable, to Historic Preservation Commission (HPC) staff for review and stamping** prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the Commission as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make **any alterations** to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-563-3400 or dan.bruechert@montgomeryplanning.org to schedule a follow-up site visit.



APPLICATION FOR
HISTORIC AREA WORK PERMIT
HISTORIC PRESERVATION COMMISSION
301.563.3400

FOR STAFF ONLY:
HAWP# 933861
DATE ASSIGNED

APPLICANT:

Name: Ryan Fitzgerald
Address: 1362 Mellon Rd Su. 140
Daytime Phone: 443.417.3414

E-mail: ryan.fitzgerald
City: Hanover Zip: 21076
Tax Account No.: 13-01072074

AGENT/CONTACT (if applicable):

Name: Kelsey Hollingshead
Address: 1362 Mellon Rd Su. 140
Daytime Phone: 443.417.34

E-mail: Kelsey.hollingshead
City: Hanover Zip: 21076
Contractor Registration No.: N/A

LOCATION OF BUILDING/PREMISE: MIHP # of Historic Property #37103

Is the Property Located within an Historic District? ☒ Yes/District Name Takoma Park Historic
☐ No/Individual Site Name

Is there an Historic Preservation/Land Trust/Environmental Easement on the Property? If YES, include a map of the easement, and documentation from the Easement Holder supporting this application. No

Are other Planning and/or Hearing Examiner Approvals /Reviews Required as part of this Application? (Conditional Use, Variance, Record Plat, etc.?) If YES, include information on these reviews as supplemental information. No

Building Number: Street: 7051 Carroll Avenue

Town/City: Rockville Nearest Cross Street:

Lot: 2 Block: F Subdivision: 0025 Parcel: 0000

TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:

- | | | |
|---|--|--|
| <input type="checkbox"/> New Construction | <input type="checkbox"/> Deck/Porch | <input type="checkbox"/> Shed/Garage/Accessory Structure |
| <input type="checkbox"/> Addition | <input type="checkbox"/> Fence | <input type="checkbox"/> Solar |
| <input type="checkbox"/> Demolition | <input type="checkbox"/> Hardscape/Landscape | <input type="checkbox"/> Tree removal/planting |
| <input type="checkbox"/> Grading/Excavation | <input type="checkbox"/> Roof | <input type="checkbox"/> Window/Door |
| | | <input checked="" type="checkbox"/> Other: Telecomm - Antenna Modification |

I hereby certify that I have the authority to make the foregoing application, that the application is correct and accurate and that the construction will comply with plans reviewed and approved by all necessary agencies and hereby acknowledge and accept this to be a condition for the issuance of this permit.

Signature of owner or authorized agent

Date

Description of Property: Please describe the building and surrounding environment. Include information on significant structures, landscape features, or other significant features of the property:

10-11 story brick building used for Senior Living apartments.

Description of Work Proposed: Please give an overview of the work to be undertaken:

AT&T proposes to remove (3) existing antennas, (1) power plant, (1) GSM cabinet and (2) converter shelves. Then AT&T will install (2) ^{New} antennas at 129' and (1) new antenna at 116', (3) new RRA's and (1) new Emerson Netware Power Plant

Work Item 1: (3) new NNHH-65A-R4 antennas

Description of Current Condition:

(9) existing antennas (3)
per sector on rooftop.
Take (3) down, (1) per
sector.

Proposed Work:

Take (3) existing antennas
down put these (3) new
Commscope NNHH-~~6~~5A-R4
antennas up.

Work Item 2: NA

Description of Current Condition:

Proposed Work:

Work Item 3: NA

Description of Current Condition:

Proposed Work:

HISTORIC AREA WORK PERMIT CHECKLIST OF APPLICATION REQUIREMENTS

	Required Attachments						
Proposed Work	I. Written Description	2. Site Plan	3. Plans/ Elevations	4. Material Specifications	5. Photographs	6. Tree Survey	7. Property Owner Addresses
New Construction	*	*	*	*	*	*	*
Additions/ Alterations	*	*	*	*	*	*	*
Demolition	*	*	*		*		*
Deck/Porch	*	*	*	*	*	*	*
Fence/Wall	*	*	*	*	*	*	*
Driveway/ Parking Area	*	*		*	*	*	*
Grading/Exc avation/Land scaing	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*



DEPARTMENT OF PERMITTING SERVICES

Marc Elrich
County Executive

Mitra Pedoeem
Director

HISTORIC AREA WORK PERMIT APPLICATION

Application Date: 11/18/2020

Application No: 933861
AP Type: HISTORIC
Customer No: 1364223

Affidavit Acknowledgement

The Contractor is the Primary applicant authorized by the property owner
This application does not violate any covenants and deed restrictions

Primary Applicant Information

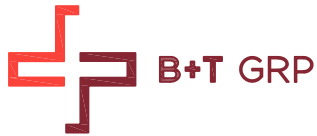
Address 7051 CARROLL AVE
TAKOMA PARK, MD 20912

Othercontact Fitzgerald (Primary)

Historic Area Work Permit Details

Work Type ALTER

Scope of Work AT&T proposes to remove (3) existing antennas and install (2) new antennas at 129', (1) new antenna at 116' and (3) new RRHs.



USID: 3939
FA: 10072888
TULIP AVE
7051 CARROL STREET
TAKOMA PARK, MD 20912
EXISTING ROOFTOP

PROJECT NO: 142211.003.01
CHECKED BY: FWP

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
A	4/6/20	STH	PRELIMINARY REVIEW
B	6/4/20	GEH	PRELIMINARY REVIEW
C	6/10/20	MTJ	PRELIMINARY REVIEW
D	6/10/20	MTJ	CONSTRUCTION

B&T ENGINEERING, INC.
07-48491
Expires 1/19/22



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

REVISION: 0
SHEET NUMBER: T-1

RF DATA SHEET

ISSUE REVISION	V2020_0.1
ISSUE DATE	12/31/19



AT&T

SITE NAME:

TULIP AVE

USID: 3939

FA NUMBER: 10072888

MONTGOMERY COUNTY
EXISTING 111'-0" ROOFTOP
LTE 6C UPGRADE

PROJECT SUMMARY

BUILDING OWNER: TAKOMA TOWER LP
ADDRESS: 7051 CARROLL STREET
TAKOMA PARK, MD 20912

SITE ADDRESS: 7051 CARROL STREET
TAKOMA PARK, MD 20912

CUSTOMER/APPLICANT: AT&T MOBILITY
7150 STANDARD DRIVE
HANOVER, MD 21076

NAD83
LATITUDE: 38.974747° N
LONGITUDE: 77.010437° W

JURISDICTION: MONTGOMERY COUNTY

COUNTY: MONTGOMERY

GROUND ELEVATION: 265' AMSL

OCCUPANCY TYPE: UNMANNED

A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

CONTACT INFORMATION

A&E FIRM: B+T GROUP
1717 S. BOULDER, STE. 300
TULSA, OK 74119
CONTACT: MIKE OAKES
PHONE: (918) 587-4630

ELECTRIC PROVIDER: PEPCO
PHONE: (877) 737-2662

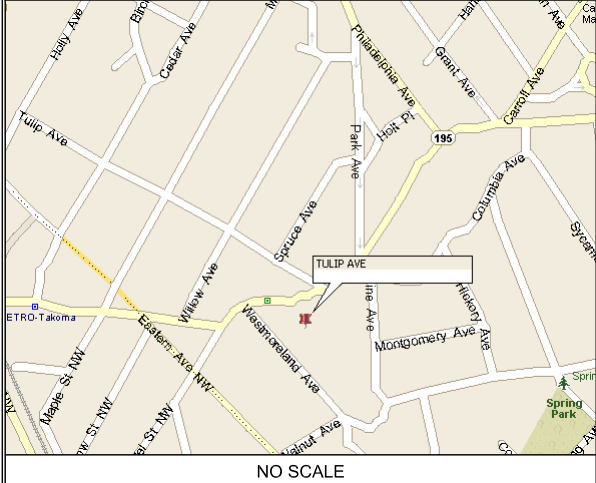
TELCO PROVIDER: AT&T
PHONE: (800) 228-2020

CODE COMPLIANCE

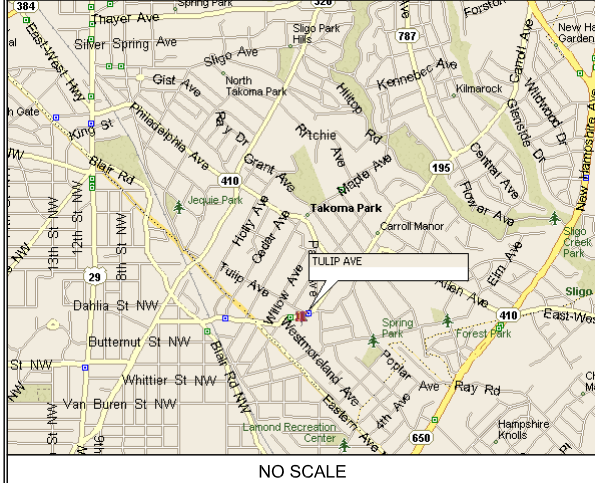
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING/DWELLING	IBC 2018
STRUCTURAL	IBC 2018
MECHANICAL	IMC 2018
ELECTRICAL	NEC 2017

AREA MAP



LOCATION MAP



DRIVING DIRECTIONS

DEPART 7150 STANDARD DRIVE, HANOVER, MD ON STANDARD DR. TURN LEFT ONTO PARKWAY DR, THEN IMMEDIATELY TURN RIGHT ONTO PARK CIRCLE DR. TURN LEFT ONTO COCA COLA DR. TAKE RAMP ONTO MD-100. AT EXIT 5A-B, KEEP RIGHT ONTO RAMP. TAKE RAMP ONTO I-95. AT EXIT 27, TURN RIGHT ONTO RAMP. TAKE RAMP ONTO I-495 [I-495 OUTERLOOP]. AT EXIT 28B, TAKE RAMP ONTO MD-650 [NEW HAMPSHIRE AVE]. TURN RIGHT ONTO MD-410 [ETHAN ALLEN AVE]. KEEP STRAIGHT ONTO MD-195 [CARROLL AVE]. TURN LEFT ONTO LOCAL ROAD. ARRIVE AT TULIP AVE.

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES:

- REMOVE (3) EXISTING ANTENNAS.
- REMOVE (1) EXISTING POWER PLANT.
- REMOVE EXISTING BATTERIES.
- REMOVE STAND-ALONE DC/FIBER.
- REMOVE (6) EXISTING DC2S.
- REMOVE (1) EXISTING 1900 UMTS CABINET.
- REMOVE (1) EXISTING GSM CABINET.
- REMOVE (2) EXISTING ARGUS CONVERTER SHELVES.
- INSTALL (2) NEW ANTENNAS AT 129'-0".
- INSTALL (1) NEW ANTENNAS AT 116'-0".
- INSTALL (3) NEW RRHS.
- INSTALL (3) NEW DC9-48-60-24-16PC-EV RAYCAPS.
- INSTALL (1) NEW EMERSON NETSURE 721 POWER PLANT.
- INSTALL (10) NEW RECTIFIERS & (4) CONVERTERS.
- INSTALL (1) NEW BATTERY RACK W/ (5) NEW -48 170MHA BATTERY STRINGS.
- INSTALL (2) NEW DC12-RM.
- INSTALL (3) NEW FIBER TRUNKS & (9) DC TRUNKS.
- MODIFY EXISTING RRU SLED MOUNT PER MOUNT ANALYSIS BY B+T GROUP DATED 5/12/20.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SEE SHEET GN-1 FOR ADDITIONAL CONSTRUCTION NOTES

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	0
GN-1,GN-2	GENERAL NOTES	0
C-1	OVERALL SITE PLAN	0
C-2	ENLARGED SITE PLAN	0
C-3	BUILDING ELEVATION	0
C-3.1	EXISTING AZIMUTH PLANS	0
C-3.2	PROPOSED AZIMUTH PLANS	0
C-4	EQUIPMENT INFO	0
C-4.1	RRH MOUNTING DETAIL	0
C-4.2	ANTENNA CABLE SCHEDULE	0
E-1	DC SURGE SHELF LAYOUT	0
E-2,E-2.1	RAYCAP DC9 WIRING DIAGRAM & MOUNTING DETAIL	0
E-3,E-3.1	WIRING DIAGRAMS	0
E-4	SYSTEM DIAGRAM	0
E-5	ALARM BLOCK DETAIL	0
E-6 - 6.1	EMERSON NETSURE 721 DETAILS & SPECS	0
E-7	POWER LOAD CALCULATIONS	0
E-8	AC/DC PANEL SCHEDULE	0
G-1	GROUNDING DETAILS	0
RF-1	PLUMBING DIAGRAM	0
SK-2	MOUNT MODIFICATION	-

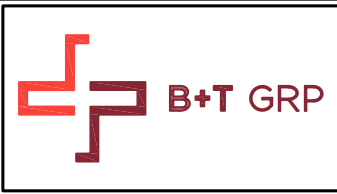
A/E DOCUMENT REVIEW STATUS

TITLE		SIGNATURE	DATE
AT&T CONSTRUCTION MGR:			
SMARTLINK PM:			
RF ENGINEER:			
ZONING APPROVAL:			
SITE ACQUISITION:			
PROPERTY OWNER:			
STATUS CODE:			
1		ACCEPTED: WITH OR NO COMMENTS, CONSTRUCTION MAY PROCEED	
2		NOT ACCEPTED: RESOLVE COMMENTS AND RESUBMIT	
ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.			



CALL MARYLAND ONE CALL
(800) 282-8555
CALL 3 WORKING DAYS
BEFORE YOU DIG!





USID: 3939
FA: 10072888
TULIP AVE
7051 CARROL STREET
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PROJECT NO: 142211.003.01
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B&T ENGINEERING, INC.
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TO ALTER THIS DOCUMENT.

