

App No: 2018100546

Revised 12.21.18 - JR

Applicant Name	Site Link Wireless, LLC		Antenna Compliance	Yes
Application Type	Minor Modificatio	Updated 11/19/2018	Compliance Desc	
Carrier	T-Mobile	6409? Yes	Antenna Location	Yes
Solution Type	Macro	Ann. Plan? Yes	Antenna Loc. Desc.	
Existing	Existing	Equipment Gvt Us No	Env. Assessment	
Application Description		Gvt. Use Desc.	Routine Env. Evaluation	

T-Mobile proposes to remove and replace (9) panel antennas at the existing building telecom site. T-Mobile also proposes to remove (3) RRH's and install (15) new RRH's. No ground work.

Site Id	46	Zoning	CR-5
Structure Type	Building	Latitude	38.99425
Address	962 Wayne Ave, Silver Spring	Longitude	-77.025975
County Site Name	962 Wayne Ave	Ground Elevation	352
Carrier Site Name	7WAN010A	City	Silver Spring
Site Owner	BSREP II MD Office Wayne LLC	Lease Status	Leased
Structure Owner	BSREP II MD Office Wayne LLC	PROW	No
Structure Height	84		

Justification

To provide additional coverage and capacity in this portion of Silver Spring.

NearbySites (New Apps Only):

Screeningconsiderations(New Apps Only):

Tuesday, November 20, 2018

11:57:17 AM

App No:	2018100546				
Antenna Model	Ericsson BSA33R-U6A				
Frequency	DL: 1965-1970, 2150-2155; UL: 1885-1890, 1750-1755				
RAD Center	110	Max ERP	931	Antenna Dimensions	75.9"x12.9"x6.2"
				Quantity	6

App No:

2018100546

Antenna Model

RFS APXVAARR18_43-U-NA20

Frequency

DL: 1965-1970, 728-734; UL: 1885-1890, 698-704

RAD Center

110

Max ERP

574

Antenna Dimensions

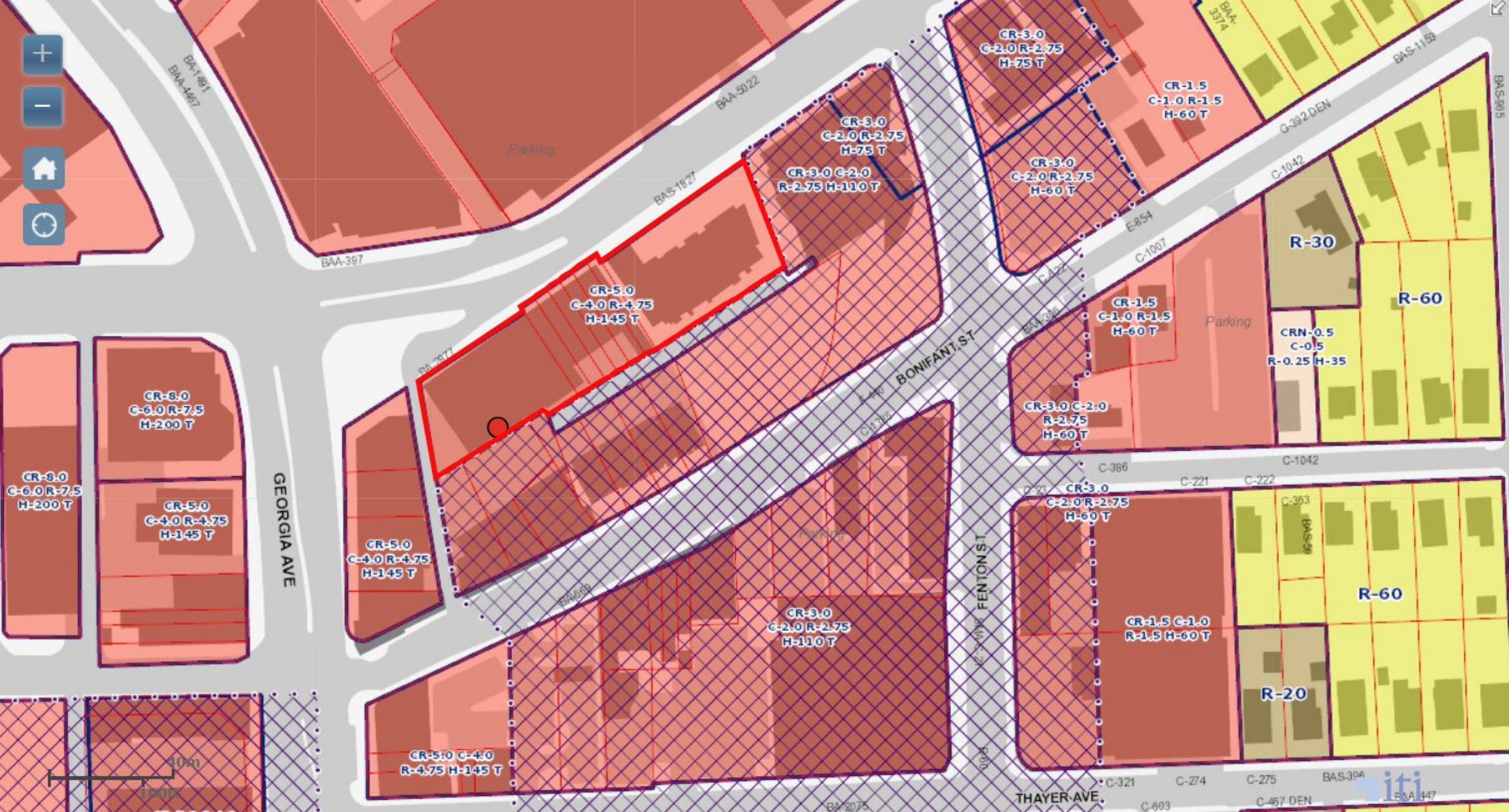
72"x24"x8.5"

Quantity

3

Tuesday, November 20, 2018

11:57:19 AM





Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°

FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600MHz, 700MHz, AWS & PCS applications.



- ➔ 24 Inch Width For Easier Zoning
- ➔ Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality
- ➔ Superior elevation pattern performance across the entire electrical down tilt range
- ➔ Includes three AISG RET motors - Includes 0.5m AISG jumper for optional diasy chain of two high band RET motors for one single AISG point of high band tilt control.
- ➔ Low band arrays driven by a single RET motor

Technical Features

LOW BAND LEFT ARRAY (617-746 MHZ) [R1]

Frequency Band	MHz	617-698	698-746
Gain	dBi	14.4	14.9
Horizontal Beamwidth @3dB	Deg	66.1+/-4.3	63.1+/-2.3
Vertical Beamwidth @3dB	Deg	14.2+/-0.8	13.0+/-0.5
Electrical Downtilt Range	Deg	0-14	
Upper Side Lobe Suppression 0 to +20	dB	20.5	21.4
Front-to-Back, at +/-30°, Copolar	dB	22.4	21.8
Cross Polar Discrimination (XPD) @ Boresight	dB	21.4	20.1
Cross Polar Discrimination (XPD) @ +/-60	dB	5.2	3.5
3rd Order PIM 2 x 43dBm	dBc	-153	
VSWR	-	1.5:1	
Cross Polar Isolation	dB	25	
Maximum Effective Power per Port	Watt	250	

LOW BAND RIGHT ARRAY (617-746 MHZ) [R2]

Frequency Band	MHz	617-698	698-746
Gain	dBi	14.1	14.5
Horizontal Beamwidth @3dB	Deg	66.5+/-4.9	63.3+/-2.2
Vertical Beamwidth @3dB	Deg	14.2+/-0.8	12.9+/-0.6
Electrical Downtilt Range	Deg	0-14	
Upper Side Lobe Suppression 0 to +20	dB	20.3	21.3
Front-to-Back, at +/-30°, Copolar	dB	22.4	21.4
Cross Polar Discrimination (XPD) @ Boresight	dB	20.2	19.7
Cross Polar Discrimination (XPD) @ +/-60	dB	4.5	1.7
3rd Order PIM 2 x 43dBm	dBc	-153	
VSWR	-	1.5:1	
Cross Polar Isolation	dB	25	
Maximum Effective Power per Port	Watt	250	



Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°

HIGH BAND LEFT ARRAY (1695-2200 MHZ) [B1]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200
Gain	dBi	16.4	17.4	18.6
Horizontal Beamwidth @3dB	Deg	64.3+/-6.7	58.6+/-6.6	56.4+/-6.8
Vertical Beamwidth @3dB	Deg	6.0+/-0.6	5.5+/-0.5	5.2+/-0.5
Electrical Downtilt Range	Deg	2-12		
Upper Side Lobe Suppression 0 to +20	dB	14.9	15	15.1
Front-to-Back, at +/-30°, Copolar	dB	25.6	23.7	24.1
Cross Polar Discrimination (XPD) @ Boresight	dB	18.2	15	15.1
Cross Polar Discrimination (XPD) @ +/-60	dB	1.9	2.7	4.6
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	250		

HIGH BAND RIGHT ARRAY (1695-2200 MHZ) [B2]

Frequency Band	MHz	1695-1880	1850-1990	1920-2200
Gain	dBi	16.3	17.6	18.6
Horizontal Beamwidth @3dB	Deg	64.8+/-7.6	58.7+/-5.7	56.7+/-6.4
Vertical Beamwidth @3dB	Deg	6.0+/-0.6	5.6+/-0.5	5.2+/-0.5
Electrical Downtilt Range	Deg	2-12		
Upper Side Lobe Suppression 0 to +20	dB	14.3	15.4	15.8
Front-to-Back, at +/-30°, Copolar	dB	26	25.1	24.9
Cross Polar Discrimination (XPD) @ Boresight	dB	16.8	15	15.7
Cross Polar Discrimination (XPD) @ +/-60	dB	1.4	3.5	5.5
3rd Order PIM 2 x 43dBm	dBc	-153		
VSWR	-	1.5:1		
Cross Polar Isolation	dB	25		
Maximum Effective Power per Port	Watt	250		


Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°
ELECTRICAL SPECIFICATIONS

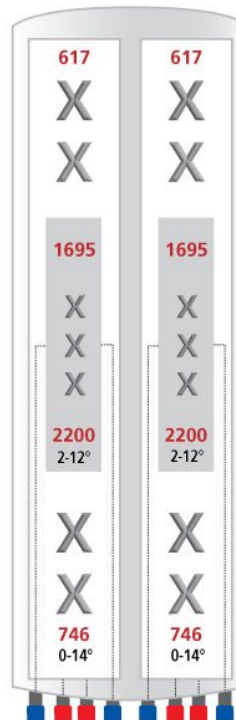
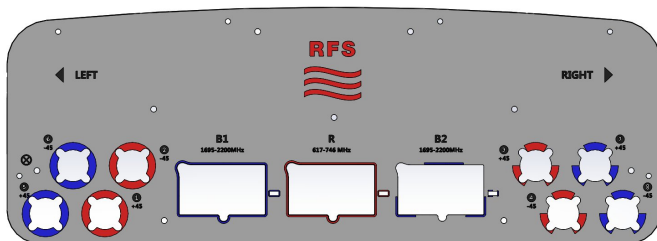
Impedance	Ohm	50.0
Polarization	Deg	±45°

MECHANICAL SPECIFICATIONS

Dimensions - H x W x D	mm (in)	1829 x 609 x 215 (72 x 24 x 8.5)
Weight (Antenna Only)	kg (lb)	48 (106)
Weight (Mounting Hardware only)	kg (lb)	11.5 (25.3)
Packing size- HxWxD	mm (in)	1980 x 735 x 375 (77.9 x 28.9 x 14.8)
Shipping Weight	kg (lb)	70 (154)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Mounting Hardware Material		Galvanized steel
Radome Material / Color		Fiber Glass / Light Grey RAL7035

TESTING AND ENVIRONMENTAL

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	240 (150)
Wind Load @Rated Wind Front	N	1072.0
Wind Load @Rated Wind Side	N	326.0
Wind Load @Rated Wind Rear	N	1160.0
Environmental		ETSI 300-019-2-4 Class 4.1E





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ORDERING INFORMATION

Order No.	Configuration	Mounting Hardware	Mounting pipe Diameter	Shipping Weight
APXVAARR18_43-U-NA20	Field Replace RET included (3)	APM40-5E Beam tilt kit (included)	60-120mm	70 Kg

External Document Links

APM40_Series_Installation_Instructions
Manual_Overdrive_Instructions
Global RFS Website

Notes

All electrical parameters are compliant with BASTA NGMN 9.6 requirements.

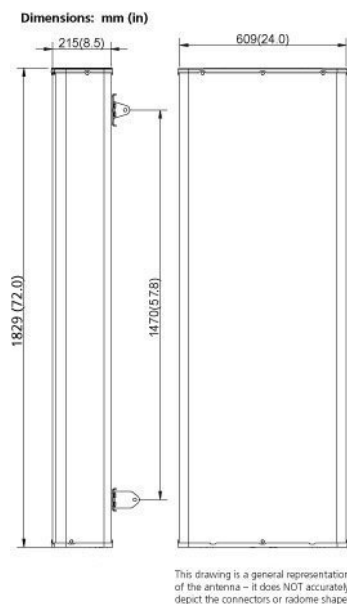
Available Configurations
APXVAARR18_43-U-NA20 -- External ACU is included -- shipping weight 69kg.

For additional mounting information please click "External Document Links".

This data is provisional and subject to changes.

External Link Reference

Global RFS Website <http://www.rfsworld.com>





SPECIFICATIONS

4x4 MIMO Bi-Sector Array Antenna

BSA33R-U6A

Electrical

Ports	8 X High Band Ports for 1695-2400 MHz			
Frequency Range	1695-1880 MHz	1920-2180 MHz	1850-1990 MHz	2300-2400 MHz
Gain (Peak)	17.5 dBi	17.8 dBi	18.3 dBi	18.8 dBi
Gain (Average)*	16.4 dBi	17.2 dBi	17.6 dBi	18.2 dBi
Azimuth Beamwidth (-3dB)	37°	34°	32°	28°
Elevation Beamwidth (-3dB)	9.8°	9.0°	8.6°	7.6°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 10°	0° to 10°
Elevation Sidelobes (1st Upper)	< -17 dB	< -18 dB	< -18 dB	< -18 dB
Front-to-Back Ratio @180°	> 35 dB	> 35 dB	> 35 dB	> 35 dB
Cross-Polar Discrimination (at Peak)	> 24 dB	> 24 dB	> 24 dB	> 24 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Voltage Standing Wave Ratio (VSWR)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc	≤ -150 dBc
Input Power Continuous Wave (CW)	300 watts	300 watts	300 watts	300 watts
Polarization	±45°	±45°	±45°	±45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Gnd	DC Gnd	DC Gnd	DC Gnd

*Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

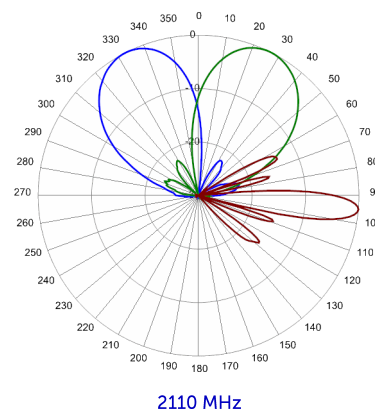
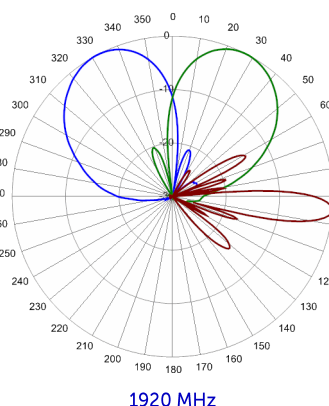
Rear Iso View



Mechanical

Dimensions (LxWxD)	75.9 x 12.9 x 6.2 inches (1929×327×158 mm)
Survival Wind Speed	> 150 mph (> 241 km/hr)
Front Wind Load	235 lbs (1045 N) @ 100 mph (161 kph)
Side Wind Load	132 lbs (588 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.2 ft² (0.9 m²)
Weight *	50.6 lbs (23 kg)
RET System Weight	3.3 lbs (1.5 kg)
Connector	8 × 7-16 DIN female long neck
Mounting Pole	2-5 in (5-12 cm)

*Weight excludes mounting and RET



1. SITE INFORMATION OBTAINED FROM THE FOLLOWING:
 - A. PLAN ENTITLED "7WAN010A-TECHNOLOGY SERVICE CORP" PREPARED BY ADVANTAGE ENGINEERS OF COLUMBIA, MD LAST REVISED 04/22/16.
 - B. LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 06/12/18.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
4. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
6. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
9. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
10. THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF, THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
11. NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
12. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
13. THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
14. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
15. THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-G AS PER IBC REQUIREMENTS.
16. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
17. CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
18. CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.

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2	12/21/18	REVISED TO INCLUDE ELECTRICAL UPGRADE	BAH	NSB	
1	10/17/18	REVISED PER COMMENTS	BAH	NSB	
0	08/14/18	ISSUED FOR CONSTRUCTION	YMA	NSB	
0	07/12/18				
A	07/12/18	SENT FOR REVIEW	MCA	NSB	
REV	DATE	DESCRIPTION	BY	CHECKED	



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SHEET TITLE :

SHEET NUMBER :

A map of Silver Spring, Maryland, with a black arrow pointing to the project location on Wayne Avenue. The map shows various landmarks and streets, including Colesville Road, Wayne Avenue, Fenton Street, and Bullis Park. A black box with the text "PROJECT LOCATION" is placed over the arrow.

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. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

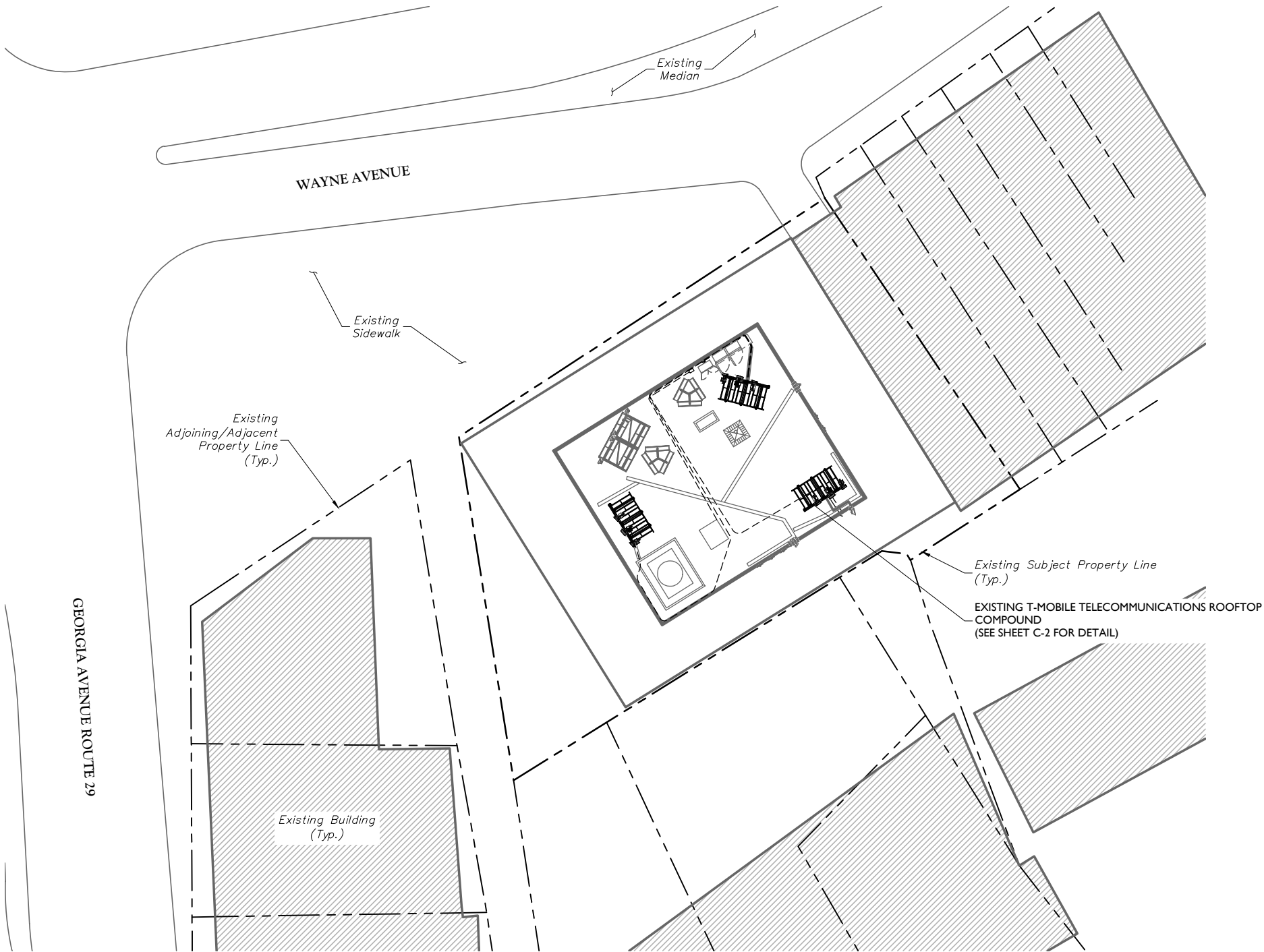
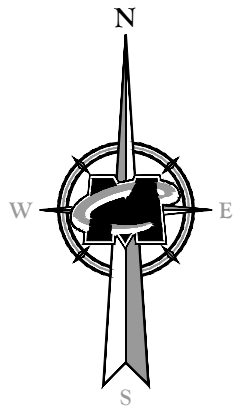
- | SHEET | DESCRIPTION |
|-------|------------------------------------|
| T-1 | TITLE SHEET |
| C-1 | SITE PLAN |
| C-2 | ROOFTOP LAYOUT |
| C-3 | EQUIPMENT LAYOUT |
| C-4 | ELEVATION VIEW |
| A-1 | ANTENNA PLANS AND ANTENNA SCHEDULE |
| A-2 | CONSTRUCTION DETAILS - 1 |
| A-3 | CONSTRUCTION DETAILS - 2 |
| A-4 | CONSTRUCTION DETAILS - 3 |
| E-1 | ELECTRICAL DETAILS |
| E-2 | GROUNDING DETAILS |
| G-1 | GENERAL AND ELECTRICAL NOTES |

