

at&t

BLACK FOREST
7113 MARSHBERN COURT
COLORADO SPRINGS, COLORADO 80908
FA#: 10093683
NOVA PROJECT ID: WES-MW-06907
MW PTN: 3755A0LF7E | MW PACE: MRUTH038364
COU2037

MasTec
Network Solutions
 3350 E BIRCH ST, SUITE 101
 BREA, CALIFORNIA 92821

PROPRIETARY INFORMATION

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PREPARED FOR



APPROVALS

GAMALIEL AGUILAR	03/04/20
90% CDS	DATE
GAMALIEL AGUILAR	04/10/20
100% CDS	DATE
GAMALIEL AGUILAR	04/10/20
100% CDS WITH STRUCTURALS	DATE
ALLAN WALKER	03/23/20
CONSTRUCTION	DATE
SITE ACQUISITION	DATE

PROJECT NAME
MICROWAVE UPGRADE

SITE NAME
BLACK FOREST/COU2037

FA NUMBER
10093683

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 COLORADO SPRINGS, COLORADO 80908

03/04/20	90% CD REVIEW (P1-B1)
04/10/20	100% FINAL CDS (P1-B2)
09/28/20	COUNTY COMMENTS (P1-B3)

SHEET TITLE

TITLE SHEET

T-1

SPECIAL INSPECTIONS

- | | |
|---|---|
| 1 CONCRETE | 13.1 VERIFY SOIL CONDITIONS ARE SUBSTANTIALLY IN CONFORMANCE WITH THE SOIL INVESTIGATION REPORT |
| 2 BOLTS INSTALLED IN CONCRETE | 13.2 VERIFY THAT FOUNDATION EXCAVATIONS EXTEND TO PROPER DEPTH AND BEARING STRATA |
| 3 CONCRETE MOMENT-RESISTING SPACE FRAME | 13.3 PROVIDE SOIL COMPACTION TEST RESULTS, DEPTH OF FILL, RELATIVE DENSITY, BEARING VALUES |
| 4 REINFORCING STEEL AND PRESTRESSING STEEL | 13.4 PROVIDE SOIL EXPANSION TEST RESULTS, EXPANSION INDEX, RECOMMENDATIONS FOR FOUNDATIONS, ON-GRADE FLOOR SLAB DESIGN FOR EACH BUILDING SITE |
| 5.1 ALL STRUCTURAL WELDING | 14 SMOKE CONTROL SYSTEM |
| 5.2 WELD TESTING DUCTILE MOMENT-RESISTING STEEL FRAME | 15 SPECIAL CASES (DESCRIBE) |
| 5.3 WELDING REINFORCING STEEL | 16 OFF-SITE FABRICATION OF BUILDING COMPONENTS |
| 6 HIGH-STRENGTH BOLTING | 17 OTHER SPECIAL INSPECTIONS AS REQUIRED BY DESIGNER |
| 7 STRUCTURAL MASONRY | |
| 8 REINFORCED GYPSUM CONCRETE | |
| 9 INSULATING CONCRETE FILL | |
| 10 SPRAY-APPLIED FIREPROOFING | |
| 11 DEEP FOUNDATIONS (PILING, DRILLED & CAISSONS) | |
| 12 SHOTCRETE | |

NO.	DESCRIPTION OF TYPE OF INSPECTION REQUIRED, LOCATION, REMARKS.

CONSULTANT TEAM

CLIENTS REPRESENTATIVE:

MASTEC NETWORK SOLUTIONS
 507 AIRPORT BLVD, SUITE 111
 MORRISVILLE, NORTH CAROLINA 27560
CONTACT: RAPHAEL MOHAMED
PHONE: (919) 674-5895
FAX: (305) 925-8514
EMAIL: RAPHAEL.MOHAMED@MASTEC.COM

PROJECT MANAGEMENT:

MASTEC NETWORK SOLUTIONS
 7025 SOUTH REVERE PARKWAY, SUITE 100
 CENTENNIAL, COLORADO 80112
CONTACT: ALLAN WALKER
PHONE: (903) 571-0760

SITE ACQUISITION:

MASTEC NETWORK SOLUTIONS
 330 EAST GERMANN ROAD, SUITE 101
 GILBERT, ARIZONA 85297
CONTACT: CHRISTINA MICHAUD
PHONE: (480) 477-4165
EMAIL: CHRISTINA.MICHAUD@MASTEC.COM

DEVELOPMENT SUMMARY

APPLICANT: AT&T MOBILITY
 188 IVERNESS DRIVE WEST, SUITE 400
 ENGLEWOOD, COLORADO 80112

PROPERTY OWNER: GEORGE GLINASTIS
 651 CORPORATE CIRCLE
 GOLDEN, COLORADO 80401

TOWER OWNER: AMERICAN TOWER CORPORATION
 TOWER ID #: CO-88791

OTHER ON-SITE TELECOM FACILITIES: YES

ASSESSORS PARCEL NUMBER: 51320-00-002

LATITUDE: 39° 02' 46.50" N 39.04625°

LONGITUDE: 104° 41' 39.80" W -104.69439°

LAT/LONG TYPE: NAD-83

ELEVATION: ±7618.0' AMSL

EXISTING ZONING: A-3

PROPOSED PROJECT AREA: NO INCREASE IN S.F.

EXISTING TYPE OF CONSTRUCTION: TYPE V-B

PROPOSED TYPE OF CONSTRUCTION: TYPE V-B

EXISTING OCCUPANCY: U-2

PROPOSED OCCUPANCY: U-2

JURISDICTION: EL PASO

SHEET INDEX

- T-1 TITLE SHEET
 T-2 SPECIFICATIONS AND NOTES
- A-1 SITE PLAN
 A-1.1 ENLARGED SITE PLAN AND EQUIPMENT PLAN
 A-2 EXISTING AND PROPOSED ELEVATIONS
 A-3 ANTENNA DETAILS
 A-3.1 DETAILS
 A-4 SPECIFICATIONS
 A-5 ANTENNA MOUNTING DETAILS
 A-5.1 ANTENNA MOUNTING DETAILS

APPLICABLE CODES

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:

- 2015 INTERNATIONAL BUILDING CODE
- 2015 INTERNATIONAL RESIDENTIAL CODE
- 2015 INTERNATIONAL MECHANICAL CODE
- 2015 INTERNATIONAL FUEL GAS CODE
- 2015 INTERNATIONAL EXISTING BUILDING CODE
- 2015 INTERNATIONAL ENERGY CONSERVATION CODE

IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL

PRECON NOTES

- CONTACT AMERICAN TOWER FIELD TECHNICIAN TO SCHEDULE PRE-COON 48 HOURS PRIOR TO REQUESTED MOBILIZATION ON SITE.

PROJECT DESCRIPTION

AT&T MOBILITY PROPOSES TO MODIFY AN EXISTING UNMANNED WIRELESS COMMUNICATIONS FACILITY. THIS MODIFICATION WILL CONSIST OF THE FOLLOWING:

- TO ELBERT SOUTH:
- INSTALL NEW AT&T 6'-0" MICROWAVE ANTENNA AT 272'-0" RAD-CENTER.
 - INSTALL NEW (1) AT&T EW-63 WAVEGUIDE.

Approved

By: **Craig Dossey, Executive Director**

Date: **10/07/2020**

El Paso County Planning & Community Development



FINAL DESIGN TO BE (1) EW-63 WAVEGUIDE.

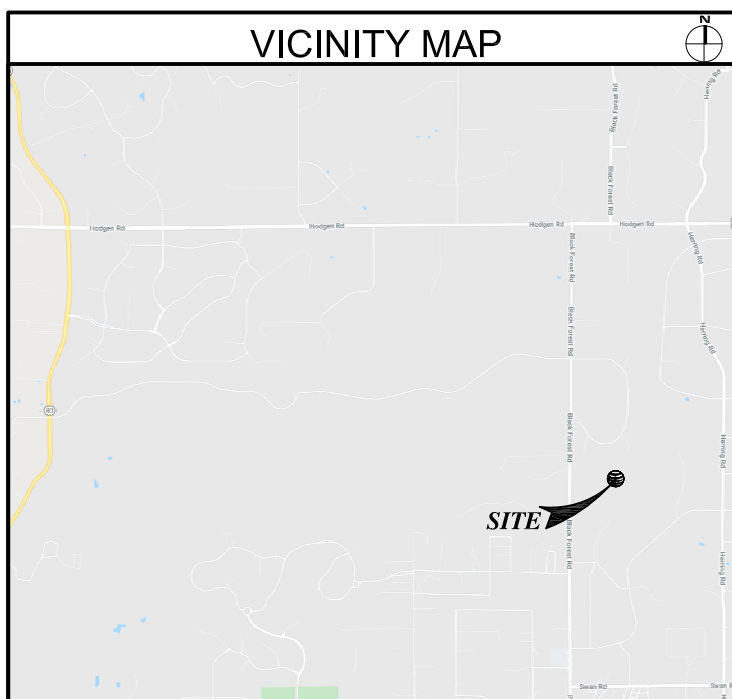
ACCESSIBILITY DISCLAIMER

THIS PROJECT IS AN UNOCCUPIED WIRELESS PCS TELECOMMUNICATIONS FACILITY AND IS EXEMPT FROM DISABLED ACCESS REQUIREMENTS.

SCALE

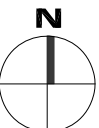
THE DRAWING SCALES SHOWN IN THIS SET REPRESENT THE CORRECT SCALE ONLY WHEN THESE DRAWINGS ARE PRINTED IN A 11"x17" OR 24"x36" FORMAT. IF THIS DRAWING SET IS NOT 11"x17" OR 24"x36", THIS SET IS NOT TO SCALE.