REVISION: 0
SHEET NUMBER: GN-1

- PROJECT COMPLIANCE NOTES:
1. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE AND IS NOT FOR HUMAN HABITAT. (NO HANDICAP ACCESS IS REQUIRED).
 2. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
 3. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS PROPOSAL, UNLESS DURING EMERGENCY.
 4. OUTDOOR STORAGE AND SOLID WASTE CONTAINERS ARE NOT PROPOSED.
 5. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST AT&T SYSTEM GROUNDING STANDARDS. "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF LTE SITES AND WILL FOLLOW AT&T GROUNDING AND BONDING REQUIREMENTS FOR NETWORK FACILITIES AT&T DOC ID ATT-TP-76416 AND AT&T POLICY LETTER ATT-CEM-13002.
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING CONSTRUCTION OPERATION.
 7. THE CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
 8. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM DRAWINGS PROVIDED BY THE APPLICANT REPRESENTATIVE. THE CONTRACTOR SHALL NOTIFY TURF VENDOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
 9. NO ADDITIONAL PARKING IS PROPOSED. EXISTING ACCESS AND PARKING WILL BE USED.
 10. NO ADDITIONAL LANDSCAPING IS PROPOSED AT THIS SITE.
 11. ALL COAXIAL CABLE/FIBER AND DC CABLE INSTALLATION IS TO FOLLOW MANUFACTURER'S INSTRUCTION.

GREENFIELD GROUNDING NOTES:

ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.

CONNECTIONS TO THE GROUND BAR SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BAR ARE PERMITTED.

ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.

GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

ELECTRICAL INSTALLATION NOTES:

ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

WIRING, RACEWAY & SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR APPROVED EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).

PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.

POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.

ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR APPROVED EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).

RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR APPROVED EQUAL); AND RATED NEMA 1 (OR BETTER).

EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.

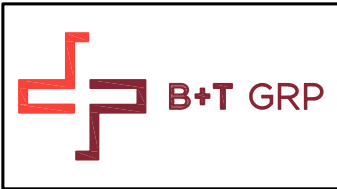
METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "AT&T WIRELESS".




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07-48491
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6/10/20

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PROJECT GENERAL NOTES:










- OR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR-----
SUBCONTRACTOR-- GENERAL CONTRACTOR (CONSTRUCTION)
OWNER-- AT&T
OEM-- ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
- THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.
- SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
- THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- CONSTRUCTION SHALL COMPLY WITH MOBILITY RAN POWER & INFRASTRUCTURE HARDWARE POLICY ATT-CEM-18006, "HOSE CLAMP & METAL SNAP-IN SUPPORTS PIM PROBLEM RESOLUTION". CONTRACTORS DOING WORK IN THE HIGH RISK PIM ZONE AREAS ARE TO MINIMIZE OR ELIMINATE EXTERNAL PIM SOURCES CAUSED BY CLAMPS AND CABLING.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

	SOLID GROUND BUS BAR
	SOLID NEUTRAL BUS BAR
	SUPPLEMENTAL GROUND CONDUCTOR
	2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
	CHEMICAL GROUND ROD
	TEST WELL
	DISCONNECT SWITCH
	METER



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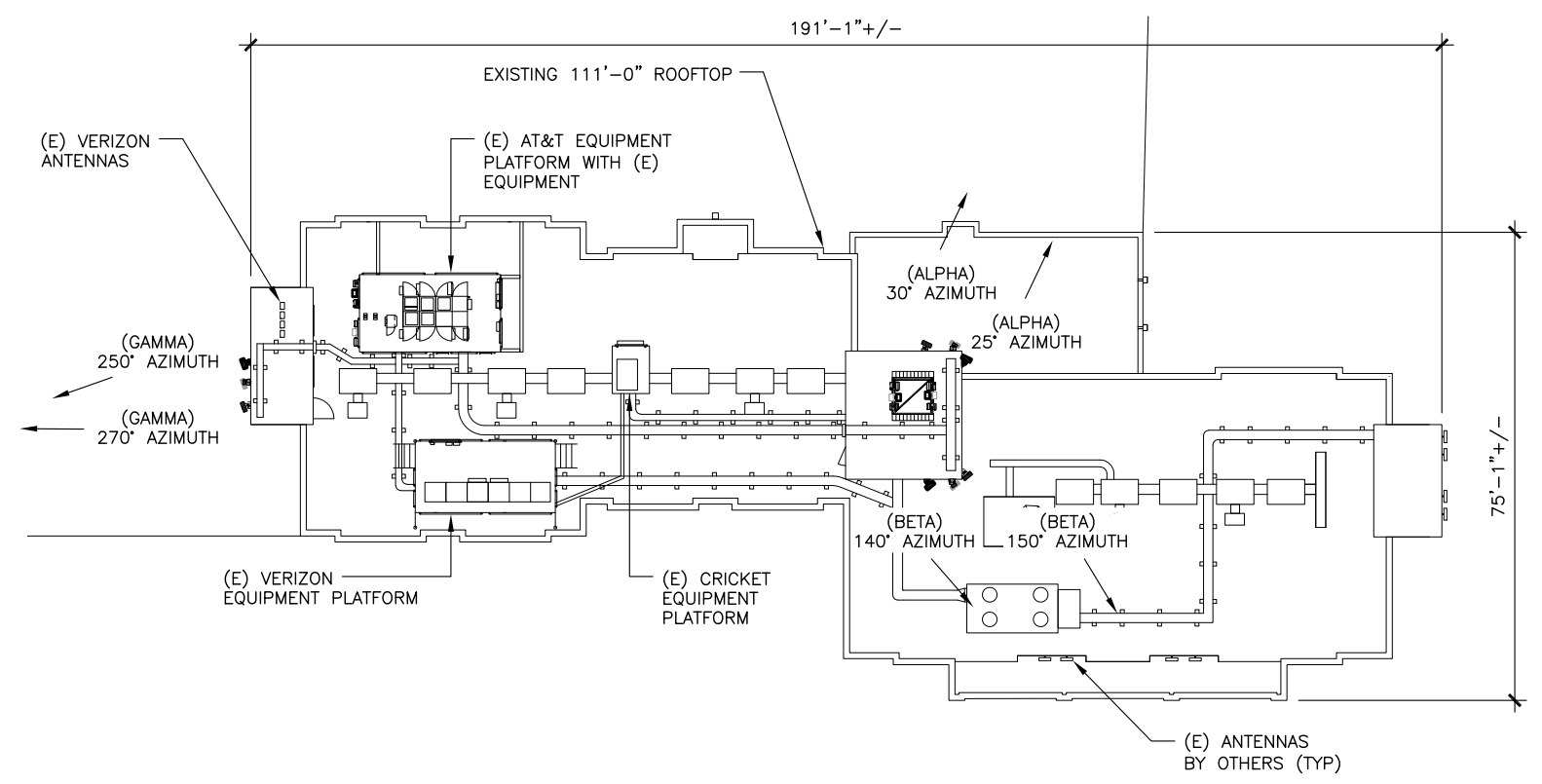
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REVISION: 0 SHEET NUMBER: C-1

1. THE SUBCONTRACTOR SHALL GIVE ALL NOTICES AND REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE SUBCONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID SUBCONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE SUBCONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE AT&T REPRESENTATIVE (B&T ENGINEERING) OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF SUBCONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE SUBCONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIAL AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE SUBCONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE THEMSELVES WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE SUBCONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS INFORMED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE SUBCONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE, UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS, AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEERING, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
11. THE SUBCONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVEMENTS, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE SUBCONTRACTOR SHALL REPAIR ANY DAMAGE THE MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
12. THE SUBCONTRACTOR SHALL MAINTAIN THE GENERAL WORK AREA AS CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST OR SMUDGES OF ANY NATURE.
13. THE SUBCONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
14. THE SUBCONTRACTOR SHALL NOTIFY THE AT&T REPRESENTATIVE (B&T ENGINEERING) WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE SUBCONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE AT&T REPRESENTATIVE (B&T ENGINEERING).
15. THE SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOBS.



1 OVERALL SITE PLAN
SCALE: 1"=30'






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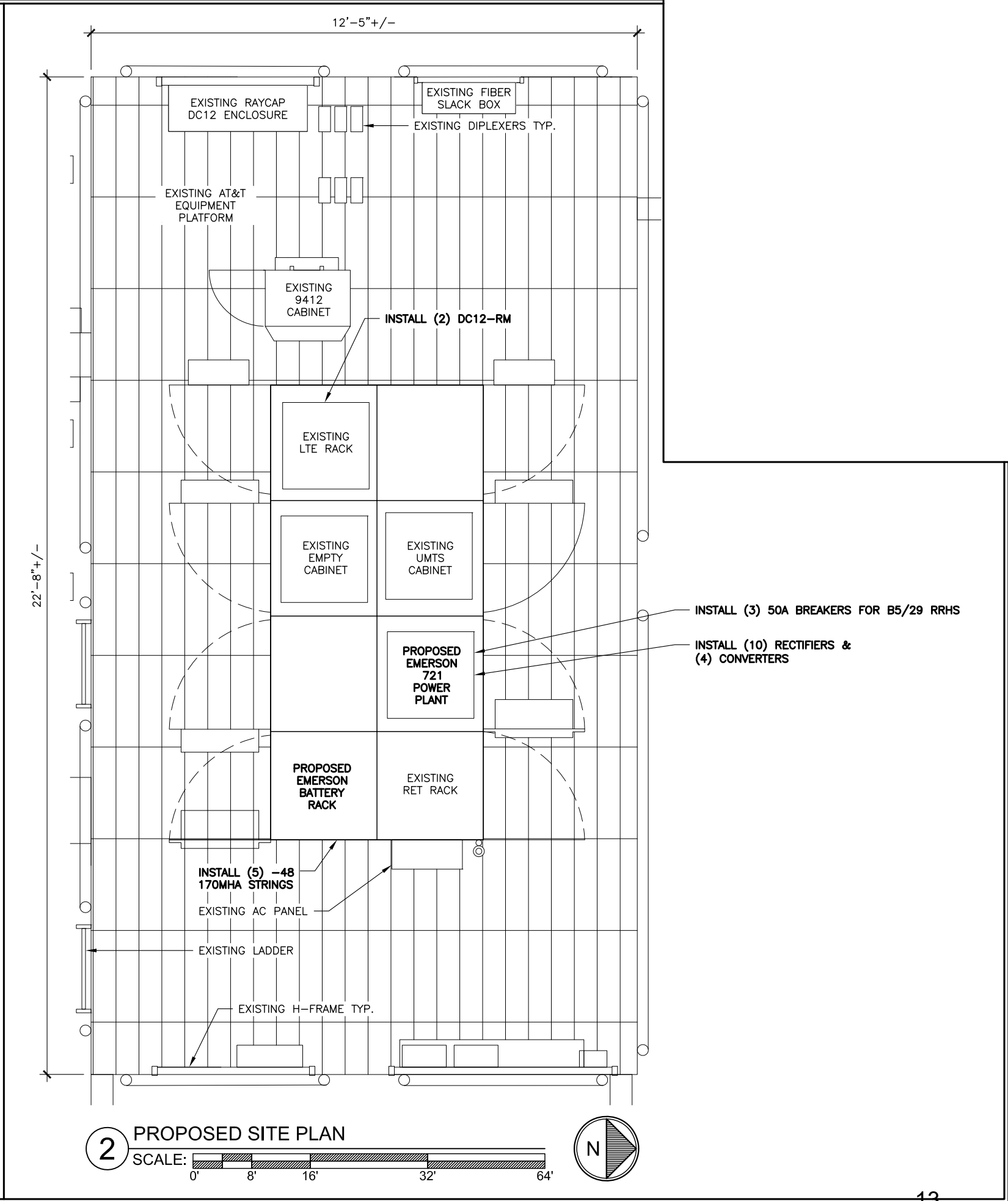
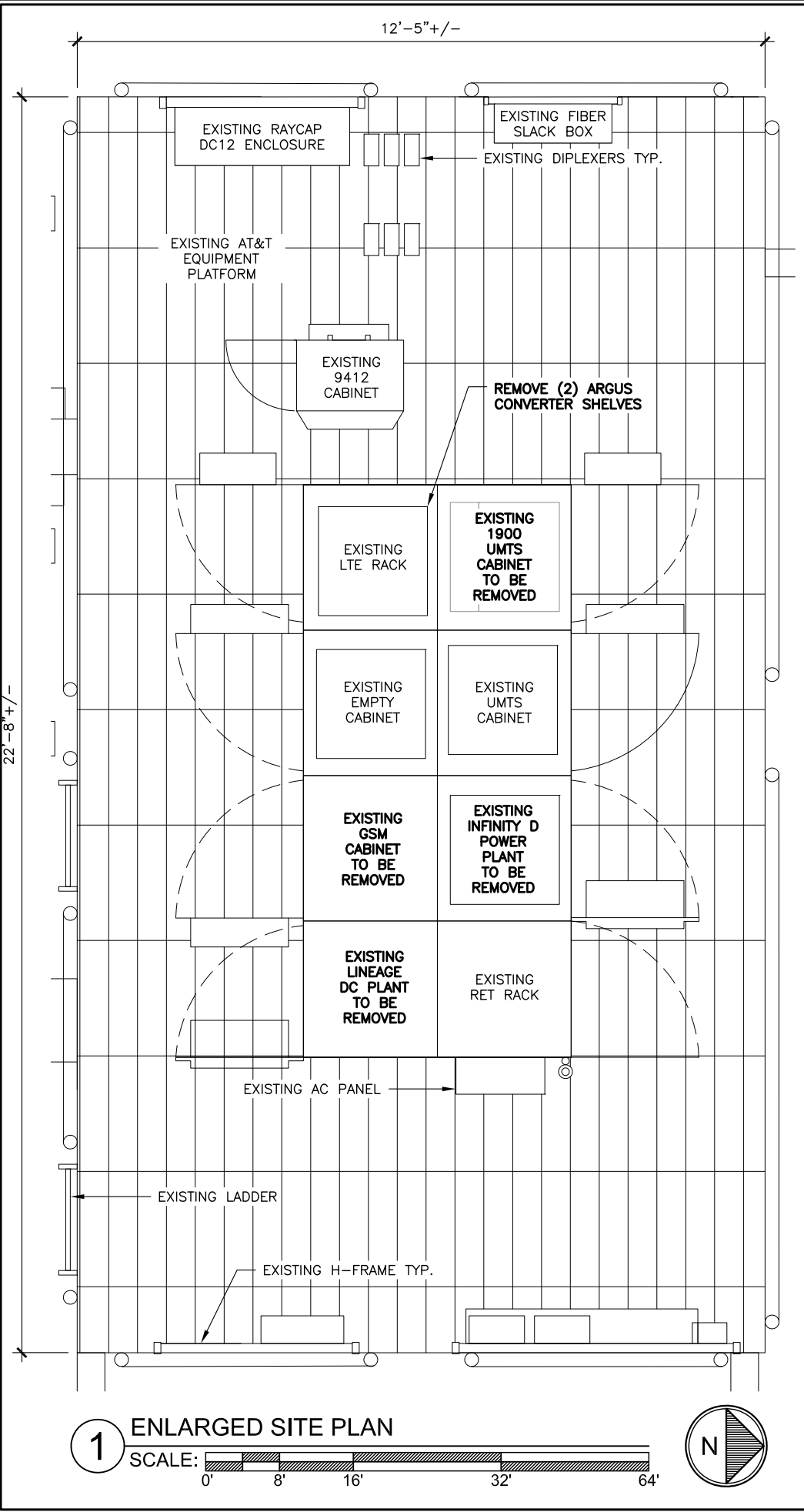
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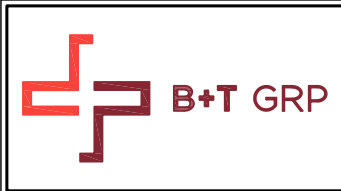
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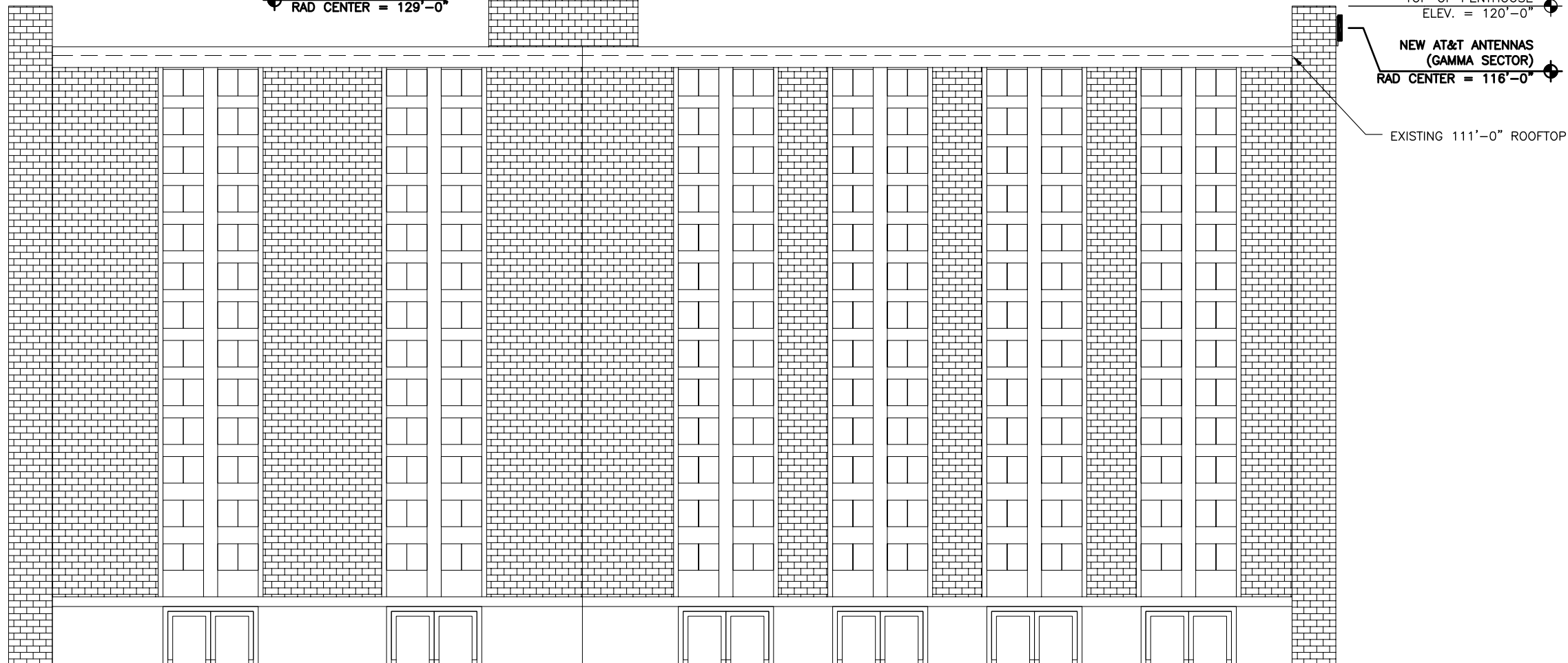
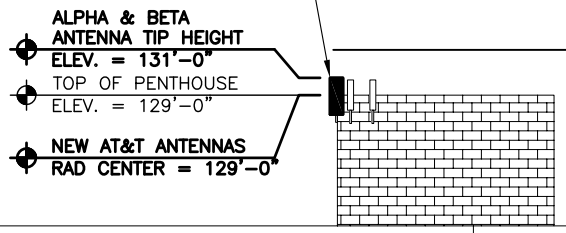
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NOTE:
THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND TRANSMISSION LINES SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS OF THIS TOWER SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND TRANSMISSION LINES. ALL ANTENNAS MUST BE MOUNTED AND THE TRANSMISSION LINES CONFIGURED IN STRICT ACCORDANCE WITH THE STRUCTURAL ANALYSIS.