2

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LEGEND

- Existing Subject Property Line
----- Existing Adjoining/Adjacent Property Line
----- Existing Structure
----- Existing Edge of Pavement/Road
----- Existing Edge of Gravel/Dirt Road
~~~~~ Existing Tree Line  
----- Existing Features  
----- PROPOSED FEATURES



SITE PLAN



SCALE : 1" = 20' FOR 22"X34"  
(SCALE : 1" = 40' FOR 11"X17")

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SCALE: AS SHOWN JOB NUMBER: 18958047A

|          |          |                                       |     |         |      |
|----------|----------|---------------------------------------|-----|---------|------|
|          |          |                                       |     |         |      |
|          |          |                                       |     |         |      |
|          |          |                                       |     |         |      |
| 2        | 12/21/18 | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB     |      |
| 1        | 10/17/18 | REVISED PER COMMENTS                  | BAH | NSB     |      |
| 0        | 08/14/18 | ISSUED FOR CONSTRUCTION               | YMA | NSB     |      |
| 8        | 07/12/18 | ISSUED FOR REVIEW                     | HCA | NSB     |      |
| A        | 07/12/18 | ISSUED FOR REVIEW                     | NSB | NSB     |      |
| REVISION | DATE     | DESCRIPTION                           | BY  | CHECKED | DATE |



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TECHNOLOGY SERVICE  
CORP.

962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



COLUMBIA OFFICE  
6240 Old Dobbins Lane  
Suite 150  
Columbia, MD 21045  
Phone: 877.627.3772

email: solutions@maserconsulting.com

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-1

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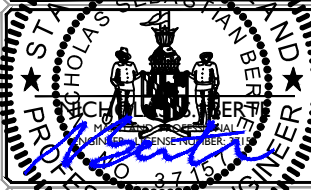
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|   |          |                                       |     |     |
|---|----------|---------------------------------------|-----|-----|
| 2 | 12/21/18 | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB |
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| 8 | 07/12/18 | ISSUED FOR REVIEW                     | HCA | NSB |
| A | 07/12/18 | ISSUED FOR REVIEW                     | NSB | NSB |

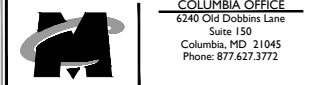


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SITE NAME:

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MONTGOMERY COUNTY



COLUMBIA OFFICE  
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Suite 150  
Columbia, MD 21045  
Phone: 877.627.3772

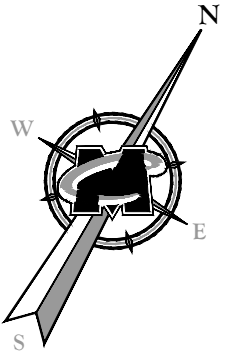
email: solutions@maserconsulting.com

SHEET TITLE:

ROOFTOP PLAN

SHEET NUMBER:

C-2



Existing T-Mobile RRUS32 B2 Behind Proposed Antenna on Site Pro 1 Dual Mounting Bracket (Typ. of 3, 1 Per Sector)

PROPOSED T-MOBILE RRUS-4415 B2 BEHIND PROPOSED ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET (TYP. OF 3, 1 PER SECTOR)

Existing Rooftop

PROPOSED T-MOBILE TWIN BEAM ANTENNA (TYP. OF 6, 2 PER SECTOR)

PROPOSED T-MOBILE RRUS-4415 B4 BEHIND PROPOSED ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET (TYP. OF 6, 2 PER SECTOR)

Existing Sprint Ballast (Typ.)

Existing Ballast Mount (Typ.)

PROPOSED T-MOBILE CONDUIT RUN FROM ELECTRICAL ROOM IN BASEMENT THROUGH STACKED UTILITY CLOSETS TO PROPOSED T-MOBILE AC PANEL IN PENTHOUSE (CONTRACTOR SHALL VERIFY PROPOSED ROUTING WITH LANDLORD PRIOR TO CONSTRUCTION)

PROPOSED T-MOBILE AC PANEL TO REPLACE EXISTING

T-Mobile Equipment Inside Penthouse (SEE EQUIPMENT LAYOUT ON SHEET C-3)

Existing Roof Opening

INSTALL 6X12 HYBRID CABLES (TYP. OF 3, 1 PER SECTOR)

PROPOSED SITE PRO 1 BALLAST MOUNT PART # RTP14 (TYP. OF 3, 1 PER SECTOR)

Existing Rooftop

Existing Penthouse Roof

PROPOSED RRUS-4449 B71 + B12 BEHIND PROPOSED ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET (TYP. OF 3, 1 PER SECTOR)

PROPOSED RRUS-01 B2 BEHIND PROPOSED ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET (TYP. OF 3, 1 PER SECTOR)

PROPOSED T-MOBILE L600 ANTENNA TO REPLACE EXISTING ANTENNA (TYP. OF 3, 1 PER SECTOR)

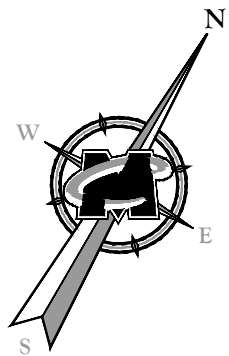
Approximate Location of Existing Stacked Utility Closets

Existing Rooftop

ROOFTOP PLAN



SCALE: 1" = 5' FOR 22'X34"  
(SCALE: 1" = 10' FOR 11'X17')



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| 2        | 12/21/18 | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB     |
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| A        | 07/12/18 | ISSUED FOR REVIEW                     | NSB | NSB     |
| REVISION | DATE     | DESCRIPTION                           | BY  | CHECKED |



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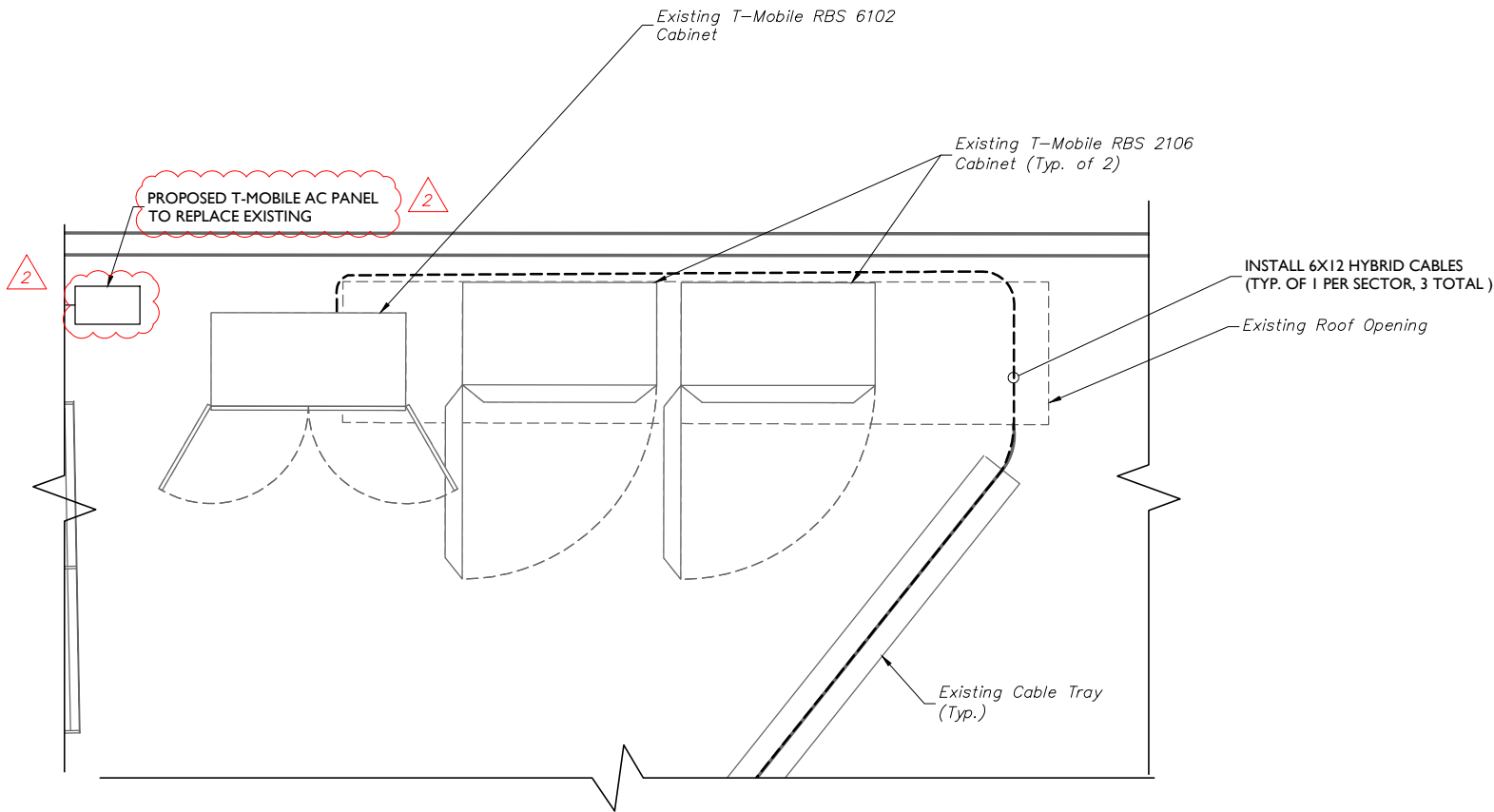
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SHEET TITLE:  
EQUIPMENT LAYOUT

SHEET NUMBER:  
C-3



EQUIPMENT LAYOUT



SCALE : 1" = 2' FOR 22"X34"  
(SCALE : 1" = 4' FOR 11"X17")

STRUCTURAL NOTES:

- A STRUCTURAL ANALYSIS REPORT PREPARED BY MASER CONSULTING P.A., DATED 07/06/18 HAS BEEN PREPARED TO CHECK THE STRUCTURAL CAPACITY OF THE PROPOSED ANTENNA MOUNT TO SUPPORT THE PROPOSED ANTENNA AND EQUIPMENT CONFIGURATION AS DEPICTED WITHIN THESE CONSTRUCTION DRAWINGS. BASED ON THE CONCLUSIONS OF THIS REPORT, THE ANTENNA MOUNT HAS BEEN DETERMINED TO HAVE SUFFICIENT CAPACITY.
- THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

PROPOSED T-MOBILE TWIN BEAM ANTENNA TO REPLACE EXISTING ANTENNA  
(TYP. OF 6, 2 PER SECTOR)

PROPOSED RRUS-4415 B4 MOUNTED BEHIND PROPOSED  
ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 6, 2 PER SECTOR)

PROPOSED T-MOBILE L600 ANTENNA TO REPLACE EXISTING ANTENNA  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED RRUS-4449 MOUNTED BEHIND PROPOSED ANTENNA  
ON SITE PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED RRUS-01 B2 MOUNTED BEHIND PROPOSED  
ANTENNA ON SITE PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED RRUS-4415 B2 BEHIND PROPOSED ANTENNA  
ON SITE PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 3, 1 PER SECTOR)

Existing RRUS-32 B2 Behind  
Proposed Antenna on Site Pro 1  
Dual Mounting Bracket  
(Typ. of 3, 1 Per Sector)

Existing Sprint Antenna  
(Typ.)

CENTERLINE OF PROPOSED T-MOBILE  
ANTENNAS  
@ 110'-0"± AGL

Top of Penthouse  
@ 105'-7"± AGL

Existing Sprint Microwave Antenna  
(Typ.)

Top of Main Roof  
@ 84'-0"± AGL

THIS T-MOBILE SITE REQUIRES AN AC  
SERVICE UPGRADE TO SUPPORT THE  
PROPOSED EQUIPMENT REFER TO THE  
E-1 SHEET FOR DETAILS

PROPOSED T-MOBILE AC PANEL  
TO REPLACE EXISTING  
PROPOSED T-MOBILE CONDUIT RUN FROM  
ELECTRICAL ROOM IN BASEMENT THROUGH  
STACKED UTILITY CLOSETS TO PROPOSED  
T-MOBILE AC PANEL IN PENTHOUSE  
(CONTRACTOR SHALL VERIFY PROPOSED  
ROUTING WITH LANDLORD PRIOR TO  
CONSTRUCTION)

Existing  
Windows  
(Typ.)

Existing  
Building

ELEVATION VIEW



SCALE : 1" = 10' FOR 22"X34"  
(SCALE : 1" = 20' FOR 11"X17")

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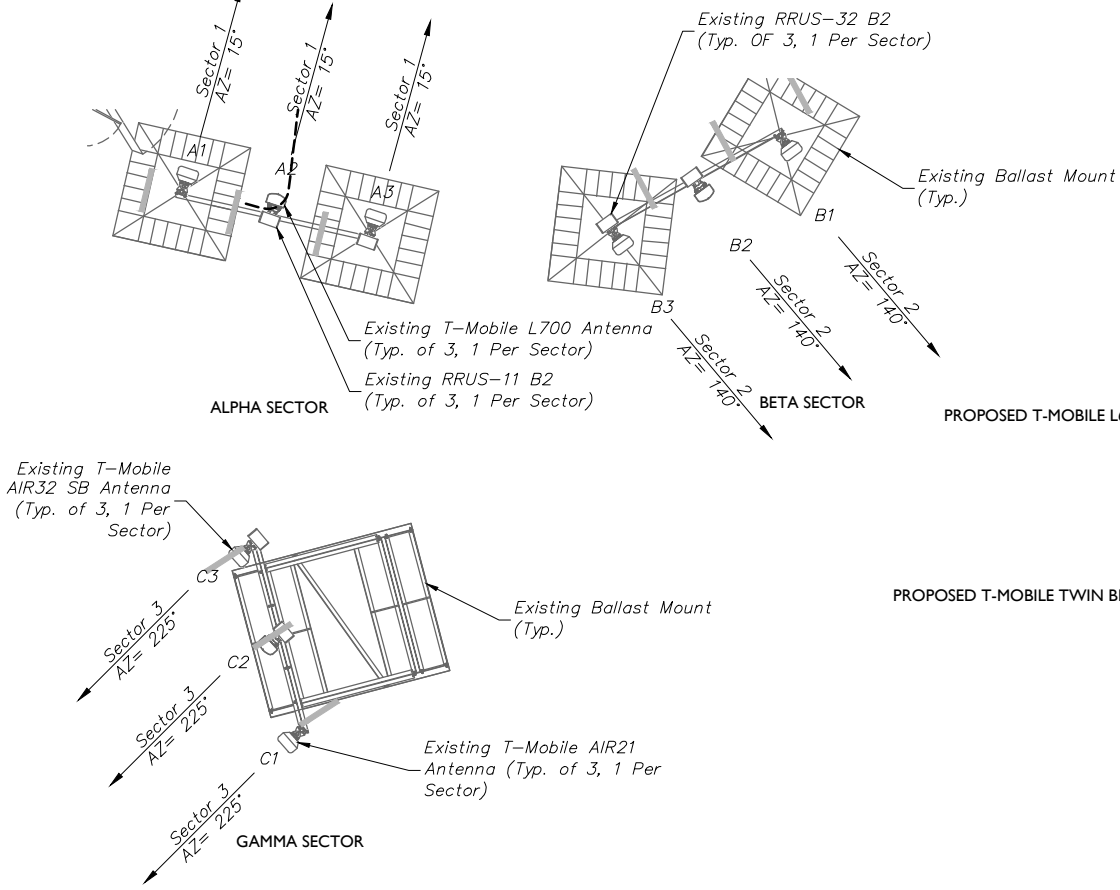
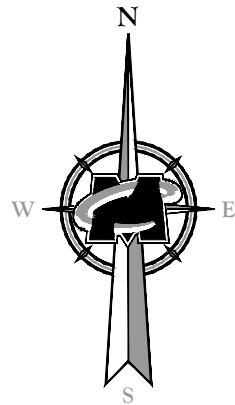
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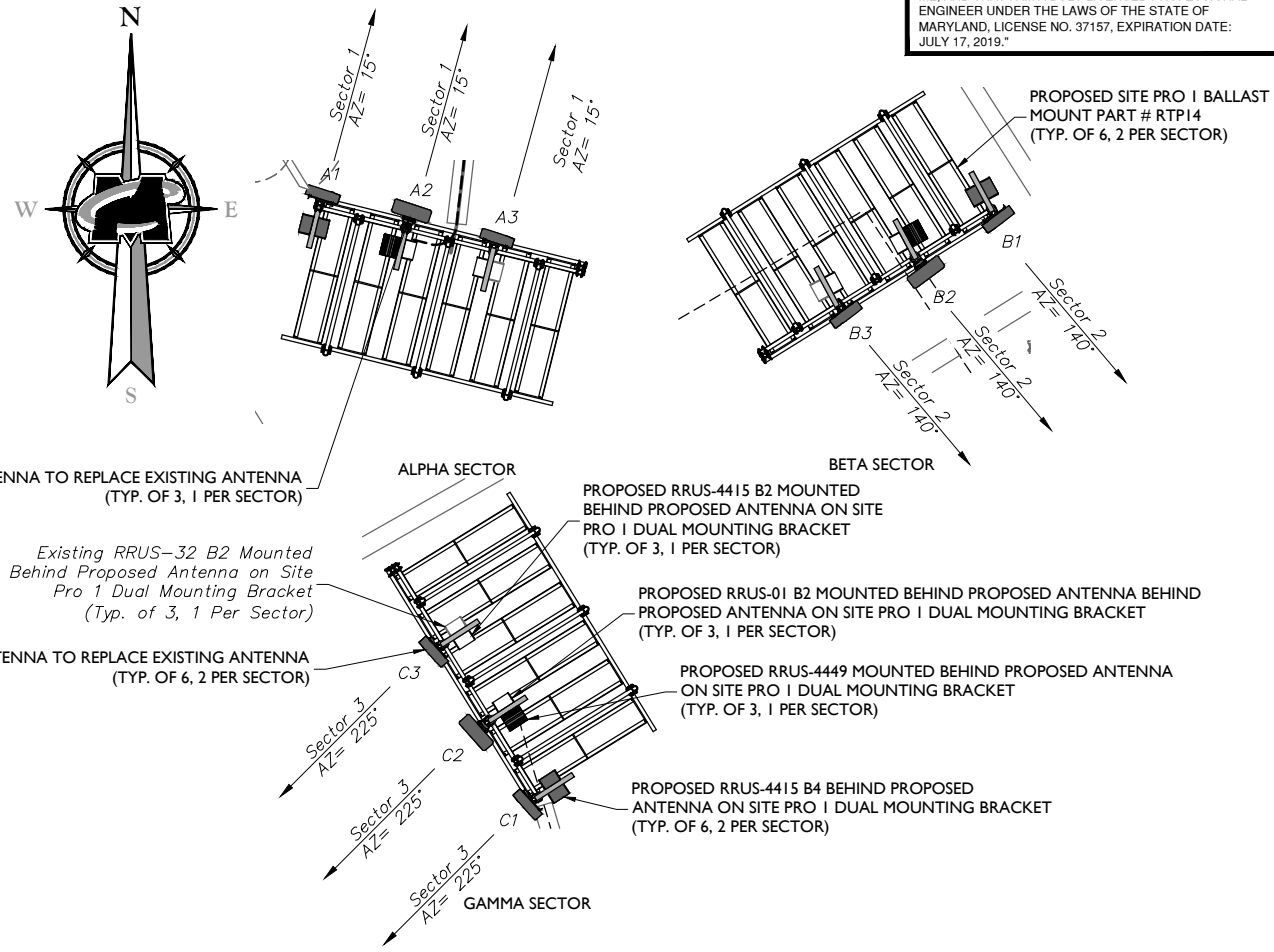
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SHEET TITLE:  
ELEVATION VIEW

SHEET NUMBER:  
C-4



EXISTING ANTENNA LAYOUT  
NOT TO SCALE



PROPOSED ANTENNA LAYOUT  
NOT TO SCALE

### ANTENNA SCHEDULE

| ANTENNA SCHEDULE            |                             |                                                                          |                             |                            |             |            |            |              |                        |                      |                                                                 |                             |           |                    |        |             |          |
|-----------------------------|-----------------------------|--------------------------------------------------------------------------|-----------------------------|----------------------------|-------------|------------|------------|--------------|------------------------|----------------------|-----------------------------------------------------------------|-----------------------------|-----------|--------------------|--------|-------------|----------|
| SECTOR                      |                             | EXISTING ANTENNA                                                         | PROPOSED ANTENNA            | ANTENNA STATUS             | HEIGHT (in) | WIDTH (in) | DEPTH (in) | WEIGHT (lbs) | ANTENNA AZIMUTH (DEG.) | ANT. CL. ELEV. (ft.) | REMOTE RADIO/TMA CONFIGURATION                                  | DOWNTILT                    |           | TRANSMISSION CABLE |        |             |          |
|                             |                             |                                                                          |                             |                            |             |            |            |              |                        |                      |                                                                 | MECH. (°)                   | ELEC. (°) | QUANTITY           | LENGTH | TYPE        | STATUS   |
| Sector 1                    | A1                          | ERICSSON<br>AIR 21 B2A B4P                                               | CCI PRODUCTS<br>BSA33R-U6A  | PROPOSED                   | 76.5        | 12.9       | 6.2        | 57.6         | 15                     | 110                  | (2) RRUS-4415 B4 (PROPOSED)                                     | -                           | -         | -                  | -      | -           | -        |
|                             |                             | COMMSCOPE<br>LNX-6514DS-VTM                                              | RFS<br>APXVAARR18_43-U-NA20 | PROPOSED                   | 72.0        | 24.0       | 8.5        | 131.3        | 15                     | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -                           | -         | 2                  | 85'    | 6X12 HYBRID | PROPOSED |
|                             | A3                          | ERICSSON<br>AIR 32 B4A B2P                                               | CCI PRODUCTS<br>BSA33R-U6A  | PROPOSED                   | 76.5        | 12.9       | 6.2        | 57.6         | 15                     | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -                           | -         | -                  | -      | -           | -        |
|                             |                             | A4                                                                       | -                           | -                          | -           | -          | -          | -            | -                      | -                    | -                                                               | -                           | -         | -                  | -      | -           | -        |
|                             | Sector 2                    | B1                                                                       | ERICSSON<br>AIR 21 B2A B4P  | CCI PRODUCTS<br>BSA33R-U6A | PROPOSED    | 76.5       | 12.9       | 6.2          | 57.6                   | 140                  | 110                                                             | (2) RRUS-4415 B4 (PROPOSED) | -         | -                  | -      | -           | -        |
| COMMSCOPE<br>LNX-6514DS-VTM |                             |                                                                          | RFS<br>APXVAARR18_43-U-NA20 | PROPOSED                   | 72.0        | 24.0       | 8.5        | 131.3        | 140                    | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -                           | -         | 2                  | 175'   | 6X12 HYBRID | PROPOSED |
| B3                          |                             | ERICSSON<br>AIR 32 B4A B2P                                               | CCI PRODUCTS<br>BSA33R-U6A  | PROPOSED                   | 76.5        | 12.9       | 6.2        | 57.6         | 140                    | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -                           | -         | -                  | -      | -           | -        |
|                             |                             | B4                                                                       | -                           | -                          | -           | -          | -          | -            | -                      | -                    | -                                                               | -                           | -         | -                  | -      | -           | -        |