VICINITY MAP

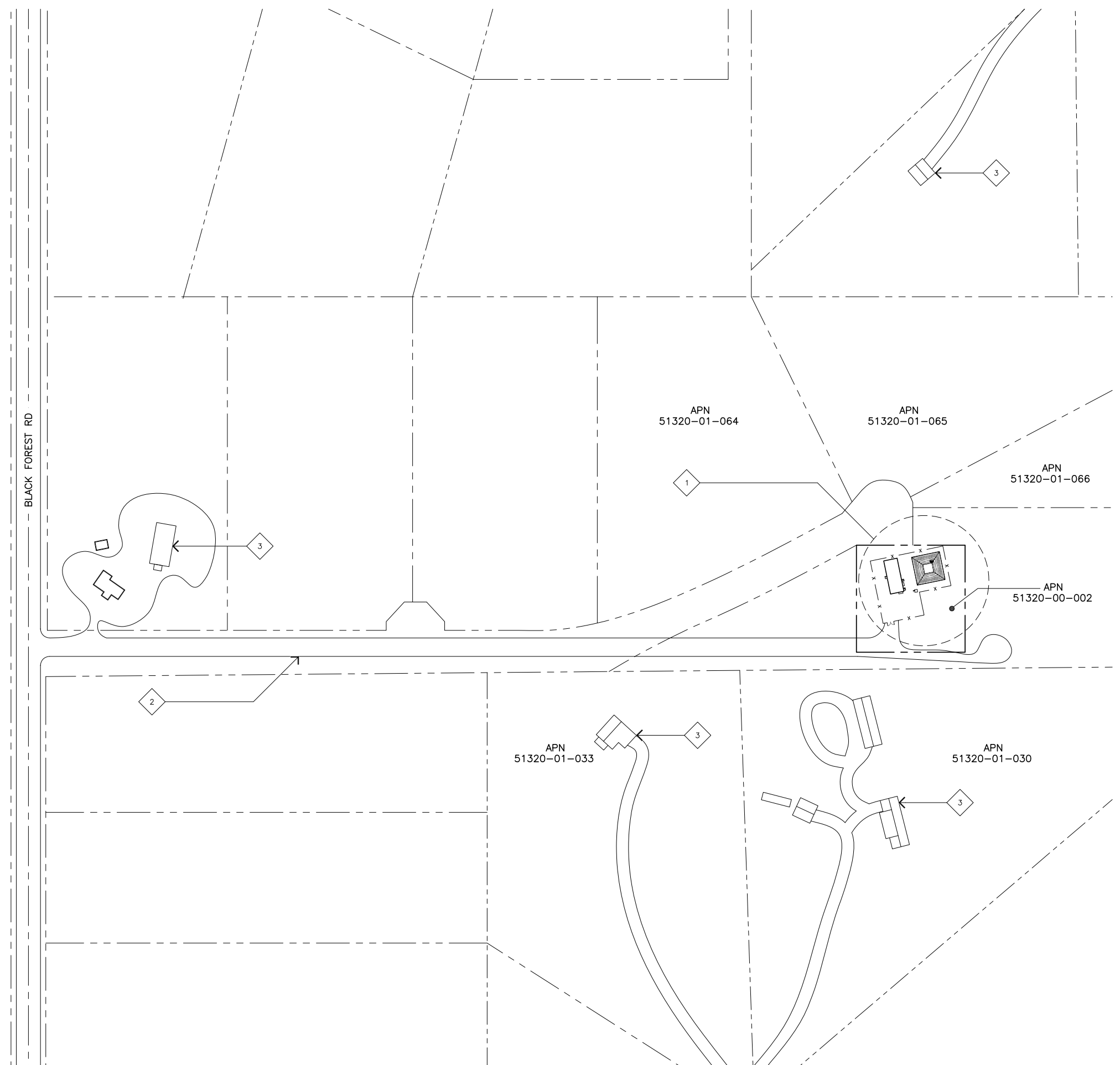


SITE PLAN KEYNOTES

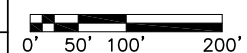
- 1 (E) AT&T LEASE AREA WITHIN
(E) COMPOUND; SEE SHEET A-1.1.
- 2 (E) ACCESS ROAD.
- 3 (E) BUILDING.



SITE PLAN



11X17 SCALE: 1" = 200'
24X36 SCALE: 1" = 100'



1

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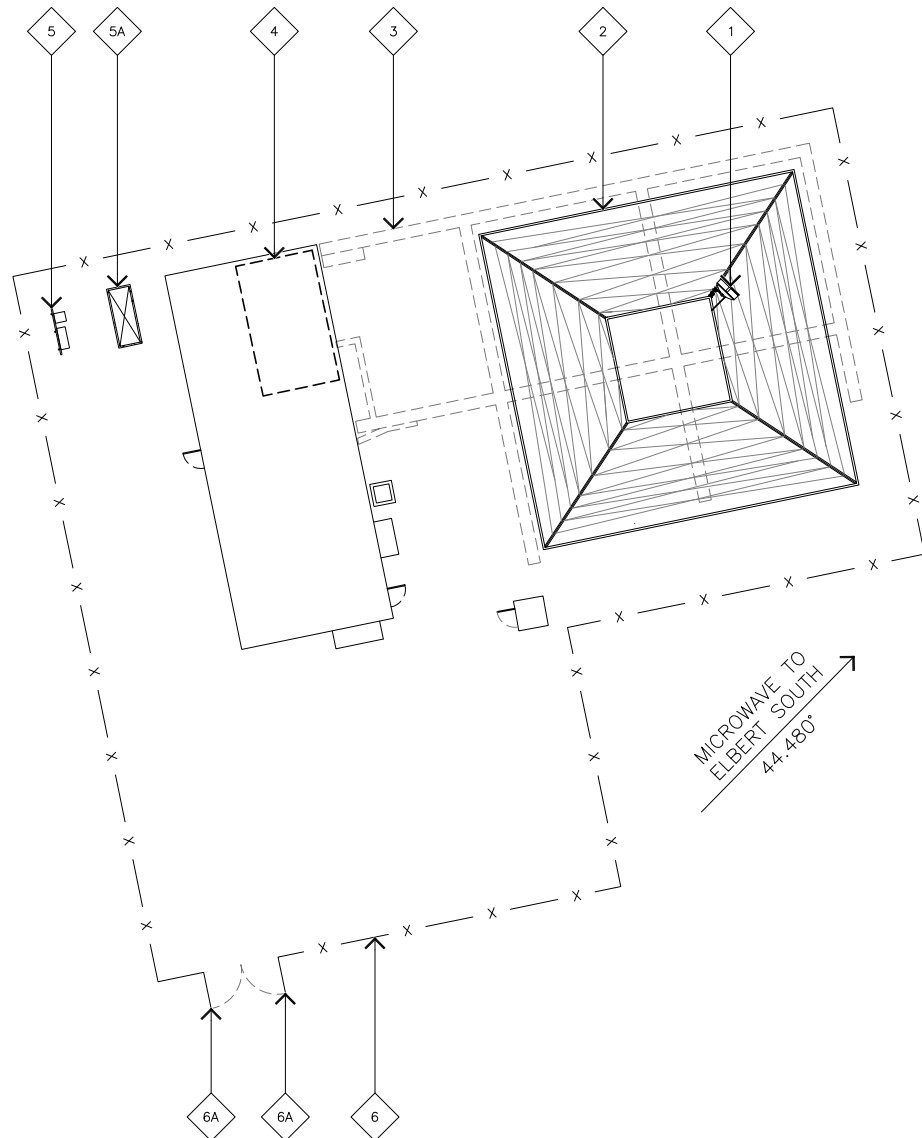
SITE PLAN

A-1

JOB NUMBER: 21253

ENLARGED SITE PLAN KEYNOTES

- 1 (N) AT&T 6'-0"Ø MICROWAVE ANTENNA MOUNTED TO (E) LATTICE TOWER; SEE DETAIL 2/A-3.
- 2 (E) LATTICE TOWER.
- 3 (E) AT&T ICE BRIDGE.
- 4 (E) AT&T EQUIPMENT AREA WITHIN (E) BUILDING; SEE DETAIL 1/A-1.1.
- 5 (E) H-FRAME.
- 5A (E) GENERATOR.
- 6 (E) CHAIN-LINK FENCE ENCLOSURE WITH BARBED WIRE.
- 6A (E) CHAIN-LINK ACCESS GATE.