STRUCTURAL ANALYSIS NOTES:
1. ANTENNA PLACEMENT WAS DETERMINED WITHOUT VERIFICATION OF STRUCTURAL ANALYSIS.
2. REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

PROPOSED:
(3) ANTENNAS WITH
(3) REMOTE RADIO HEADS
(3) RAYCAP SURGE SUPPRESSORS
(3) FIBER TRUNKS AND
(9) DC TRUNKS
MOUNTED TO EXISTING ANTENNA MOUNT



1 BUILDING ELEVATION
SCALE: N.T.S.



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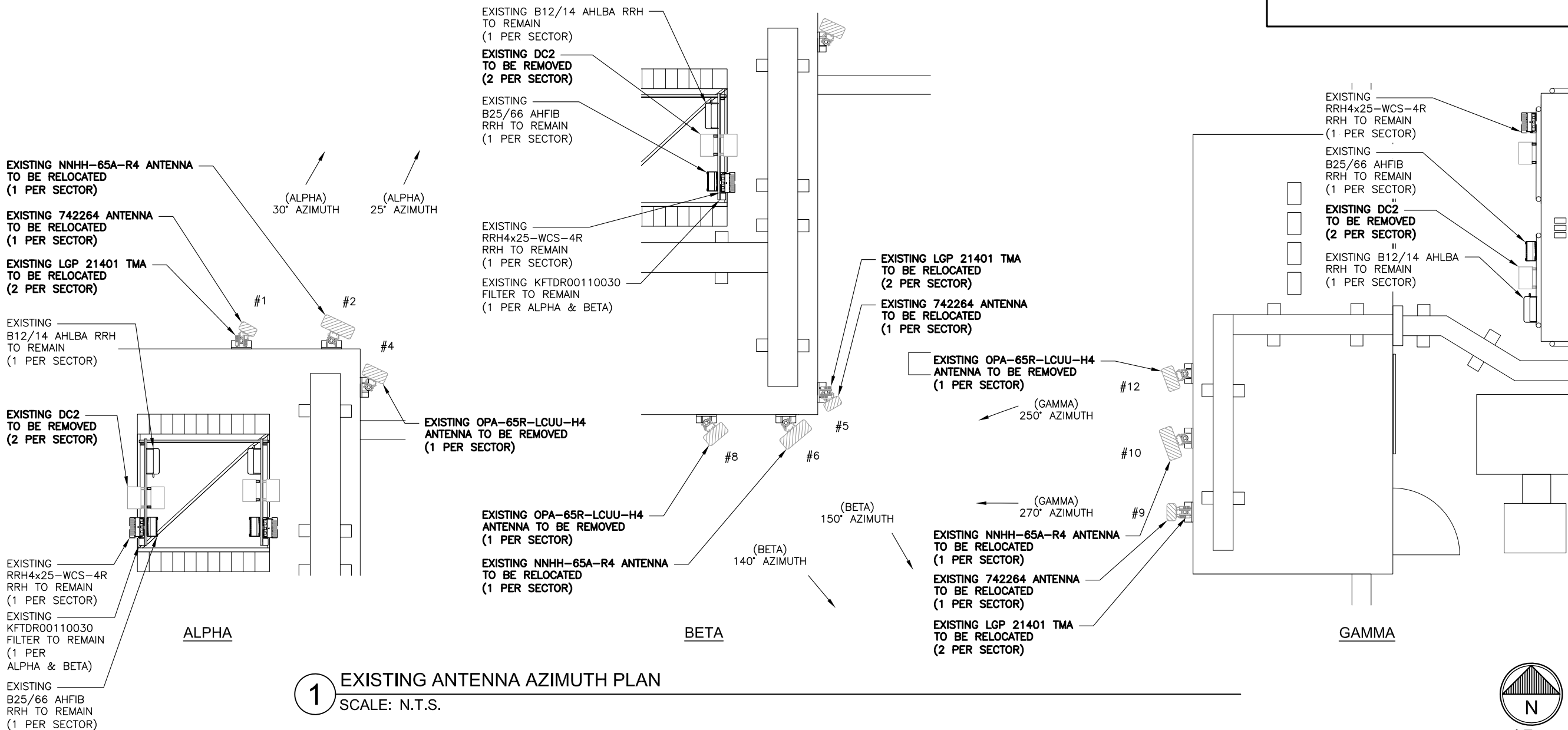
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SHEET NUMBER: C-4

ANTENNA CABLE AND ACCESSORY NOTES AND REQUIREMENTS:

1. GENERAL: PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NECESSARY FOR RECEIVING, INSTALLING, TESTING, AND ADJUSTING ANTENNA CABLES FROM THE ANTENNA TO THE CONNECTIONS AT THE BASE TRANSCIVER STATION (BTS). THIS SHALL INCLUDE ALL EQUIPMENT SHOWN OR REQUIRED FOR A COMPLETE OPERATING SYSTEM. ANTENNA, ANTENNA CABLES, CONNECTORS, AND FITTINGS SHALL BE THIRD PARTY FURNISHED COMPONENTS AS SHOWN ON THE BILL OF MATERIALS.

2. MATERIALS

A. ANTENNA CABLES: AS SCHEDULED

B. ANTENNA CONNECTORS: AS SCHEDULED

C. CABLE HANGERS: INSTALLED AT MAXIMUM 18" SPACING

D. GROUNDING KITS: AS SPECIFIED

3. INSTALLATION

A. ANTENNA CABLE LENGTHS SHALL BE FIELD MEASURED. INSTALLER SHALL NOTIFY AT&T PRIOR TO PURCHASE OF CABLE OF THE OVERALL LENGTH REQUIRED.

B. CABLES SHALL BE LABELED IN ACCORDANCE WITH AT&T ELECTRICAL MATERIALS AND METHODS SPECIFICATIONS.

C. ALL CABLE CONNECTIONS OUTSIDE SHALL BE COVERED WITH WEATHERPROOFING TAPE.

D. THE MINIMUM BENDING RADIUS FOR ALL ANTENNA CABLES SHALL BE AS SHOWN BELOW OR PER THE MANUFACTURER, WHICHEVER IS MORE CONSERVATIVE:

E. CABLES SHALL BE INSTALLED WITH THE MINIMUM NUMBER OF BENDS. CABLE SHALL NOT BE LEFT UNTERMINATED IN THE FIELD. NO BENDS WILL BE ACCEPTED IF WITHIN 5" OF CONNECTOR.

F. GROUNDING KITS: AFTER INSTALLATION OF GROUND STRAPS, THE CONNECTIONS SHALL BE MADE WEATHER TIGHT USING WEATHERPROOF KITS AS IDENTIFIED ABOVE. GROUND PIGTAILS SHALL BE BROUGHT OUT IN THE DOWNWARD DIRECTION FROM THE CONNECTION TO THE ANTENNA CABLE WITHOUT ANY SHARP BENDS (MINIMUM RADIUS 10") AND CONNECTION SHALL BE MADE TO GROUNDING SYSTEM.