| Sector 3                    |                             | C1                                                                       | ERICSSON<br>AIR 21 B2A B4P  | CCI PRODUCTS<br>BSA33R-U6A | PROPOSED    | 76.5       | 12.9       | 6.2          | 57.6                   | 225                  | 110                                                             | (2) RRUS-4415 B4 (PROPOSED) | -         | -                  | -      | -           | -        |
|                             | COMMSCOPE<br>LNX-6514DS-VTM |                                                                          | RFS<br>APXVAARR18_43-U-NA20 | PROPOSED                   | 72.0        | 24.0       | 8.5        | 131.3        | 225                    | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -                           | -         | 2                  | 175'   | 6X12 HYBRID | PROPOSED |
|                             | C3                          | ERICSSON<br>AIR 32 B4A B2P                                               | CCI PRODUCTS<br>BSA33R-U6A  | PROPOSED                   | 76.5        | 12.9       | 6.2        | 57.6         | 225                    | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -                           | -         | -                  | -      | -           | -        |
|                             |                             | C4                                                                       | -                           | -                          | -           | -          | -          | -            | -                      | -                    | -                                                               | -                           | -         | -                  | -      | -           | -        |
|                             | NOTES:                      |                                                                          |                             |                            |             |            |            |              |                        |                      |                                                                 |                             |           |                    |        |             |          |
| 1.                          |                             | BASED UPON RFDS DATED 5/31/18.                                           |                             |                            |             |            |            |              |                        |                      |                                                                 |                             |           |                    |        |             |          |
| 2.                          |                             | CONTRACTOR SHALL VERIFY THEY HAVE THE LATEST RFDS PRIOR TO CONSTRUCTION. |                             |                            |             |            |            |              |                        |                      |                                                                 |                             |           |                    |        |             |          |

NOTES:  
1. BASED UPON RFDS DATED 5/31/18.  
2. CONTRACTOR SHALL VERIFY THEY HAVE THE LATEST RFDS PRIOR TO CONSTRUCTION.

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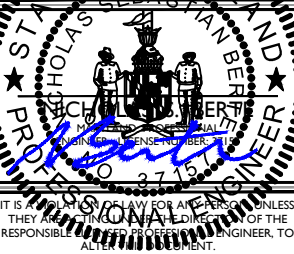


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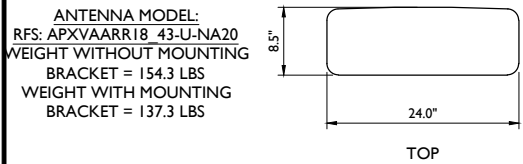
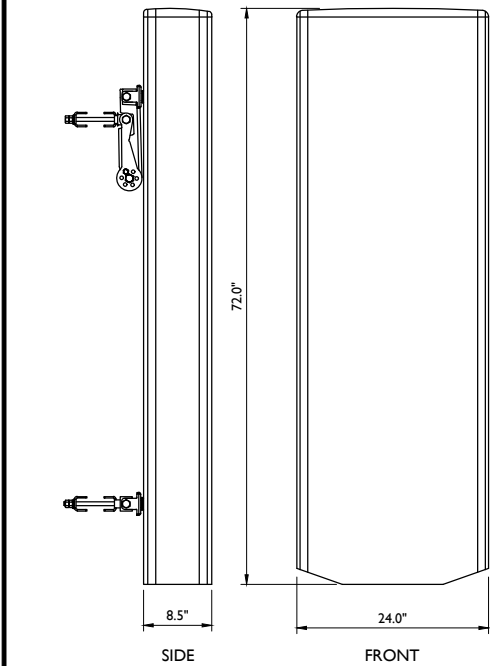
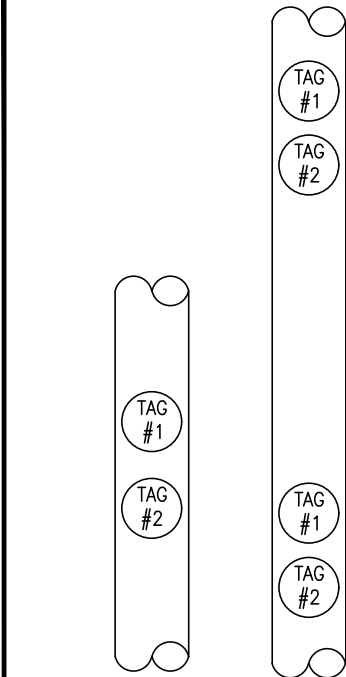
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SHEET TITLE:  
ANTENNA PLANS AND ANTENNA SCHEDULE

SHEET NUMBER:  
A-1

\\p01nas1\07007MAN010A\Technology Services\Corp CD\Rev 2.dwg,4.2 By: MATTHEW



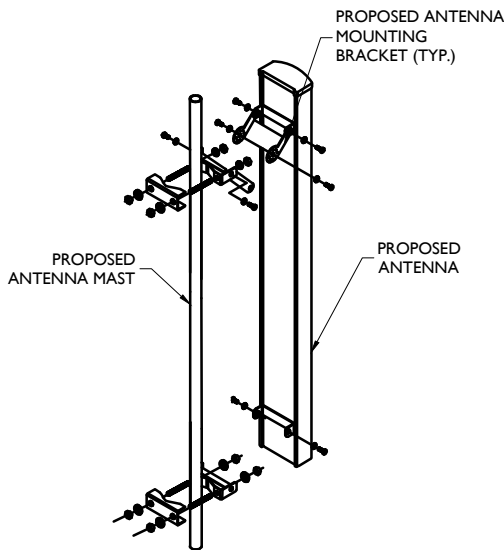
ANTENNA MODEL:  
RFS: APXVAARR18 43-U-NA20  
WEIGHT WITHOUT MOUNTING  
BRACKET = 154.3 LBS  
WEIGHT WITH MOUNTING  
BRACKET = 137.3 LBS

#### COLOR CODING NOTES:

R - RED - GSM  
G - GREEN - UMTS 1900  
B - BLUE - UMTS AWS  
Y - YELLOW - LTE  
O - ORANGE - FIBER CABLE

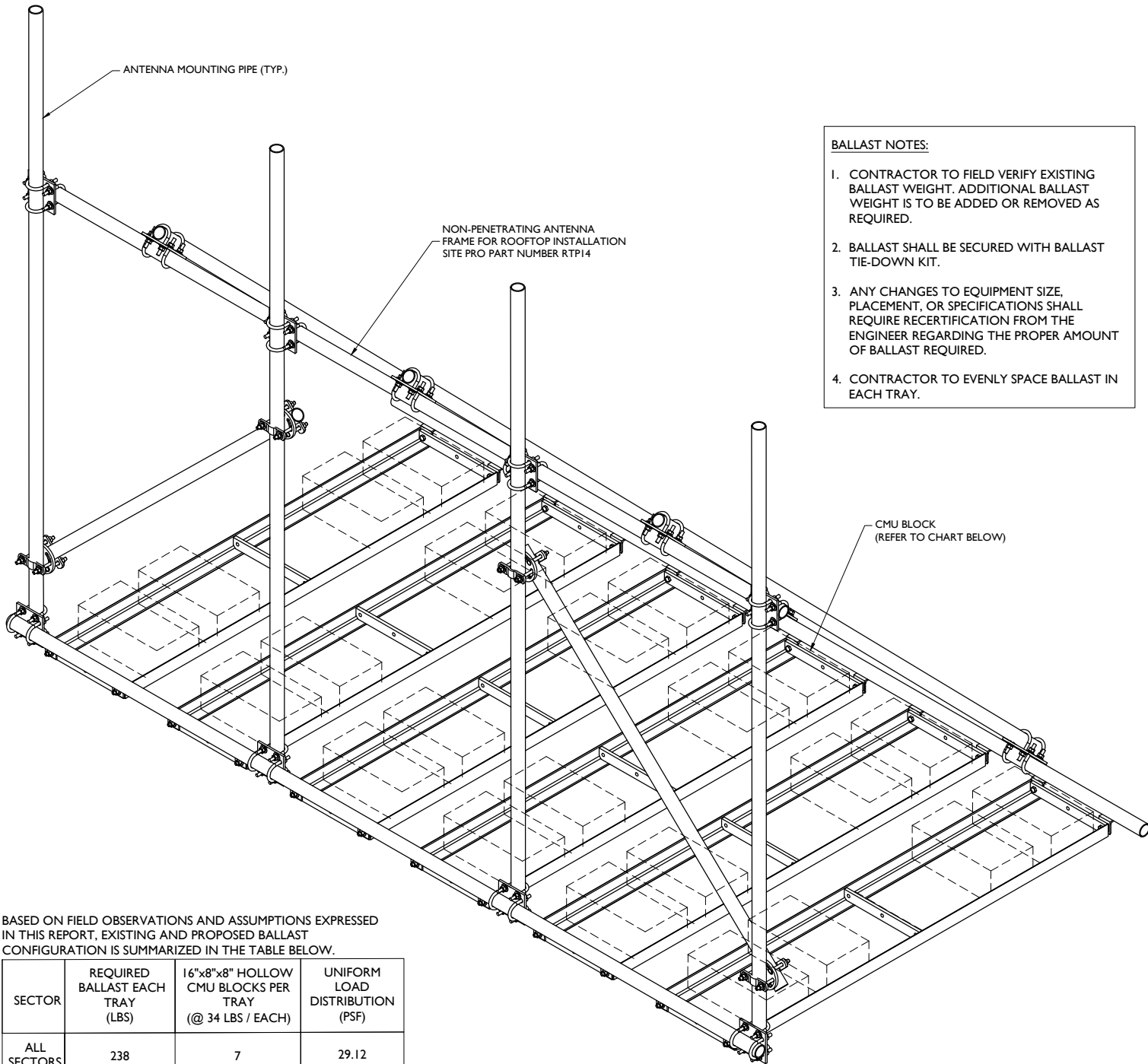
#### METALLIC TAG NOTES:

1. TWO METALLIC TAGS SHALL BE ATTACHED AT EACH END OF EVERY CABLE LONGER THAN (3) THREE FEET.
2. CABLES LESS THAN (3) THREE FEET WILL HAVE TWO METALLIC TAGS ATTACHED AT THE CENTER OF THE CABLE.
3. TAGS WILL BE FASTENED WITH STAINLESS STEEL ZIP TIES APPROPRIATE FOR CABLE DIAMETER.
4. STANDARDIZED METALLIC TAG KITS WILL BE ASSEMBLED WITH TAGS ALREADY ENGRAVED TO ACCOMMODATE ALL CONFIGURATIONS.



ANTENNA MOUNTING DETAIL  
NOT TO SCALE

ANTENNA DETAILS  
NOT TO SCALE



#### BALLAST NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING BALLAST WEIGHT. ADDITIONAL BALLAST WEIGHT IS TO BE ADDED OR REMOVED AS REQUIRED.
2. BALLAST SHALL BE SECURED WITH BALLAST TIE-DOWN KIT.
3. ANY CHANGES TO EQUIPMENT SIZE, PLACEMENT, OR SPECIFICATIONS SHALL REQUIRE RECERTIFICATION FROM THE ENGINEER REGARDING THE PROPER AMOUNT OF BALLAST REQUIRED.
4. CONTRACTOR TO EVENLY SPACE BALLAST IN EACH TRAY.

BASED ON FIELD OBSERVATIONS AND ASSUMPTIONS EXPRESSED IN THIS REPORT, EXISTING AND PROPOSED BALLAST CONFIGURATION IS SUMMARIZED IN THE TABLE BELOW.

| SECTOR      | REQUIRED BALLAST EACH TRAY (LBS) | 16"x8"x8" HOLLOW CMU BLOCKS PER TRAY (@ 34 LBS / EACH) | UNIFORM LOAD DISTRIBUTION (PSF) |
|-------------|----------------------------------|--------------------------------------------------------|---------------------------------|
| ALL SECTORS | 238                              | 7                                                      | 29.12                           |

ASSUMING: 8"x8"x16" HOLLOW CMU BLOCK AT 34 LB  
8"x8"x16" HOLLOW CMU BLOCK AT 37 LB  
8"x12"x16" HOLLOW CMU BLOCK AT 52 LB

SITE PRO RTP14 BALLAST MOUNT DETAIL  
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SCALE: AS SHOWN JOB NUMBER: 18958047A

| NO. | DATE     | DESCRIPTION                           | BY  | CHECKED BY |
|-----|----------|---------------------------------------|-----|------------|
| 2   | 12/21/18 | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB        |
| 1   | 10/17/18 | REVISED PER COMMENTS                  | BAH | NSB        |
| 0   | 08/14/18 | ISSUED FOR CONSTRUCTION               | YMA | NSB        |
| 8   | 07/12/18 | ISSUED FOR REVIEW                     | HCA | NSB        |
| A   | 07/12/18 | ISSUED FOR REVIEW                     | HCA | NSB        |

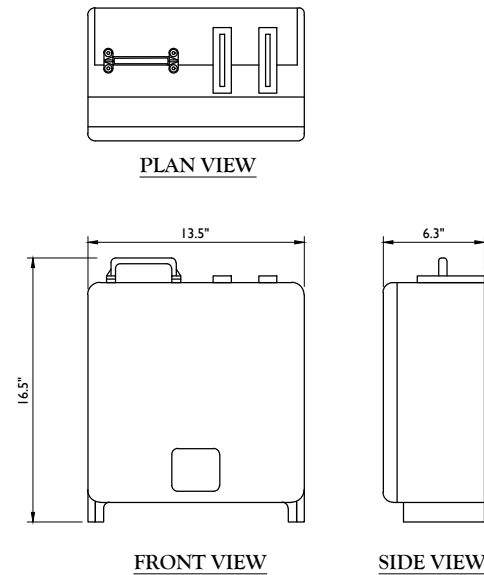
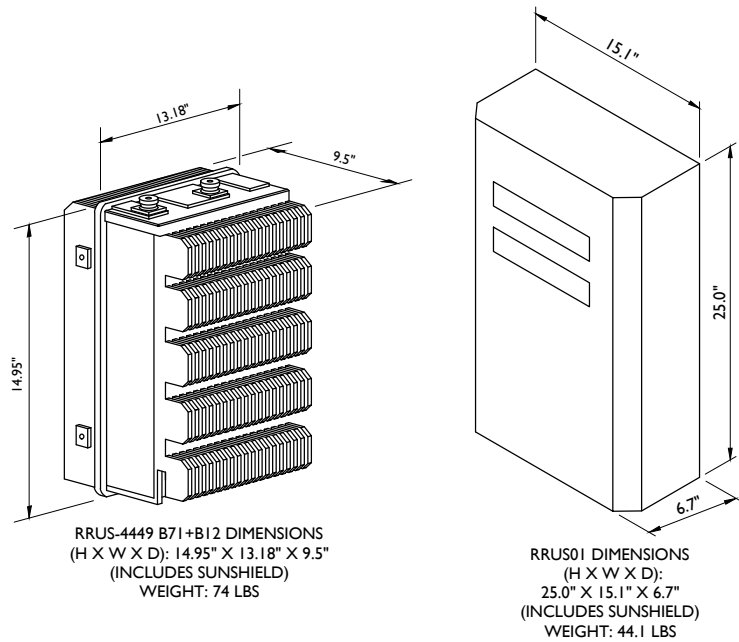
REVISIONS  
DATE: 07/12/18  
BY: YMA  
CHECKED BY: NSB  
PROJECT: 18958047A  
ENGINEER: SEBASTIAN ANDERSON  
PROF. ENGINEER  
LICENSE NUMBER: 37157

SITE NAME:  
7WAN010A  
TECHNOLOGY SERVICE CORP.  
962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY

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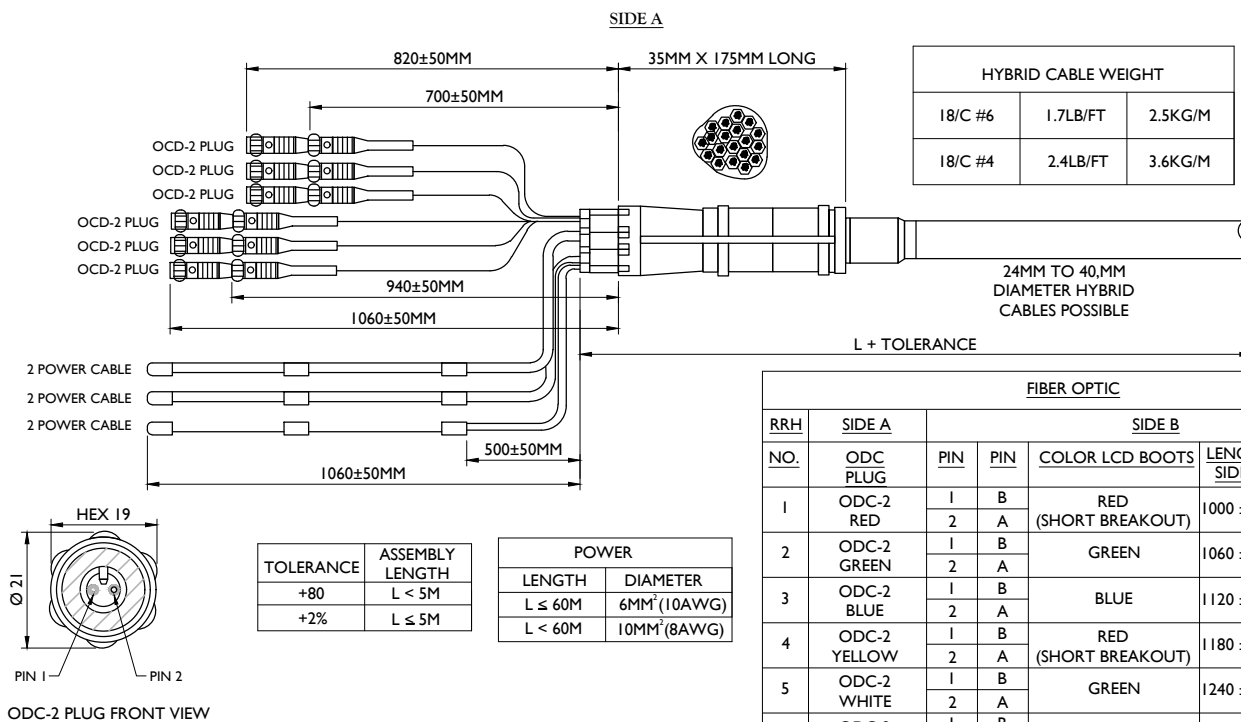
SHEET TITLE:  
CONSTRUCTION DETAILS - I

SHEET NUMBER:  
A-2

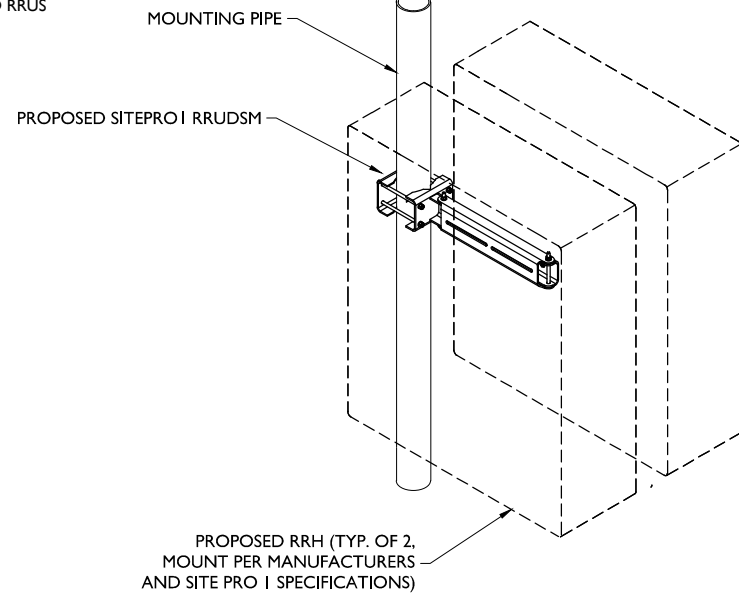
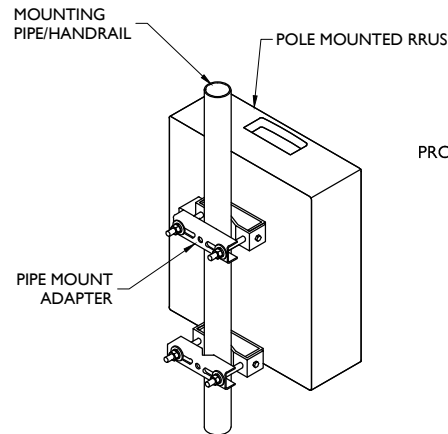
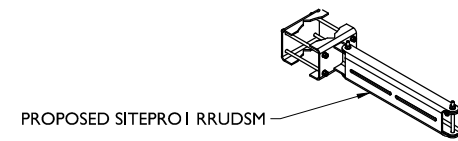


WEIGHT INCLUDES W/FILTER & FAN = 49.6LBS  
**ERICSSON RRUS 4415 B2/B4**  
NOT TO SCALE

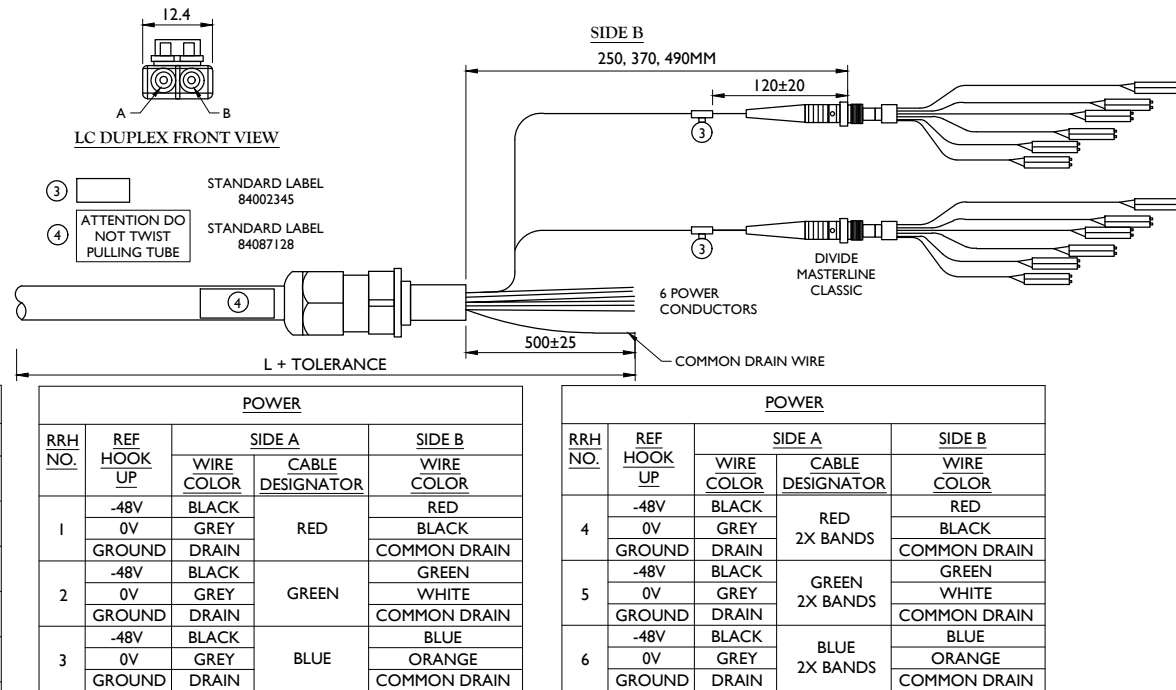
**RRU DETAILS**  
NOT TO SCALE



**MLE HYBRID CABLE (6 POWER/12 FIBER)**  
NOT TO SCALE



**SITE PRO 1 RRH MOUNTING DETAIL**  
NOT TO SCALE



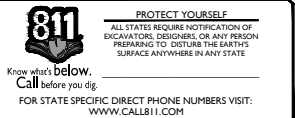
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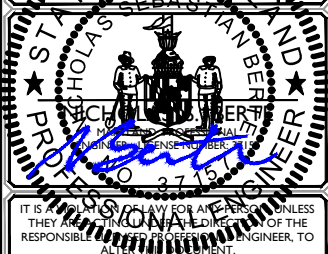


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| SCALE:   | JOB NUMBER: |
|----------|-------------|
| AS SHOWN | 18958047A   |

| NO. | DATE     | REVISION                              | BY  | CHKD. | APP'D. |
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| 8   | 07/12/18 | ISSUED FOR PERMIT                     | HCA | NSB   |        |
| A   | 07/12/18 | ISSUED FOR PERMIT                     | HCA | NSB   |        |



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**CONSTRUCTION DETAILS - 2**

**A-3**

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|          |          |                                       |     |         |
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| REVISION | DATE     | DESCRIPTION                           | BY  | CHECKED |

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Phone: 877.627.3772

email: solutions@maserconsulting.com

SHEET TITLE:  
CONSTRUCTION DETAILS - 3

SHEET NUMBER:  
A-4

2" INNERDUCT (SEE CORE DRILL DETAIL FOR HOLE SIZES)

Existing CMU or Conc. Wall

1/2" TYP

GROUT ALL VOIDS AROUND SLEEVE

FILL SPACE WITH DOW CORNERING 790 OR EQUAL

PIPE SLEEVE

NOTES:

- PIPE ANCHORAGE IS REQUIRED NEARBY TO PREVENT PIPE MOVEMENT THRU PENETRATION.
- CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING STEEL REINFORCEMENT IN WALL OR FLOOR SLAB PRIOR TO DRILLING FOR CONDUIT PENETRATIONS.

SECTION - PIPE PENETRATION AT  
CMU WALL (CONC. WALL SIMILAR)

NOT TO SCALE

SYSTEM NO. C-AJ-1151  
F RATING - 2 HR  
T RATING - 0 HR  
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ FT  
L RATING AT 400° F - 4 CFM/SQ FT

3/4" MINIMUM  
7/8" MAXIMUM

1

2

4

1

3

PIPE (SIZE VARIES)

SECTION 1-1

PIPE PENETRATION THROUGH CONCRETE FLOOR/WALL

NOT TO SCALE

NOTES:

- FLOOR OR WALL ASSEMBLY - MINIMUM 3-1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE FLOOR OR MINIMUM 4-1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. \*MAXIMUM DIAMETER OF OPENINGS IS 6". SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- THROUGH PENETRANTS - ONE METALLIC PIPE OR CONDUIT TO BE INSTALLED WITHIN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY. THE ANNULAR SPACE SHALL BE MIN. 3/4" TO MAX 7/8". THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:
  - STEEL PIPE - NOMINAL 4" DIAMETER (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
  - CONDUIT - NOMINAL 4" DIAMETER (OR SMALLER) STEEL CONDUIT.
- PACKING MATERIAL - MINIMUM 2-1/2" THICKNESS OF MINIMUM 4.0 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
- FILL, VOID OR CAVITY MATERIAL - SEALANT - MINIMUM 1" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE \*ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SIDES OF WALL.

HILTI CONSTRUCTION CHEMICALS, INC. - FS601, FS604 OR FS-ONE SEALANT

(NOTE: UL RATINGS APPLY WHEN FS-ONE SEALANT IS USED).

\* BEARING THE UL CLASSIFICATION MARKING

\\pfiles\07007WAN010A\Technology Service Corp\CD\rev 2.dwg;L4 By: MATTHEW

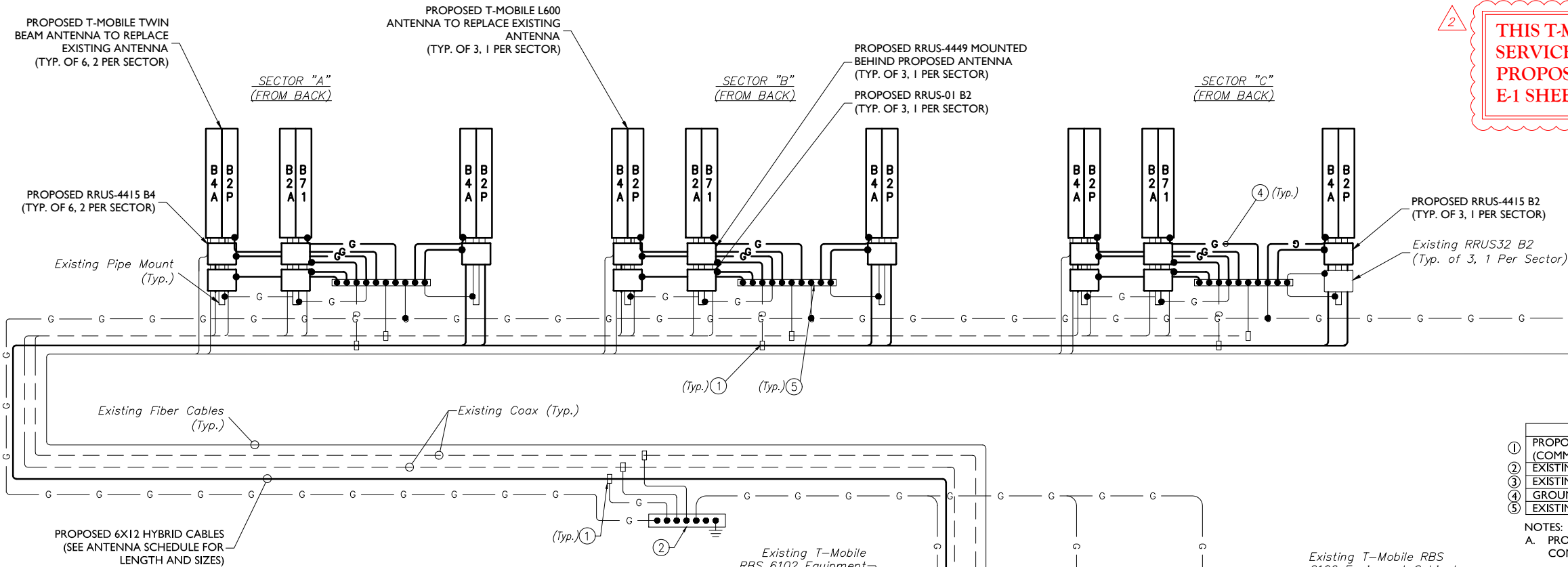
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THIS T-MOBILE SITE REQUIRES AN AC SERVICE UPGRADE TO SUPPORT THE PROPOSED EQUIPMENT REFER TO THE E-1 SHEET FOR DETAILS



| GROUNDING SCHEDULE |                                                               |
|--------------------|---------------------------------------------------------------|
| ①                  | PROPOSED FIBER GROUNDING KIT (COMMSCOPE PART #UG12158-15B4-T) |
| ②                  | EXISTING MGB (BUSSBAR #1)                                     |
| ③                  | EXISTING EQUIPMENT GROUNDING                                  |
| ④                  | GROUND PROPOSED ANTENNA PER MANUFACTURES SPECS                |
| ⑤                  | EXISTING SECTOR GROUND BAR                                    |

NOTES:

- A. PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
- B. DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
- C. PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
- D. ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".

| T-MOBILE PANEL SCHEDULE      |                   |        |     |                  |       |       |      |     |             |                     |      |
|------------------------------|-------------------|--------|-----|------------------|-------|-------|------|-----|-------------|---------------------|------|
| MAIN BREAKER RATING (A): 200 |                   |        |     | VOLTAGE (V): 240 |       |       |      |     |             |                     |      |
| Type                         | DESCRIPTION       | VA     | BKR | POSN             | L1    | L2    | POSN | VA  | DESCRIPTION | Type                |      |
| Single                       | RECEPTACLES       | 850    | 20  | 1                | 3730  |       | 2    | 30  | 2880        | RBS 2106            | Dual |
| Dual                         | TRANSMITTER (OFF) | 0      | 40  | 3                |       | 2880  | 4    | 30  | 2880        |                     |      |
| Dual                         | BOOSTER #1 (OFF)  | 0      | 30  | 9                | 14400 |       | 10   | 150 | 14400       | RBS 6102 CABINET #1 | Dual |
| Single                       | UNKNOWN (OFF)     | 0      | 20  | 11               |       | 14400 | 12   |     | 14400       |                     |      |
|                              |                   |        |     | 13               | 0     |       | 14   |     |             |                     |      |
|                              |                   |        |     | 15               | 0     |       | 16   |     |             |                     |      |