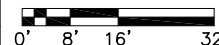
ENLARGED SITE PLAN GENERAL NOTES

- A. OTHER CARRIER ANTENNAS NOT SHOWN FOR CLARITY.
- B. GROUND ALL (N) EQUIPMENT AND COAX PER DETAIL 3/A-3.
- C. OTHER CARRIER ANTENNAS NOT SHOWN FOR CLARITY.
- D. CONTRACTOR TO PROVIDE ALL LABOR TO INSTALL COAX, RETS AND ANTENNAS.
- E. CONTRACTOR TO PROVIDE ALL COAX, CONNECTORS, ANCILLARY EQUIPMENT (INCLUDING WEATHER STRIPPING, GROUND KITS, ETC.).
- F. CONTRACTOR TO COLOR CODE ALL COAX. COLORED BANDS OF TAPE ON COAX IDENTIFY SECTOR, FREQUENCY, TECHNOLOGY, AND TRANSMIT GROUP AS FOLLOWS ON ALL COAX MODIFIED OR INSTALLED ONLY.
- G. WHEN ANTENNA LINES ARE DIPLEXED, THE COLOR CODE OF THE HIGHEST FREQUENCY PREVAILS (I.E. UMS DIPLEXED WITH TDMA SHOULD HAVE COLOR 4 BANDS).
- H. ALL ANTENNAS AND ANTENNA CABLE SHALL BE FURNISHED BY CONTRACTOR AND INSTALLED BY ANTENNA INSTALLATION CONTRACTOR.
- I. PRIOR TO PLACEMENT OF ANTENNA POLE MOUNTS, THE CONTRACTOR SHALL VERIFY THAT THE AZIMUTH AND DIMENSIONS SHOWN ON THE PLANS MATCH ACTUAL FIELD CONDITIONS. ALLOWABLE TOLERANCE: HORIZONTAL ALIGNMENT = ±5'; VERTICAL ALIGNMENT = ±1'.
- J. ANTENNA INSTALLATION CONTRACTOR SHALL PROVIDE ALL CONDUIT, CABLE TRAY, GROUNDS, ETC. FOR COMPLETE INSTALLATION OF ANTENNAS AND CABLES SHOWN AND INTENDED AS REQUIRED FOR A COMPLETE OPERATING SYSTEM IN ACCORDANCE WITH CONTRACTOR STANDARDS.
- K. IN NO CASE SHALL THERE BE ANY MORE THAN TWO (2) 90° TURNS (OR EQUIVALENT) IN ANY CONTINUOUS LENGTH OF CONDUIT BETWEEN PULL BOXES OR SIMILAR FEATURES.
- L. ANTENNA CONDUIT SHALL ONLY INCLUDE FACTORY-MADE LARGE RADIUS SWEEPS AT ALL CHANGES IN DIRECTION. SWEEP RADIUS SHALL BE 18" MINIMUM ABOVE GROUND AND 36" MINIMUM BELOW GROUND.
- M. CONDUIT SHALL BE 3"Ø MINIMUM. ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC. ALL EXPOSED CONDUIT ABOVE GRADE LEVEL SHALL BE IMC OR RIGID GALVANIZED. ALL EXPOSED CONDUIT PROTECTED IN A BUILDING OR ON A ROOF SHALL BE EMT OR UV STABILIZED PAINTED SCHEDULE 80 PVC.
- N. IN HIGH TRAFFIC AREAS OR WHERE SUSCEPTIBLE TO DAMAGE CONTRACTOR SHALL PROVIDE FORMED 14 GA. GALVANIZED SHEET METAL COVER OVER COAXIAL CABLE ROUTES. WHERE CABLE IS RUN ON THE WALL, ATTACH UNISTRUT TO WALL AND COVER WITH 14 GA. GALVANIZED FORMED SHEET METAL COVER OR MATERIAL AS DIRECTED BY CONTRACTOR CONSTRUCTION MANAGER.
- O. VERIFY ROUTE AND LENGTH OF CABLE PRIOR TO CUTTING. ADJUST INDICATED ROUTE AS REQUIRED TO CLEAR (E) EQUIPMENT AT FACILITIES.
- P. MAXIMUM LENGTH OF 7/8" COAX CABLE SHALL BE 140'-0". MAXIMUM LENGTH OF 1-1/4" COAX CABLE SHALL BE 190'-0". MAXIMUM LENGTH OF 1-5/8" COAX CABLE SHALL BE 235'-0".
- Q. VERIFY MODEL NUMBERS OF ANTENNAS WITH CONTRACTOR SERVICES.
- R. THE CONTRACTOR SHALL PROVIDE TESTING OF ANTENNAS AND SHALL PROVIDE DOCUMENTATION TO THE CONTRACTOR PROJECT MANAGER.
- S. GENERAL CONTRACTOR TO VERIFY ALL TORQUE TOLERANCES PER THE MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.



ENLARGED SITE PLAN

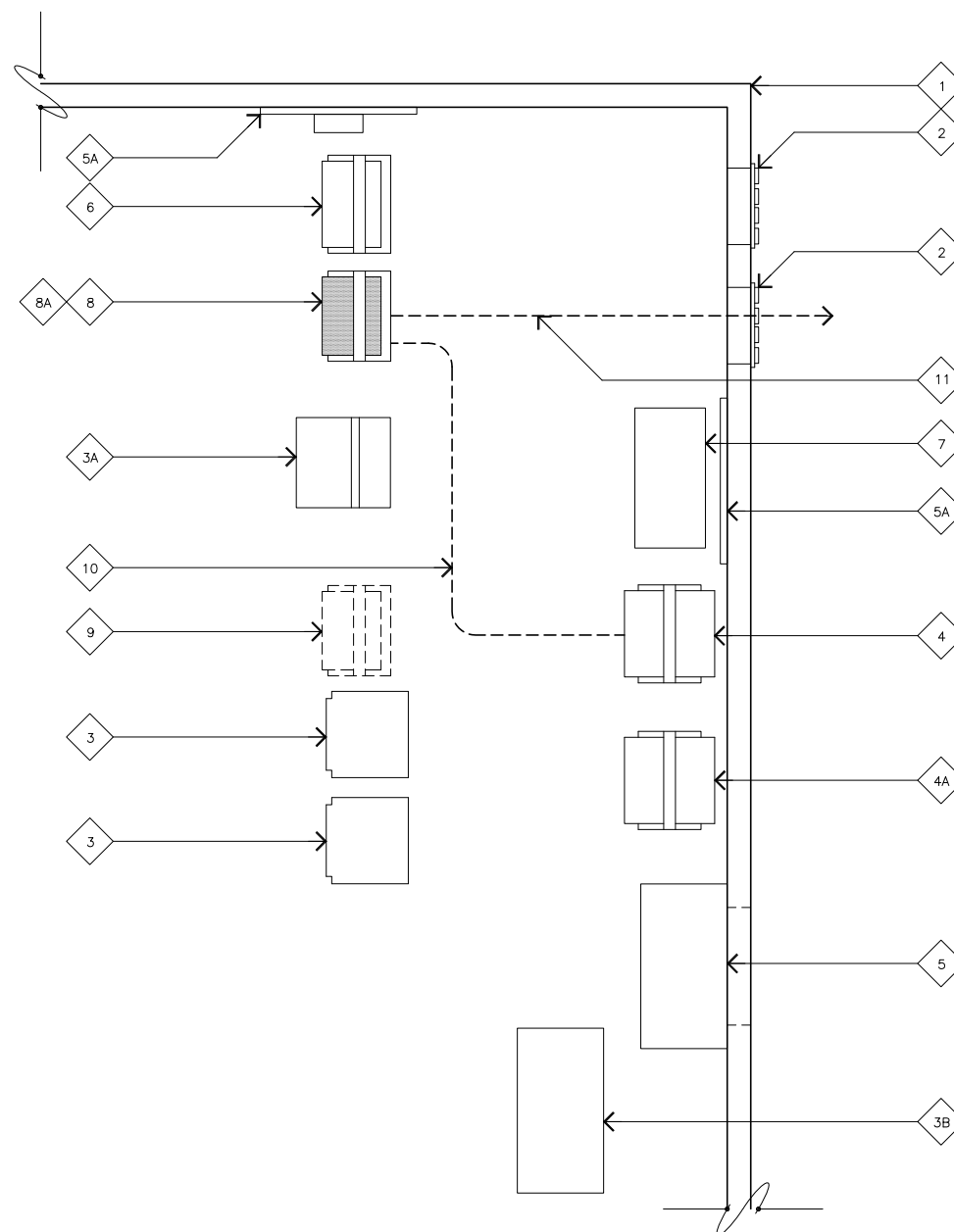
11X17 SCALE: 1/32" = 1'-0"
24X36 SCALE: 1/16" = 1'-0"



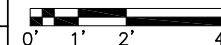
2

EQUIPMENT PLAN KEYNOTES

- 1 (E) AT&T EQUIPMENT SHELTER.
- 2 (E) AT&T ENTRY PORT.
- 3 (E) AT&T GSM EQUIPMENT CABINET.
- 3A (E) AT&T UMS EQUIPMENT CABINET.
- 3B (E) AT&T EQUIPMENT CABINET.
- 4 (E) AT&T DC POWER PLANT.
- 4A (E) AT&T BATTERY RACK.
- 5 (E) INTERIOR MOUNTED HVAC UNIT.
- 5A (E) AT&T TELCO BACKBOARD.
- 6 (E) AT&T LTE DATA RACK.
- 7 (E) STORAGE CABINET.
- 8 (N) AT&T MICROWAVE RADIO EQUIPMENT MOUNTED IN (E) DATA RACK. IF INSUFFICIENT SPACE, MOUNT IN (N) 19" DATA RACK, AS SHOWN.
- 8A (N) AT&T 24VDC TO -48VDC CONVERTER IN (E) DATA RACK, IF REQUIRED.
- 9 (N) 19" DATA RACK, IF REQUIRED.
- 10 (N) AT&T DC CABLE FROM (E) 24VDC POWER CABINET TO (N) -48VDC CONVERTER, IF REQUIRED.
- 11 (N) (1) AT&T EW-63 WAVEGUIDE; SEE SHEET A-4.



11X17 SCALE: 1/4" = 1'-0"
24X36 SCALE: 1/2" = 1'-0"



1

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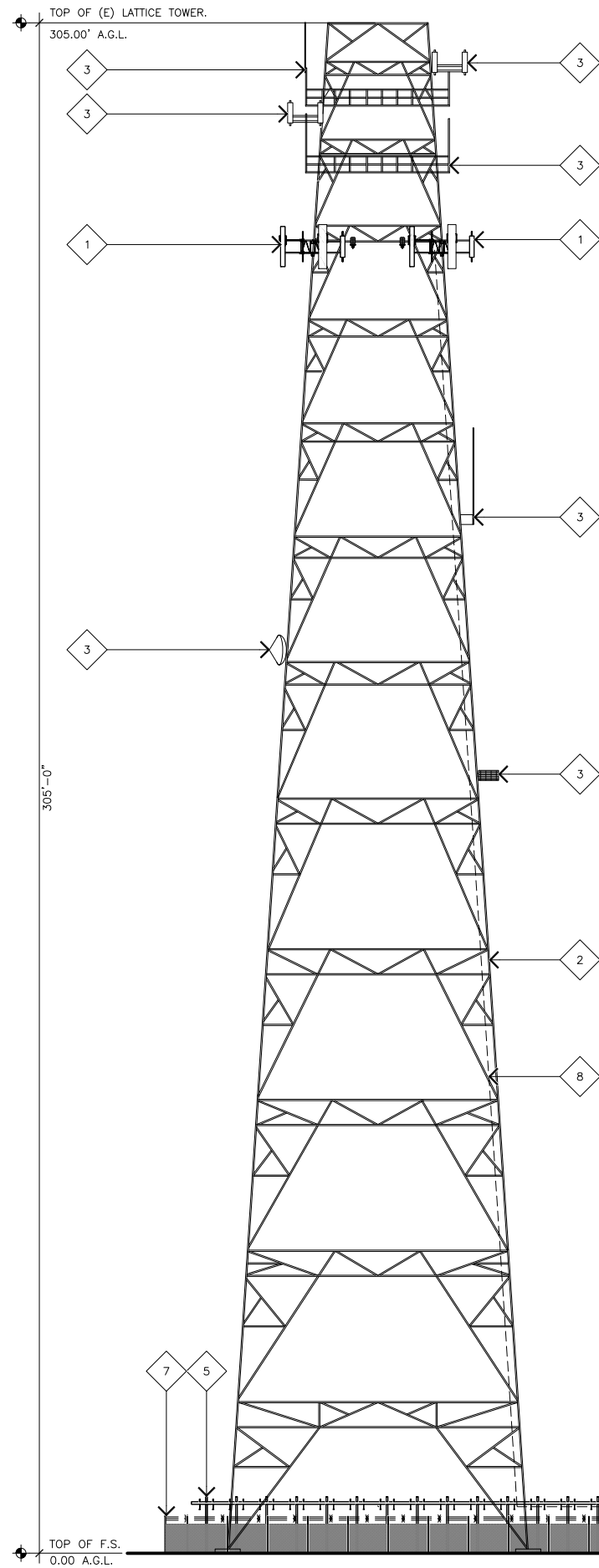
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**ENLARGED SITE AND
EQUIPMENT PLAN**