CABLE	IN AIR OR CABLE TRAY	IN CONDUIT
1/2"	5"	10"
7/8"	10"	18"
1-5/8"	20"	28"

2 ANTENNA MOUNT DETAIL
SCALE: N.T.S.

SIZE AND WEIGHT TABLE

RRH	WIDTH	DEPTH	HEIGHT W/O CABLE MANAGEMENT COVER	WEIGHT W/O BRACKET	CONNECTOR TYPE
RRH2X40-07L	11.5"	5.7"	24.8"	50.7 LBS.	7/16 DIN FEMALE
RRH 4T4R B5 AHCA	11.61"	6.5"	13.27"	36.8 LBS.	4.3-10 FEMALE
RRH 4T4R B5/B29 AHCB	12.13"	5.86"	22.04"	86 LBS.	4.3-10 FEMALE
RRH 4T4R B12/B14 AHLBA	12.13"	6.97"	22.04"	77.2 LBS.	4.3-10 FEMALE
RRH 4T4R B25/B66 AHFIB	12.13"	5.86"	22.04"	66.1 LBS.	4.3-10 FEMALE
FLEXI RRH 4T4R B14 FRBI	13.03"	6.65"	23.03"	57 LBS.	4.3-10 FEMALE
RRH 2X40 AWS	10.63"	24.4"	-	44 LBS.	7/16 DIN FEMALE
RRH2X60W-850 UMTS/LTE	11.5"	9.0"	18.9"	50.8 LBS.	7/16 DIN FEMALE
B25 RRH4x30-4R	11.97"	7.18"	21.2"	52.9 LBS.	7/16 DIN FEMALE
RRH4X25-WCS-4R	12.0"	8.7"	31.5"	70 LBS.	7/16 DIN FEMALE
RRH2X40-07L-AT (RETUNED)	12.2"	6.1"	25.2"	52.5 LBS.	7/16 DIN FEMALE
RRH2X40W-07L DE	12.2"	6.6"	25.2"	55 LBS.	7/16 DIN FEMALE
B66A-RRH4x45	11.9"	7.2"	25.8"	68.34 LBS.	4.3-10 FEMALE

CLEARANCE AND BREAKER SIZE TABLE

RRH	FRONT	REAR	RIGHT	LEFT	TOP	BOTTOM	BREAKER	MIN WIRE SIZE
700 07L-AT	36"	0"	3.94"	3.94"	12"	12"	15 AMP	#12 AWG
700 DE	36"	0"	3.94"	3.94"	12"	12"	15 AMP	#12 AWG
850 UMTS/LTE	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP	#12 AWG
2X60 850, 1900	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP	#12 AWG
2X60 B66 2100	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP	#12 AWG
2X60 1900A 4R	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	15 AMP	#12 AWG
2X60 B4 1900	39.37"	2.76"	3.94"	3.94"	11.81"	19.67"	20 AMP	#12 AWG
4X30 B25 1900	39.4"	2"	3.1"	3.1"	11.8"	15.7"	20 AMP	#12 AWG
4X30 B30 2300	39.4"	2"	3.9"	3.9"	11.8"	12"	20 AMP	#12 AWG
AWS 2X40	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP	#12 AWG
AWS RDEM	36"	1.97"	3.94"	3.94"	11.82"	12"	15 AMP	#12 AWG
AWS B66	39.4"	2"	3.1"	3.1"	11.8"	24"	25 AMP	#10 AWG
B14 160 FRBI	35.4"	0.39"	0.39"	0.39"	24"	12"	20 AMP	#12 AWG
B5 160W AHCA	35.4"	0.39"	0.39"	0.39"	24"	12"	25 AMP	#8 AWG
B25/B66 320W	35.4"	0.39"	0.39"	0.39"	24"	12"	50 AMP	#6 AWG
B12/B14 320W	35.4"	0.39"	0.39"	0.39"	24"	12"	50 AMP	#6 AWG
B5/B29 320W	35.4"	0.39"	0.39"	0.39"	24"	12"	50 AMP	#6 AWG

ALL WIRE & CABLE SHALL BE SIZED BASED ON THE NEC AMPACITY VALUE

1 RRH DETAIL
SCALE: N.T.S.

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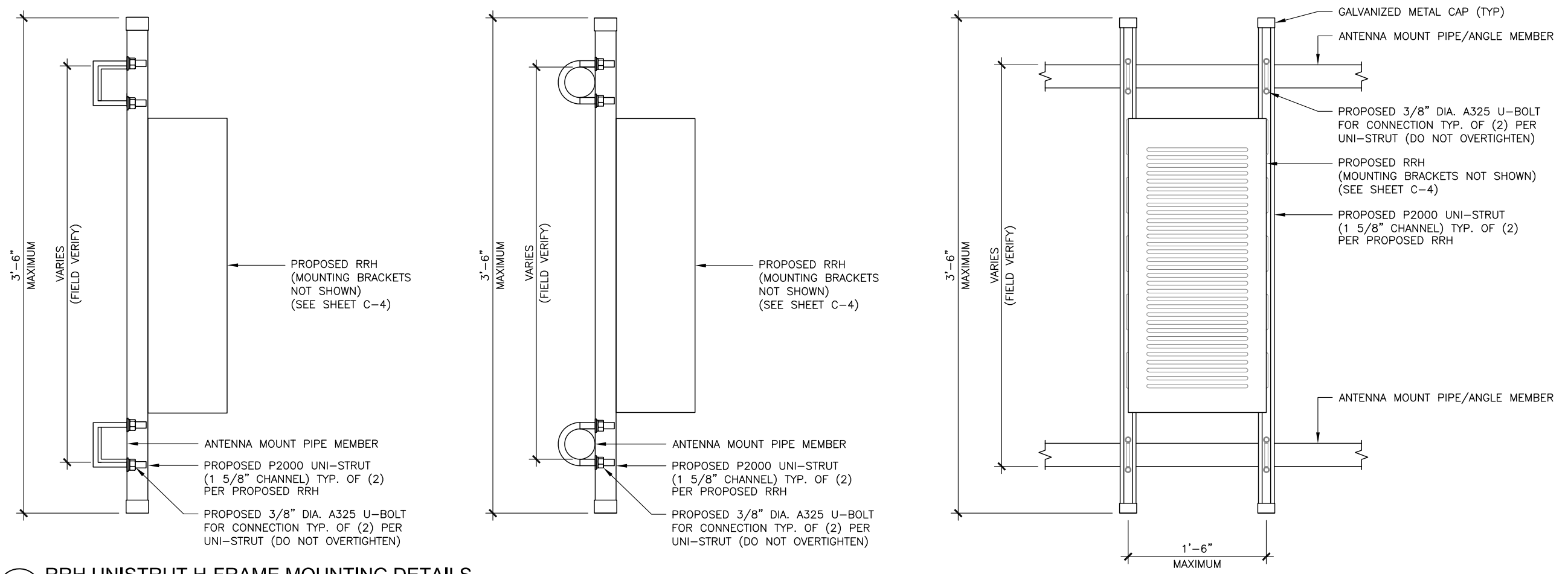
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D	6/10/20	MTJ	CONSTRUCTION

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REVISION: 0
SHEET NUMBER: C-4.1



1 RRH UNISTRUT H-FRAME MOUNTING DETAILS
SCALE: N.T.S.

USID: 3939
FA: 10072888
TULIP AVE

7051 CARROL STREET
TAKOMA PARK, MD 20912
EXISTING ROOFTOP

PROJECT NO: 142211.003.01

CHECKED BY: FWP

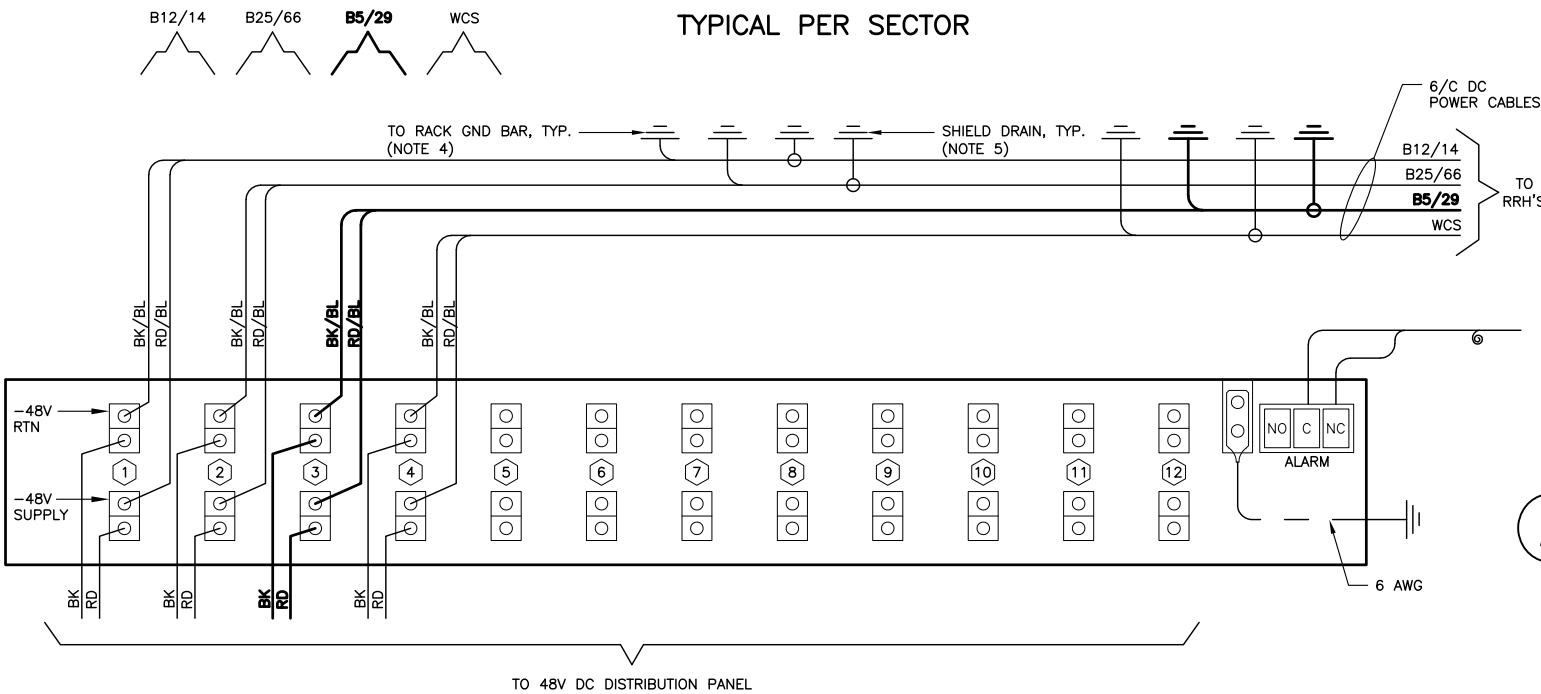
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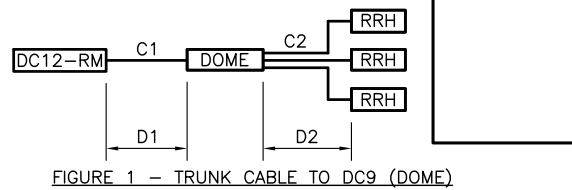
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REVISION: 0 SHEET NUMBER: E-1



- NOTES:
- SEE SYSTEM DIAGRAM FOR DC POWER CABLE CONDUCTOR SIZES.
 - CABLE TERMINALS FOR POWER CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE FOR 1/4"-20 STUDS.
 - CABLE TERMINAL FOR GROUND CONNECTION SHALL BE COMPRESSION TYPE, 2-HOLE 1"-CENTERS FOR 1/4"-20 STUDS.
 - CONNECTIONS TO RACK GROUND BAR SHALL BE MADE WITH 2-HOLE COMPRESSION TERMINALS.
 - WHEN SHIELDED CABLE IS USED, CONNECT CABLE SHIELD DRAIN WIRE TO RACK GROUND BAR. THIS CONNECTION SHALL BE INDEPENDENT OF THE CABLE GROUND WIRE CONNECTION.
 - TURN BACK AND STORE UNUSED CONDUCTORS.

1 INDOOR DC SURGE SUPPRESION WIRING DIAGRAM
SCALE: N.T.S.

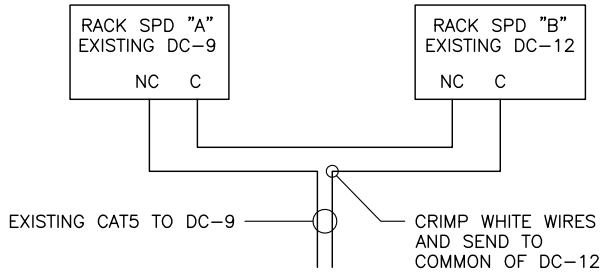


MAXIMUM CABLE LENGTHS FOR FIGURE 1

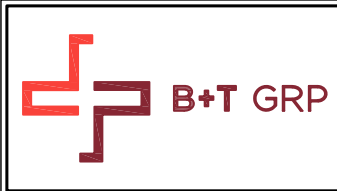
CABLE	D1/D2 LENGTH (FT)		
	8 AWG	10 AWG	12 AWG
C1	265	165	104
C2	16	16	16

- NOTES:
- CABLE LENGTHS ARE APPLICABLE FOR ALU 700MHZ & AWS FREQUENCY RRH MODELS.
 - NOMINAL SYSTEM VOLTAGE IS -48V DC, SUPPLIED FROM A 48V BATTERY. NORMAL OPERATING VOLTAGE IS 52V.
 - CABLE LENGTHS BASED ON ROSENBERGER CABLES.

