

AT&T
MOBILITY

JURISDICTION: BLOOMINGTON



FULLERTON
ENGINEERING DESIGN

1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
www.FullertonEngineering.com

APPLICABLE BUILDING CODES AND STANDARDS

THE SCOPE OF WORK CONSISTS OF:

- INSTALL (4) NEW PANEL ANTENNAS
- INSTALL (4) NEW 1900 RRH UNITS
- INSTALL (4) NEW 700 RRH UNITS
- INSTALL (1) NEW CABINET
- INSTALL DC POWER AND FIBER CABLES
- INSTALL ARGUS SHELF IN CABINET WITH (4) NEW CONVERTERS

• CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.

• ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE:	2015 MINNESOTA BUILDING CODE
ELECTRICAL CODE:	2017 NATIONAL ELECTRICAL CODE

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

DRAWING INDEX



NO SCALE

REV	DATE	DESCRIPTION	BY
A	11/14/17	90% REVIEW	AA
B	11/30/17	100% REVIEW	AA
O	12/15/17	FINAL	EM
1	1/17/18	REVISION	AA
2	3/22/18	REVISION	AA

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SUPERVISION AND CONTROL, AND TO THE BEST
OF MY KNOWLEDGE AND BELIEF COMPLY WITH
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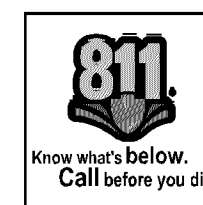
Henry M. Bellagamba
License # 43012

9 Jay M. Belger

T-1	TITLE SHEET
N-1	GENERAL NOTES
C-1	ROOF PLAN
C-2	ELEVATION
C-3	ANTENNA LAYOUT AND DETAILS
C-4	SITE DETAILS
C-5	EQUIPMENT DETAILS

DIRECTIONS

SCAN QR CODE FOR LINK
TO SITE LOCATION MAP



DRAWINGS SCALED TO 11"x17"

SITE NAME
CRAN_RUMW_MOAMN_008/
CRAN_RUMW_MOAMN_009/
CRAN_RUMW_MOAMN_010/
CRAN_RUMW_MOAMN_011

PAGE NUMBER:
MRIMW017659/MRUMW017662
MRUMW017666/MRUMW017671

SITE ADDRESS

3200 E 81ST STREET
BLOOMINGTON, MN 55425

SHEET NAME

TITLE SHEET

SHEET NUMBER

T-1

GENERAL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
2. ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, AT&T PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR’S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
4. FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
5. PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
6. DRAWING PLANS SHALL NOT BE SCALED.
7. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK NOT CLEARLY IDENTIFIED ON THE DRAWINGS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE PROJECT MANAGER.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
9. ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, TRENCHING, SCAFFOLDING, FORMWORK, ELECTRICAL, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. WHEN THE CONTRACTOR ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, DOT AND LOCAL REQUIREMENTS.
11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.
13. THE CONTRACTOR SHALL CALL THE LOCAL PUBLIC UTILITY LOCATING PROVIDER (811) A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING IN THE PUBLIC RIGHT OF WAY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING PRIVATE UTILITIES.
15. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE THE WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.
16. WHEN EXCAVATING IN THE AREA OF EXISTING UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN PROTECTING SUCH UTILITIES. CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
17. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO THE PROJECT MANAGER AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTORS NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTORS EXPENSE.
18. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUT NOT LIMITED TO BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES, PLANTS, ETC. ARE TO BE SAVED AND PROTECTED FROM DAMAGE. CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS AND UPON COMPLETION OF WORK REPAIR BACK TO ORIGINAL CONDITIONS ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
19. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND SHALL BE SUBJECT TO APPROVAL BY THE PROPERTY OWNER AND THE PROJECT MANAGER.
20. THE CONTRACTOR SHALL PROVIDE ON–SITE TRASH RECEPTACLES FOR COLLECTION OF NON–TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
21. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON–SITE.
22. UNLESS NOTED OTHERWISE, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS NECESSARY FOR CONSTRUCTION.
23. THE PROJECT MANAGER MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.
24. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY THE PROJECT MANAGER WITH AS–BUILT PLANS UPON COMPLETION OF THE PROJECT.