A-1.1

JOB NUMBER: 21253

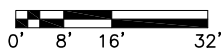


EXISTING ELEVATION KEYNOTES

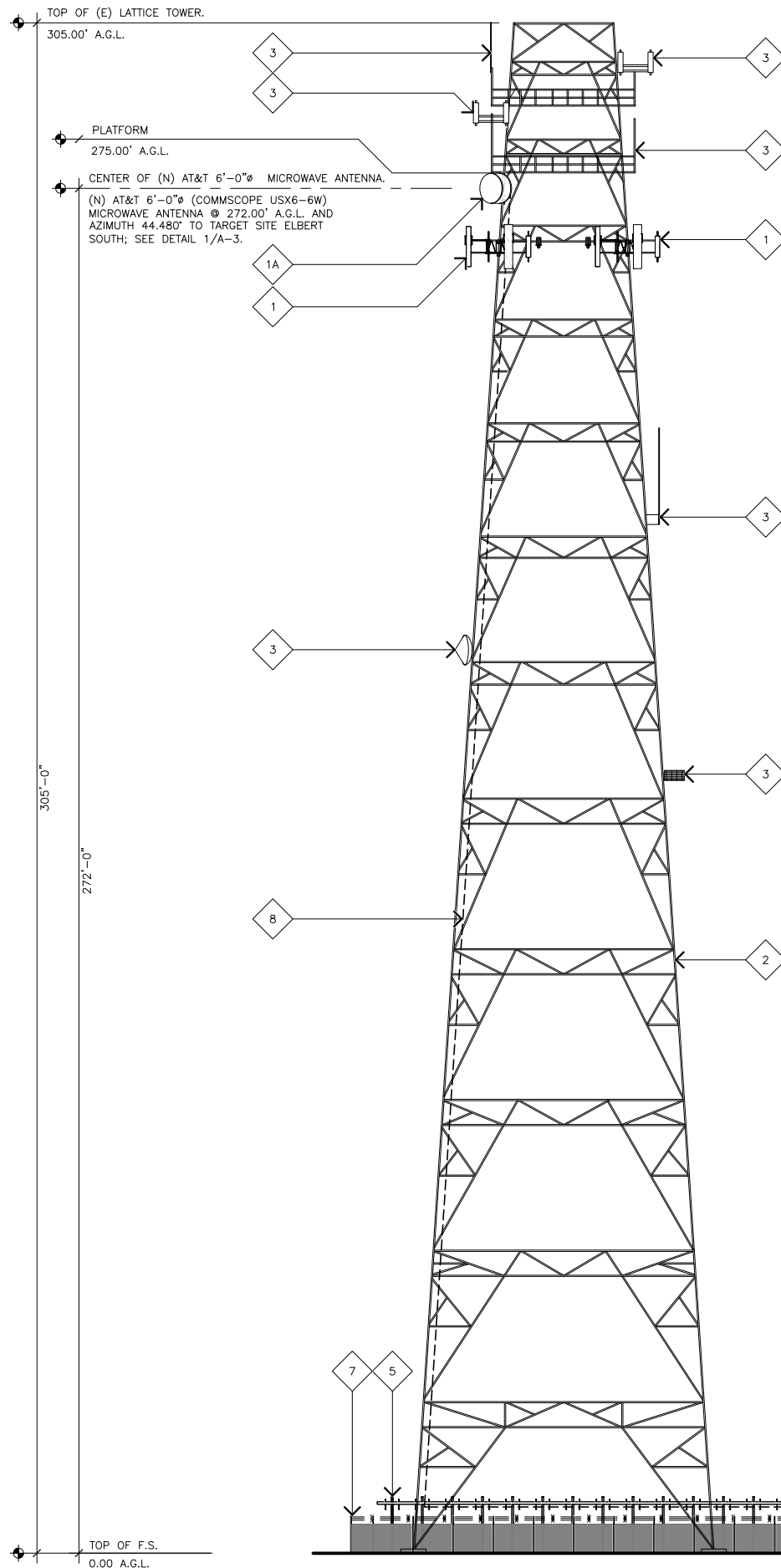
- 1 (E) AT&T ANTENNAS MOUNTED TO (E) LATTICE TOWER.
- 2 (E) LATTICE TOWER.
- 3 (E) OTHER CARRIER ANTENNAS MOUNTED TO (E) LATTICE TOWER.
- 4 (E) AT&T EQUIPMENT AREA WITHIN (E) BUILDING.
- 5 (E) AT&T ICE BRIDGE.
- 6 (E) PROPANE TANK.
- 6A (E) GENERATOR.
- 7 (E) CHAIN-LINK FENCE ENCLOSURE.
- 8 (E) AT&T CABLE RUNS MOUNTED TO (E) LATTICE TOWER.

EXISTING NORTH ELEVATION

11X17 SCALE: 1/32" = 1'-0"
24X36 SCALE: 1/16" = 1'-0"



2



PROPOSED ELEVATION KEYNOTES

- 1 (E) AT&T ANTENNAS MOUNTED TO (E) LATTICE TOWER.
- 1A (N) AT&T 6'-0" MICROWAVE ANTENNA MOUNTED TO (E) LATTICE TOWER TO ELBERT SOUTH.
- 2 (E) LATTICE TOWER.
- 3 (E) OTHER CARRIER ANTENNAS MOUNTED TO (E) LATTICE TOWER.
- 4 (E) AT&T EQUIPMENT AREA WITHIN (E) BUILDING.
- 5 (E) AT&T ICE BRIDGE.
- 6 (E) PROPANE TANK.
- 6A (E) GENERATOR.
- 7 (E) CHAIN-LINK FENCE ENCLOSURE.
- 8 (N) (1) AT&T EW-63 WAVEGUIDE MOUNTED TO (E) LATTICE TOWER.

PROPOSED NORTH ELEVATION

11X17 SCALE: 1/32" = 1'-0"
24X36 SCALE: 1/16" = 1'-0"



1

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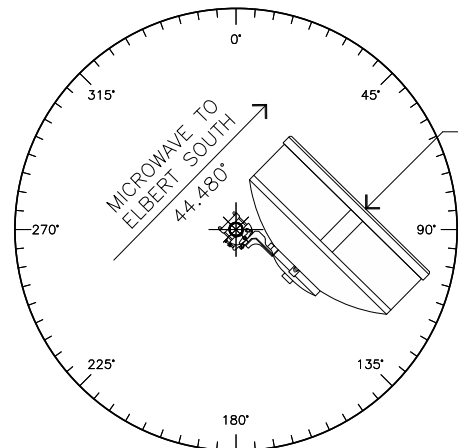
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EXISTING & PROPOSED ELEVATIONS

A-2



(N) AT&T 6'-0" MICROWAVE ANTENNA.

MICROWAVE SCHEDULE						
ANTENNA MODEL	ANTENNA AZIMUTH	RAD CENTER	CABLE TYPE	QTY	ODU TYPE	QTY
COMMSCOPE USX6-6W	44.480°	272'-0"	EW-63 WAVEGUIDE	1	-	-