2 LTE CONDUCTOR SIZES
SCALE: N.T.S.



3 DC-9/DC-12 ALARM DAISY CHAIN DETAIL
SCALE: N.T.S.



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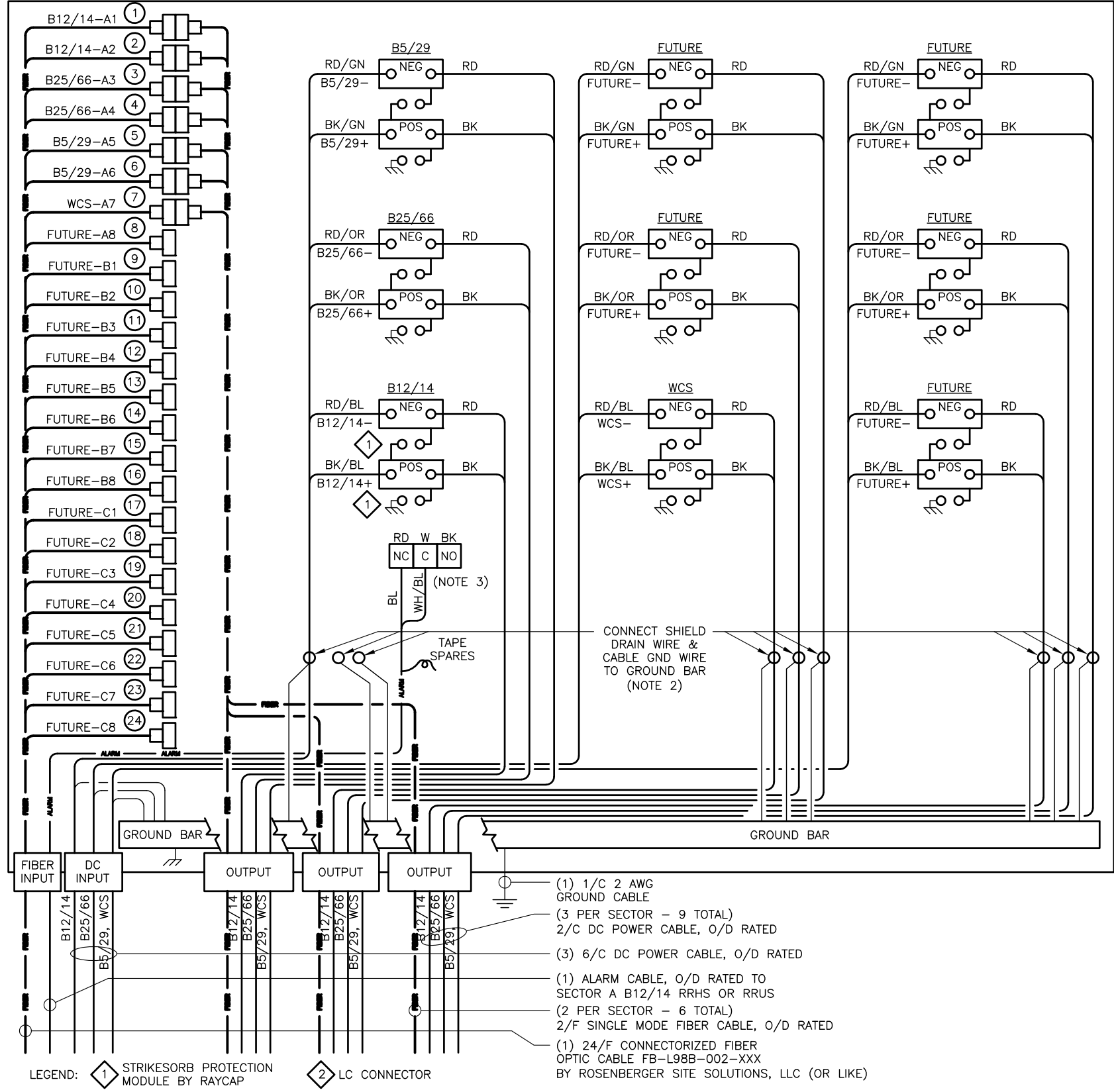
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SHEET NUMBER: E-2

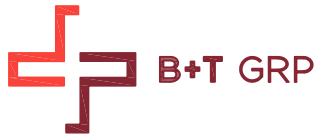
TYPICAL PER SECTOR



CONNECTION DIAGRAM DC SURGE SUPPRESSION
SYSTEM DC9-48-60-24-16PC-EV (BY RAYCAP)

1 DC SURGE PROTECTION SYSTEM
SCALE: N.T.S.

- NOTES:
- SEE SYSTEM DIAGRAM FOR CONDUCTOR SIZES.
 - WHEN SHIELDED CABLE IS USED, CONNECT CABLE SHIELD DRAIN WIRE AND GROUND WIRE TO GROUND BAR.
 - INSTALL RAYCAP PROVIDED LOOP-BACK CONNECTOR ON THE LAST ACTIVE (POWERED) MODULE WHEN FEWER THAN 6 RRHS OR RRUS ARE DEPLOYED.



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REVISION: SHEET NUMBER:

0 E-2.1

DATA SHEET

DC Surge Protection Solutions - Outdoor Rated

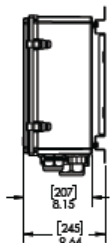
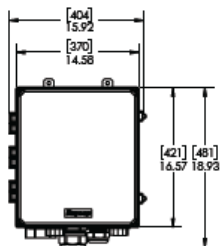
DC9-48-60-24-PC16-EV

Overvoltage Protection and Fiber Distribution/Cable Management Junction Box

Rooftop

The DC9-48-60-24-PC16-EV is designed to be the most robust lightning and power surge protector available for rooftop equipment in distributed node B or e-node B applications. The flexible design provides electrical protection and fiber distribution cable management at rooftop or toptop sectors. The solution employs the patented Strikesorb® 30-V1-2CEV surge protective device (SPD), capable of providing 12.5kA (10/350µs) of surge capacity for up to 9 -48V DC circuits.

powered by
Strikesorb®



Features

- Provides protection for nine individual -48V DC Remote Radio Heads
- Fiber connections for up to 24 pair of fiber
- Simplifies inter-connectivity and cable management for DC conductors
- Impulse discharge current of 12.5kA 10/350 µs
- UL 1449 4th Edition Type 2 surge protective device
- IEC 61643-11 Class I protection for DC applications
- NEMA 4x rated enclosure
- Unit ships with conduit fittings for input of DC power and fiber. Gland kits available for applications needing glands.
- Galvanized steel bracket with mounting options to include Pole Mount, Wood Pole, Wall Mount or Banding.
- Patent pending

Benefits

- Strikesorb modules are fully recognized components to UL 1449 4th Edition, meeting all intermediate and high current fault requirements to facilitate use in original equipment manufacturers (OEM) applications. Strikesorb modules are also VDE certified according to IEC 61643-11 standard
- Strikesorb offers unique maintenance-free protection against direct lightning currents
- NEMA 4x enclosure allows for indoor or outdoor installation

Raycap

www.raycap.com

Strikesorb is a registered trademark of Raycap
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G02-01-811 191101

SPECIFICATIONS

DC Surge Protection Solutions - Outdoor Rated

DC9-48-60-24-PC16-EV

Overvoltage Protection and Fiber Distribution/Cable Management Junction Box

powered by
Strikesorb®

Electrical

Model Number	DC9-48-60-24-PC16-EV
OEQ / ANT Number	CEQ. 44867
Number of Circuits Protected	9
Surge Protective Device (SPD) Type per UL 1449 4th Edition	Type 2
Surge Protective Device Class per IEC 61643-11	Class I
Nominal Operating DC Voltage [U _n]	-48 VDC
Maximum Continuous Operating DC Voltage [V _{dcmax}]	60 VDC
Impulse Discharge Current [I _{imp}] per IEC 61643-11	12.5 kA 10/350 µs
Voltage Protection Level [U _p] at 12.5kA per IEC 61643-11	160 V
Voltage Protection Level [U _p] at 6kA per IEC 61643-11	145 V
Voltage Protection Rating (VPR) per UL 1449 4th Edition	330 V
Suppression Technology	MOV
Strikesorb Module Type 20A (UL 1449 4th edition)	30-V1-2CEV
Protection Modes:	Normal Mode -48V to Return Common Mode Return to Ground

Mechanical

Connection Terminal (Suppression) Method	Compression lug 2 hole, #10, 5/8 pitch, 12-4 AWG [3.31-21 mm ²]
Connection Terminal (Ground) Method	Compression lug 2 hole, #10, 5/8 pitch, 12-4 AWG [3.31-21 mm ²]
Connection Terminal (Drain) Method	Compression lug 1 hole, #10, 12-4 AWG [3.31-21 mm ²]
Connection Terminal (Fiber) Method	LC-LC Single Mode
Operating Temperature (°C)	-35° C to +65° C
Storage Temperature (°C)	-40° C to +80° C
Cold Temperature Cycling IEC 61300-2-22	-30° C to +60° C 200 hrs @ 5 PSI
Resistance to Aggressive Materials OEI IEC 61073-2	Including Acids and Bases
UV Protection ISO 4892-2 Method A	Xenon-Arc 2160 hrs UL F-1
Enclosure Type	Outdoor - NEMA 4x Rated
Enclosure Dimensions (L x W x H)	16.34" x 16.57" x 8.19" [415 x 421 x 208 mm]
Weight	34.9 lbs [15.83 kg]
Combined Wind Loading	Sustained 150 mph Sustained: 110.5 lbs [601 N] Gust 195 mph Gust: 186.8 lbs [1018 N]

Available Kits

DC9-48-60-24-PC16-EV / 8AWG Gland Kit	CEQ. 44870
DC9-48-60-24-PC16-EV / 6AWG Gland Kit	CEQ. 44864
DC9-48-60-24-PC16-EV / 4AWG Gland Kit	CEQ. 44865

Standards Compliance & Certifications

Strikesorb modules are compliant to the following Surge Protection Device Standards:	
Standards:	UL 1449 4th Edition: 2011, IEC 61643-11: 2011, EN 61643-11: 2012, IEEE C62.11: 2005, IEEE C62.41: 2002, IEEE C62.45: 2002, NEMA-LS-1
Certifications:	UL, VDE, CE

Each gland kit contains three glands and three inserts. Insert hole sizes are based on which kit is ordered, 4AWG, 6AWG or 8AWG.



AWG=American Wire Gauge



Raycap

www.raycap.com

G02-01-811 191101

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FA: 10072888
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REVISION: 0

SHEET NUMBER: E-3

TO CRGB SECTION "P" 2 AWG
TO CRGB SECTION "I" 2 AWG
RACK "P" GROUND BAR (NOTE 2)
RACK "I" GROUND BAR (NOTE 2)

10 AWG TO RACK "I" GND BAR
10 AWG TO RACK "I" GND BAR
10 AWG TO RACK "I" GND BAR
10 AWG TO RACK "I" GND BAR

6 AWG TO RACK "I" GND BAR

TO RACK "P" GROUND BAR

TO BETA
TO GAMMA

TO RAYCAPS (REFER 1/E-3.1)
B12/14
B25/66
B5/29
WCS

ALPHA SECTOR (TYPICAL PER SECTOR)

FROM BETA
FROM GAMMA

24V (+)
0V
CRGB

PART OF DC POWER PLANT

24V TO -48V CONVERTER WITH INTEGRAL -48V BREAKER PANEL (NOTE 2)

+24V INPUT FEED A (NOTE 4)
+24V INPUT FEED B (NOTE 4)
FACTORY WIRING
+GND O/P (NOTE 5)
- GND I/P (NOTE 4)
0V

ALARM TERMINAL BLOCK

ALARM CABLE TO 66 BLOCK (THIS SHEET)

NOTES (INDOOR)

1. LABEL THE DC POWER CABLES WITH FIBER TAGS AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-700B/C+".
2. INSTALL ON LTE EQUIPMENT RACK.
3. DELETED
4. CABLE TERMINALS FOR +24V INPUT FEED A, FEED B AND REFERENCE GROUND SHALL BE 2-HOLE: 3/8" ON 1" CENTER.
5. INSTALL CABLE TERMINALS FOR FEED A AND FEED B RETURN BACK-TO-BACK ON OPPOSITE SIDES OF PAD.
6. CABLE TERMINALS FOR CHASSIS GROUND SHALL BE 2-HOLE, 1/4" ON 5/8" CENTER.
7. SEE 2/E-1 FOR DC POWER CABLE SIZES AND MAXIMUM CABLE LENGTH.
8. SEE 1/E-1 FOR DC12-RM INTERNAL WIRING.
9. A JUNCTION BOX IS REQUIRED WHEN FIBER OPTIC CABLES ARE INSTALLED IN CONDUIT AS SCOPED BY MARKET.
10. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.
11. CONVERTER REFERENCE GROUND IS NOT REQUIRED WHEN CONVERTER AND 24V DC POWER PLANT ARE ON THE SAME RACK OR ENCLOSURE.
12. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
13. SEE ALARM BLOCK ASSIGNMENT DETAIL FOR ALARM CABLE CONNECTIONS.
14. ADD DC SURGE MODULES TO EXISTING RACK MOUNTED SURGE UNITS AS REQUIRED.

1 WIRING DIAGRAM
SCALE: N.T.S.

23

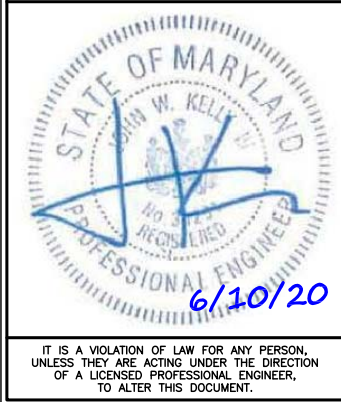


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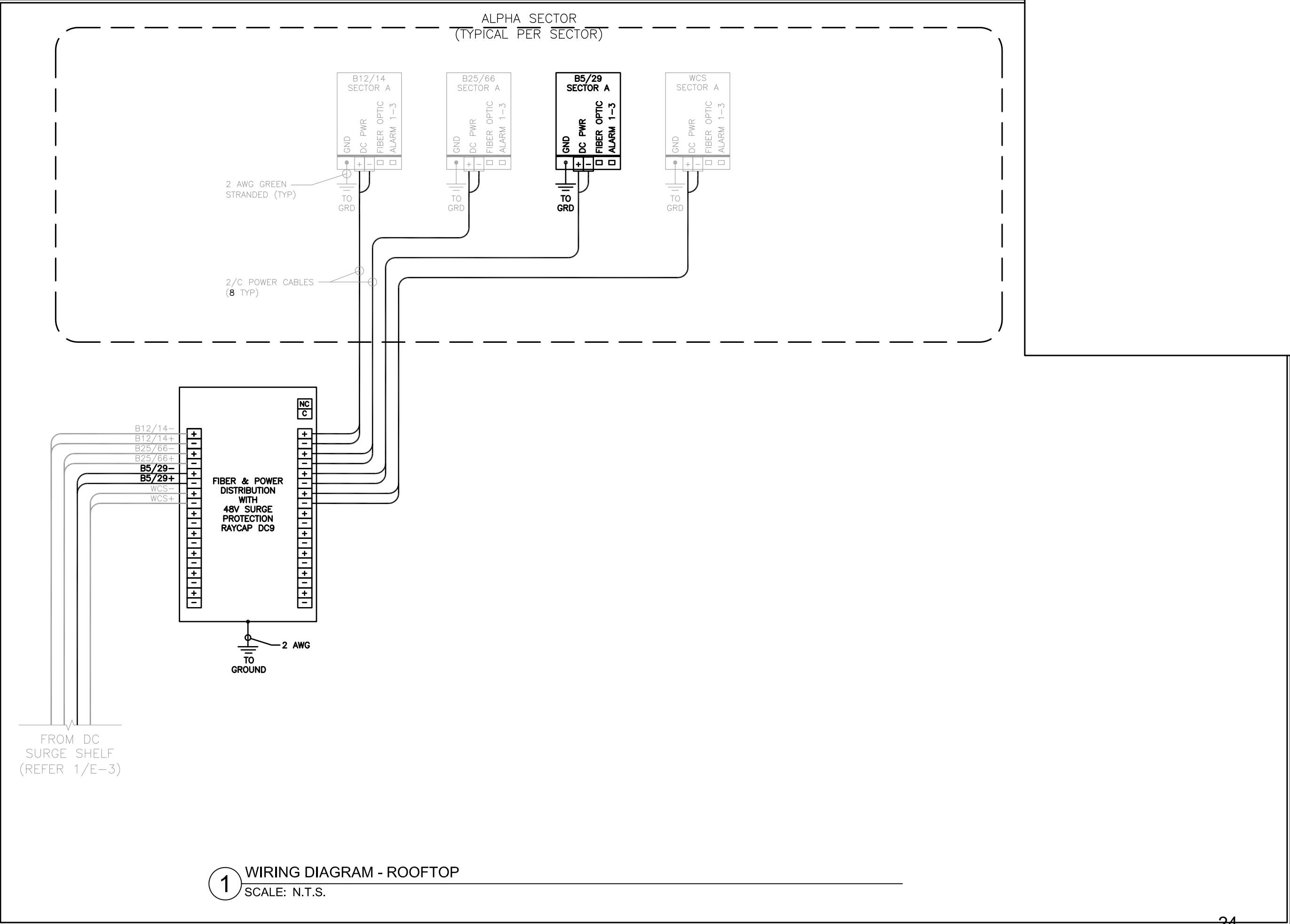
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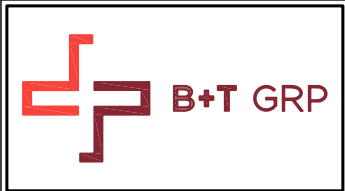
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1 WIRING DIAGRAM - ROOFTOP
SCALE: N.T.S.