ELECTRIC:

1. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND OSHA REQUIREMENTS.
2. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
3. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS AND TRANSPORTATION FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS.
4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY PERMIT AND INSPECTION FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS WITH THE AUTHORITY HAVING JURISDICTION.
5. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, IEEE, NEMA AND NFPA.
6. ALL MATERIALS SHALL BE U.L. LISTED.
7. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT.
8. MATERIALS SHALL MEET WITH APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
9. THE CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND STARTING CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
10. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF THE TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE PROJECT MANAGER AT JOB COMPLETION.
13. POST–INSTALLATION, ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
14. PROVIDE THE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL “AS–INSTALLED” DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
15. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS NOTING USE FUNCTION.
16. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J–BOX, SWITCH BOX, ETC.
17. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
18. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.
19. ALL CONDUCTORS SHALL BE COPPER.
20. ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
21. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
22. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED TO MATCH ORIGINAL RATING.
23. BX OR ROMEX CABLE IS NOT PERMITTED.
24. ALL ELECTRICAL/FIBER ENCLOSURES, JUNCTION BOXES, CONDUIT KNOCKOUTS, RACEWAYS, ETC. SHALL BE RODENT–PROOF.
25. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.



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Henry M. Bellagamba
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SITE NAME

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PAGE NUMBER:

MRIMW017659/MRUMW017662
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SHEET NAME

GENERAL NOTES

SHEET NUMBER

N-1



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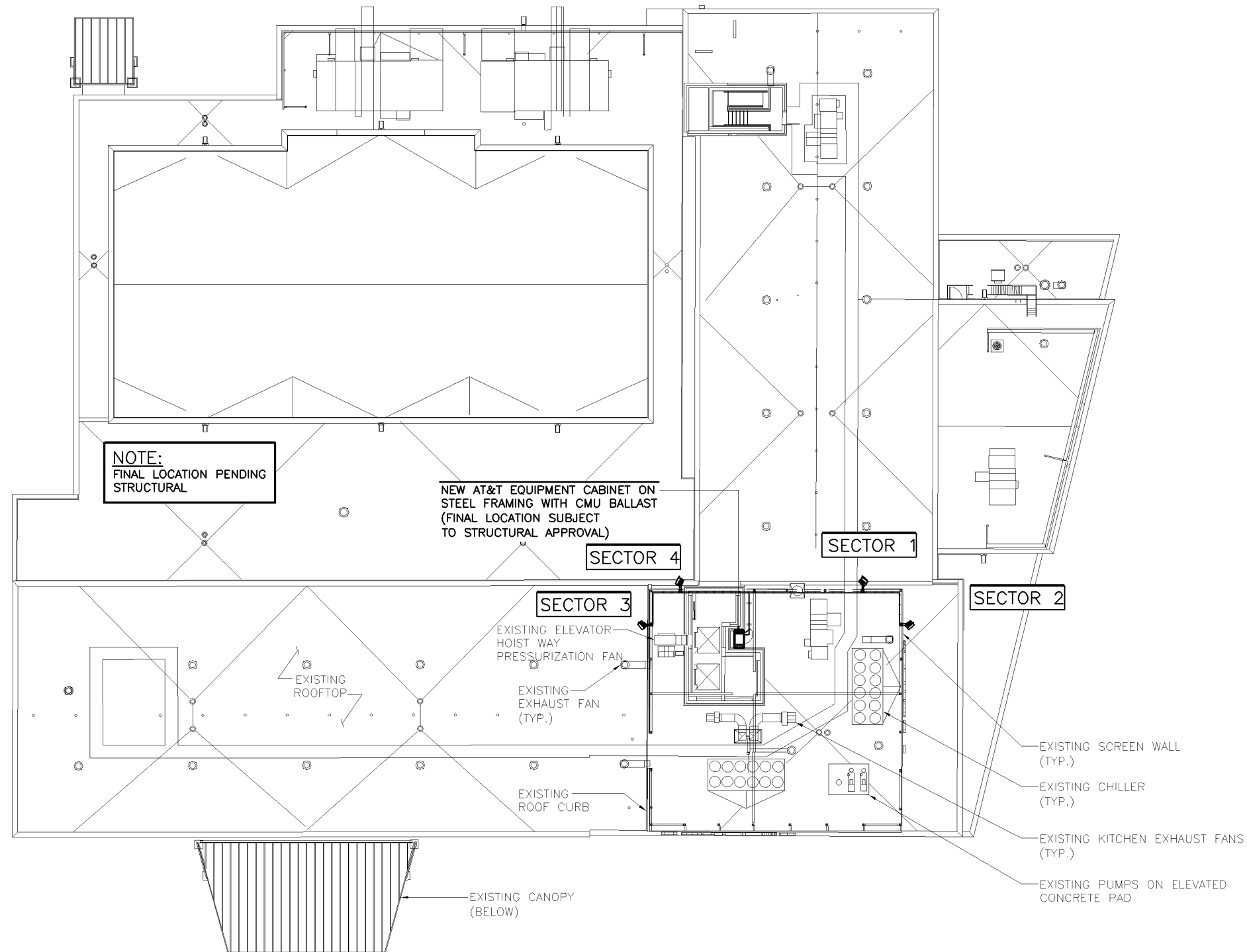
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SHEET NAME