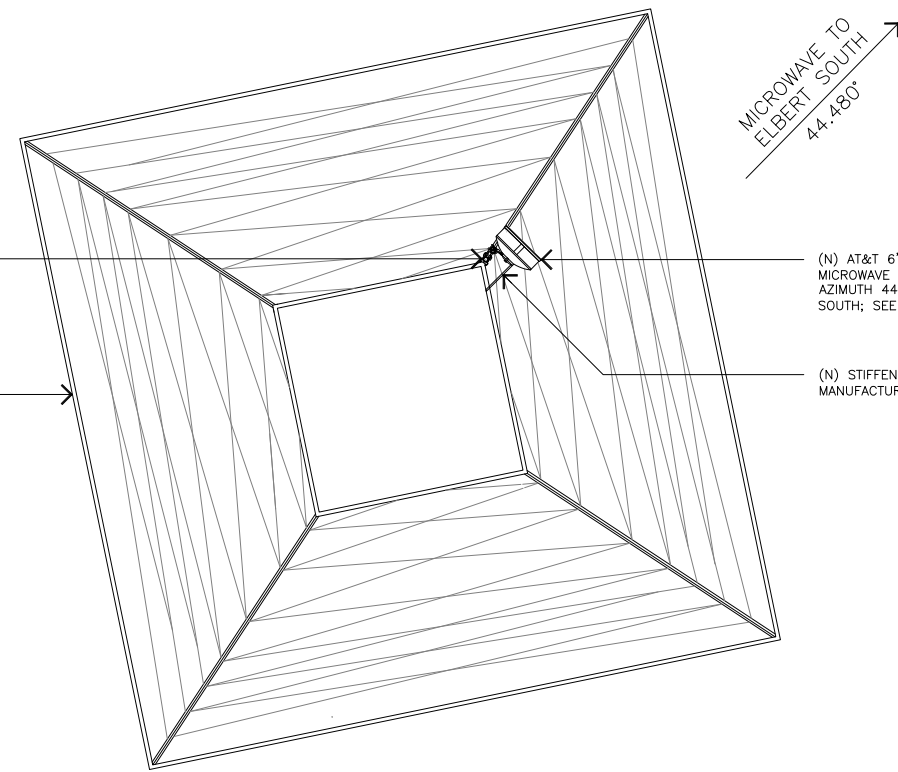
MICROWAVE AZIMUTH

SCALE: NONE

4

STIFFENER ARM SCHEDULE

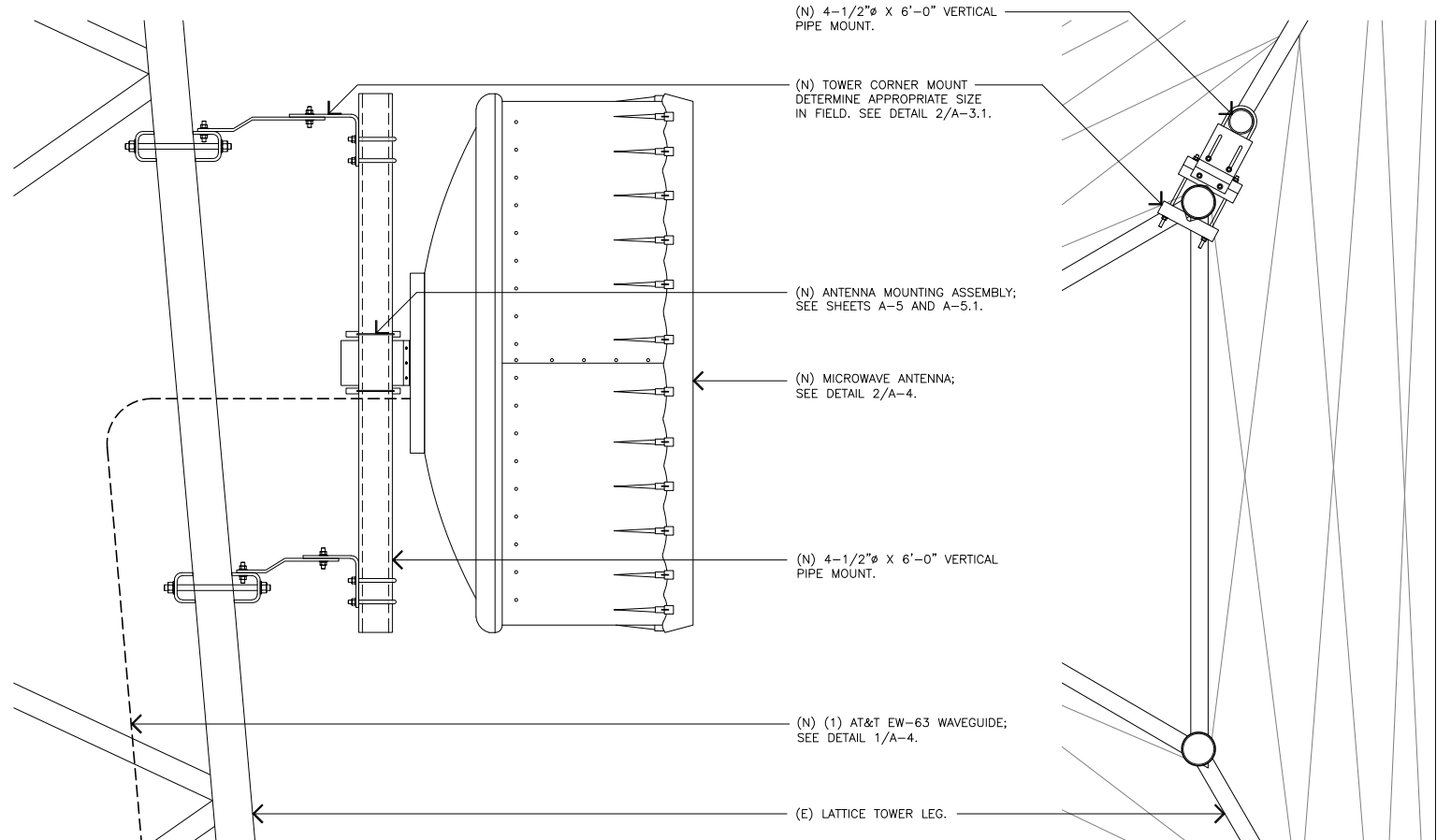
SIZE OF MICROWAVE ANTENNA	NUMBER OF STIFFENER ARMS
1'-0" TO 2'-7"	NONE
3'-0" TO 4'-0"	1
6'-0"	2
8'-0" TO 10'-0"	3
12'-0" +	4



ANTENNA PLAN

SCALE: NONE

2



ELEVATION VIEW

PLAN VIEW
ANTENNAS NOT SHOWN FOR CLARITY

GROUNDING SYSTEM SCHEMATIC

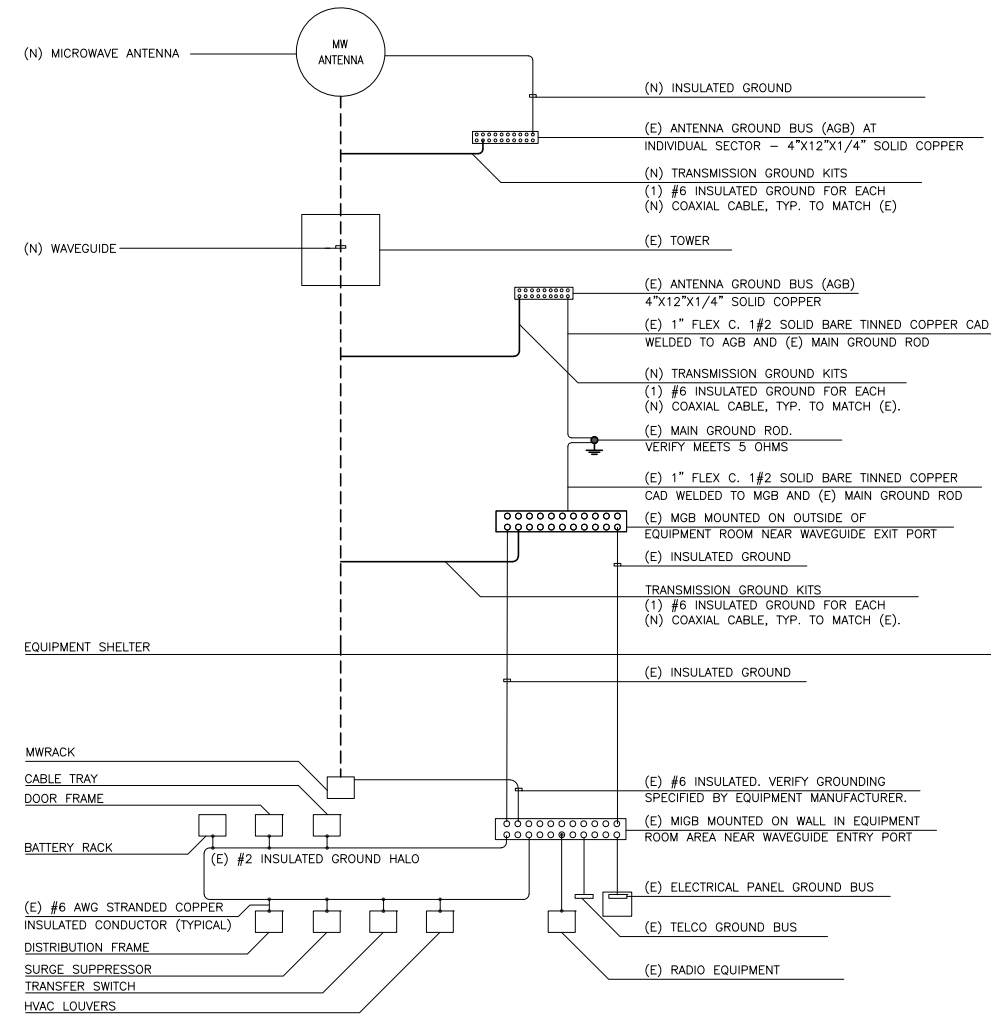
SCALE: NONE

3

MICROWAVE ANTENNA DETAIL

SCALE: NONE

1



GENERAL NOTES:

1. SPLICE GROUND CONNECTIONS.
2. FOLLOW COAXIAL CABLE MANUFACTURERS RECOMMENDATIONS (TYPICAL)
3. ALL INSULATED GROUND WIRES TO BE STRANDED, AWG WIRE UNLESS NOTED OTHERWISE.
4. THIS IS TYPICAL FOR ONE SECTOR OF ANTENNAS. SEE PLANS FOR NUMBER OF SECTORS.
5. NUMBER OF COAX IS DIAGRAMATIC.
6. EXISTING DIPLXER'S AND EXISTING TMA'S NOT SHOWN FOR CLARITY.