|                              |                   |        |     | 17               | 0     |       | 18   |     |             |                     |      |
|                              |                   |        |     | 19               | 0     |       | 20   |     |             |                     |      |
|                              |                   |        |     | 21               | 0     |       | 22   |     |             |                     |      |
|                              |                   |        |     | 23               | 0     |       | 24   |     |             |                     |      |
| PHASE TOTALS (VA):           |                   | 18130  |     |                  | 17280 |       |      |     |             |                     |      |
| CURRENT PER PHASE (A):       |                   | 151    |     |                  | 144   |       |      |     |             |                     |      |
| PANEL TOTAL (A):             |                   | 147.54 |     |                  |       |       |      |     |             |                     |      |
| PANEL TOTAL (VA):            |                   | 35410  |     |                  |       |       |      |     |             |                     |      |
| PANEL CAPACITY (kVA):        |                   | 48.0   |     |                  |       |       |      |     |             |                     |      |
| PANEL LOADING (TOTAL) (kVA): |                   | 35.4   |     |                  |       |       |      |     |             |                     |      |
| SPARE CAPACITY (kVA):        |                   | 12.6   |     |                  |       |       |      |     |             |                     |      |

1. The main 200A breaker is assumed to be a 100% rated circuit breaker.

PANEL SCHEDULE  
NOT TO SCALE

UTILITY DIAGRAM  
NOT TO SCALE

PROPOSED (3) #300 kcmil AWG THHN AND (1) #1G AWG THHN IN 4"Ø CONDUIT RUN FROM ELECTRICAL ROOM IN BASEMENT THROUGH STACKED UTILITY CLOSETS TO PROPOSED T-MOBILE AC PANEL IN PENTHOUSE. LENGTH ±100' (CONTRACTOR SHALL VERIFY PROPOSED ROUTING WITH LANDLORD PRIOR TO CONSTRUCTION)

Existing Basement

PROPOSED T-MOBILE 200A DISCONNECT IN MAIN ELECTRICAL ROOM  
PROPOSED T-MOBILE 200A - 120/240V - 1Ø METER IN EXISTING ELECTRICAL ROOM

PROPOSED GROUND INCOMING SERVICE NEUTRAL TO GROUND BAR IN MAIN SERVICE DISCONNECT  
PROPOSED 200A - 240/120V SERVICE (3) #3/0 AWG THHN IN 2"Ø CONDUIT TO UTILITY DEMARC PROVIDE EXCESS WIRE COILED FOR UTILITY TO MAKE SECONDARY CONNECTIONS ELECTRICAL CONTRACTOR SHALL SUBMIT A SERVICE AND METER REQUEST AT ONSET OF PROJECT



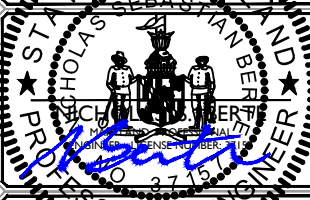
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SHEET TITLE:

ELECTRICAL DETAILS

SHEET NUMBER:

E-1

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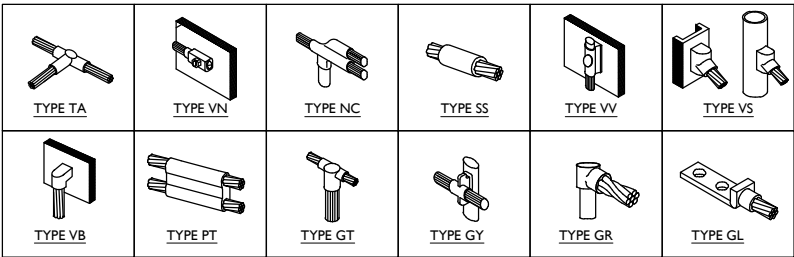


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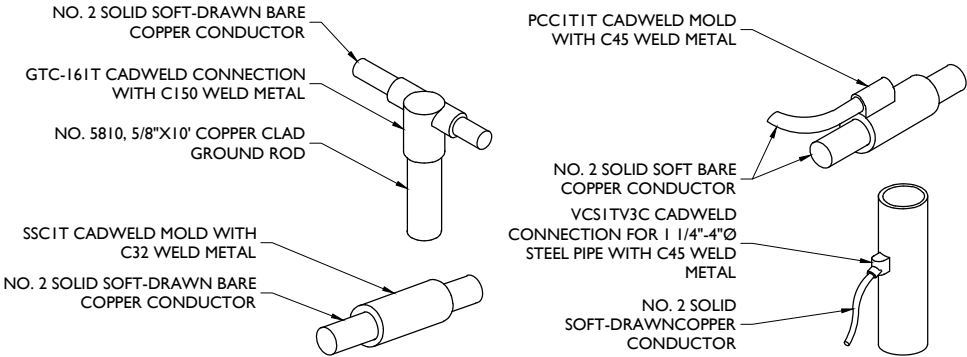
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CADWELD GROUNDING PRODUCTS  
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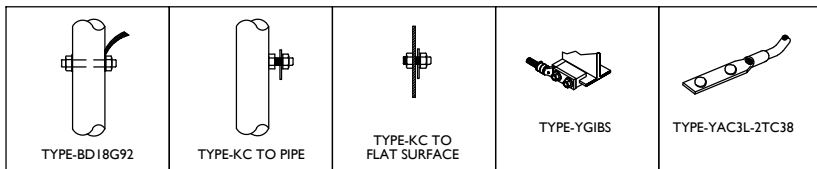


CADWELD DETAIL  
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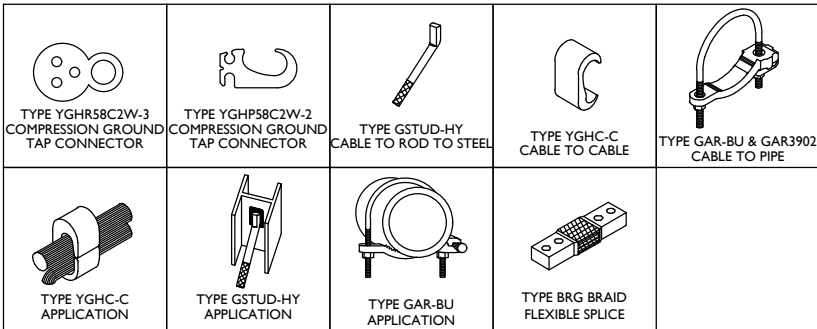
TERMINATION TYPES:  
A. MECHANICAL COMPRESSION LUG  
B. DOUBLE BARRELL COMPRESSION CONNECTOR  
C. EXOTHERMIC TERMINATION  
D. BEAM CLAMP

|                                         | SOLID #2 TINNED COPPER | #6 GROUND LEAD | #2/O STRANDED GRNDG ELECTRODE CONDUCTOR | MASTER GROUND BAR | STRUCTURAL OR TOWER STEEL GROUND RING | BDO SERVICE ENTRY OR GROUND RING | GROUND ROD |
|-----------------------------------------|------------------------|----------------|-----------------------------------------|-------------------|---------------------------------------|----------------------------------|------------|
| SOLID #2 TINNED COPPER                  | B OR C                 | B OR C         |                                         | C                 | A, C, OR D                            |                                  | C          |
| #6 GROUND LEAD                          | B OR C                 |                |                                         | A                 | A, C, OR D                            |                                  |            |
| #2/O STRANDED GRNDG ELECTRODE CONDUCTOR |                        |                |                                         | A                 | A, C, OR D                            | A                                |            |
| MASTER GROUND BAR                       | C                      | A              | A                                       |                   |                                       |                                  |            |
| STRUCTURAL OR TOWER STEEL GROUND RING   | A, C, OR D             | A, C, OR D     | A, C, OR D                              |                   |                                       |                                  | C          |

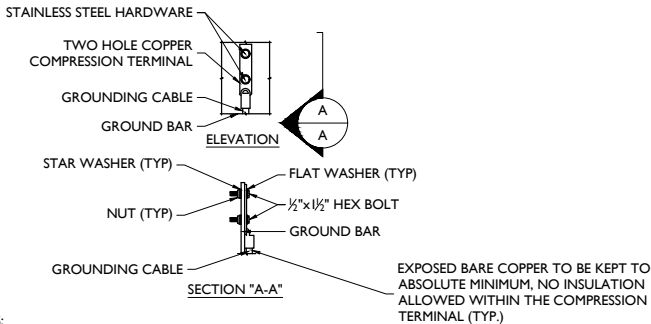
GROUNDING TERMINATION MATRIX  
NOT TO SCALE



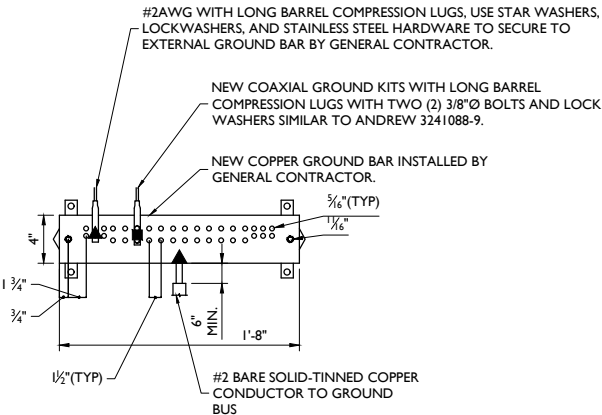
BURNDY GROUNDING DETAILS  
NOT TO SCALE



BURNDY GROUNDING PRODUCTS  
NOT TO SCALE

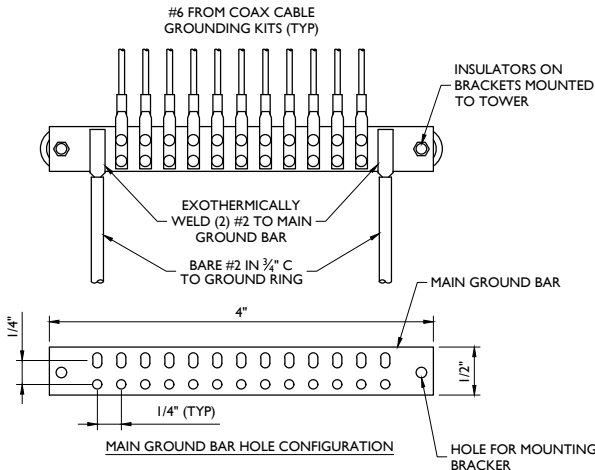


- NOTES:
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.



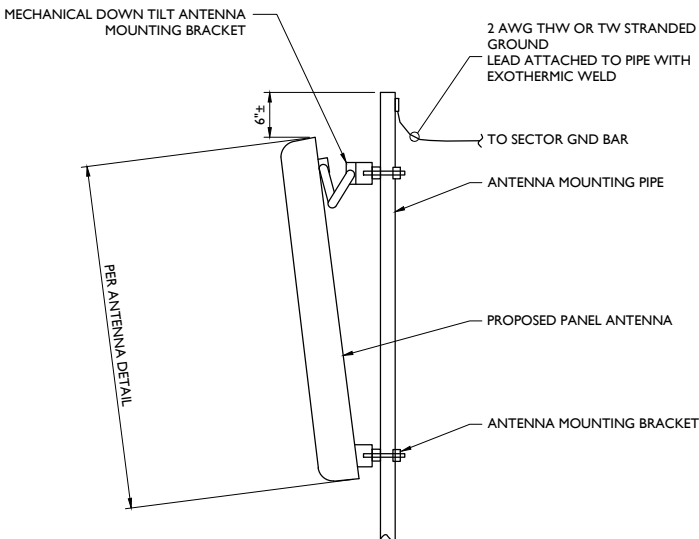
- NOTES:
- ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
  - ALL HOLES ARE COUNTERSUNK 1/16\"/>

TYPICAL GROUND BAR CONNECTION DETAIL  
NOT TO SCALE



- LUG NOTES:
- ALL HARDWARE IS 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS.
  - ALL HARDWARE SHALL BE S.S. 3/8\"/>
  - FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

GROUND BAR DETAIL  
NOT TO SCALE



ANTENNA MAST GROUNDING DETAIL  
NOT TO SCALE



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SCALE: AS SHOWN JOB NUMBER: 18958047A

| NO. | DATE     | DESCRIPTION                           | BY  | CHECKED BY |
|-----|----------|---------------------------------------|-----|------------|
| 2   | 12/21/18 | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB        |
| 1   | 10/17/18 | REVISED PER COMMENTS                  | BAH | NSB        |
| 0   | 08/14/18 | ISSUED FOR CONSTRUCTION               | YMA | NSB        |
| 8   | 07/12/18 | ISSUED FOR REVIEW                     | HCA | NSB        |
| A   | 07/12/18 | ISSUED FOR REVIEW                     | NSB | NSB        |

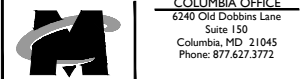


IT IS MY DUTY AND OBLIGATION AS A PROFESSIONAL ENGINEER, TO ALERTLY PROTECT THE PUBLIC INTEREST.

SITE NAME:

7WAN010A  
TECHNOLOGY SERVICE  
CORP.

962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



COLUMBIA OFFICE  
6240 Old Dobbins Lane  
Suite 150  
Columbia, MD 21045  
Phone: 877.627.3772

email: solutions@maserconsulting.com

SHEET TITLE:

GROUNDING DETAILS

SHEET NUMBER:

E-2

ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
- B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
- C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB
- D. PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
- E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
- F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS, IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
- A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
- B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
- A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALITY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
- B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
- D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
- E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:

- A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
- A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
- B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON.
- SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDING PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
- A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
- B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
- C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
- D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
- E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
- F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
- G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
- I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
- J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
- K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
- L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
- M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
- N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
- O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
- P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/ THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:
- | LENGTH (FT.) | HOME RUN WIRE SIZE |
|--------------|--------------------|
| 0 TO 50      | NO. 12             |
| 51 TO 100    | NO. 10             |
| 101 TO 150   | NO. 8              |
8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
- A. GENERAL ELECTRIC COMPANY
- B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
- A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
- B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
- A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
- C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
- A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
- C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37157, EXPIRATION DATE: JULY 17, 2019."



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SCALE: AS SHOWN JOB NUMBER: 18958047A

|   |          |                                       |     |     |
|---|----------|---------------------------------------|-----|-----|
| 1 | 1/21/18  | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB |
| 2 | 1/21/18  | REVISED TO INCLUDE ELECTRICAL UPGRADE | BAH | NSB |
| 1 | 10/17/18 | REVISED PER COMMENTS                  | BAH | NSB |
| 0 | 08/14/18 | ISSUED FOR CONSTRUCTION               | YMA | NSB |
| 8 | 07/12/18 | ISSUED FOR CONSTRUCTION               | MCA | NSB |
| A | 07/12/18 | ISSUED FOR CONSTRUCTION               | NSB | NSB |



IT IS A PENALTY FOR ANY PERSON UNLESS THEY ARE A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

7WAN010A  
TECHNOLOGY SERVICE  
CORP.  
962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



SHEET TITLE:  
GENERAL AND ELECTRICAL  
NOTES

SHEET NUMBER:  
G-1

|                         |                         |                  |                    |                         |     |
|-------------------------|-------------------------|------------------|--------------------|-------------------------|-----|
| App No:                 | 2018100546              |                  |                    |                         |     |
| Applicant Name          | Site Link Wireless, LLC |                  | Antenna Compliance | Yes                     |     |
| Application Type        | Minor Modificatio       | Updated          | 11/19/2018         | Compliance Desc         |     |
| Carrier                 | T-Mobile                | 6409?            | Yes                | Antenna Location        | Yes |
| Solution Type           | Macro                   | Ann. Plan?       | Yes                | Antenna Loc. Desc.      |     |
| Existing                | Existing                | Equipment Gvt Us | No                 | Env. Assessment         |     |
| Application Description |                         | Gvt. Use Desc.   |                    | Routine Env. Evaluation |     |

T-Mobile proposes to remove and replace (9) panel antennas at the existing building telecom site. T-Mobile also proposes to remove (3) RRH's and install (15) new RRH's. No ground work.

|                   |                              |                  |               |
|-------------------|------------------------------|------------------|---------------|
| Site Id           | 46                           | Zoning           | CR-5          |
| Structure Type    | Building                     | Latitude         | 38.99425      |
| Address           | 962 Wayne Ave, Silver Spring | Longitude        | -77.025975    |
| County Site Name  | 962 Wayne Ave                | Ground Elevation | 352           |
| Carrier Site Name | 7WAN010A                     | City             | Silver Spring |
| Site Owner        | BSREP II MD Office Wayne LLC | Lease Status     | Leased        |
| Structure Owner   | BSREP II MD Office Wayne LLC | PROW             | No            |
| Structure Height  | 96                           |                  |               |

Justification

To provide additional coverage and capacity in this portion of Silver Spring.

NearbySites (New Apps Only):