SITE PLAN

SHEET NUMBER

C-1

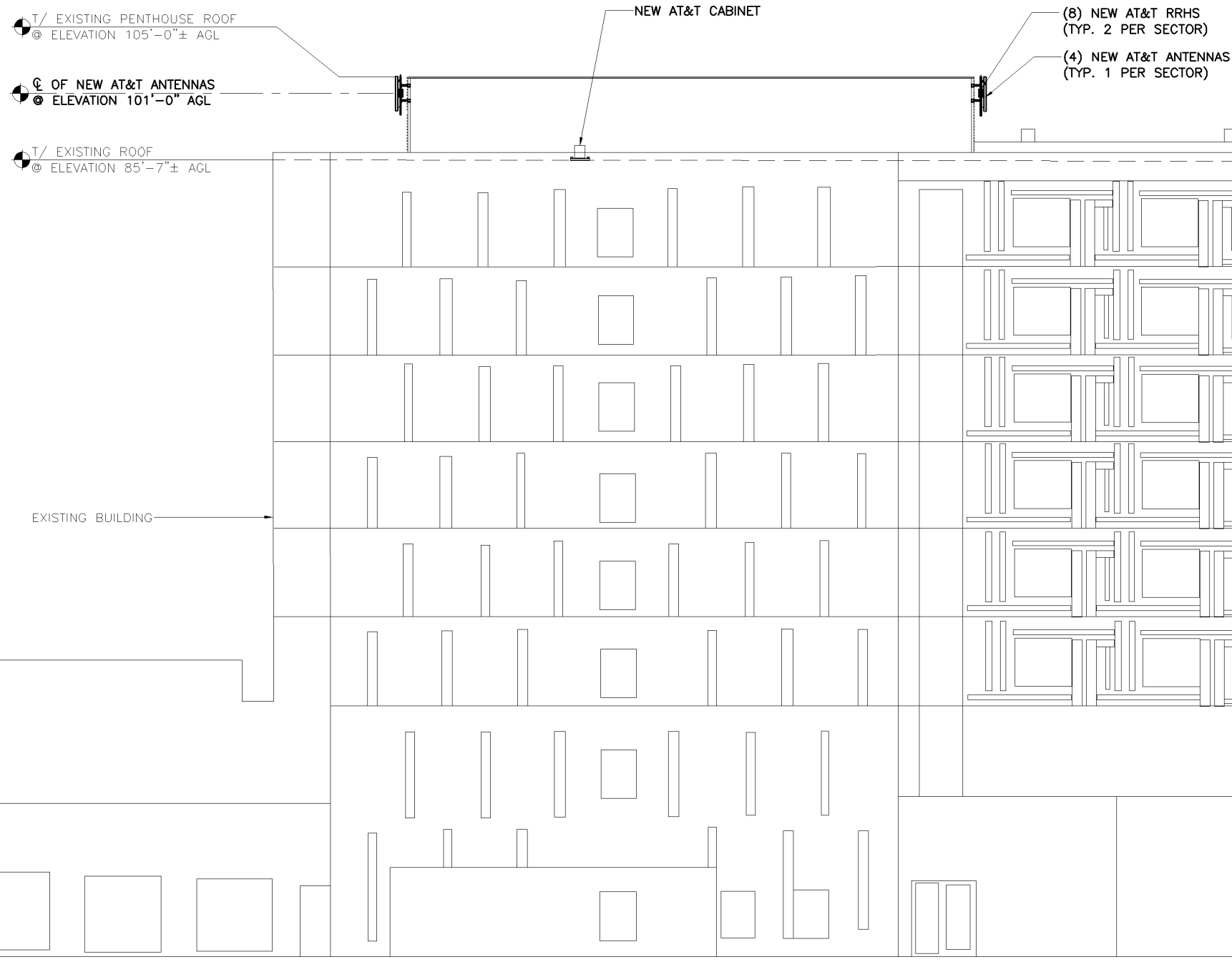


NOTES:

1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY

PAINT NOTE:

ALL NEW AND EXISTING ANTENNAS, MICROWAVE EQUIPMENT, AND MOUNTING HARDWARE TO BE PAINTED TO MATCH THE COLORS AND/OR SIMULATE THE MATERIALS OF THE BUILDING FACADE ON WHICH THEY ARE MOUNTED.