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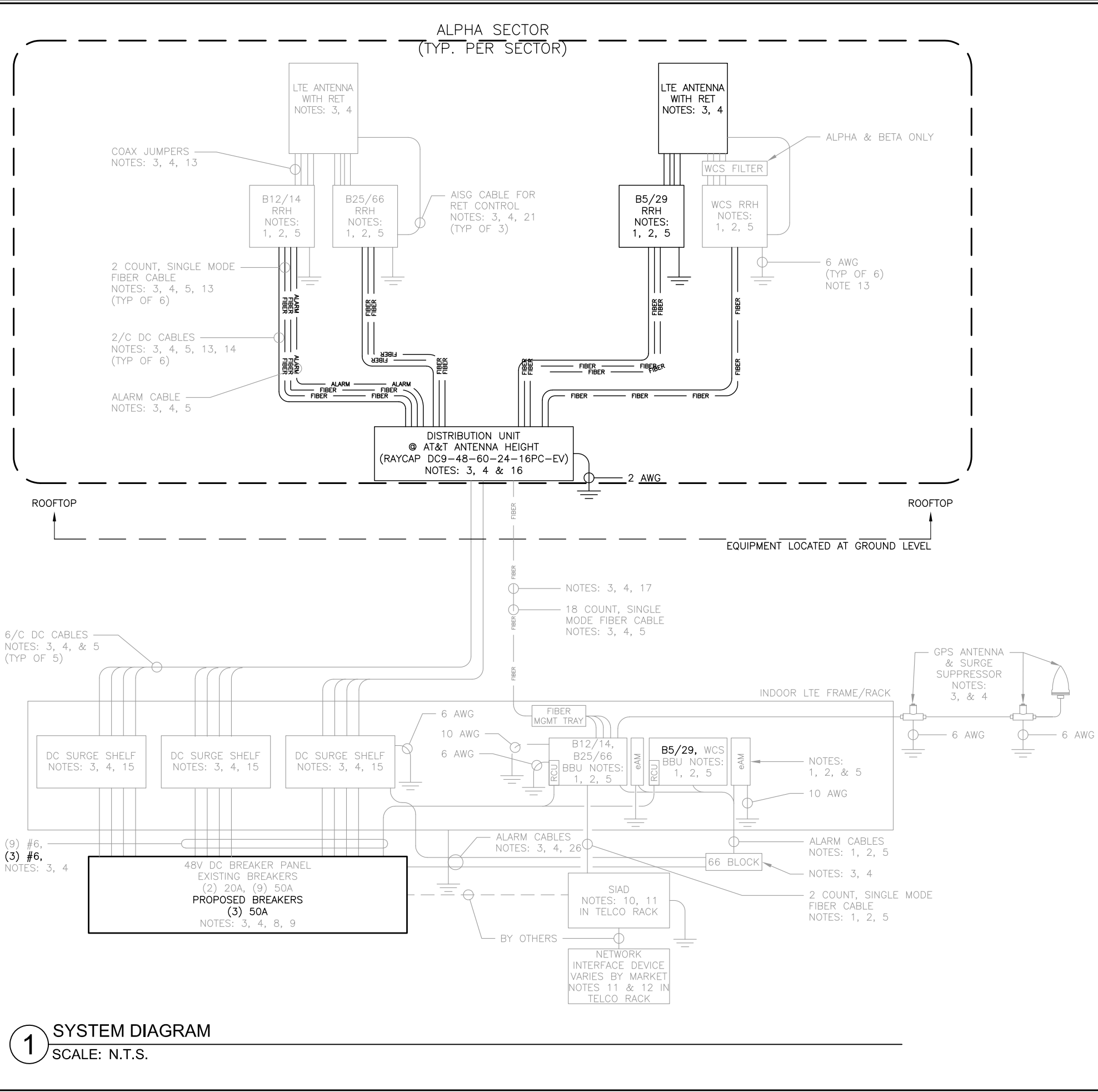
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SHEET NUMBER: E-4




- NOTES:
1. FURNISHED BY OEM/AT&T.
 2. INSTALLED BY OEM OR AS SCOPED BY MARKET.
 3. FURNISHED BY SMARTLINK.
 4. INSTALLED BY SMARTLINK.
 5. FINAL CONNECTION BY OEM OR AS SCOPED BY MARKET.
 6. OPEN END OF LFMC TO BE LEFT WEATHERPROOFED UNTIL TERMINATED.
 7. DELETED
 8. PART OF DC POWER PLANT. BREAKERS SPECIFIED SEPARATELY.
 9. BREAKERS TO BE TAGGED AND LOCKED OUT.
 10. SIAD IS FURNISHED AND INSTALLED BY OTHERS AND INCLUDES POWER CONNECTIONS AND FIBER TO THE UNIT OR AS SCOPED BY MARKET. WHEN IN SMARTLINK SCOPE, INSTALL 10 AWG CHASSIS GROUND, PROVIDE (2) 10A BREAKERS FROM A 24V DC POWER SOURCE OR (2) 5A BREAKERS FROM A 48V DC POWER SOURCE AND CONNECT USING MFR POWER CABLE WITH SPECIAL CONNECTOR.
 11. EQUIPMENT LOCATED ON EXISTING TELCO RACK.
 12. LEC TO FURNISH AND INSTALL NETWORK INTERFACE DEVICE.
 13. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
 14. SEE 2/E-1 FOR DC POWER CABLE SIZES.
 15. DC SURGE SHELF SHALL BE RAYCAP DC12-48-60-RM. SEE 1/E-1 FOR INTERNAL WIRING DIAGRAM.
 16. SEE 1/E-2 FOR DC9 INTERNAL WIRING DIAGRAM.
 17. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
 18. MAX DC CABLE LENGTH IS 16 FEET.
 19. DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING, TYPE RHH/RHW UL LISTED FOR 90°C DRY/75°C WET INSTALLATIONS.
 20. GROUNDING WIRES SHALL BE COPPER, THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
 21. RET CONTROL FROM THE RRH IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
 22. FIBER OPTIC TRUNKS SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
 23. MAXIMUM 4/0 AWG CABLE LENGTH FROM 24V DC POWER PLANT TO CONVERTER SHALL NOT EXCEED 44 FT.
 24. PROVIDE GROUND WIRES FOR ENHANCED ALARM MODULE (eAM) WHEN EMPLOYED BY MARKET.
 25. SEE AT&T STANDARDS FOR GPS ANTENNA AND SURGE SUPPRESSOR COAXIAL CABLE CONNECTION.
 26. SEE AT&T STANDARDS FOR ALARM CABLE REQUIREMENTS.

1 SYSTEM DIAGRAM
SCALE: N.T.S.








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SHEET NUMBER: E-5

EXTERNAL ALARM #

WMS ACTIVE STATE

LUCENT PUNCH DOWN ON PIN COLUMN #1

INSTALL BRIDGE CLIPS ON COLUMN #2 & #3

EQUIPMENT PUNCH DOWN ON PIN COLUMN #4

ALARM SETTING N/C OR N/O

1	OPEN	PORT #0	WHITE/BLUE BLUE/WHITE	1 - - - - 1	FUTURE	
2	OPEN	PORT #1	WHITE/ORANGE ORANGE/WHITE	2 - - - - 2	FUTURE	
3	CLOSED	PORT #2	WHITE/GREEN GREEN/WHITE	3 - - - - 3	AC FAILURE (ACF)	NOT REQUIRED
4	OPEN	PORT #3	WHITE/BROWN BROWN/WHITE	4 - - - - 4	DOOR OPEN (INTRUSION)	N/C
5	CLOSED	PORT #4	WHITE/SLATE SLATE/WHITE	5 - - - - 5	BATTERIES ON DISCHARGE (BD)	NOT REQUIRED
6	CLOSED	PORT #5	RED/BLUE BLUE/RED	6 - - - - 6	GMT FUSE ALARM	NOT REQUIRED
7	CLOSED	PORT #6	RED/ORANGE ORANGE/RED	7 - - - - 7	BATTERY DISCONNECT	NOT REQUIRED
8	OPEN	PORT #7	RED/GREEN GREEN/RED	8 - - - - 8	FUTURE	
9	OPEN	PORT #8	RED/BROWN BROWN/RED	9 - - - - 9	2nd RAYCAP DC SURGE ARRESTOR	N/C
10	OPEN	PORT #9	RED/SLATE SLATE/RED	10 - - - - 10	HIGH TEMP	N/C
11	CLOSED	PORT #10	BLACK/BLUE BLUE/BLACK	11 - - - - 11	Rx AIT	NOT REQUIRED
		PORT #11	BLACK/ORANGE ORANGE/BLACK	12 - - - - 12	FUTURE	
		PORT #12	BLACK/GREEN GREEN/BLACK	13 - - - - 13	FUTURE	
		PORT #13	BLACK/BROWN BROWN/BLACK	14 - - - - 14	FUTURE	
		PORT #14	BLACK/SLATE SLATE/BLACK	15 - - - - 15	FUTURE	
		PORT #15	YELLOW/BLUE BLUE/YELLOW	16 - - - - 16	FUTURE	
		PORT #16		17 - - - - 17	FUTURE	
		PORT #17		18 - - - - 18	FUTURE	
		PORT #18		19 - - - - 19	FUTURE	
		PORT #19		20 - - - - 20	FUTURE	
		PORT #20		21 - - - - 21	FUTURE	
		PORT #21		22 - - - - 22	FUTURE	
		PORT #22		23 - - - - 23	POWER MAJOR (PMJ)	N/C
		PORT #23		24 - - - - 24	POWER MINOR (PMN)	N/C
		PORT #24		25 - - - - 25	RAYCAP DC SURGE ARRESTOR	N/C
				26 - - - - 26		
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NOTES:

- ALL LUCENT CABLE TO BE ROUTED FROM LEFT SIDE OF THE 66 BLOCK
- ALL EQUIPMENT CABLE TO BE ROUTED FROM RIGHT SIDE OF 66 BLOCK
- ALL EQUIPMENT CABLING NEEDS TO BE LABELED
- 66 BLOCK COVER REQUIRED
- BRIDGE CLIPS ARE REQUIRED

LABELING:


- LABEL COVER ("LTE EXTERNAL ALARM BLOCK")
- LABEL RAYCAP DC SURGE ARRESTOR ALARM CABLE ("DC SURGE ARRESTOR" "2nd DC SURGE ARRESTOR")
- LABEL MCU/PDU/DSX/SIAD POWER CABLES ("MCU" "PDU" "DSX" "SIAD" "GMT FUSE")
- LABEL GMT FUSE CABLE ("GMT FUSE ALARM")
- LABEL FIBER JUMPER FROM SIAD TO LTE 700 BBU WITH ("LTE 700 FIBER").
- LABEL FIBER PANEL PORTS WITH ("ALPHA 700" "BETA 700" "GAMMA 700")
- LABEL ALL DC BREAKER IF REQUIRED
- UPDATE ALL DC BREAKER SCHEDULE IN DC POWER PLANT & DC TO DC CONVERTOR.


1


66 BLOCK ALARM DETAIL FOR LTE

SCALE: N.T.S.