Screeningconsiderations(New Apps Only):

|               |                                                               |         |                |                    |                             |
|---------------|---------------------------------------------------------------|---------|----------------|--------------------|-----------------------------|
| App No:       | <div>2018100546</div>                                         |         |                |                    |                             |
| Antenna Model | <div>Ericsson BSA33R-U6A</div>                                |         |                |                    |                             |
| Frequency     | <div>DL: 1965-1970, 2150-2155; UL: 1885-1890, 1750-1755</div> |         |                |                    |                             |
| RAD Center    | <div>110</div>                                                | Max ERP | <div>931</div> | Antenna Dimensions | <div>75.9"x12.9"x6.2"</div> |
|               |                                                               |         |                | Quantity           | <div>6</div>                |

App No:

2018100546

Antenna Model

RFS APXVAARR18\_43-U-NA20

Frequency

DL: 1965-1970, 728-734; UL: 1885-1890, 698-704

RAD Center

110

Max ERP

574

Antenna Dimensions

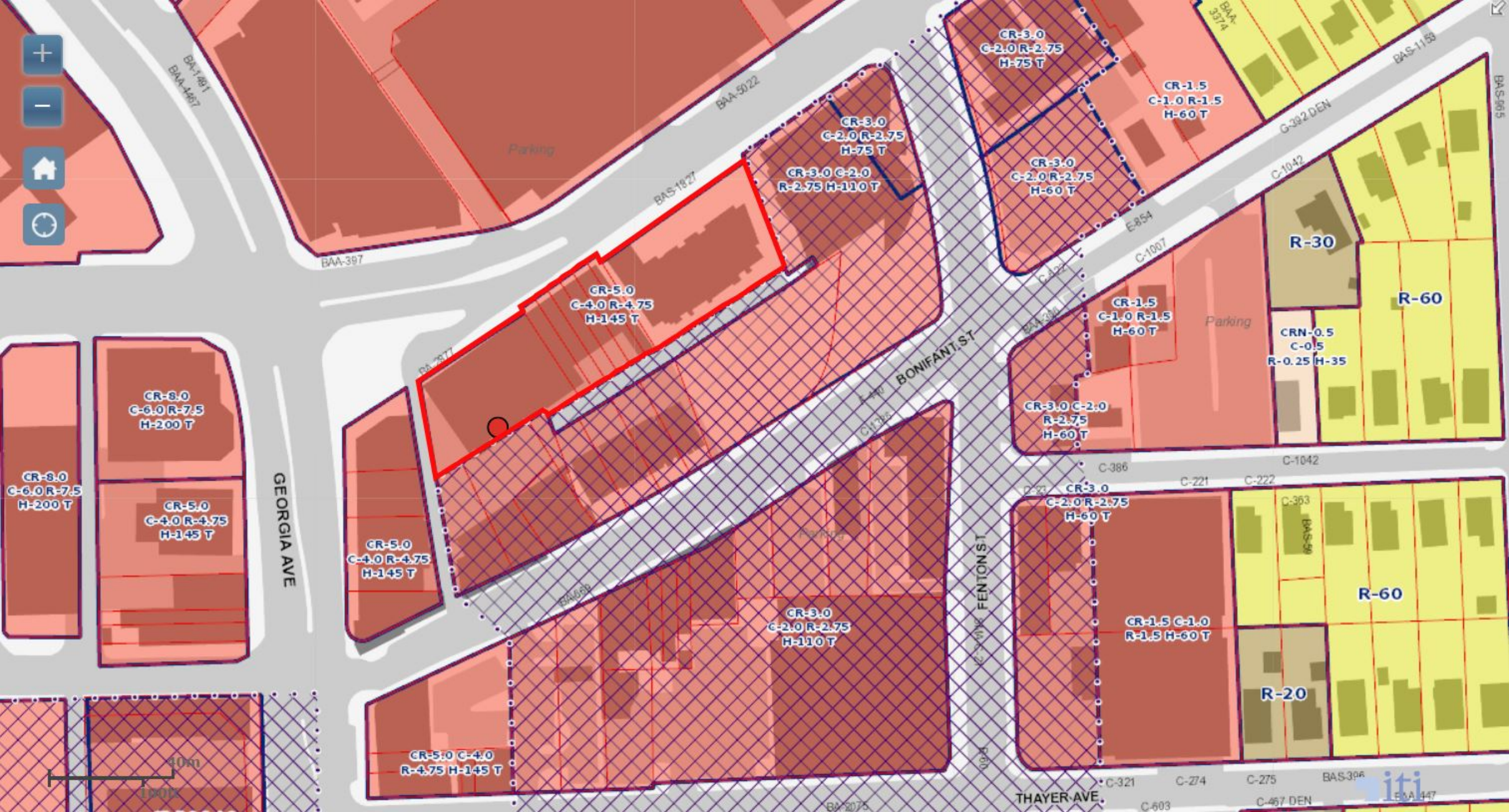
72"x24"x8.5"

Quantity

3

Tuesday, November 20, 2018

11:57:19 AM





## Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°

### FEATURES / BENEFITS

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600MHz, 700MHz, AWS & PCS applications.



- ➔ 24 Inch Width For Easier Zoning
- ➔ Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality
- ➔ Superior elevation pattern performance across the entire electrical down tilt range
- ➔ Includes three AISG RET motors - Includes 0.5m AISG jumper for optional diasy chain of two high band RET motors for one single AISG point of high band tilt control.
- ➔ Low band arrays driven by a single RET motor

### Technical Features

#### LOW BAND LEFT ARRAY (617-746 MHZ) [R1]

|                                              |      |            |            |
|----------------------------------------------|------|------------|------------|
| Frequency Band                               | MHz  | 617-698    | 698-746    |
| Gain                                         | dBi  | 14.4       | 14.9       |
| Horizontal Beamwidth @3dB                    | Deg  | 66.1+/-4.3 | 63.1+/-2.3 |
| Vertical Beamwidth @3dB                      | Deg  | 14.2+/-0.8 | 13.0+/-0.5 |
| Electrical Downtilt Range                    | Deg  | 0-14       |            |
| Upper Side Lobe Suppression 0 to +20         | dB   | 20.5       | 21.4       |
| Front-to-Back, at +/-30°, Copolar            | dB   | 22.4       | 21.8       |
| Cross Polar Discrimination (XPD) @ Boresight | dB   | 21.4       | 20.1       |
| Cross Polar Discrimination (XPD) @ +/-60     | dB   | 5.2        | 3.5        |
| 3rd Order PIM 2 x 43dBm                      | dBc  | -153       |            |
| VSWR                                         | -    | 1.5:1      |            |
| Cross Polar Isolation                        | dB   | 25         |            |
| Maximum Effective Power per Port             | Watt | 250        |            |

#### LOW BAND RIGHT ARRAY (617-746 MHZ) [R2]

|                                              |      |            |            |
|----------------------------------------------|------|------------|------------|
| Frequency Band                               | MHz  | 617-698    | 698-746    |
| Gain                                         | dBi  | 14.1       | 14.5       |
| Horizontal Beamwidth @3dB                    | Deg  | 66.5+/-4.9 | 63.3+/-2.2 |
| Vertical Beamwidth @3dB                      | Deg  | 14.2+/-0.8 | 12.9+/-0.6 |
| Electrical Downtilt Range                    | Deg  | 0-14       |            |
| Upper Side Lobe Suppression 0 to +20         | dB   | 20.3       | 21.3       |
| Front-to-Back, at +/-30°, Copolar            | dB   | 22.4       | 21.4       |
| Cross Polar Discrimination (XPD) @ Boresight | dB   | 20.2       | 19.7       |
| Cross Polar Discrimination (XPD) @ +/-60     | dB   | 4.5        | 1.7        |
| 3rd Order PIM 2 x 43dBm                      | dBc  | -153       |            |
| VSWR                                         | -    | 1.5:1      |            |
| Cross Polar Isolation                        | dB   | 25         |            |
| Maximum Effective Power per Port             | Watt | 250        |            |



**Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°**

**HIGH BAND LEFT ARRAY (1695-2200 MHZ) [B1]**

| Frequency Band                               | MHz  | 1695-1880  | 1850-1990  | 1920-2200  |
|----------------------------------------------|------|------------|------------|------------|
| Gain                                         | dBi  | 16.4       | 17.4       | 18.6       |
| Horizontal Beamwidth @3dB                    | Deg  | 64.3+/-6.7 | 58.6+/-6.6 | 56.4+/-6.8 |
| Vertical Beamwidth @3dB                      | Deg  | 6.0+/-0.6  | 5.5+/-0.5  | 5.2+/-0.5  |
| Electrical Downtilt Range                    | Deg  | 2-12       |            |            |
| Upper Side Lobe Suppression 0 to +20         | dB   | 14.9       | 15         | 15.1       |
| Front-to-Back, at +/-30°, Copolar            | dB   | 25.6       | 23.7       | 24.1       |
| Cross Polar Discrimination (XPD) @ Boresight | dB   | 18.2       | 15         | 15.1       |
| Cross Polar Discrimination (XPD) @ +/-60     | dB   | 1.9        | 2.7        | 4.6        |
| 3rd Order PIM 2 x 43dBm                      | dBc  | -153       |            |            |
| VSWR                                         | -    | 1.5:1      |            |            |
| Cross Polar Isolation                        | dB   | 25         |            |            |
| Maximum Effective Power per Port             | Watt | 250        |            |            |

**HIGH BAND RIGHT ARRAY (1695-2200 MHZ) [B2]**

| Frequency Band                               | MHz  | 1695-1880  | 1850-1990  | 1920-2200  |
|----------------------------------------------|------|------------|------------|------------|
| Gain                                         | dBi  | 16.3       | 17.6       | 18.6       |
| Horizontal Beamwidth @3dB                    | Deg  | 64.8+/-7.6 | 58.7+/-5.7 | 56.7+/-6.4 |
| Vertical Beamwidth @3dB                      | Deg  | 6.0+/-0.6  | 5.6+/-0.5  | 5.2+/-0.5  |
| Electrical Downtilt Range                    | Deg  | 2-12       |            |            |
| Upper Side Lobe Suppression 0 to +20         | dB   | 14.3       | 15.4       | 15.8       |
| Front-to-Back, at +/-30°, Copolar            | dB   | 26         | 25.1       | 24.9       |
| Cross Polar Discrimination (XPD) @ Boresight | dB   | 16.8       | 15         | 15.7       |
| Cross Polar Discrimination (XPD) @ +/-60     | dB   | 1.4        | 3.5        | 5.5        |
| 3rd Order PIM 2 x 43dBm                      | dBc  | -153       |            |            |
| VSWR                                         | -    | 1.5:1      |            |            |
| Cross Polar Isolation                        | dB   | 25         |            |            |
| Maximum Effective Power per Port             | Watt | 250        |            |            |


**Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°**
**ELECTRICAL SPECIFICATIONS**

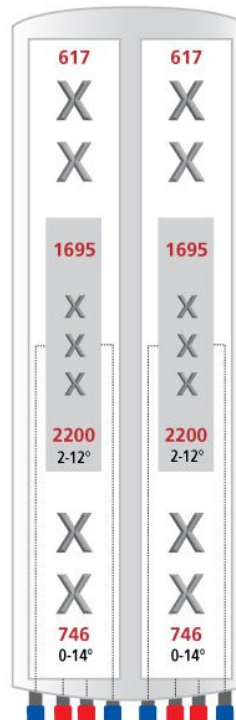
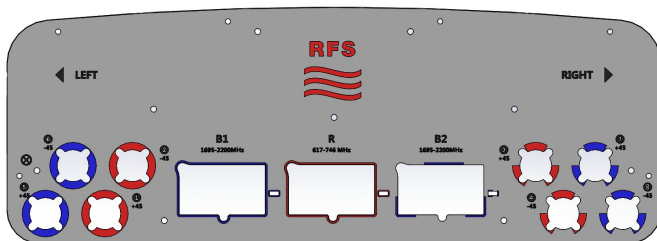
|                     |     |      |
|---------------------|-----|------|
| <b>Impedance</b>    | Ohm | 50.0 |
| <b>Polarization</b> | Deg | ±45° |

**MECHANICAL SPECIFICATIONS**

|                                        |         |                                                                                                        |
|----------------------------------------|---------|--------------------------------------------------------------------------------------------------------|
| <b>Dimensions - H x W x D</b>          | mm (in) | 1829 x 609 x 215 (72 x 24 x 8.5)                                                                       |
| <b>Weight (Antenna Only)</b>           | kg (lb) | 48 (106)                                                                                               |
| <b>Weight (Mounting Hardware only)</b> | kg (lb) | 11.5 (25.3)                                                                                            |
| <b>Packing size- HxWxD</b>             | mm (in) | 1980 x 735 x 375 (77.9 x 28.9 x 14.8)                                                                  |
| <b>Shipping Weight</b>                 | kg (lb) | 70 (154)                                                                                               |
| <b>Connector type</b>                  |         | 8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)                                     |
| <b>Adjustment mechanism</b>            |         | Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator |
| <b>Mounting Hardware Material</b>      |         | Galvanized steel                                                                                       |
| <b>Radome Material / Color</b>         |         | Fiber Glass / Light Grey RAL7035                                                                       |

**TESTING AND ENVIRONMENTAL**

|                                     |         |                             |
|-------------------------------------|---------|-----------------------------|
| <b>Temperature Range</b>            | °C (°F) | -40 to 60 (-40 to 140 )     |
| <b>Lightning protection</b>         |         | IEC 61000-4-5               |
| <b>Survival/Rated Wind Velocity</b> | km/h    | 240 (150 )                  |
| <b>Wind Load @Rated Wind Front</b>  | N       | 1072.0                      |
| <b>Wind Load @Rated Wind Side</b>   | N       | 326.0                       |
| <b>Wind Load @Rated Wind Rear</b>   | N       | 1160.0                      |
| <b>Environmental</b>                |         | ETSI 300-019-2-4 Class 4.1E |





**Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 14.9/14.5/18.6/18.6 dBi, 1.8m (6ft), VET, RET, 0-14°/0-14°/2-12°/2-12°**

**ORDERING INFORMATION**

| Order No.            | Configuration                  | Mounting Hardware                 | Mounting pipe Diameter | Shipping Weight |
|----------------------|--------------------------------|-----------------------------------|------------------------|-----------------|
| APXVAARR18_43-U-NA20 | Field Replace RET included (3) | APM40-5E Beam tilt kit (included) | 60-120mm               | 70 Kg           |

**External Document Links**

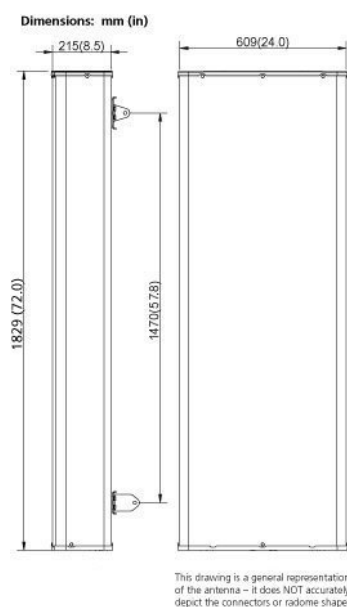
APM40\_Series\_Installation\_Instructions  
Manual\_Overdrive\_Instructions  
Global RFS Website

**Notes**

All electrical parameters are compliant with BASTA NGMN 9.6 requirements.  
Available Configurations  
APXVAARR18\_43-U-NA20 -- External ACU is included -- shipping weight 69kg.  
For additional mounting information please click "External Document Links".  
This data is provisional and subject to changes.

**External Link Reference**

Global RFS Website <http://www.rfsworld.com>





## SPECIFICATIONS

### 4x4 MIMO Bi-Sector Array Antenna

BSA33R-U6A

#### Electrical

| Ports                                | 8 X High Band Ports for 1695-2400 MHz |               |               |               |
|--------------------------------------|---------------------------------------|---------------|---------------|---------------|
| Frequency Range                      | 1695-1880 MHz                         | 1920-2180 MHz | 1850-1990 MHz | 2300-2400 MHz |
| Gain (Peak)                          | 17.5 dBi                              | 17.8 dBi      | 18.3 dBi      | 18.8 dBi      |
| Gain (Average)*                      | 16.4 dBi                              | 17.2 dBi      | 17.6 dBi      | 18.2 dBi      |
| Azimuth Beamwidth (-3dB)             | 37°                                   | 34°           | 32°           | 28°           |
| Elevation Beamwidth (-3dB)           | 9.8°                                  | 9.0°          | 8.6°          | 7.6°          |
| Electrical Downtilt                  | 0° to 10°                             | 0° to 10°     | 0° to 10°     | 0° to 10°     |
| Elevation Sidelobes (1st Upper)      | < -17 dB                              | < -18 dB      | < -18 dB      | < -18 dB      |
| Front-to-Back Ratio @180°            | > 35 dB                               | > 35 dB       | > 35 dB       | > 35 dB       |
| Cross-Polar Discrimination (at Peak) | > 24 dB                               | > 24 dB       | > 24 dB       | > 24 dB       |