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SHEET NAME
ELEVATION

SHEET NUMBER
C-2



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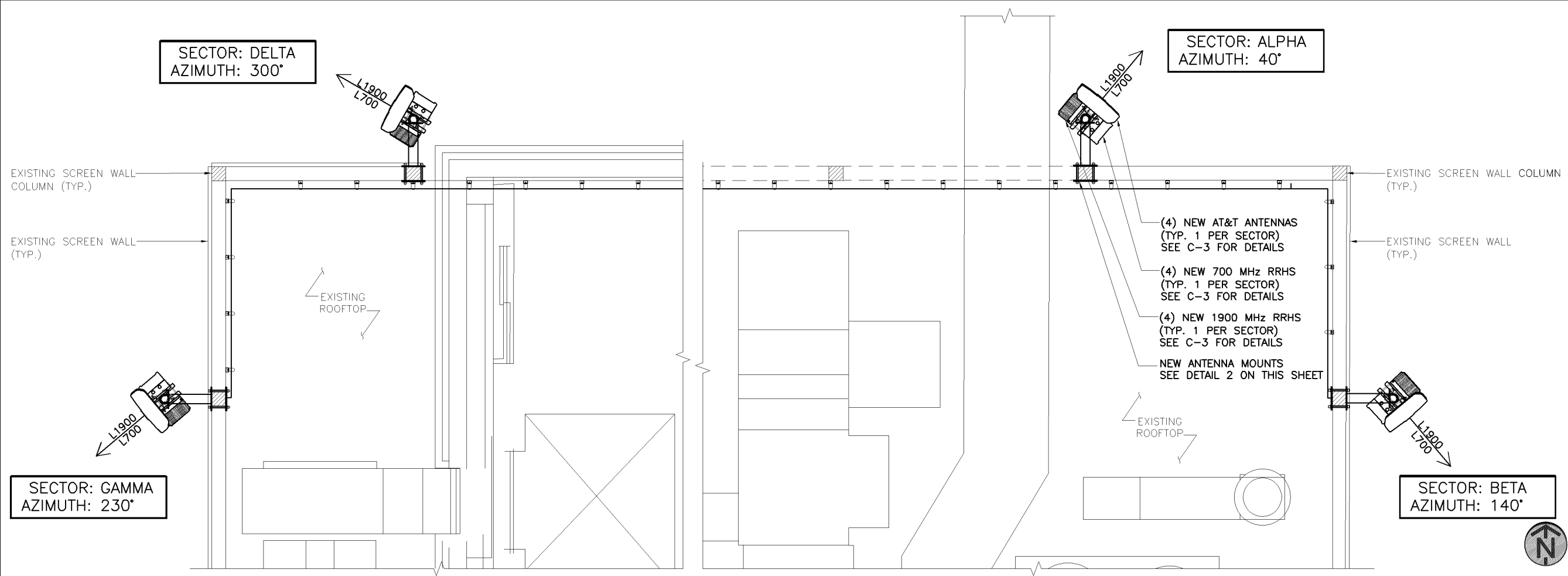
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SHEET NAME
**ANTENNA LAYOUT
AND DETAILS**