26








USID: 3939
FA: 10072888
TULIP AVE
7051 CARROL STREET
TAKOMA PARK, MD 20912
EXISTING ROOFTOP

PROJECT NO: 142211.003.01

CHECKED BY: FWP

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
A	4/6/20	STH	PRELIMINARY REVIEW
B	6/4/20	GEH	PRELIMINARY REVIEW
C	6/10/20	MTJ	PRELIMINARY REVIEW
D	6/10/20	MTJ	CONSTRUCTION

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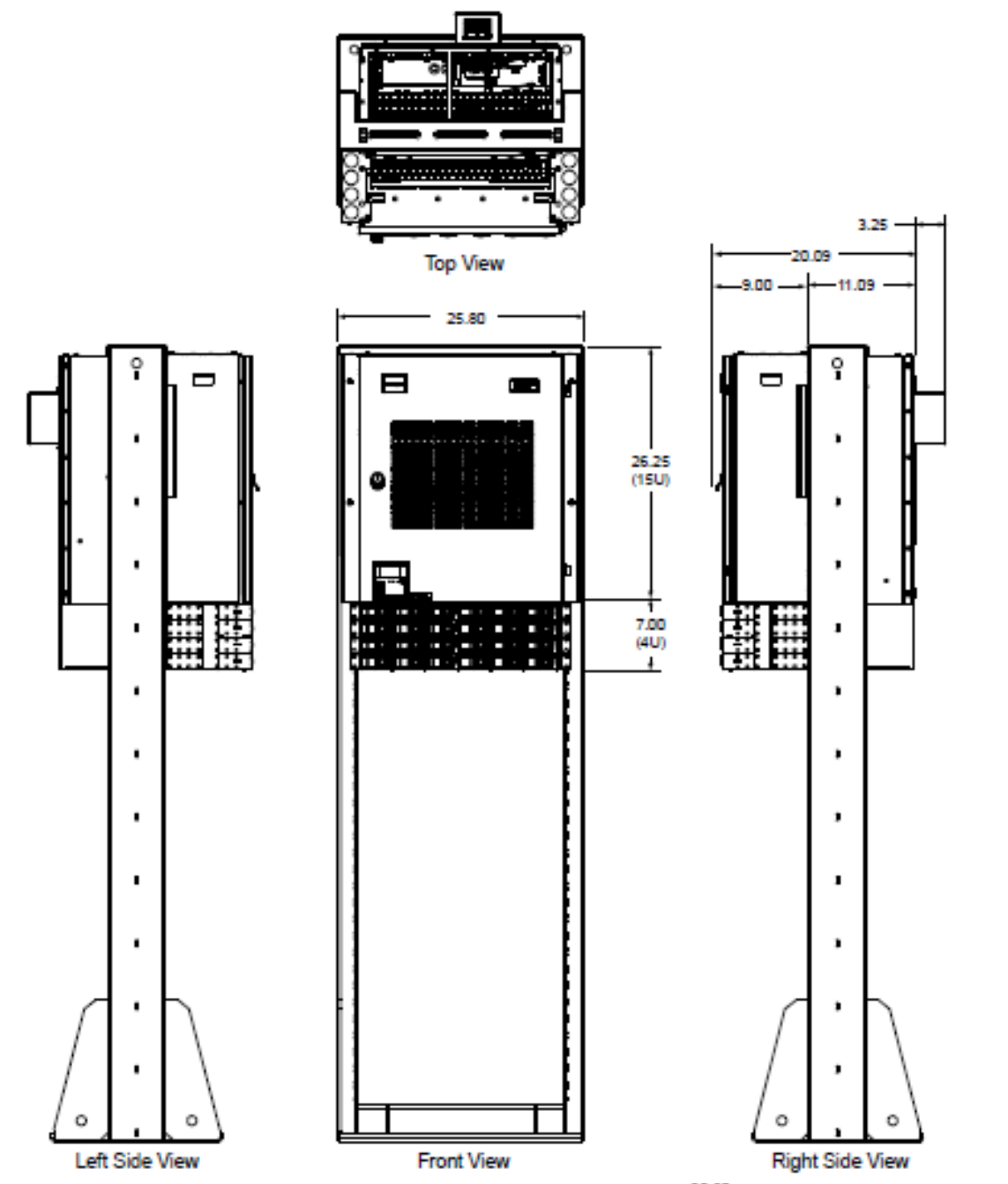
6/10/20

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REVISION: 0

SHEET NUMBER: E-6

OVERALL DIMENSIONS:
ALL DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
WEIGHT OF CABINET : 500 LBS



Top View

Left Side View

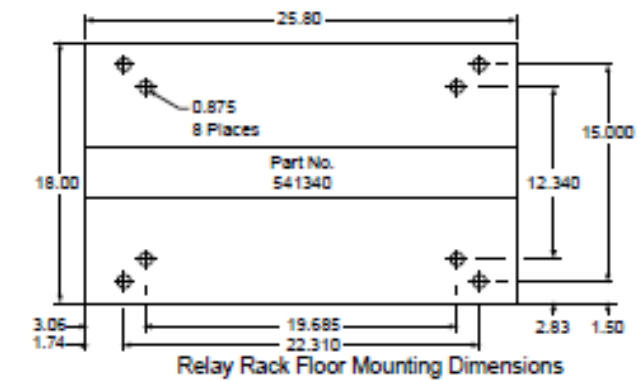
Front View

Right Side View

Dimensions: 25.80, 26.25 (15U), 7.00 (4U), 20.09, 9.00, 11.09, 3.25

Notes:

- 1. All dimensions are in inches.
- 2. Finish: Textured Gray
- 3. Relay Rack Dimensions: 84"H x 25.8"W x 18"D
- 4. Relay Rack Available Mounting Positions: 28RU (1RU = 1.75") (accepts #12 hardware)
- 5. Weight: 500 lbs.



Relay Rack Floor Mounting Dimensions

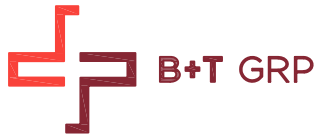
Dimensions: 25.80, 18.00, 0.875 (8 Places), 15.000, 12.340, 19.685, 22.310, 3.05, 1.74, 2.83, 1.50

Part No. 541340

1

INDOOR EMERSON NETSURE 721 -48V DC POWER SYSTEM
SCALE: N.T.S.

27



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0 E-6.1

eSure™ Converter C48/24-1500

EMERSON
Network Power

Technical Specifications

DC Input	
Input Voltage, Nominal	48VDC
Input Voltage, Permitted Variation	41VDC to 58.5VDC
Max Input Current	39.5A

DC Output	
Output Voltage, Adjustment Range	24 to 28 VDC
Output Power	1500W@Vout>24VDC
Output Power, Derated for Input Voltage	See diagram
Output Current	63A
Output Current Limit Set Point	6.3 to 63A
Efficiency	>95%
Psophometric Noise (system)	<2 mV; output noise<38dBmc
Temperature Derating	See diagram

Control and Monitoring	
Converter Alarm and Signaling	Alarm and status reported via CAN bus to system controller
Visual Indications	Green LED: Normal Operation Yellow LED: Alarm Red LED: Failure Flashing Red LED: Fan Failure

Environmental	
Temperature Range, Operating	-40 to +80°C, -40 to +176°F
Temperature Range, Storage	-40 to +85°C, -40 to +185°F
Relative Humidity	0 to 95%
Altitude	2000 m, 6560 ft at full power
EMC	ETSI EN 300 386 class A, FCC CFR 47 Part 15 class A, Telcordia GR-1089-CORE class A
Safety	IEC 60950, EN 60950, UL 60950

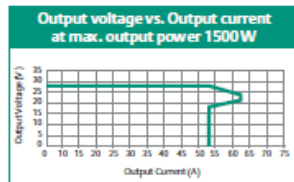
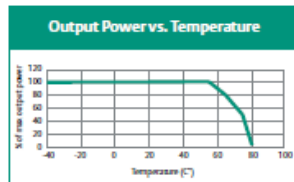
Mechanics	
Dimensions (H x W x D)	42x 84.5x252.5mm/1.65x3.33x9.94 inches
Weight	1.13kg/2.49lbs

Other Parts	
Controller Units	See separate ACU/ACU+ and SCU/SCU+ datasheets

Ordering Information

Model Number	Description
TC48241500	Converter 48VDC/24VDC 1500W

Diagrams



eSure™ Rectifier R48-2000e3

EMERSON
Network Power

Technical Specifications

AC Input	
Input Voltage, Nominal	200 to 250 VAC
Input Voltage, Permitted Variation	85 to 300 VAC
Line Frequency	45 to 65 Hz
Max Input Current	12 A
Power Factor	>0.99 for 50%-100% load
THD (Total Harmonic Distortion)	≤5% for 50%-100% load at 208Vac, 220Vac, 230Vac, 240Vac

DC Output	
Output Voltage, Adjustment Range	~42 to ~58 V DC
Output Power	2000W Maximum
Output Power, Derated for Input Voltage	See diagram
Output Current	42A@~48VDC
Output Current Limit Set Point	0 to 42A
Peak Efficiency	96.2%
Temperature Derating	Full output power up to +65°C at input voltage range >200 - 300VAC (>176 - 200VAC, +55°C)

Control and Monitoring	
Rectifier Alarm and Signaling	Alarm and status reported via CAN bus to system controller
Visual Indications	Green LED: Normal Operation Yellow LED: Alarm Red LED: Failure

Environmental	
Temperature Range, Operating	-40 to 80°C, -40 to +176°F (See diagram for de-rating)
Temperature Range, Storage	-40 to +70°C, -40 to +158°F
Relative Humidity	0 to 95%
Altitude	2000 m, 6560 ft at full power
EMC	ETSI EN300 386: 2005, Class B. Other than telecom centers. FCC CFR 47 Part 15, Class B conducted and radiated EN55022, Class B conducted and radiated CISPR22, Class B conducted and radiated Telcordia GR-1089-CORE issue 6
Safety	UL 60950-1; EN 60950-1; IEC 60950

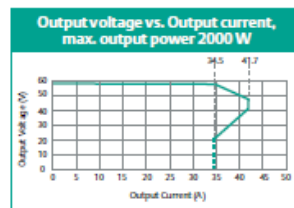
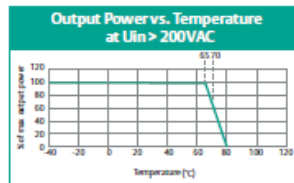
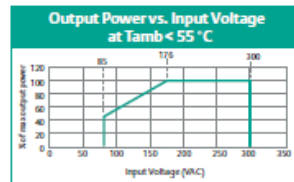
Mechanics	
Dimensions (H x W x D)	41x84.5x252.5mm/1.61x3.33x9.94 inches
Weight	1.13kg/2.49lbs

Other Parts	
Controller Units	See separate controller datasheet

Ordering Information

Part Number	Description
1R482000e3	High efficiency eSure™ rectifier, ~48VDC, 2000W

Diagrams





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TAKOMA PARK, MD 20912
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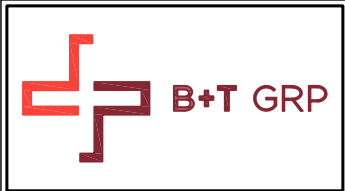
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0 | E-7

STEP 1: ENTER QUANTITIES OF EQUIPMENT & DC OPERATING VOLTAGE:			
STEP 2: ENTER DC PLANT TYPE FROM DROP-DOWN MENU: (*GENERIC* +24V or -48V DC PLANT CAN BE SELECTED FOR ANY MANUFACTURER'S DC PLANT) <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">Emerson STD-48VDC NetSure 721 Plant 800A NEQ15920</div> -48V PRIMARY DC PLANT SPECIFIED (DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)			
STEP 2A: THIS STEP ONLY SHOWN IF "GENERIC" DC PLANT PLANT TYPE HAS BEEN SELECTED:			
STEP 2B: THIS STEP ONLY SHOWN IF TYCO GPS2424 DC PLANT PLANT TYPE HAS BEEN SELECTED:			
STEP 3: DO YOU WANT TO CONFIGURE A STANDARD STAND-ALONE DC CONVERTER SYSTEM? <input type="checkbox"/> N			
<small>NOTE: IF YOU SELECT "Y" ANY INTEGRATED DC PLANT CONVERTER OPTIONS WILL BE BYPASSED</small>			
STEP 4: ENTER INDOOR SITE BUILDING/SHELTER DATA: <small>(Square Footage used for Interior AC Lighting Load calculation)</small> SELECT SITE BUILDING TYPE & SIZE: OTHER SPECIFY TOTAL FLOOR SPACE (SQUARE FEET): 8			
STEP 5: ENTER SITE HVAC SYSTEM DATA: SPECIFY INDIVIDUAL HVAC UNIT SIZE (TONS): 0 SPECIFY QUANTITY: 0 DOES SITE HAVE ADDITIONAL HVAC (DIFFERENT SIZE)? <input type="checkbox"/> N ARE THERE SITE HVAC HEATING UNITS? <input type="checkbox"/> N TOTAL SPECIFIED SITE HVAC: 0 TONS ESTIMATED HVAC REQUIREMENT: TWO 3-TON UNITS SPECIFIED HVAC NOT SUFFICIENT <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">THIS TOOL DOES NOT APPLY TO SITES THAT ARE EQUIPPED WITH FREE STANDING DIRECT AIR COOLING</div>			
STEP 6: ENTER SITE STATIONARY GENERATOR DATA: DOES SITE HAVE A STATIONARY GENERATOR? <input type="checkbox"/> N ESTIMATED CAPACITY REQUIRED: 35 KW (NO SITE GENERATOR)			
STEP 7: ENTER SITE BATTERY CONFIGURATION DATA: SELECT SINGLE STRING BATTERY CAPACITY (AH): 170 SPECIFY TOTAL QUANTITY OF BATTERY STRINGS: 5 TOTAL SITE BATTERY CAPACITY (AH): 850 <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">NOTE: STANDARD BATTERY CAPACITY HAS BEEN SPECIFIED</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">NOTE: 12 VOLT MONOBLOCK BATTERIES - 4 batteries per -48V String</div> <div style="border: 1px solid black; padding: 2px; margin-top: 5px;">ESTIMATED BATTERY RESERVE TIME: 4.55 HOURS (NO SITE GENSET) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">SITES WITH STATIONARY GENSETS SHALL BE ENGINEERED WITH A MAX OF 3 SHELVES OF 100 AH BATTERIES <small>(3 shelves at 400 or 8 shelves at 120 Ah @ 1 OTHER SITES & MEMBERS OF A SOCIETY)</small></div> <div style="font-size: small; margin-top: 10px;">SITE POWER CALCULATION TOOL - VERSION 4.3 - October 17, 2017 R. BADGERO ANY QUESTIONS PLEASE CONTACT RICK BADGERO (RB6625@ATT.COM)</div></div>			