| Cross-Polar Port-to-Port Isolation   | > 25 dB                               | > 25 dB       | > 25 dB       | > 25 dB       |
| Voltage Standing Wave Ratio (VSWR)   | < 1.5:1                               | < 1.5:1       | < 1.5:1       | < 1.5:1       |
| Passive Intermodulation (2x20W)      | ≤ -150 dBc                            | ≤ -150 dBc    | ≤ -150 dBc    | ≤ -150 dBc    |
| Input Power Continuous Wave (CW)     | 300 watts                             | 300 watts     | 300 watts     | 300 watts     |
| Polarization                         | ±45°                                  | ±45°          | ±45°          | ±45°          |
| Input Impedance                      | 50 Ohms                               | 50 Ohms       | 50 Ohms       | 50 Ohms       |
| Lightning Protection                 | DC Gnd                                | DC Gnd        | DC Gnd        | DC Gnd        |

\*Electrical specifications follow document "Recommendation on Base Station Antenna Standards" (BASTA) V9.6.

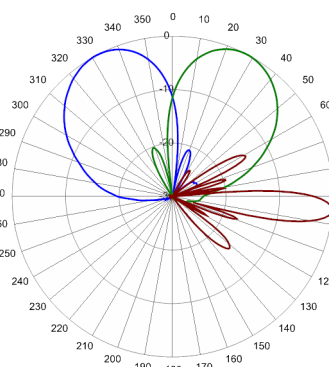
Rear Iso View



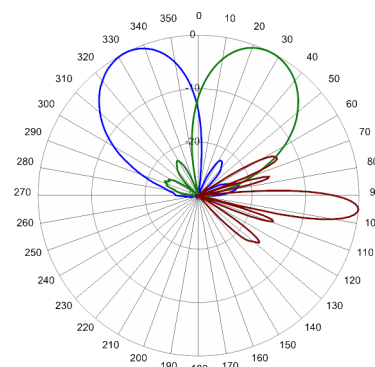
#### Mechanical

|                            |                                            |
|----------------------------|--------------------------------------------|
| Dimensions (LxWxD)         | 75.9 x 12.9 x 6.2 inches (1929×327×158 mm) |
| Survival Wind Speed        | > 150 mph (> 241 km/hr)                    |
| Front Wind Load            | 235 lbs (1045 N) @ 100 mph (161 kph)       |
| Side Wind Load             | 132 lbs (588 N) @ 100 mph (161 kph)        |
| Equivalent Flat Plate Area | 9.2 ft² (0.9 m²)                           |
| Weight *                   | 50.6 lbs (23 kg)                           |
| RET System Weight          | 3.3 lbs (1.5 kg)                           |
| Connector                  | 8 × 7-16 DIN female long neck              |
| Mounting Pole              | 2-5 in (5-12 cm)                           |

\*Weight excludes mounting and RET



1920 MHz



2110 MHz

## PROJECT NOTES

- SITE INFORMATION OBTAINED FROM THE FOLLOWING:
  - PLAN ENTITLED "7WAN010A-TECHNOLOGY SERVICE CORP" PREPARED BY ADVANTAGE ENGINEERS OF COLUMBIA, MD LAST REVISED 04/22/16.
  - LIMITED FIELD OBSERVATION BY MASER CONSULTING ON 06/12/18.
- THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC/GOVERNING AUTHORITIES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
- THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE AS A RESULT OF CONSTRUCTION OF THIS FACILITY AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING THE BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND CONSTRUCTION DRAWINGS.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THESE DRAWINGS MUST BE VERIFIED. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY POTENTIALLY DANGEROUS EXPOSURE LEVELS.
- THE PROPOSED FACILITY WILL CAUSE AN INSIGNIFICANT OR "DE-MINIMUS" INCREASE IN STORM WATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
- NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS FACILITY AS TO CAUSE A NUISANCE.
- THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
- THE FACILITY DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
- CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTHS WITH RF ENGINEERING PRIOR TO INSTALLATION.
- THE TOWER, MOUNTS AND ANTENNAS SHALL BE DESIGNED TO MEET EIA/TIA-222-G AS PER IBC REQUIREMENTS.
- ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
- CONTRACTOR MUST FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION.
- CONSTRUCTION SHALL NOT COMMENCE UNTIL COMPLETION OF A PASSING STRUCTURAL ANALYSIS CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE STRUCTURAL ANALYSIS IS TO BE PERFORMED BY OTHERS.

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# T-Mobile

## SITE NUMBER: 7WAN010A

## SITE NAME: TECHNOLOGY SERVICE CORP

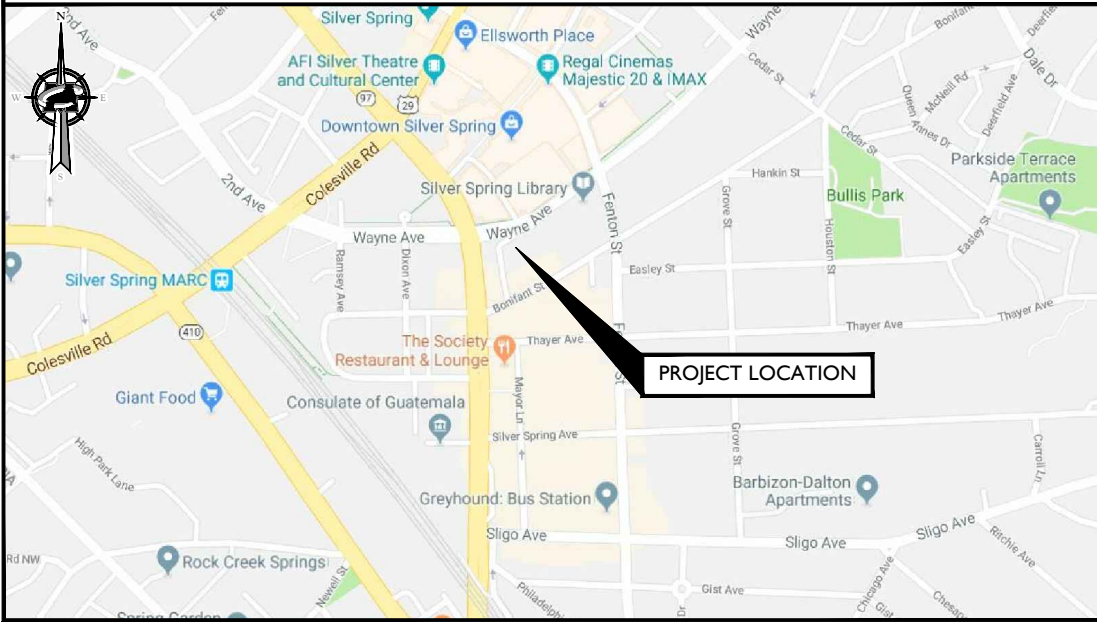
## 67D93D

## 962 WAYNE AVENUE

## SILVER SPRING, MD 20910

## MONTGOMERY COUNTY

## VICINITY MAP



## CODE COMPLIANCE

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. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2015 INTERNATIONAL BUILDING CODE
- 2014 NATIONAL ELECTRICAL CODE - NFPA 70
- 2015 NFPA 1 & NFPA 101
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10
- AMERICAN CONCRETE INSTITUTE
- TIA-222-G
- TIA 607 FOR GROUNDING
- INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81 IEEE C2 LATEST EDITION
- ANSI T1.311
- PROPOSED USE: UNMANNED TELECOM FACILITY
- HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
- CONSTRUCTION TYPE: IIB

## PROJECT INFORMATION

### SITE INFORMATION

LATITUDE: 38.994044° N (PREVIOUS CDS)  
LONGITUDE: 77.0261° W (PREVIOUS CDS)  
JURISDICTION: MONTGOMERY COUNTY

### APPLICANT/LESSEE

COMPANY: T-MOBILE NORTHEAST  
ADDRESS: 12050 BALTIMORE AVE  
CITY, STATE, ZIP: BELTSVILLE, MD 20705

### STRUCTURE OWNER

COMPANY: BSREP II MD OFFICE WAYNE LLC  
ADDRESS: C/O BROOKFIELD PROPERTIES INC  
CITY, STATE, ZIP: 250 VESEY ST 15TH FL  
NEW YORK, NY 10281-1023

### CLIENT REPRESENTATIVE

COMPANY: SITE LINK WIRELESS LLC  
ADDRESS: 3620 COMMERCE DRIVE - SUITE 707  
CITY, STATE, ZIP: BALTIMORE, MD 21227  
CONTACT: DREW MONTGOMERY  
E-MAIL: DMONTGOMERY@SITELINKWIRELESS.COM

### SITE ACQUISITION

COMPANY: SITE LINK WIRELESS LLC  
ADDRESS: 3620 COMMERCE DRIVE - SUITE 707  
CITY, STATE, ZIP: BALTIMORE, MD 21227  
CONTACT: DREW MONTGOMERY  
E-MAIL: DMONTGOMERY@SITELINKWIRELESS.COM

### ENGINEER

COMPANY: MASER CONSULTING P.A.  
ADDRESS: 6240 OLD DOBBINS LANE, SUITE 150  
CITY, STATE, ZIP: COLUMBIA, MD 21045  
CONTACT: MARK AYLWARD  
PHONE: (877) 627-3772  
E-MAIL: MAYLWARD@MASERCONSULTING.COM

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37157, EXPIRATION DATE: JULY 17, 2019."



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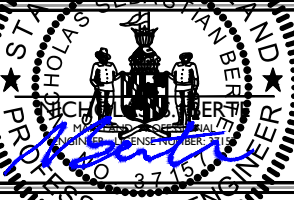


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SCALE: AS SHOWN JOB NUMBER: 18958047A

| REV | DATE     | DESCRIPTION             | BY  | CHKD |
|-----|----------|-------------------------|-----|------|
| 1   | 10/17/18 | REVISED PER COMMENTS    | BAH | NSB  |
| 0   | 08/14/18 | ISSUED FOR CONSTRUCTION | YMA | NSB  |
| B   | 07/12/19 | ISSUED FOR REVIEW       | MCA | NSB  |
| A   | 06/12/18 | ISSUED FOR REVIEW       | BAH | NSB  |

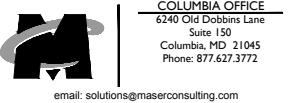


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SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



SHEET TITLE:  
TITLE SHEET

SHEET NUMBER:  
T-1

## PROJECT DESCRIPTION/ SCOPE OF WORK

- |                                                       |                                               |                                                |
|-------------------------------------------------------|-----------------------------------------------|------------------------------------------------|
| <input type="checkbox"/> EXISTING MONOPOLE            | <input checked="" type="checkbox"/> RBS 6102  | <input checked="" type="checkbox"/> OUTDOOR    |
| <input type="checkbox"/> EXISTING SST                 | <input checked="" type="checkbox"/> RBS 2106  | <input type="checkbox"/> INDOOR                |
| <input type="checkbox"/> EXISTING TRANSMISSION TOWER  | <input type="checkbox"/> SITE SUPPORT KIT     | <input type="checkbox"/> CONCRETE PAD          |
| <input type="checkbox"/> EXISTING WATER TANK          | <input type="checkbox"/> SITE SUPPORT CABINET | <input type="checkbox"/> STEEL PLATFORM        |
| <input checked="" type="checkbox"/> EXISTING BUILDING | <input type="checkbox"/> HCS                  | <input type="checkbox"/> PPC                   |
| <input type="checkbox"/> RAW LAND                     |                                               | <input checked="" type="checkbox"/> PANELBOARD |
| <input type="checkbox"/> EXISTING FLAG POLE           |                                               |                                                |

T-MOBILE NORTHEAST LLC PROPOSES THE MODIFICATION OF AN UNMANNED WIRELESS BROADBAND FACILITY.

- REMOVE (3) RRUS-11 B12, 1 PER SECTOR
- REMOVE (6) EXISTING ANTENNAS, 2 PER SECTOR
- INSTALL (6) NEW T-MOBILE ANTENNA MOUNT, 2 PER SECTOR
- INSTALL (3) RRUS-4415 B2, 1 PER SECTOR
- INSTALL (6) RRUS-4415 B4, 2 PER SECTOR
- INSTALL (3) RRUS-4449 B71+B12, 1 PER ALPHA, BETA, & GAMMA SECTORS
- INSTALL (3) RRUS-01 B2, 1 PER ALPHA, BETA, & GAMMA SECTORS
- INSTALL (3) 6X12 HYBRID CABLE

## SHEET INDEX

| SHEET | DESCRIPTION                        |
|-------|------------------------------------|
| T-1   | TITLE SHEET                        |
| C-1   | SITE PLAN                          |
| C-2   | ROOFTOP LAYOUT                     |
| C-3   | EQUIPMENT LAYOUT                   |
| C-4   | ELEVATION VIEW                     |
| A-1   | ANTENNA PLANS AND ANTENNA SCHEDULE |
| A-2   | CONSTRUCTION DETAILS - 1           |
| A-3   | CONSTRUCTION DETAILS - 2           |
| E-1   | ELECTRICAL DETAILS                 |
| E-2   | GROUNDING DETAILS                  |
| G-1   | GENERAL AND ELECTRICAL NOTES       |



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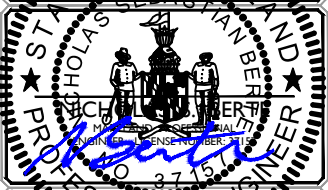
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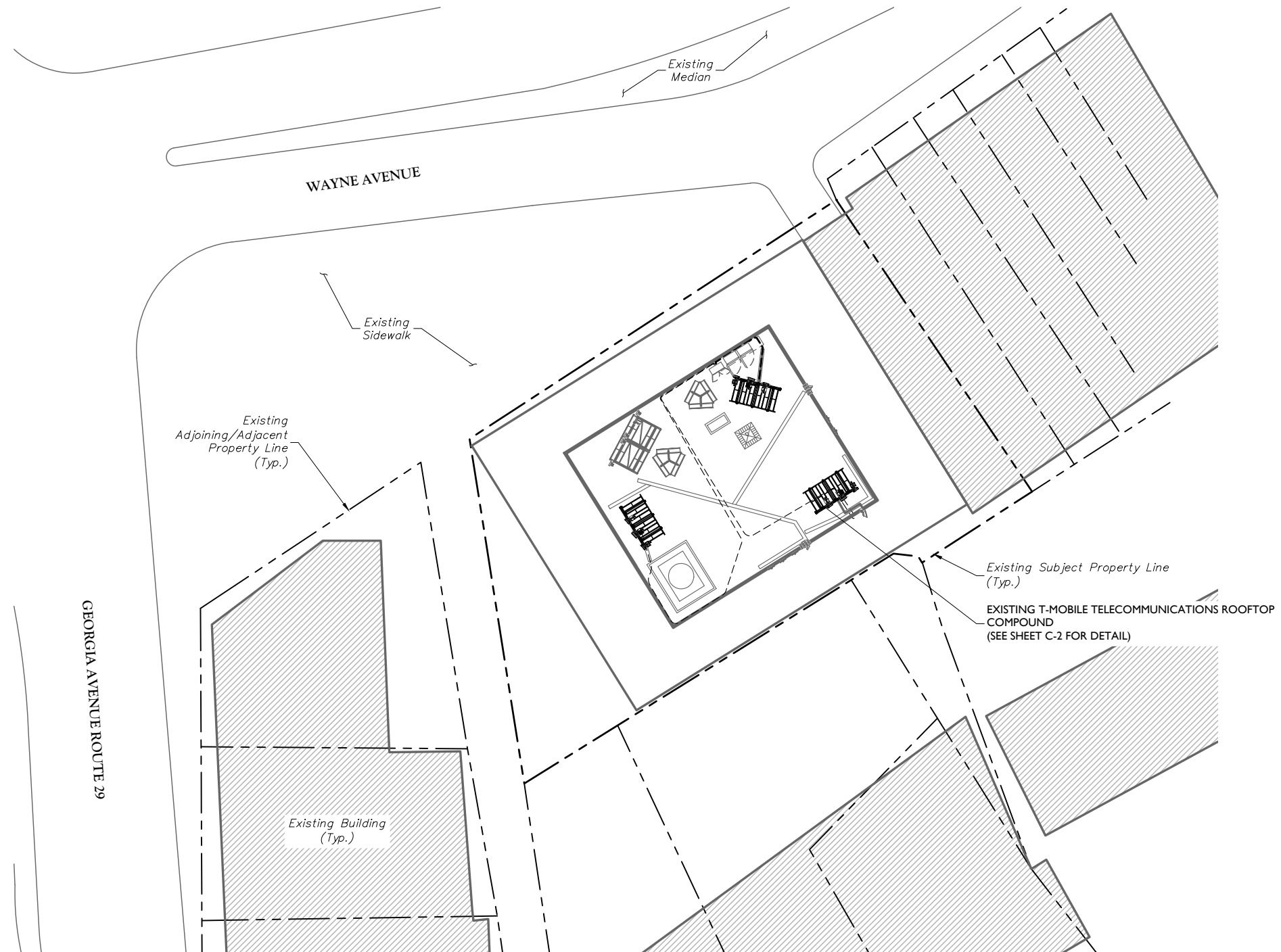
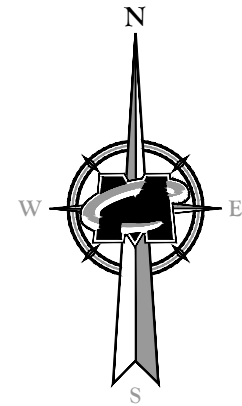
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SHEET TITLE :

SITE PLAN

SHEET NUMBER: C-1



 Existing Subject Property Line  
 Existing Adjoining/Adjacent Property Line  
 Existing Structure  
 Existing Edge of Pavement/Road  
 Existing Edge of Gravel/Dirt Road  
 Existing Tree Line  
 Existing Features  
 **PROPOSED FEATURES**

20 16 12 8 4 0 10 20 4

SCALE : 1" = 20' FOR 22"X34"  
(SCALE : 1" = 40' FOR 11"X17")

By: MPOE  
M:\7\WAN\010A\Technology Service Corp\_CD.R ev 0.dwg\C-1

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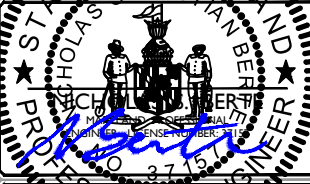
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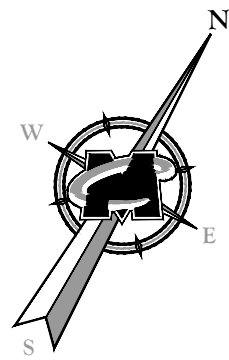
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Phone: 877.627.3772  
email: solutions@maserconsulting.com

SHEET TITLE

ROOFTOP PLAN

SHEET NUMBER

C-2



Existing T-Mobile RRUS32 B2 Behind  
Proposed Antenna on Site Pro 1 Dual  
Mounting Bracket  
(Typ. of 3, 1 Per Sector)

PROPOSED T-MOBILE RRUS-4415 B2  
BEHIND PROPOSED ANTENNA ON SITE  
PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 3, 1 PER SECTOR)

Existing Rooftop

PROPOSED T-MOBILE TWIN BEAM  
ANTENNA  
(TYP. OF 6, 2 PER SECTOR)

PROPOSED T-MOBILE RRUS-4415 B4  
BEHIND PROPOSED ANTENNA ON SITE  
PRO 1 DUAL MOUNTING BRACKET  
(TYP. OF 6, 2 PER SECTOR)

Existing Sprint Ballast  
(Typ.)

Existing Ballast Mount  
(Typ.)

T-Mobile Equipment Inside Penthouse  
(SEE EQUIPMENT LAYOUT ON SHEET C-3)

Existing Roof Opening

INSTALL 6X12 HYBRID CABLES  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED SITE PRO 1 BALLAST  
MOUNT PART # RTP14  
(TYP. OF 3, 1 PER SECTOR)

Existing Rooftop

Existing Penthouse  
Roof

PROPOSED RRUS-4449 B71 + B12  
BEHIND PROPOSED ANTENNA ON  
SITE PRO 1 DUAL MOUNTING  
BRACKET  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED RRUS-01 B2 BEHIND  
PROPOSED ANTENNA ON SITE  
PRO 1 DUAL MOUNTING  
BRACKET  
(TYP. OF 3, 1 PER SECTOR)

PROPOSED T-MOBILE L600 ANTENNA  
TO REPLACE EXISTING ANTENNA  
(TYP. OF 3, 1 PER SECTOR)

Existing Rooftop

ROOFTOP PLAN



SCALE : 1" = 5' FOR 22"X34"  
(SCALE : 1" = 10' FOR 11"X17")



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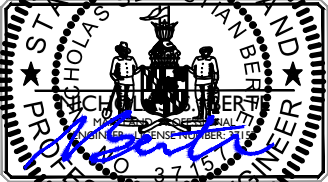
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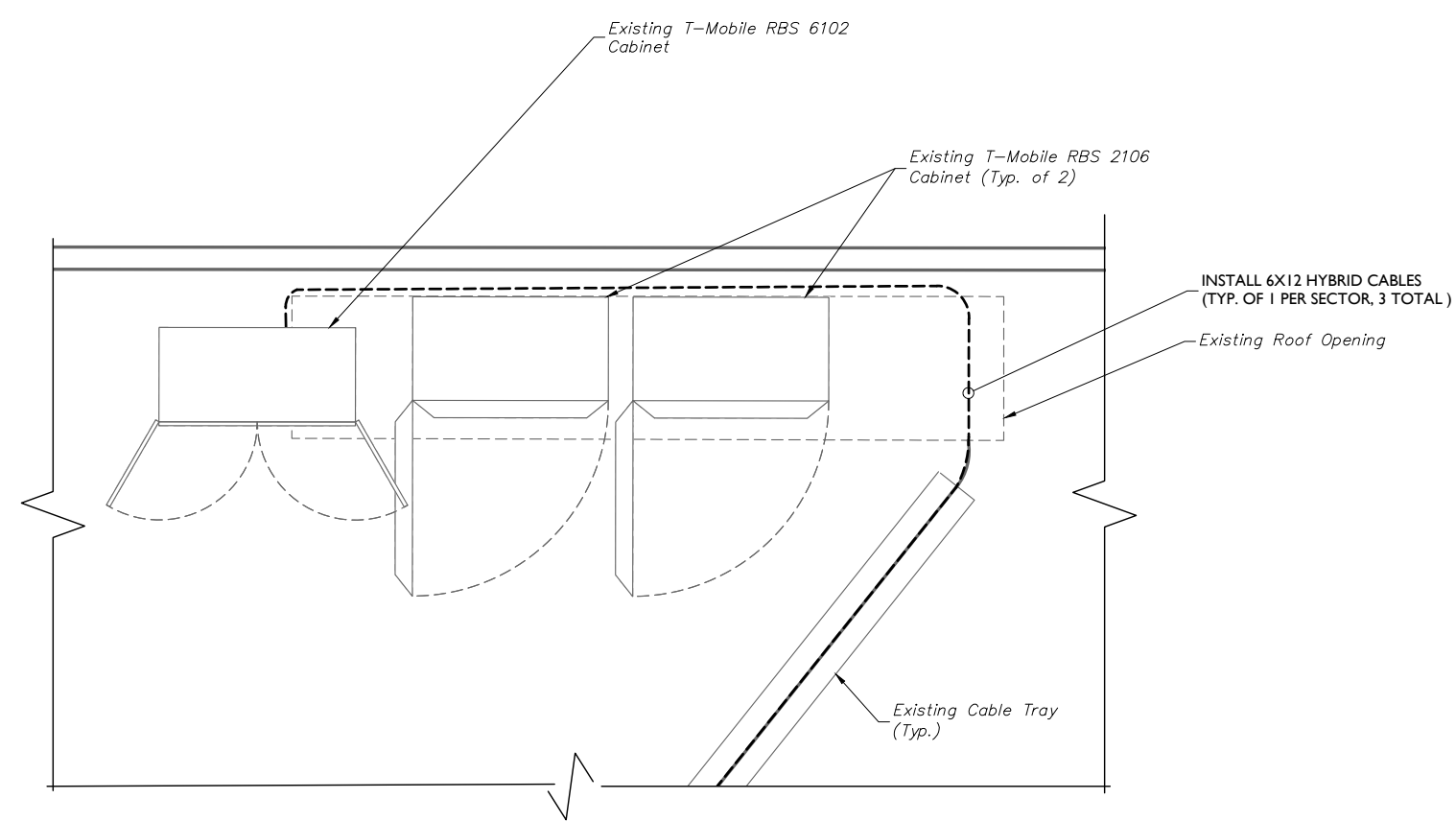
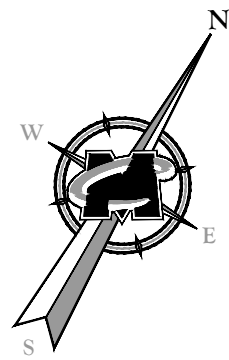
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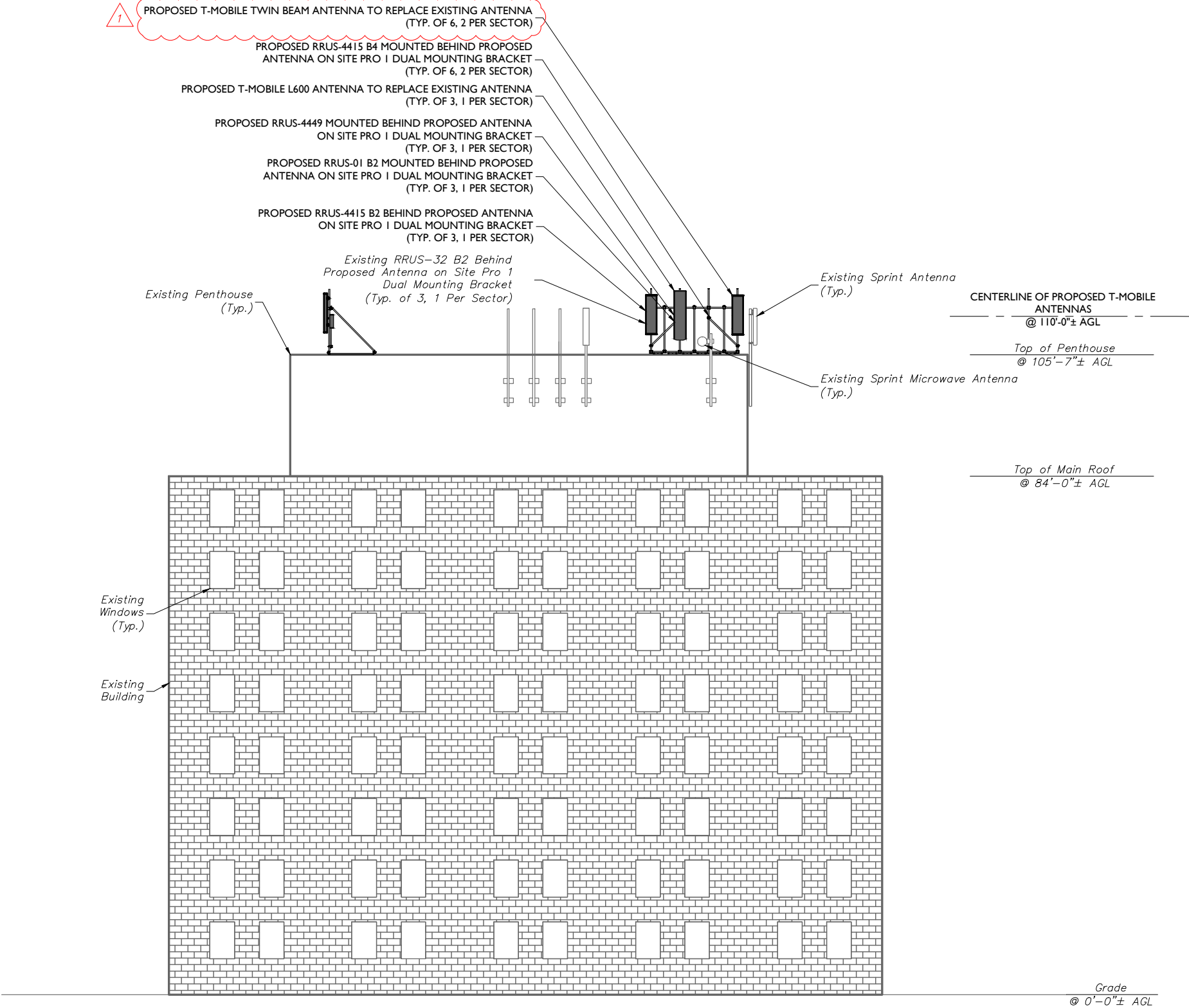


SHEET NUMBER : C-3



STRUCTURAL NOTES:

- A STRUCTURAL ANALYSIS REPORT PREPARED BY MASER CONSULTING P.A., DATED 07/06/18 HAS BEEN PREPARED TO CHECK THE STRUCTURAL CAPACITY OF THE PROPOSED ANTENNA MOUNT TO SUPPORT THE PROPOSED ANTENNA AND EQUIPMENT CONFIGURATION AS DEPICTED WITHIN THESE CONSTRUCTION DRAWINGS. BASED ON THE CONCLUSIONS OF THIS REPORT, THE ANTENNA MOUNT HAS BEEN DETERMINED TO HAVE SUFFICIENT CAPACITY.
- THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.



ELEVATION VIEW



SCALE : 1" = 10' FOR 22'X34"  
(SCALE : 1" = 20' FOR 11'X17")

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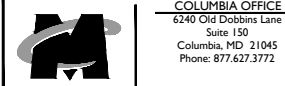
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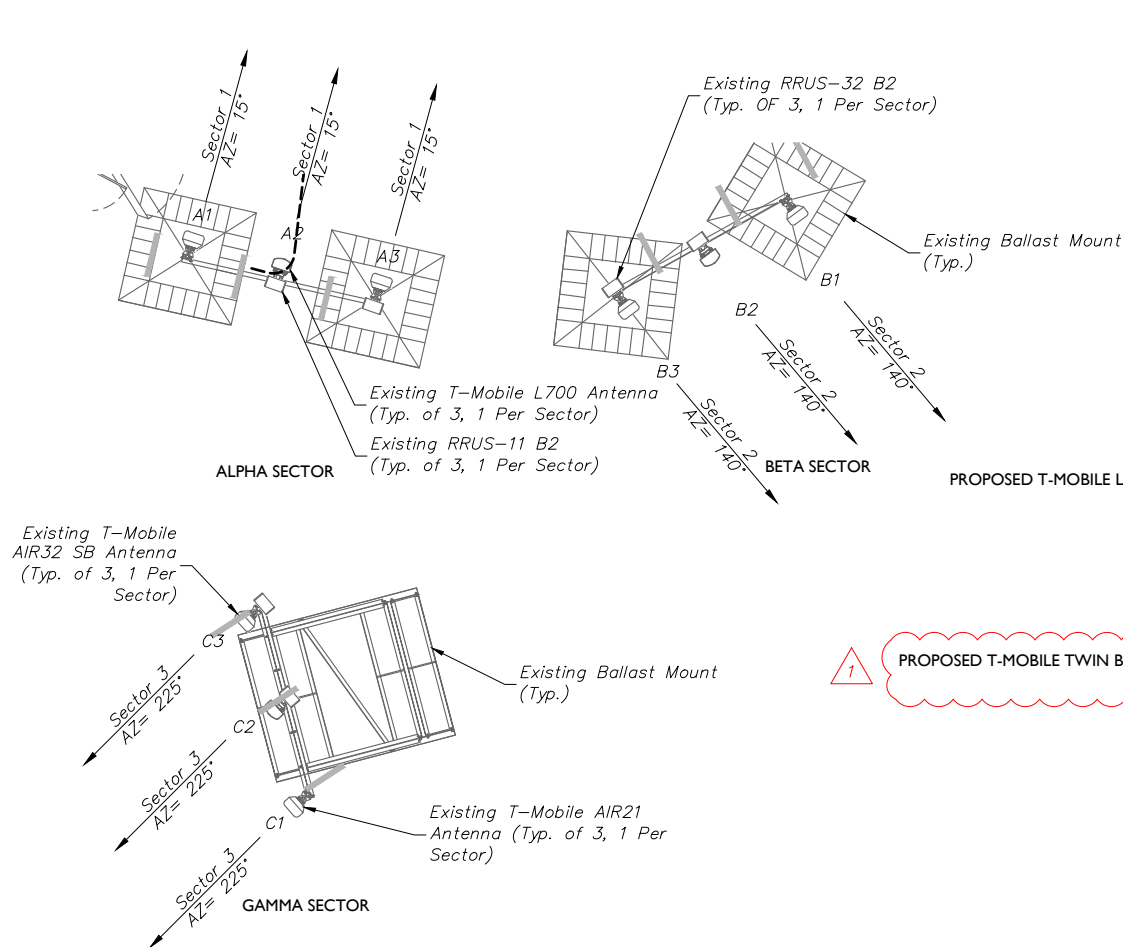
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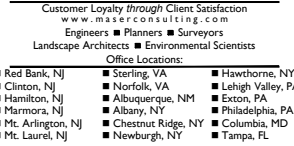
ELEVATION VIEW

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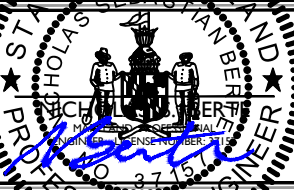
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A-1

| SECTOR             |    | EXISTING ANTENNA                                                                                           | PROPOSED ANTENNA     | ANTENNA STATUS | HEIGHT (in) | WIDTH (in) | DEPTH (in) | WEIGHT (lbs) | ANTENNA AZIMUTH (DEG.) | ANT. CL. ELEV. (ft.) | REMOTE RADIO/TMA CONFIGURATION                                  | DOWNTILT  |           | TRANSMISSION CABLE |        |             |          |