SHEET NUMBER

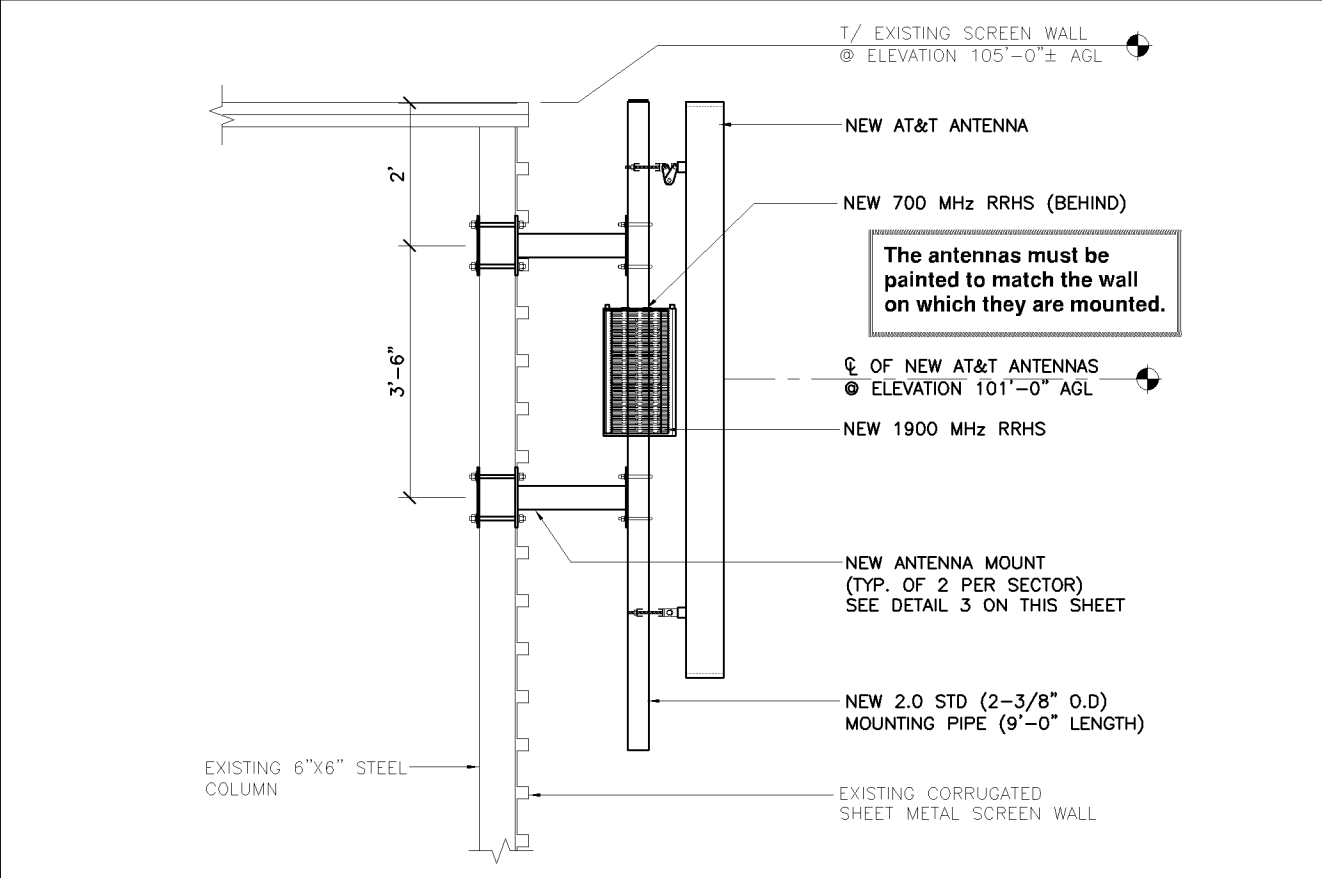
C-3



ANTENNA LAYOUT

SCALE: 1/4" = 1'-0"

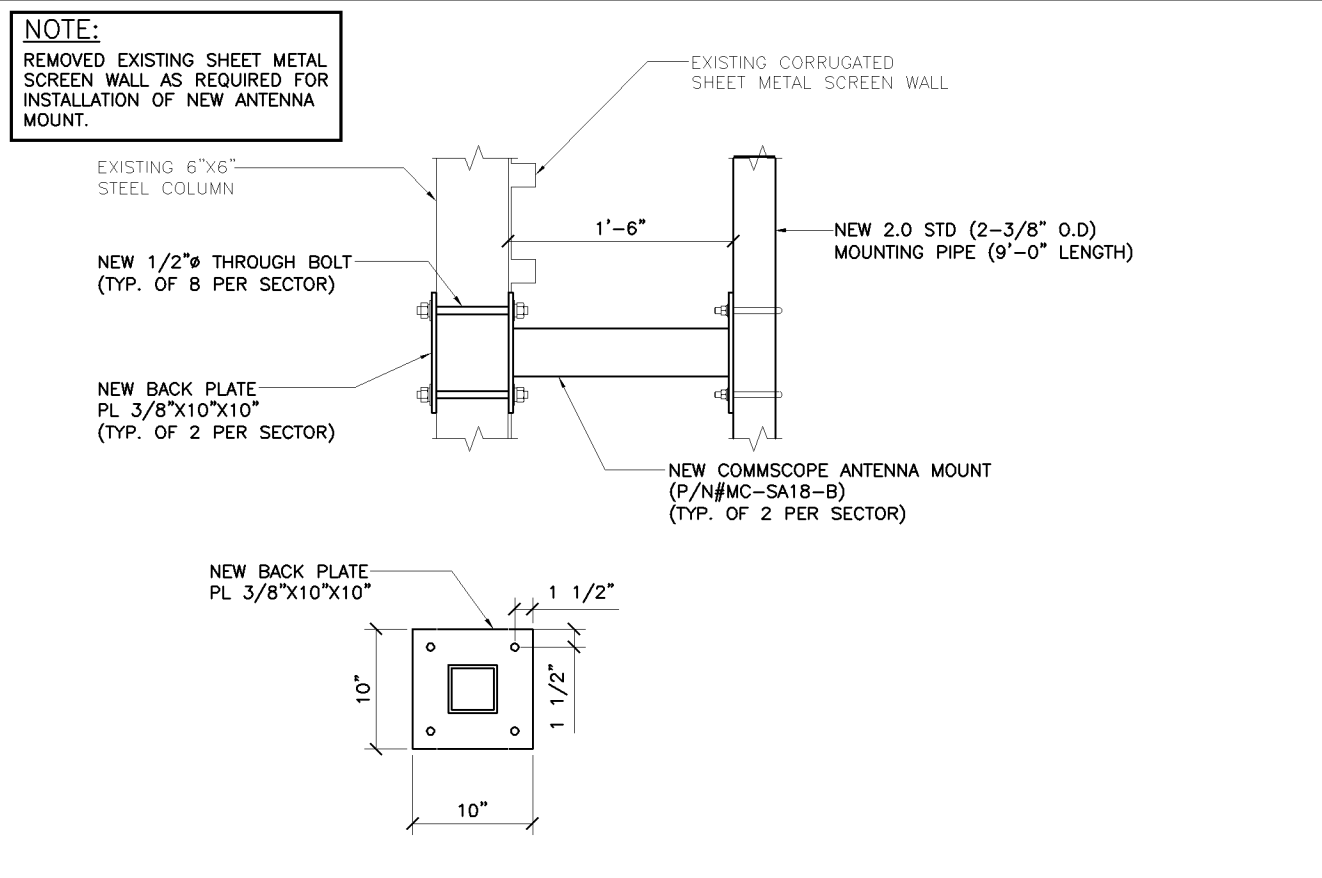
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TYPICAL ANTENNA MOUNTING DETAIL