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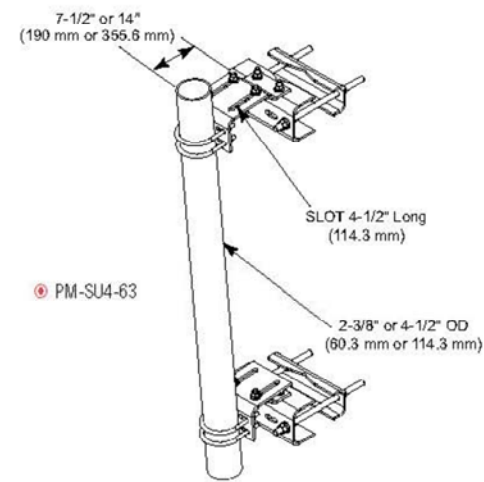
A-3

Universal Sliding Pipe Mount Kits

Application: Lattice towers
Size: 2-3/8" (60.3 mm) OD or 4-1/2" (114.3 mm) OD
Design: Pipe with saddle mount and adjustable clamps
Feature: Universal sliding bracket with up to 7° of taper
Mounts to: Straight or tapered legs up to 16" (406.4 mm) OD, 16" (406.4 mm) angle 60°, or 12" (304.8 mm) angle 90°
Material: Hot dip galvanized steel
Includes: Universal saddle mount, sliding pipe mount brackets, with or without pipe
Order Separately: Pipes for base kits

Wind Rating*: 120 mph (BWS) per latest revision of TIA/EIA-222 at 150' AGL

*Typical installation of one 8' microwave antenna with stiff arm



Part Number	Description	Weight, lb (kg)
-------------	-------------	-----------------

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 8" (203.2 mm), or 6" (152.4 mm) 90° Angle Legs, 2-3/8" (60.3 mm) Antenna Mounting Pipe

PM-SU2-B	Base Kit, Order Pipe Separately, Kit of 2	80 (32.3)
PM-SU2-72	2-3/8" OD x 72" (60.3 mm OD x 1.8 m)	101 (45.8)
PM-SU2-96	2-3/8" OD x 96" (60.3 mm OD x 2.4 m)	114 (51.7)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 16" (406.4 mm), or 12" (304.8 mm) 90° Angle Legs, 2-3/8" (60.3 mm) Antenna Mounting Pipe

PML-SU2-B	Base Kit, Order Pipe Separately, Kit of 2	80 (32.3)
PML-SU2-72	2-3/8" OD x 72" (60.3 mm OD x 1.8 m)	101 (45.8)
PML-SU2-96	2-3/8" OD x 96" (60.3 mm OD x 2.4 m)	114 (51.7)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 8" (203.2 mm), or 6" (152.4 mm) 90° Angle Legs, 14" (355.6 mm) Stand-off, 2-3/8" (60.3 mm) Antenna Mounting Pipe

PM-SU2L-B	Base Kit, Order Pipe Separately, Kit of 2	90 (40.9)
PM-SU2L-72	2-3/8" OD x 72" (60.3 mm OD x 1.8 m)	110 (49.9)
PM-SU2L-96	2-3/8" OD x 96" (60.3 mm OD x 2.4 m)	121 (54.9)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 16" (406.4 mm), or 12" (304.8 mm) 90° Angle Legs, 14" (355.6 mm) Stand-off, 2-3/8" (60.3 mm) Antenna Mounting Pipe

PML-SU2L-B	Base Kit, Order Pipe Separately, Kit of 2	90 (40.9)
PML-SU2L-72	2-3/8" OD x 72" (60.3 mm OD x 1.8 m)	110 (49.9)
PML-SU2L-96	2-3/8" OD x 96" (60.3 mm OD x 2.4 m)	121 (54.9)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 8" (203.2 mm), or 6" (152.4 mm) 90° Angle Legs, 4-1/2" (114.3 mm) Antenna Mounting Pipe

PM-SU4-B	Base Kit, Order Pipe Separately, Kit of 2	81 (36.8)
PM-SU4-63	4-1/2" OD x 63" (114.3 mm OD x 1.6 m)	138 (62.6)
PM-SU4-96	4-1/2" OD x 96" (114.3 mm OD x 2.4 m)	169 (76.7)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 16" (406.4 mm), or 12" (304.8 mm) 90° Angle Legs, 4-1/2" (114.3 mm) Antenna Mounting Pipe

PML-SU4-B	Base Kit, Order Pipe Separately, Kit of 2	81 (36.8)
PML-SU4-63	4-1/2" OD x 63" (114.3 mm OD x 1.6 m)	138 (62.6)
PML-SU4-96	4-1/2" OD x 96" (114.3 mm OD x 2.4 m)	169 (76.7)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 8" (203.2 mm), or 6" (152.4 mm) 90° Angle Legs, 14" (355.6 mm) Stand-off 4-1/2" (114.3 mm) Antenna Mounting Pipe

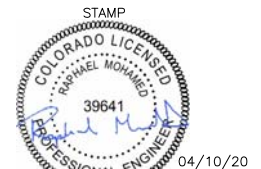
PM-SU4L-B	Base Kit, Order Pipe Separately, Kit of 2	90 (40.9)
PM-SU4L-63	4-1/2" OD x 63" (114.3 mm OD x 1.6 m)	145 (65.8)
PM-SU4L-96	4-1/2" OD x 96" (114.3 mm OD x 2.4 m)	175 (79.4)

Universal Sliding Pipe Mount Kits, for Round or 60° Angle Legs up to 16" (406.4 mm), or 12" (304.8 mm) 90° Angle Legs, 14" (355.6 mm) Stand-off, 4-1/2" (114.3 mm) Antenna Mounting Pipe

PML-SU4L-B	Base Kit, Order Pipe Separately, Kit of 2	90 (40.9)
PML-SU4L-63	4-1/2" OD x 63" (114.3 mm OD x 1.6 m)	145 (65.8)
PML-SU4L-96	4-1/2" OD x 96" (114.3 mm OD x 2.4 m)	175 (79.4)

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ALLAN WALKER	03/23/20
CONSTRUCTION	DATE
SITE ACQUISITION	DATE

PROJECT NAME
MICROWAVE UPGRADE

SITE NAME
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FA NUMBER
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04/10/20	100% FINAL CDS (P1-B2)
09/28/20	COUNTY COMMENTS (P1-B3)

SHEET TITLE

DETAILS

A-3.1

USX6-6W-6GR



1.8m | 6ft Sentinel® Ultra High Performance, Super High XPD Antenna

Product Classification

Brand	Sentinel®
Product Type	Microwave antenna

General Specifications

Antenna Type	USX - Sentinel® Ultra High Performance, Super High XPD Antenna
Diameter, nominal	1.8 m 6 ft
Packing	Standard pack
Radome Color	Gray
Radome Material	Fabric
Reflector Construction	One-piece reflector
Antenna Input	CPR137G
Antenna Color	Gray
Antenna Type	USX - Sentinel® Ultra High Performance, Super High XPD Antenna
Diameter, nominal	1.8 m 6 ft
Polarization	Dual

Mechanical Specifications

Fine Azimuth Adjustment	±5°
Fine Elevation Adjustment	±15°
Mounting Pipe Diameter	50 mm–115 mm 2.0 in–4.5 in
Net Weight	90 kg 198 lb
Side Struts, Included	1
Side Struts, Optional	1
Wind Velocity Operational	180 km/h 112 mph
Wind Velocity Survival Rating	200 km/h 124 mph

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Product Specifications



EW63

EW63, HELIAX® Standard Elliptical Waveguide



CHARACTERISTICS

Construction Materials

Jacket Material	PE
Conductor Material	Corrugated copper
Jacket Color	Black

Dimensions

Cable Volume	855.0 L/km 9.2 ft ³ /kft
Cable Weight	0.76 kg/m 0.51 lb/ft
Diameter Over Jacket (E Plane)	51.10 mm 2.01 in
Diameter Over Jacket (H Plane)	29.50 mm 1.16 in

Environmental Specifications

Installation Temperature	-40 °C to +60 °C (-40 °F to +140 °F)
Operating Temperature	-55 °C to +85 °C (-67 °F to +185 °F)
Storage Temperature	-70 °C to +85 °C (-94 °F to +185 °F)

General Specifications

Brand	HELIAX®
-------	---------

Mechanical Specifications

Maximum Twist	3.00 °/m 1.00 °/ft
Minimum Bend Radius, Multiple Bends (E Plane)	260.00 mm 10.00 in
Minimum Bend Radius, Multiple Bends (H Plane)	740.00 mm 29.00 in
Minimum Bend Radius, Single Bend (E Plane)	180.00 mm 7.00 in
Minimum Bend Radius, Single Bend (H Plane)	510.00 mm 20.00 in

Standard Conditions

Attenuation, Ambient Temperature	24 °C 75 °F
Average Power, Ambient Temperature	40 °C 104 °F
Average Power, Temperature Rise	42 °C 76 °F

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SHEET TITLE

SPECIFICATIONS

Installation Instructions



TMW Antenna
Tower Mount for 6ft (1.8m) Antennas.
Andrew Institute offers installation training.

Description
The following pages show the steps required to assemble and fit the antenna mount to a vertical pipe of diameter 48 to 115 mm (1.9 to 4.5"). This mount provides ±20° azimuth or ±15° elevation adjustment.

Notice
The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. Andrew installation instructions have been written for such personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

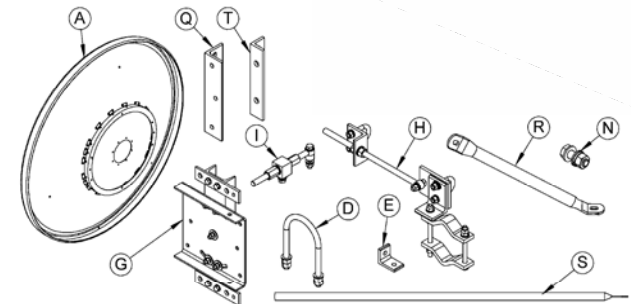
Andrew disclaims any liability or responsibility for the results of improper or unsafe installation practices.

Warning: Use protective wear to avoid skin contact with the pre-applied conductive grease on threads. Keep away from mouth. Wash thoroughly after use with liberal amounts of liquid soap and rinse with water. Do not store open near food or food sources. Dispose of empty or partially filled containers according to governmental regulations for petroleum products. Contents: oil, clay, and zinc dust.