|--------------------|----|------------------------------------------------------------------------------------------------------------|----------------------|----------------|-------------|------------|------------|--------------|------------------------|----------------------|-----------------------------------------------------------------|-----------|-----------|--------------------|--------|-------------|----------|
|                    |    |                                                                                                            |                      |                |             |            |            |              |                        |                      |                                                                 | MECH. (°) | ELEC. (°) | QUANTITY           | LENGTH | TYPE        | STATUS   |
| Sector 1           | A1 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 15                     | 110                  | (2) RRUS-4415 B4 (PROPOSED)                                     | -         | -         | -                  | -      | -           | -        |
|                    |    | AIR 21 B2A B4P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | A2 | COMMSCOPE                                                                                                  | RFS                  | PROPOSED       | 72.0        | 24.0       | 8.5        | 131.3        | 15                     | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -         | -         | 2                  | 85'    | 6X12 HYBRID | PROPOSED |
|                    |    | LNx-6514DS-VTM                                                                                             | APXVAARR18_43-U-NA20 |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | A3 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 15                     | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -         | -         | -                  | -      | -           | -        |
|                    |    | Air 32 B4A B2P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | A4 | -                                                                                                          | -                    | -              | -           | -          | -          | -            | -                      | -                    | -                                                               | -         | -         | -                  | -      | -           | -        |
| -                  |    | -                                                                                                          |                      |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
| Sector 2           | B1 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 140                    | 110                  | (2) RRUS-4415 B4 (PROPOSED)                                     | -         | -         | -                  | -      | -           | -        |
|                    |    | AIR 21 B2A B4P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | B2 | COMMSCOPE                                                                                                  | RFS                  | PROPOSED       | 72.0        | 24.0       | 8.5        | 131.3        | 140                    | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -         | -         | 2                  | 175'   | 6X12 HYBRID | PROPOSED |
|                    |    | LNx-6514DS-VTM                                                                                             | APXVAARR18_43-U-NA20 |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | B3 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 140                    | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -         | -         | -                  | -      | -           | -        |
|                    |    | Air 32 B4A B2P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | B4 | -                                                                                                          | -                    | -              | -           | -          | -          | -            | -                      | -                    | -                                                               | -         | -         | -                  | -      | -           | -        |
| -                  |    | -                                                                                                          |                      |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
| Sector 3           | C1 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 225                    | 110                  | (2) RRUS-4415 B4 (PROPOSED)                                     | -         | -         | -                  | -      | -           | -        |
|                    |    | AIR 21 B2A B4P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | C2 | COMMSCOPE                                                                                                  | RFS                  | PROPOSED       | 72.0        | 24.0       | 8.5        | 131.3        | 225                    | 110                  | (1) RRUS-4449 B71 + B12 (PROPOSED)<br>(1) RRUS-01 B2 (PROPOSED) | -         | -         | 2                  | 175'   | 6X12 HYBRID | PROPOSED |
|                    |    | LNx-6514DS-VTM                                                                                             | APXVAARR18_43-U-NA20 |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | C3 | ERICSSON                                                                                                   | CCI                  | PROPOSED       | 76.5        | 12.9       | 6.2        | 57.6         | 225                    | 110                  | (1) RRUS-32 B2 (EXISTING)<br>(1) RRUS-4415 B2 (PROPOSED)        | -         | -         | -                  | -      | -           | -        |
|                    |    | Air 32 B4A B2P                                                                                             | BSA33R-U6A           |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
|                    | C4 | -                                                                                                          | -                    | -              | -           | -          | -          | -            | -                      | -                    | -                                                               | -         | -         | -                  | -      | -           | -        |
| -                  |    | -                                                                                                          |                      |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |
| NOTES:<br>1.<br>2. |    | BASED UPON RFDS DATED 5/31/18.<br>CONTRACTOR SHALL VERIFY THEY HAVE THE LATEST RFDS PRIOR TO CONSTRUCTION. |                      |                |             |            |            |              |                        |                      |                                                                 |           |           |                    |        |             |          |

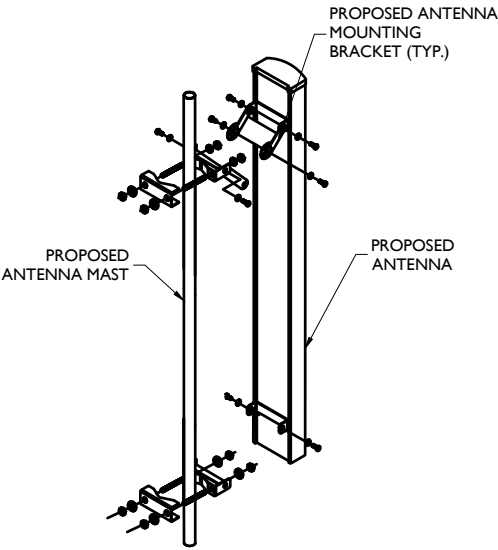
|        |                                                                          |
|--------|--------------------------------------------------------------------------|
| NOTES: |                                                                          |
| 1.     | BASED UPON RFDS DATED 5/31/18.                                           |
| 2.     | CONTRACTOR SHALL VERIFY THEY HAVE THE LATEST RFDS PRIOR TO CONSTRUCTION. |

COLOR CODING NOTES:

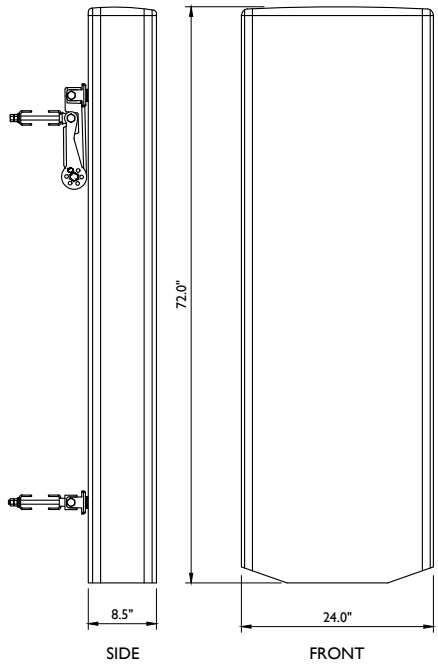
R - RED - GSM  
G - GREEN - UMTS 1900  
B - BLUE - UMTS AWS  
Y - YELLOW - LTE  
O - ORANGE - FIBER CABLE

METALLIC TAG NOTES:

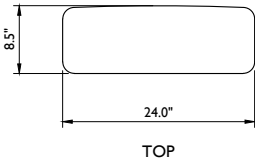
1. TWO METALLIC TAGS SHALL BE ATTACHED AT EACH END OF EVERY CABLE LONGER THAN (3) THREE FEET.
2. CABLES LESS THAN (3) THREE FEET WILL HAVE TWO METALLIC TAGS ATTACHED AT THE CENTER OF THE CABLE.
3. TAGS WILL BE FASTENED WITH STAINLESS STEEL ZIP TIES APPROPRIATE FOR CABLE DIAMETER.
4. STANDARDIZED METALLIC TAG KITS WILL BE ASSEMBLED WITH TAGS ALREADY ENGRAVED TO ACCOMMODATE ALL CONFIGURATIONS.



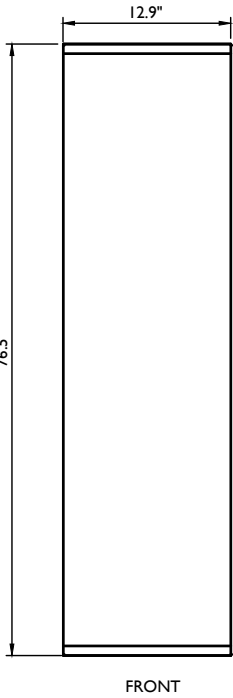
ANTENNA MOUNTING DETAIL  
NOT TO SCALE



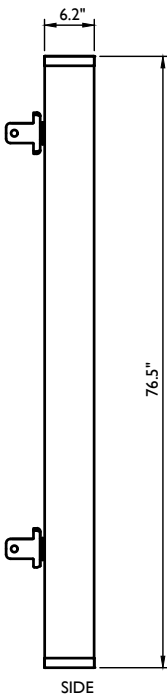
ANTENNA MODEL:  
RFS: APXVAARR18 43-U-NA20  
WEIGHT WITHOUT MOUNTING  
BRACKET = 154.3 LBS  
WEIGHT WITH MOUNTING  
BRACKET = 137.3 LBS



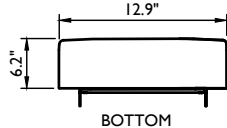
TOP



FRONT



SIDE



BOTTOM

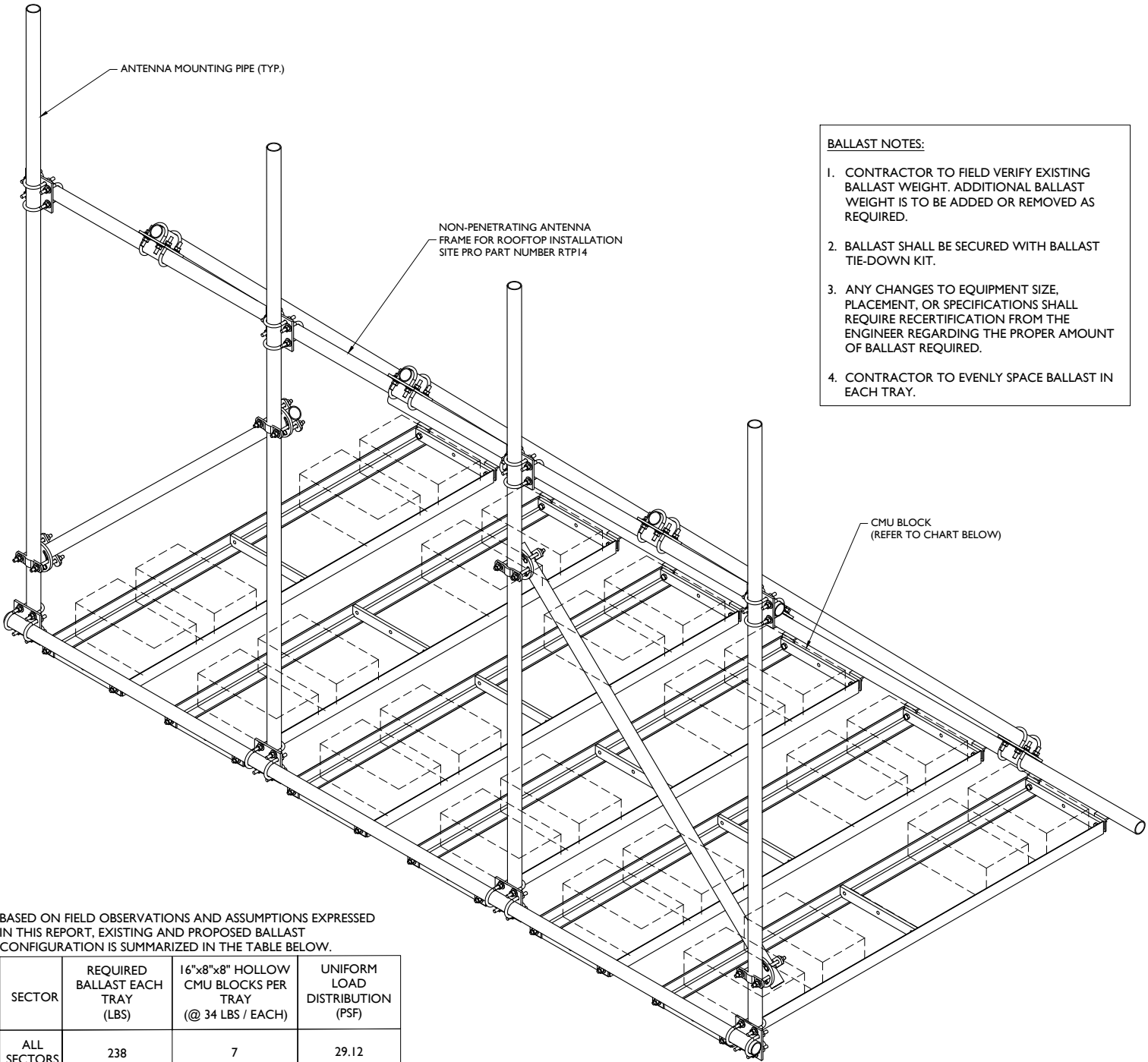
ANTENNA DETAILS  
NOT TO SCALE

ANTENNA MODEL:  
CCI: BSA33R-U6A  
WEIGHT WITHOUT MOUNTING  
BRACKET = 45 LBS  
WEIGHT WITH MOUNTING  
BRACKET = 57.6 LBS

BASED ON FIELD OBSERVATIONS AND ASSUMPTIONS EXPRESSED  
IN THIS REPORT, EXISTING AND PROPOSED BALLAST  
CONFIGURATION IS SUMMARIZED IN THE TABLE BELOW.

| SECTOR         | REQUIRED<br>BALLAST EACH<br>TRAY<br>(LBS) | 16"x8"x8" HOLLOW<br>CMU BLOCKS PER<br>TRAY<br>(@ 34 LBS / EACH) | UNIFORM<br>LOAD<br>DISTRIBUTION<br>(PSF) |
|----------------|-------------------------------------------|-----------------------------------------------------------------|------------------------------------------|
| ALL<br>SECTORS | 238                                       | 7                                                               | 29.12                                    |

ASSUMING: 8"x8"x16" HOLLOW CMU BLOCK AT 34 LB  
8"x8"x16" HOLLOW CMU BLOCK AT 37 LB  
8"x12"x16" HOLLOW CMU BLOCK AT 52 LB



BALLAST NOTES:

1. CONTRACTOR TO FIELD VERIFY EXISTING BALLAST WEIGHT. ADDITIONAL BALLAST WEIGHT IS TO BE ADDED OR REMOVED AS REQUIRED.
2. BALLAST SHALL BE SECURED WITH BALLAST TIE-DOWN KIT.
3. ANY CHANGES TO EQUIPMENT SIZE, PLACEMENT, OR SPECIFICATIONS SHALL REQUIRE RECERTIFICATION FROM THE ENGINEER REGARDING THE PROPER AMOUNT OF BALLAST REQUIRED.
4. CONTRACTOR TO EVENLY SPACE BALLAST IN EACH TRAY.

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ENGINEER UNDER THE LAWS OF THE STATE OF  
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JULY 17, 2019."



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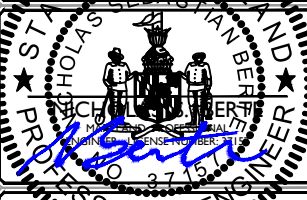


SITE LINK WIRELESS  
www.sitelinkwireless.com



SCALE: AS SHOWN JOB NUMBER: 18958047A

| REV | DATE     | DESCRIPTION             | BY  | CHKD |
|-----|----------|-------------------------|-----|------|
| 1   | 10/17/18 | REVISED PER COMMENTS    | BAH | NSB  |
| 0   | 08/14/18 | ISSUED FOR CONSTRUCTION | YMA | NSB  |
| B   | 07/12/18 | ISSUED FOR REVIEW       | MCA | NSB  |
| A   | 06/14/18 | ISSUED FOR REVIEW       | NSB | NSB  |
| REV | 05/17/18 | DESIGN CHECKED          | BAH | NSB  |



IT IS A VIOLATION OF THE PROFESSIONAL ENGINEER ACT, TITLE 10, § 1-101, OF THE MARYLAND CODE, IF ANY PERSON, WITHOUT THE WRITTEN CONSENT OF THE PROFESSIONAL ENGINEER, TO ALTER, REPRODUCE, OR OTHERWISE USE THIS SEAL.

SITE NAME:

7WAN010A  
TECHNOLOGY SERVICE  
CORP.

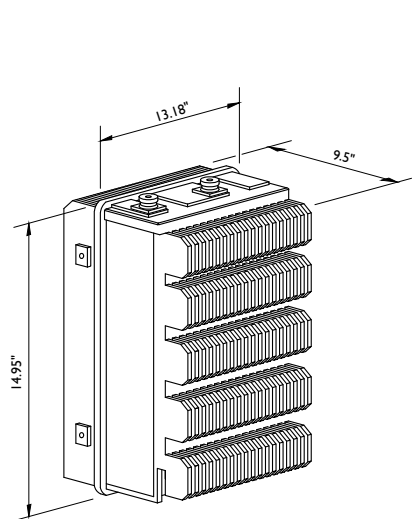
962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



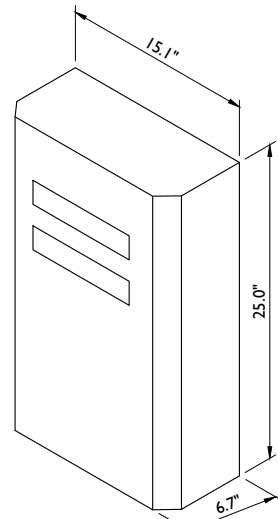
SHEET TITLE:  
CONSTRUCTION DETAILS - I

SHEET NUMBER:  
A-2

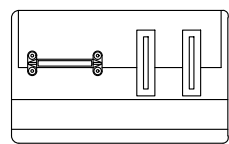
SITE PRO RTP14 BALLAST MOUNT DETAIL  
NOT TO SCALE



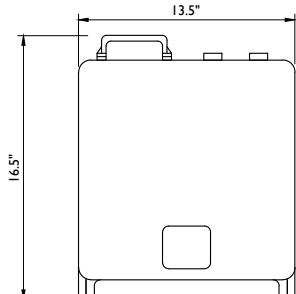
RRUS-4449 B7I+B12 DIMENSIONS  
(H X W X D): 14.95" X 13.18" X 9.5"  
(INCLUDES SUNSHIELD)  
WEIGHT: 74 LBS



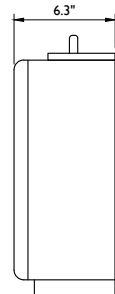
RRUS01 DIMENSIONS  
(H X W X D):  
25.0" X 15.1" X 6.7"  
(INCLUDES SUNSHIELD)  
WEIGHT: 44.1 LBS



PLAN VIEW



FRONT VIEW



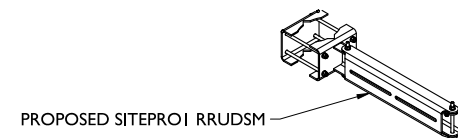
SIDE VIEW

WEIGHT INCLUDES W/FILTER & FAN = 49.6LBS

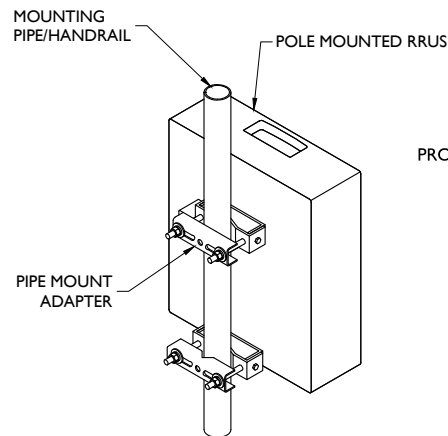
**ERICSSON RRUS 4415 B2/B4**  
NOT TO SCALE

### RRU DETAILS

NOT TO SCALE



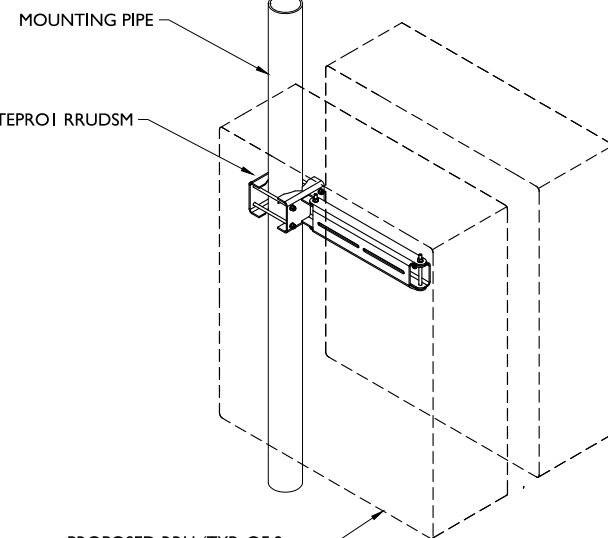
PROPOSED SITEPRO1 RRUSM



MOUNTING  
PIPE/HANDRAIL

POLE MOUNTED RRUS

PIPE MOUNT  
ADAPTER



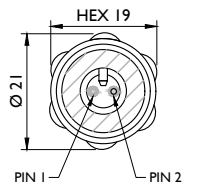
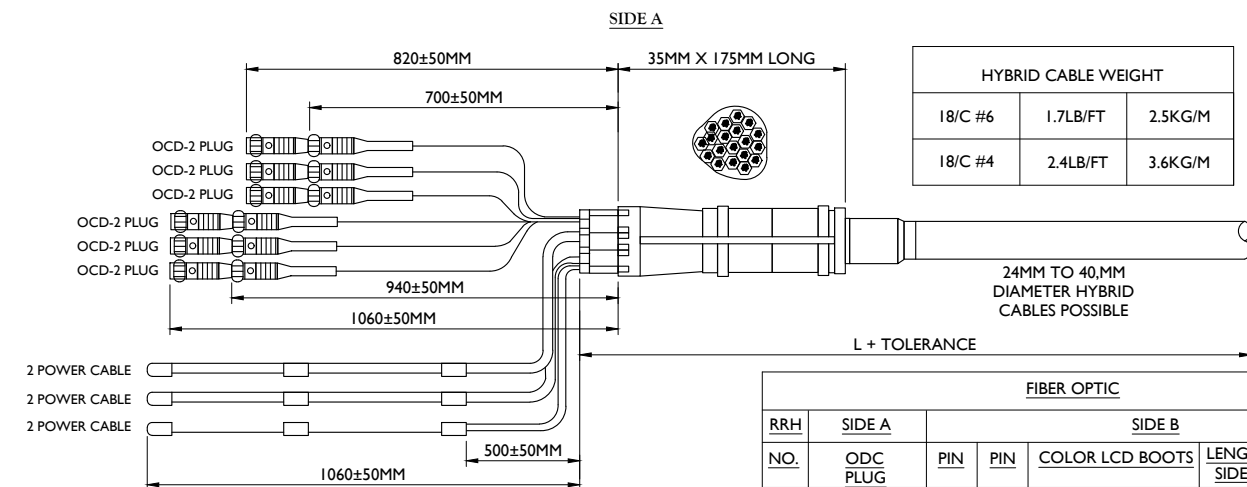
MOUNTING PIPE

PROPOSED SITEPRO1 RRUSM

PROPOSED RRH (TYP. OF 2,  
MOUNT PER MANUFACTURERS  
AND SITE PRO 1 SPECIFICATIONS)

### SITE PRO 1 RRH MOUNTING DETAIL

NOT TO SCALE



ODC-2 PLUG FRONT VIEW

| TOLERANCE | ASSEMBLY<br>LENGTH |
|-----------|--------------------|
| +80       | L < 5M             |
| +2%       | L ≤ 5M             |

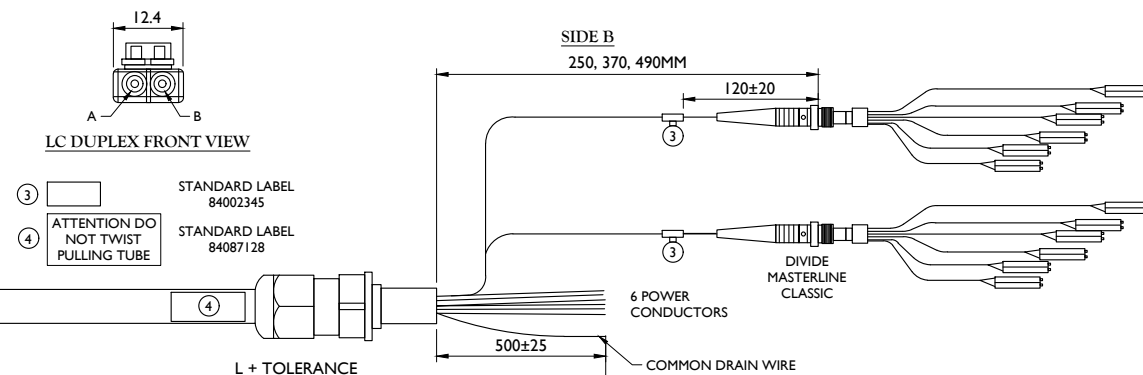
| POWER   |                          |
|---------|--------------------------|
| LENGTH  | DIAMETER                 |
| L ≤ 60M | 6MM <sup>2</sup> (10AWG) |
| L < 60M | 10MM <sup>2</sup> (8AWG) |