SCALE: 3/8" = 1'-0"

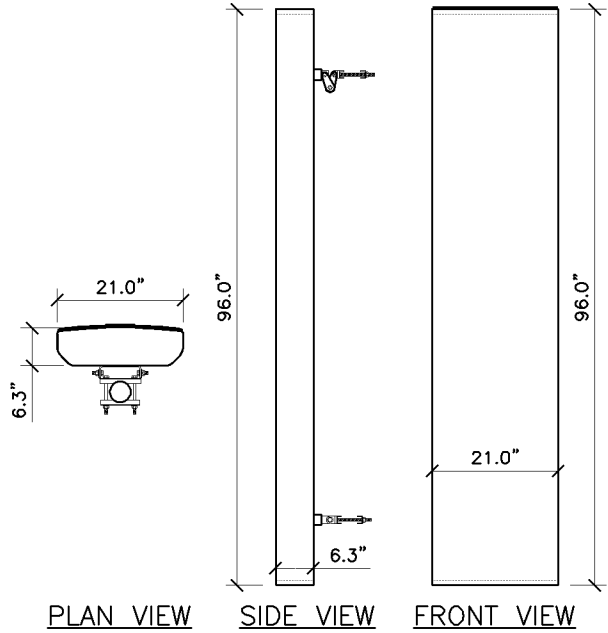
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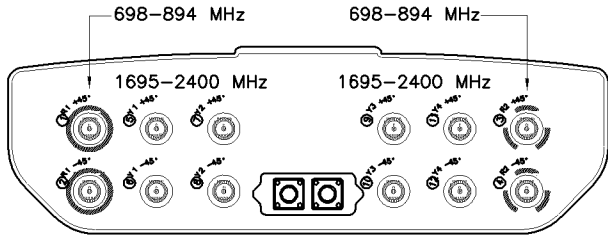
ANTENNA MOUNTING DETAILS

SCALE: 3/4" = 1'-0"

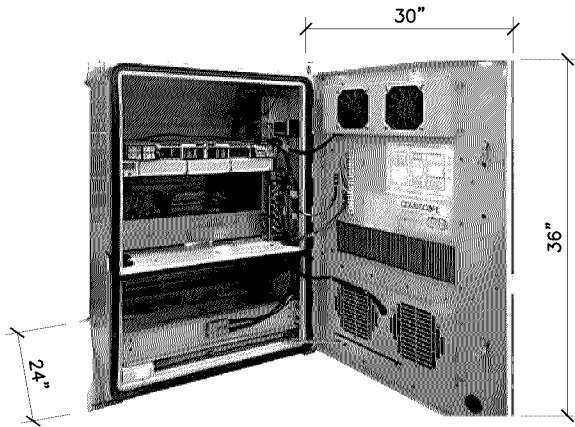
3



KMW — EPBQ-654L8H8-L2
12-PORT MULTI-BAND ANTENNA
FREQUENCY RANGE
698-806 MHz
806-894 MHz
1695-1850 MHz
1850-1910 MHz
1910-2180 MHz
2300-2400 MHz
ANTENNA 97.0 Lbs
BRACKET 7.5 Lbs
TOTAL WEIGHT 104.5 Lbs