TABLE 1- ANTENNA PARTS LIST

Item	Qty.	Description
A	1	REFLECTOR ASSY
D	3	U-BOLT
E	2	BRACKET
G	1	PANNING FRAME ASSY
H	1	AZIMUTH ADJUSTER
I	1	ELEVATION ADJUSTER
N	11	M12x35mm HEX HEAD BOLT*
	19	FLAT WASHER*
	11	SPRING WASHER*
	11	M12 NUT*
Q	1	MOUNTING ANGLE
R	1	STRENGTHENING STRUT
S	1	STRUT PIPE
T	1	SAFETY BRACKET

* = PART OF ACCESSORY KIT



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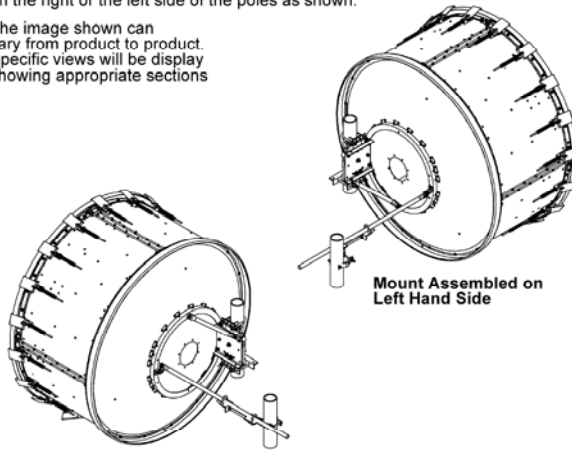


TMW Antenna
Tower Mount for 6ft (1.8m) Antennas.
Andrew Institute offers installation training.

Assembling the Mount

the antenna may be assembled with the mounts on the right or the left side of the poles as shown.

The image shown can vary from product to product. Specific views will be display showing appropriate sections



Mount Assembled on Right Hand Side

Note: only the left side assembly is described the right side assembly is identical except or the orientation of the strengthening strut - alternate steps and views will be shown.

Certain views have the antenna shields omitted for clarity.

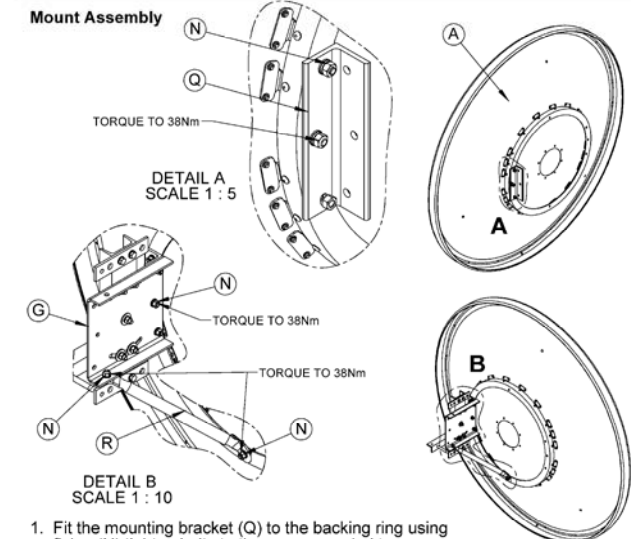
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Installation Instructions



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Tower Mount for 6ft (1.8m) Antennas.
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- Fit the mounting bracket (Q) to the backing ring using fixing (N) tighten bolts to the recommended torque.
 - Fit the panning frame assy (G) to the mounting bracket (Q) using the fixings (N) tighten the bolts to the recommended torque.
- L.H.S. Mount only**
- Fit the Strengthening Strut (R) to Mount using fixings (N) tighten the bolts to the recommended torque.

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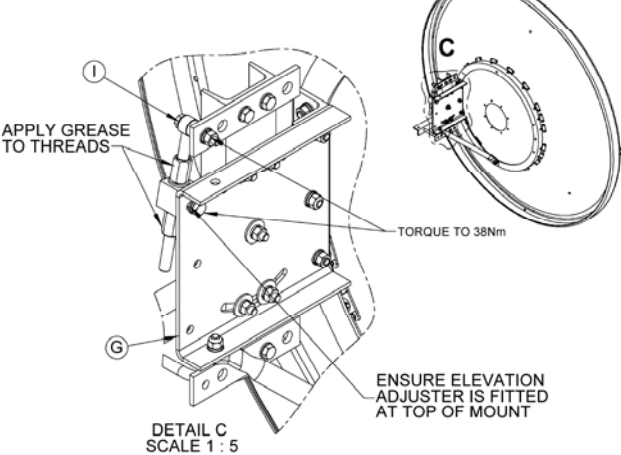
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Installation Instructions



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Attaching the Elevation Adjuster



- Fit elevation adjuster (I) to the position shown on the mount (G).
- Tighten all bolts and nuts to the elevation adjuster securely enough to allow for rotational movement whilst remaining adjuster attached.

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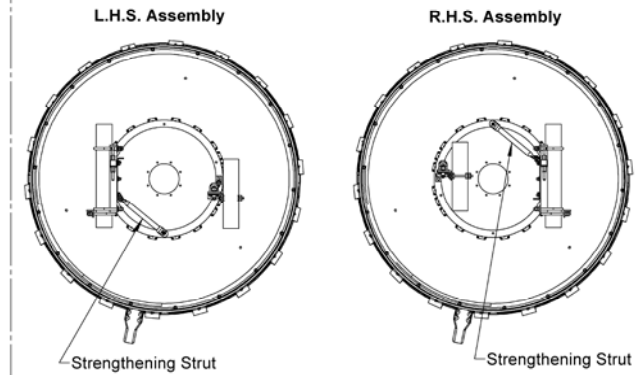
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Installation Instructions



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Orientation of Strengthening Strut Pipe on Mount



- For mounts assembled on the Left Hand Side - the strengthening strut item (R) is fitted to the Bottom of Reflector Backing Ring, as shown.
- For mounts assembled on the Right Hand Side - the strengthening strut item (R) is fitted to the Top of the Reflector Backing Ring, as shown.

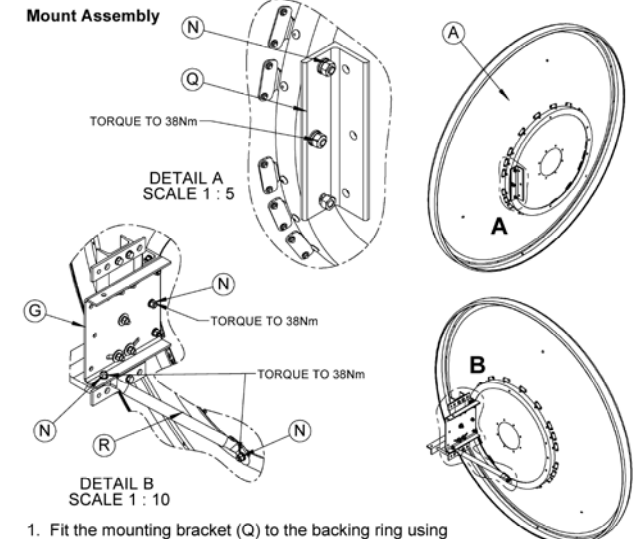
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Installation Instructions



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Tower Mount for 6ft (1.8m) Antennas.
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- Fit the mounting bracket (Q) to the backing ring using fixing (N) tighten bolts to the recommended torque.
 - Fit the panning frame assy (G) to the mounting bracket (Q) using the fixings (N) tighten the bolts to the recommended torque.
- L.H.S. Mount only**
- Fit the Strengthening Strut (R) to Mount using fixings (N) tighten the bolts to the recommended torque.

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ANTENNA MOUNTING DETAILS

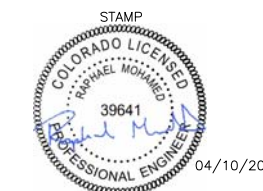
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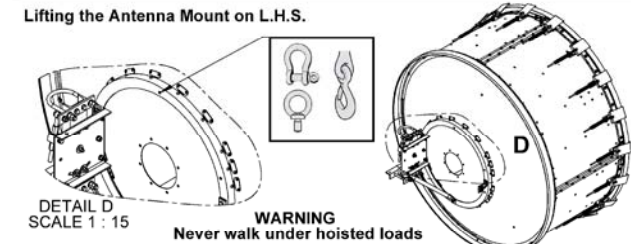
ANTENNA MOUNTING DETAILS

A-5

Installation Instructions

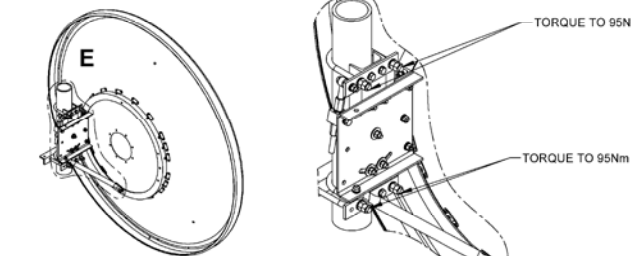
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Lifting the Antenna Mount on L.H.S.



- Lift the Antenna using the hoisting hole located on the backing ring

Attach Antenna to the pole



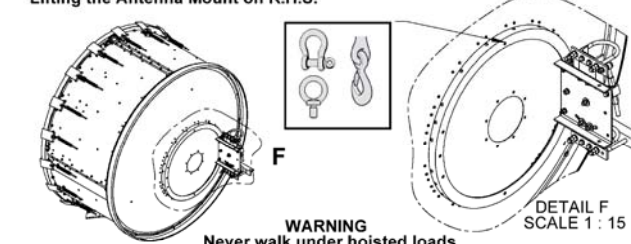
- Attach Mount to pole using U-Bolts, once in approximate position, fully tighten U-Bolts to recommended torque.

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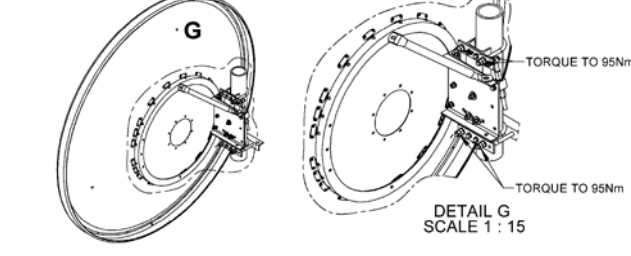
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Lifting the Antenna Mount on R.H.S.