| HYBRID CABLE WEIGHT |          |         |
|---------------------|----------|---------|
| 18/C #6             | 1.7LB/FT | 2.5KG/M |
| 18/C #4             | 2.4LB/FT | 3.6KG/M |

| FIBER OPTIC |                       |        |     |                         |                    |   |
|-------------|-----------------------|--------|-----|-------------------------|--------------------|---|
| RRH<br>NO.  | SIDE A<br>ODC<br>PLUG | SIDE B |     | LENGTH<br>SIDE B        | RUBBER<br>GROMMETS |   |
|             |                       | PIN    | PIN |                         |                    |   |
| 1           | ODC-2<br>RED          | 1      | B   | RED<br>(SHORT BREAKOUT) | 1000 ± 50          | 1 |
| 2           | ODC-2<br>GREEN        | 1      | B   | GREEN                   | 1060 ± 50          | 1 |
| 3           | ODC-2<br>BLUE         | 1      | B   | BLUE                    | 1120 ± 50          | 1 |
| 4           | ODC-2<br>YELLOW       | 1      | B   | RED<br>(SHORT BREAKOUT) | 1180 ± 50          | 1 |
| 5           | ODC-2<br>WHITE        | 1      | B   | GREEN                   | 1240 ± 50          | 1 |
| 6           | ODC-2<br>BLACK        | 1      | B   | BLUE                    | 1300 ± 50          | 1 |

### MLE HYBRID CABLE (6 POWER/12 FIBER)

NOT TO SCALE



| POWER      |                   |               |                     |              |
|------------|-------------------|---------------|---------------------|--------------|
| RRH<br>NO. | REF<br>HOOK<br>UP | SIDE A        |                     | SIDE B       |
|            |                   | WIRE<br>COLOR | CABLE<br>DESIGNATOR |              |
| 1          | -48V              | BLACK         | RED                 | RED          |
|            | 0V                | GREY          |                     | BLACK        |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |
| 2          | -48V              | BLACK         | GREEN               | GREEN        |
|            | 0V                | GREY          |                     | WHITE        |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |
| 3          | -48V              | BLACK         | BLUE                | BLUE         |
|            | 0V                | GREY          |                     | ORANGE       |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |

| POWER      |                   |               |                     |              |
|------------|-------------------|---------------|---------------------|--------------|
| RRH<br>NO. | REF<br>HOOK<br>UP | SIDE A        |                     | SIDE B       |
|            |                   | WIRE<br>COLOR | CABLE<br>DESIGNATOR |              |
| 4          | -48V              | BLACK         | RED<br>2X BANDS     | RED          |
|            | 0V                | GREY          |                     | BLACK        |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |
| 5          | -48V              | BLACK         | GREEN<br>2X BANDS   | GREEN        |
|            | 0V                | GREY          |                     | WHITE        |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |
| 6          | -48V              | BLACK         | BLUE<br>2X BANDS    | BLUE         |
|            | 0V                | GREY          |                     | ORANGE       |
|            | GROUND            | DRAIN         |                     | COMMON DRAIN |

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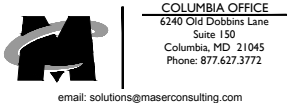
|     |          |                         |     |     |
|-----|----------|-------------------------|-----|-----|
| 1   | 10/17/18 | REVISED PER COMMENTS    | BAH | NSB |
| 0   | 08/14/18 | ISSUED FOR CONSTRUCTION | YMA | NSB |
| B   | 07/12/18 | ISSUED FOR REVIEW       | MCA | NSB |
| A   | 06/12/18 | ISSUED FOR REVIEW       | NSB | NSB |
| REV | 05/12/18 | DESIGN CHECKED BY       | BAH | NSB |



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PROVIDED BY THE CLIENT AND TO  
ALERT THE CLIENT OF ANY  
DEFICIENCIES OR INADEQUACIES.

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TECHNOLOGY SERVICE  
CORP.  
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SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



SHEET TITLE:  
CONSTRUCTION DETAILS - 2

SHEET NUMBER:  
A-3



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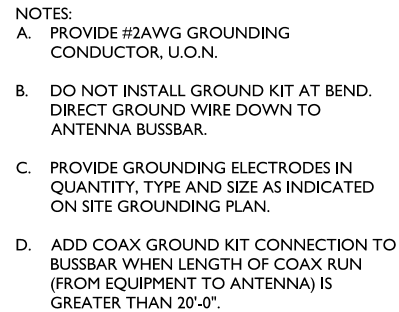
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### PANEL SCHEDULE

NOT TO SCALE

SHEET NUMBER : E-1



ELECTRICAL NOTES:

WORK INCLUDED

1. INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

- A. PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
- B. PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
- C. SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS. EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB
- D. PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
- E. PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
- F. MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
2. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

1. PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
2. THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
3. LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
4. EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR OF SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
5. GENERAL
- A. AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
- B. VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.
6. QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
- A. PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIAL STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
- B. WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- C. PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
- D. MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
- E. PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

1. GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAULTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

1. REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
2. CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

1. CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

1. AS-BUILT DRAWINGS:

- A. UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
2. SERVICE MANUALS:
- A. UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
- B. PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

1. PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK.
2. OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

1. BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
2. PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

1. DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
2. WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON.
- SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

1. ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
2. ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
3. MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
4. USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSIONS TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
5. HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

1. ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
- A. EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
- B. EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
- C. ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
- D. INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
- E. ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
- F. INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
- G. MINIMUM SIZE CONDUIT TO BE ¾" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- H. FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
- I. CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
- J. THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
- K. ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.
- L. PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
- M. PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
- N. CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
- O. PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
- P. WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

1. CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
2. ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
3. ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/ THHN INSULATION, EXCEPT AS NOTED.
4. WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
5. CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
6. WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
7. HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:
- | LENGTH (FT.) | HOME RUN WIRE SIZE |
|--------------|--------------------|
| 0 TO 50      | NO. 12             |
| 51 TO 100    | NO. 10             |
| 101 TO 150   | NO. 8              |
8. VOLTAGE DROP IS NOT TO EXCEED 3%.
9. MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOK OR AND APPROVED EQUAL.

WIRING DEVICES

1. ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION.

DISCONNECT SWITCHES AND FUSES

1. DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
2. PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
3. PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
4. DISCONNECT SWITCHES TO BE MANUFACTURED BY:
- A. GENERAL ELECTRIC COMPANY
- B. SQUARE-D
5. PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

1. INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
2. INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
3. FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
4. FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
- A. THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
- B. TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

1. THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
3. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
4. THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
5. MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
2. THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
3. NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

1. CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.

2. SEE MASTER CONTRACTION SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

1. ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

1. THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
2. EXTERIOR
- A. VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
- C. IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
3. INTERIOR
- A. VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
- B. REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
- C. REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE

1. REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

1. GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
2. ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

1. SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
2. SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

1. BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
2. SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
3. PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
4. CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
5. DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
6. PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
7. COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
8. NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

1. CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
2. THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
3. CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37157, EXPIRATION DATE: JULY 17, 2019."



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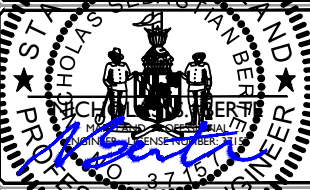
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|            |          |                         |             |            |  |  |  |  |  |
| 1          | 10/17/18 | REVISED PER COMMENTS    | BAH         | NSB        |  |  |  |  |  |
| 0          | 08/14/18 | ISSUED FOR CONSTRUCTION | YMA         | NSB        |  |  |  |  |  |
| B          | 07/12/19 |                         | MCA         | NSB        |  |  |  |  |  |
| A          |          | SCHEMATIC FOR REVIEW    |             | NSB        |  |  |  |  |  |
| REVISED BY | DATE     | DESCRIPTION             | DESIGNED BY | CHECKED BY |  |  |  |  |  |



IT IS MY DUTY AS A PROFESSIONAL ENGINEER, WITHOUT REGARD TO THE NEEDS OF THE INDIVIDUAL CLIENT, TO UPHOLD THE INTERESTS OF THE PUBLIC AND THE RESPONSIBILITY OF THE PROFESSION. I HEREBY CERTIFY THAT I AM A LICENSED PROFESSIONAL ENGINEER, TO ALTERNATE PROJECTS.

SITE NAME:

7WAN010A  
TECHNOLOGY SERVICE  
CORP.

962 WAYNE AVENUE  
SILVER SPRING, MD 20910  
MONTGOMERY COUNTY



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SHEET TITLE:  
GENERAL AND ELECTRICAL  
NOTES

SHEET NUMBER:  
G-1