KMW — EPBQ-654L8H8-L2



COMMScope — RBC36-24
GE 2RU 48V-150A MICRO CELL SITE CABINET
WEIGHT (UNLOADED) 200 Lbs
WEIGHT (LOADED) 425 Lbs



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SPECIFICATIONS

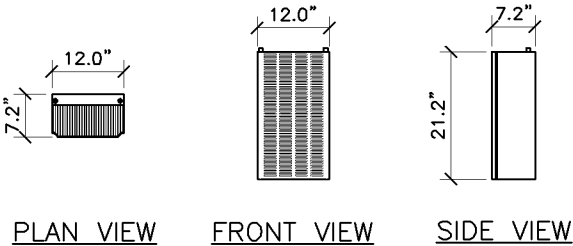
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C-4

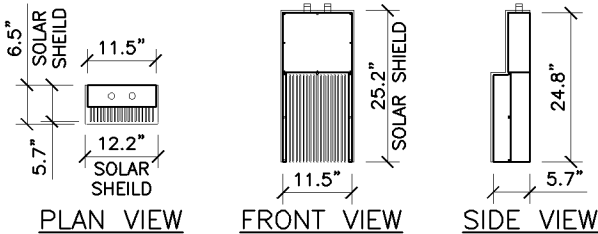
ANTENNA SPEC SCALE: 3/8" = 1'-0" 1

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

CABINET DETAIL SCALE: N.T.S. 3



ALCATEL-LUCENT B25 RRH4x30
REMOTE RADIO HEAD
FREQUENCY BAND: 1.9 GHz
WEIGHT: 53 lbs



ALCATEL-LUCENT RRH2X40-07L-AT
REMOTE RADIO HEAD WITH SOLAR SHIELD
FREQUENCY RANGE 717-728 MHz
UNIT WEIGHT W/O MNT. KIT 52.9 Lbs
SOLAR SHIELD WEIGHT 3 Lbs
TOTAL WEIGHT 55.9 Lbs

RRU SPECS SCALE: 3/8" = 1'-0" 4

RRU SPECS SCALE: 3/8" = 1'-0" 5

NOT USED SCALE: N.T.S. 6



AT&T
MOBILITY

901 S. MARQUETTE AVENUE
MINNEAPOLIS, MN 55402



S&C
WIRELESS

540 W. MADISON ST. 17TH FLOOR
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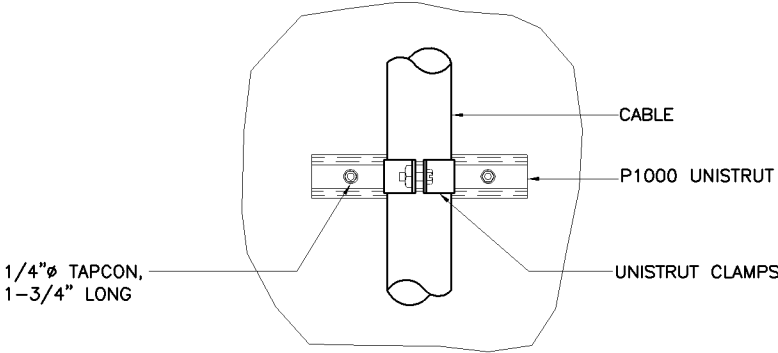
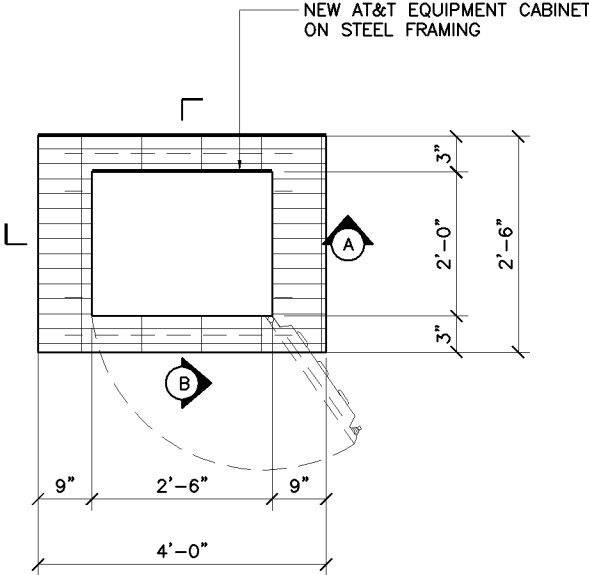
3200 E 81ST STREET
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SHEET NAME