- Lift the Antenna using the hoisting hole located on the backing ring

Attach Antenna to the pole



- Attach Mount to pole using U-Bolts, once in approximate position, fully tighten U-Bolts to recommended torque.
- Attach Strengthening Strut (R) to Mount using Fixings (N) tighten the bolts to the recommended torque.

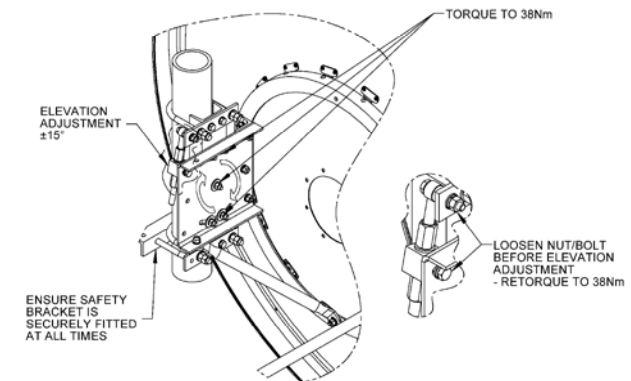
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Antenna set-up and alignment

Adjusting the Antenna in Elevation



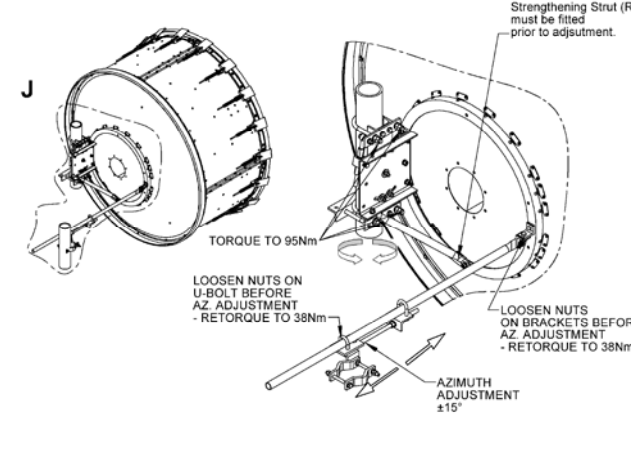
- Loosen the 5 bolts on the Panning Frame Assembly enough to allow for rotational movement while remaining securely attached.
- Loosen the nuts on the Fine Elevation Adjuster and adjust the antennas signal, until the optimum signal is found. Tighten the nut on the Fine Adjuster by hand.
- Re-torque fixings once adjustment is complete.

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Installation Instructions

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TMW Antenna Bulletin 102344 page 11 of 12
Tower Mount for 6ft (1.8m) Antennas. Model Version 03 Status: Rev D
Andrew Institute offers installation training.

Adjusting the Antenna in Azimuth



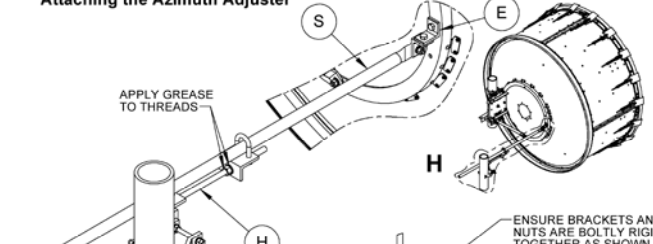
- Loosen the U-Bolts enough to allow for rotational movement around the pole, while remaining securely attached.
- Loosen the nuts on the Azimuth adjuster and adjust the antennas signal, until the optimum signal is found. Tighten the nut on the fine adjuster by hand.
- Re-torque fixings once adjustment is complete.
- Repeat ELEVATION and AZIMUTH adjustments until optimum signal is found.

Andrew Wireless Solutions
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U.K.: 0900-230505
Other Europe: +44 782 782 612
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Installation Instructions

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Tower Mount for 6ft (1.8m) Antennas. Model Version 03 Status: Rev D
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Attaching the Azimuth Adjuster



STRUT TO BE LOOSELY FITTED UNTIL ALIGNMENT IS COMPLETE THEN TIGHTEN FIXINGS TO RECOMMENDED TORQUE.

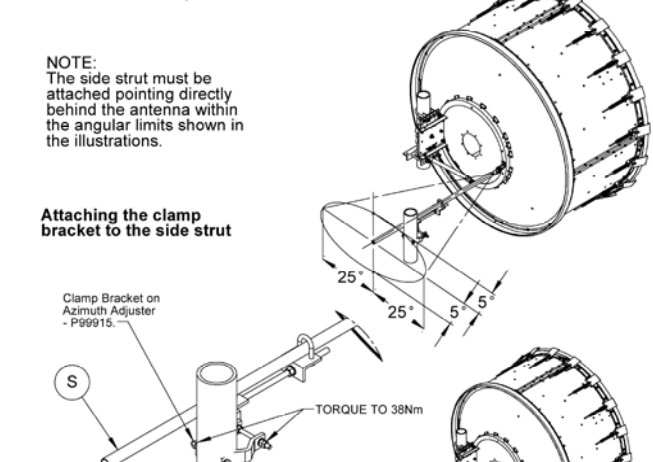
- Assemble Brackets (E) together with Fixings (N), attach to Reflector Assembly, as shown with Fixings (N).
- Attach Strut Pipe (S) to Bracket with Fixing (N)
- Attach the Azimuth Adjuster (H) to the Strut Pipe (S).
- Attach the Azimuth Adjuster (H) to Tower member using the Pipe Clamp Bracket fitted on Azimuth Adjuster.

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Tower Mount for 6ft (1.8m) Antennas. Model Version 03 Status: Rev D
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Side Strut & Clamp Bracket installation



- Tighten M12 U-Bolt sufficiently to allow for movement whilst remaining securely attached

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MasTec Network Solutions

3350 E BIRCH ST, SUITE 101
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APPROVALS

GAMALIEL AGUILAR	03/04/20
90% CDS	DATE
GAMALIEL AGUILAR	04/10/20
100% CDS	DATE
GAMALIEL AGUILAR	04/10/20
100% CDS WITH STRUCTURALS	DATE
ALLAN WALKER	03/23/20
CONSTRUCTION	DATE
SITE ACQUISITION	DATE

PROJECT NAME

MICROWAVE UPGRADE

SITE NAME

BLACK FOREST/COU2037

FA NUMBER

10093683

7113 MARSHBURN COURT
COLORADO SPRINGS, COLORADO 80908

DRAWING DATES

03/04/20 90% CD REVIEW (P1-B1)
04/10/20 100% FINAL CDS (P1-B2)
09/28/20 COUNTY COMMENTS (P1-B3)

SHEET TITLE

ANTENNA MOUNTING DETAILS

ANTENNA MOUNTING DETAILS

SCALE:
NONE

1

A-5.1

**Microwave Path Data Sheet
COMSEARCH**

Page 1 of 1

19700 Janelia Farm Boulevard, Ashburn, VA, 20147
(703)726-5810 www.comsearch.com

PCN Date: 04/08/2020
Job Number: 200408COMSKN01

Prev Job Num: 190830COMSKN01
RCN Number: 20040803

Administrative Information	BLACK FOREST CO	ELBERT SOUTH CO
City/County	Black Forest/El Paso	/Elbert
Status / License Basis	Engineering Proposal / PRIMARY OPERATION	Engineering Proposal / PRIMARY OPERATION
Call Sign		
Licensee Code	P2705A	P2705A
Licensee Name	New Cingular Wireless PCS LLC -Colo	New Cingular Wireless PCS LLC -Colo
Radio Service / Station Class	CF -- Point-to-Point Microwave, Common Carrier	FXO -- Fixed

Site Information	BLACK FOREST CO	ELBERT SOUTH CO
Latitude (NAD 83)	39 ° 2' 46.5" N	39 ° 10' 37.6" N
Longitude (NAD 83)	104 ° 41' 39.8" W	104 ° 31' 44.9" W
Ground Elevation (m/ft-AMSL)	2321.97 / 7618.0	2132.69 / 6997.0
Antenna Structure Registration #	1024235	
Path Azimuth (°)	44.480	224.584
Path Length (km / miles)	20.380 / 12.663	

Transmit Antenna	BLACK FOREST CO	ELBERT SOUTH CO
Manufacturer	57373A Commscope	57373A Commscope
Model	USX6-6W	USX6-6W
Gain(dBi) / Beamwidth(°) / Tilt(°)	38.8 / 1.80 / -0.58	38.8 / 1.80 / 0.44
Centerline (m / ft - AGL)	82.91 / 272.0	89.92 / 295.0

Receive Antenna	Same As Transmit
Manufacturer	
Model	
Gain (dBi) / Beamwidth (°)	
Centerline (m / ft - AGL)	

Diversity Receive Antenna
Manufacturer
Model
Gain (dBi) / Beamwidth (°)
Centerline (m / ft - AGL)

Radio Information	BLACK FOREST CO	ELBERT SOUTH CO
Manufacturer	TEET54 Nokia	TEET54 Nokia
Model	WVCE61-L2-512F30S-208	WVCE61-L2-512F30S-208
Model Description	Wavence MPT-HLC Fixed Modulation	Wavence MPT-HLC Fixed Modulation
Emission Designator / Modulation	30MOD7W 512 QAM	30MOD7W 512 QAM
Loading	1 CH DIG 208000.000	1 CH DIG 208000.000
Stability (%)	0.001	0.001
	Nominal Coordinated Maximum	Nominal Coordinated Maximum
Power (dBm)	34.0	34.0
Received Level (dBm)	-35.7	-35.7
EIRP (dBm)	65.8	67.0
Fixed Loss: Tx / Common (dB)	0.0 / 7.0	0.0 / 5.8
Free Space Loss (dB)		134.5

Transmit Frequencies (MHz)	BLACK FOREST CO	ELBERT SOUTH CO
	6004.5000V(13T) 6063.8000V(15T)	6256.5400V(23T) 6315.8400V(25T)



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SHEET TITLE

PCN SHEET

A-6