NOTE: LOAD VALUES FOR ANY EQUIPMENT CAN BE USER SPECIFIED ON THE POWER CONSUMPTION WORKSHEET - USER CHANGES TO DEFAULT LOAD VALUES ARE HIGHLIGHTED IN BRIGHT YELLOW			
RADIO HEADS - Outdoor			
QTY	RADIO HEADS - Outdoor	VOLTAGE	WATTS
0	RRUS 01 B2, B5 (80W)	48	0
0	RRUS 01 B12 (80W)	48	0
0	RRUS 11 B12 (2x30W)	48	0
0	RRUS 11 B2, B4, B5, B12 (2x40W)	48	0
0	RRUS 12 B2, B4, B5 (2x30W)	48	0
0	RRUS 32 B2 (4x40W)	48	0
0	RRUS 32 B30 (4x25W)	48	0
0	RRUS 32 B65A	48	0
0	RRUS A2 B2, B4, B12	48	0
0	RRUSE2 B29	48	0
0	RRUW B2, B5	48	0
0	AIR 21 (80W)	48	0
0	RRUS 4478 B14	48	0
(FUTURE)			
A-LU			
3	Avr5 B65A	48	3300
0	FDD RRH2x40-OTL (UHLA) B17	48	0
0	RRH2x40-OTL-AT (UHLB) B17	48	0
0	B25 RRH4x30 (UHFA) B25	48	0
0	B25 RRH2x50 (UHFA) B25	48	0
3	2X30W-880 B5	48	1935
0	2X30W-1900 B2	48	0
0	2X30W-1900A B2	48	0
0	RRH2x40-OTL-OE (UHLG) B29	48	0
3	RRH 474R (FRB) B14	48	3090
3	RRH4X25 B30	48	1245
(FUTURE)			
(FUTURE)			
RADIO HEADS - Indoor			
QTY	RADIO HEADS - Indoor	VOLTAGE	WATTS
0	RRUS 01 B2, B5 (80W)	48	0
0	RRUS 01 B12 (80W)	48	0
0	RRUS 11 B12 (2x30W)	48	0
0	RRUS 11 B2, B4, B5, B12 (2x40W)	48	0
0	RRUS 12 B2, B4, B5 (2x30W)	48	0
0	RRUS 32 B2 (4x40W)	48	0
0	RRUS 32 B30 (4x25W)	48	0
0	RRUS 32 B65A	48	0
0	RRUS A2 B2, B4, B12	48	0
0	RRUSE2 B29	48	0
0	RRUW B2, B5	48	0
0	AIR 21 (80W)	48	0
0	RRUS 4478 B14	48	0
(FUTURE)			
A-LU			
0	Avr5 B65A	48	0
0	FDD RRH2x40-OTL (UHLA) B17	48	0
0	RRH2x40-OTL-AT (UHLB) B17	48	0
0	B25 RRH4x30 (UHFA) B25	48	0
0	B25 RRH2x50 (UHFA) B25	48	0
0	2X30W-880 B5	48	0
0	2X30W-1900 B2	48	0
0			








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7051 CARROL STREET
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SHEET NUMBER: E-8

PANEL SCHEDULE																					
10072888		Tulip Ave								Intersect panel											
120/208V, 3 PHASE		200A MAIN BKR (COMMERCIAL PWR) 65 KAIC SERIES RATED								UL LISTED SERVICE ENTRANCE EQUIPMENT											
200A BUS, 10 KAIC																					
MAIN BREAKER RATING (A) :						200		SYSTEM VOLTAGE (V) :													
Type	DESCRIPTION	VA	c/nc	BKR	POSN	L1	L3	L2	POSN	BKR	c/nc	VA	DESCRIPTION	Type							
single	LIGHTS(OFF)	0	nc	20	1	2150			2	40	c	2150	RECT 1/2	dual							
single	GFCI(OFF)	0	nc	20	3			2150	4		c	2150									
dual	AIR COND 1	1095	nc	20	5		3245		6	40	c	2150	RECT 3/4	dual							
		1095	nc		7	3245			8		c	2150									
dual	AIR COND 2(OFF)	0	nc	20	9			2150	10	40	c	2150	RECT 5/6	dual							
		0	nc		11		2150		12		c	2150									
dual	AIR COND 3	1095	nc	20	13	3245			14	40	c	2150	RECT 7/8	dual							
		1095	nc		15			3245	16		c	2150									
dual	AIR COND 4	1095	nc	20	17		3245		18	40	c	2150	RECT 9/10	dual							
		1095	nc		19	3245			20		c	2150									
dual	AIR COND 5(OFF)	0	nc	20	21			0	22	40	c	0	RECT 11/12	dual							
		0	nc		23		0		24		c	0									
dual	AIR COND 6	1095	nc	20	25	2190			26	20	c	1095	AC 7	dual							
		1095	nc		27			2190	28		c	1095									
single	FIBER TOWER	0	nc	15	29		0		30	20	nc	0	SPARE	single							
	NOT AVAILABLE				31	0			32				NOT AVAILABLE								
	NOT AVAILABLE				33			0	34				NOT AVAILABLE								
	NOT AVAILABLE				35		0		36				NOT AVAILABLE								
	NOT AVAILABLE				37	0			38				NOT AVAILABLE								
	NOT AVAILABLE				39			0	40				NOT AVAILABLE								
	NOT AVAILABLE				41		0		42				NOT AVAILABLE								
PHASE TOTALS (VA):						14075	8640	9735													
CURRENT PER PHASE (A):						117	72	81	Amperes/phase cannot exceed main breaker rating												
PANEL TOTAL (VA):						32450		Legend: c = continuous, nc = non-continuous													
PANEL CAPACITY (kVA):						72.1		CONNECTED LOAD (kVA):		32.5											
PANEL LOADING (TOTAL) (kVA):						32.5															
SPARE CAPACITY (kVA):						39.6															

1

AC PANEL SCHEDULE

SCALE: N.T.S.

DESCRIPTION	700	FUTURE	B12/14	B12/14	B12/14	B12/14	B25/66	B25/66	B25/66	B5/29	B5/29	B5/29	WCS	WCS	WCS				
	BBU	BBU	LTE	RRH/RRU	LTE	RRH/RRU	SECTOR A	LTE	RRH/RRU	SECTOR B	LTE	RRH/RRU	SECTOR C	LTE	RRH/RRU	SECTOR A	LTE	RRH/RRU	SECTOR B
BRKR RATING (A)	20	20	50	50	50	50	50	50	50	50	50	50	50	50	50				
POSITION	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	

2

DC PANEL SCHEDULE

SCALE: N.T.S.

30



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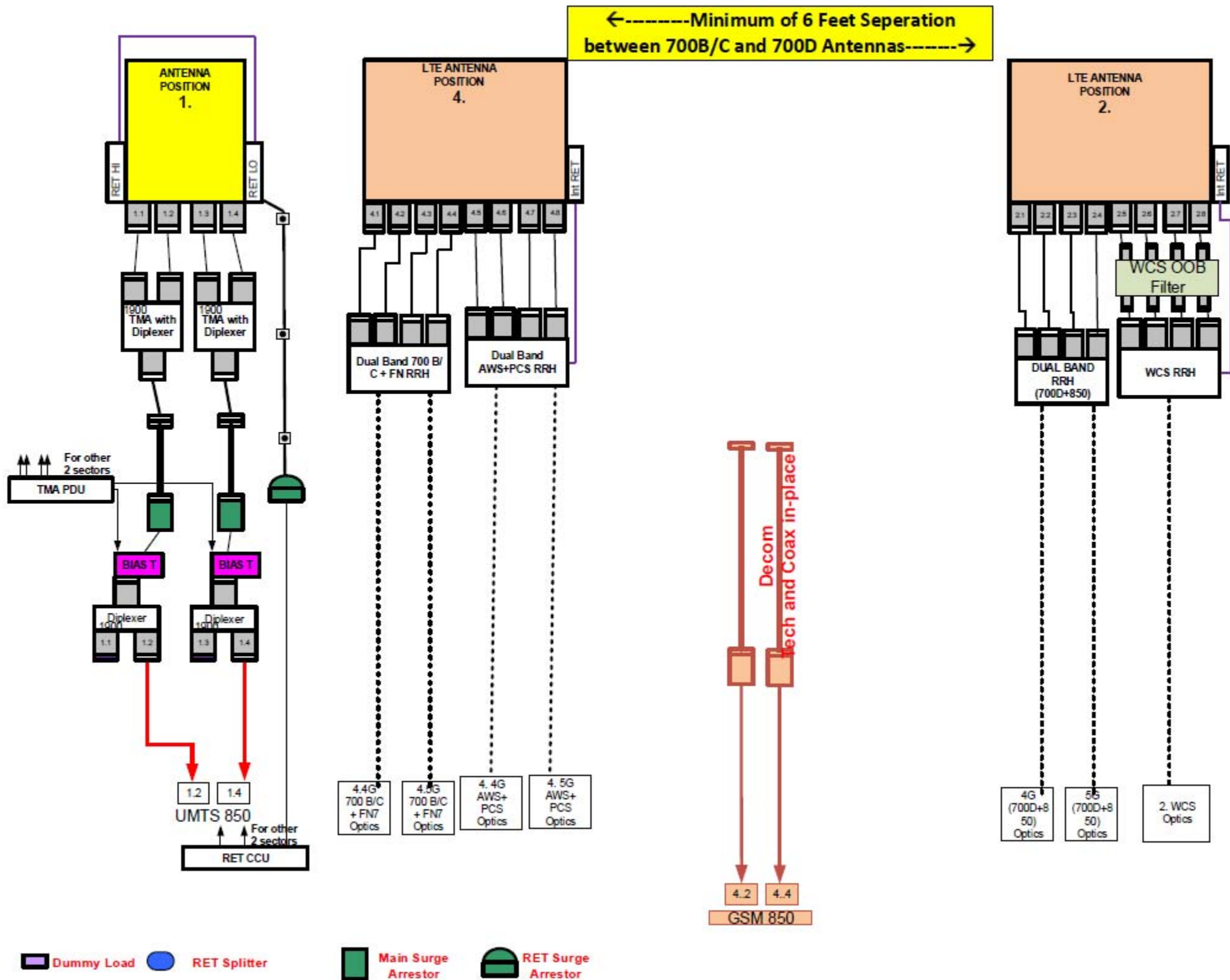
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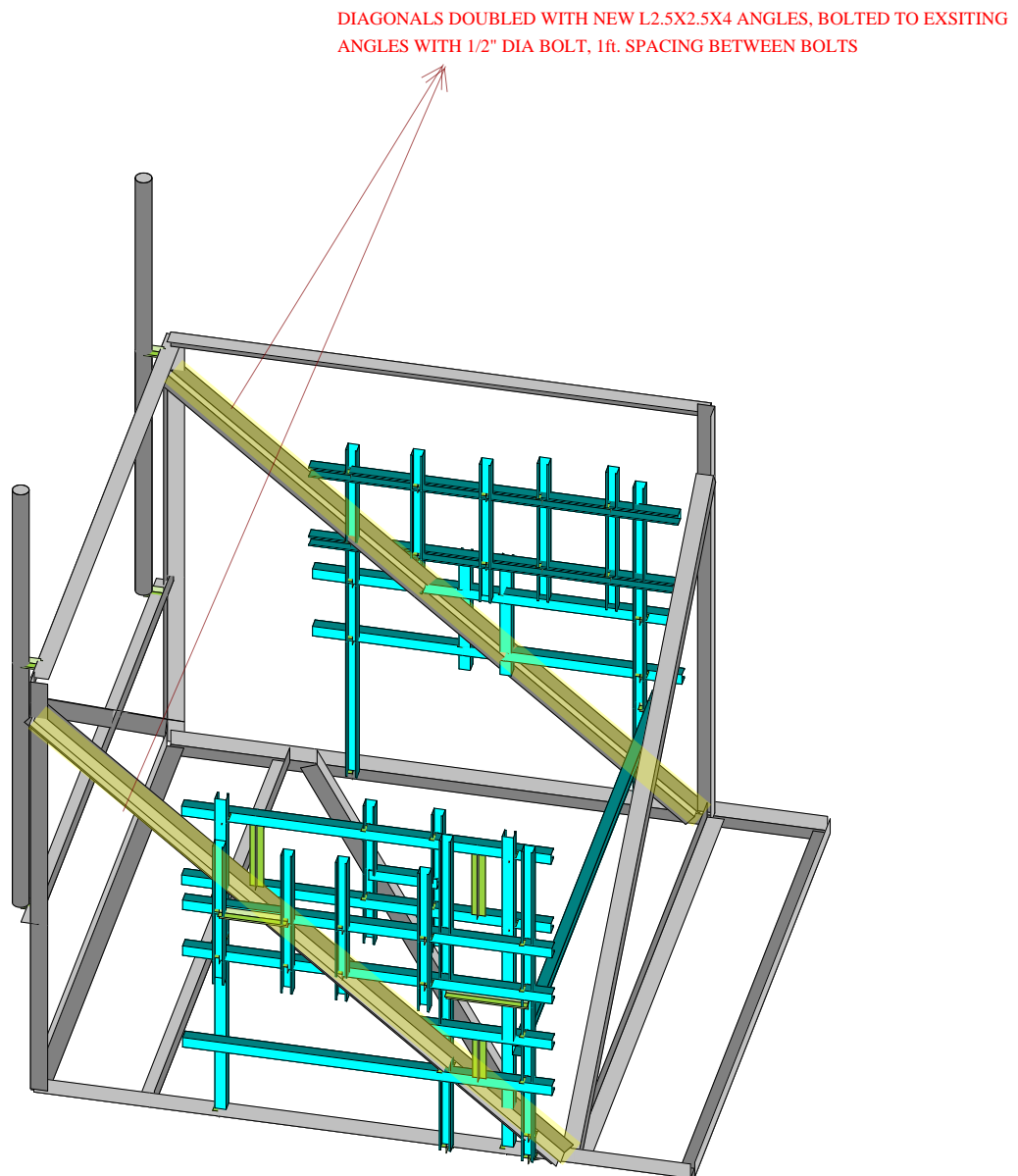
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10072888 - Tulip Ave

SK - 2

May 12, 2020 at 2:46 PM

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