EQUIPMENT DETAILS

SHEET NUMBER

C-5



EQUIPMENT CABINET PLAN

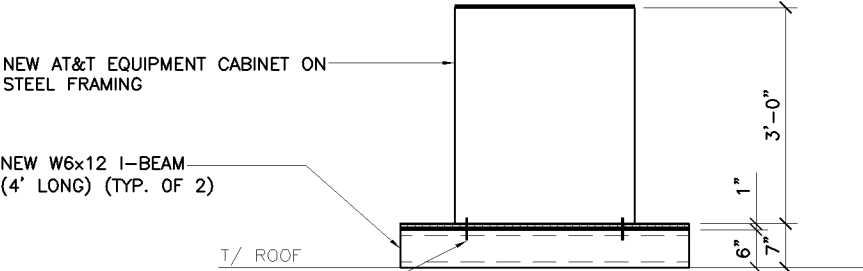
SCALE: 3/8" = 1'-0"

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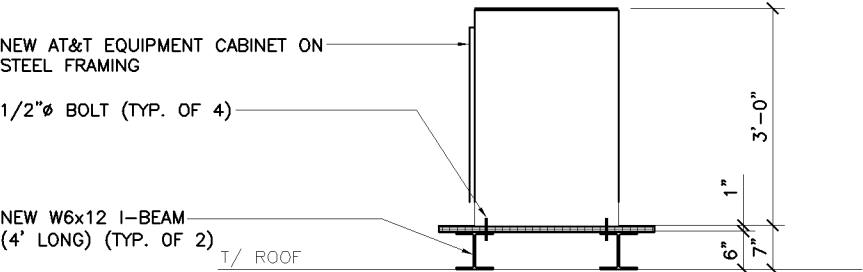
CABLE SUPPORT DETAIL

SCALE: N.T.S.

2



SECTION A



SECTION B

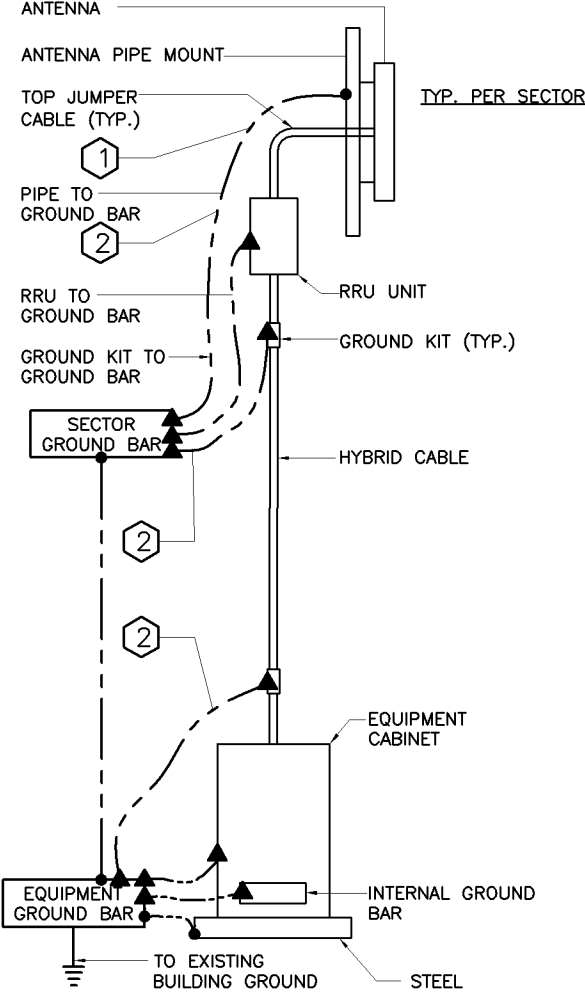
EQUIPMENT CABINET SECTIONS

SCALE: 3/8" = 1'-0"

3

SYMBOL LEGEND:

- EXOTHERMIC CONNECTION
- ▲ MECHANICAL CONNECTION
- ▬ INTERNAL EQUIPMENT GROUND BAR
- ▬ GROUND BAR
- ① #2 AWG STRANDED INSULATED COPPER GROUND WIRE
- ② #6 AWG STRANDED INSULATED COPPER GROUND WIRE



GROUNDING SCHEMATIC

SCALE: N.T.S.

4