SHEET INDEX

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A-2	SITE ELEVATION
A-2A	EXISTING & PROPOSED ANTENNA PLANS
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A-3B	EXISTING AND PROPOSED ANTENNA CABLING DIAGRAMS
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AERIAL VIEW

VICINITY MAP

SCOPE OF WORK

THE SCOPE OF WORK CONSISTS OF MODIFYING THE EXISTING WIRELESS INSTALLATION:

1. REMOVAL OF (9) EXISTING ANTENNAS
2. INSTALLATION OF (9) NEW ANTENNAS
3. INSTALLATION OF (6) RF MODULES
4. INSTALLATION OF (3) SYSTEM MODULES
5. INSTALLATION OF (3) COVP'S
6. INSTALLATION OF (2) HYBRID CABLES
7. INSTALLATION OF (1) SSC CABINET

T··Mobile·

Site Modernization

Site Number

ML10018C (ROOFTOP)

Site Name

CITY PARKING LOT

Site Address

324 W HIGHLAND AVE
MILWAUKEE, WI 53203

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APPROVALS

T-MOBILE OPS _____
R.F. OPS _____
R.F. ENGINEER _____
SITE ACQUISITION _____
CONSTRUCTION _____
SITE OWNER _____

PROFESSIONAL LICENSURE

I CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF THE GOVERNING LOCAL BUILDING CODE.

WISCONSIN — GHAZWAN M. SADAT 40304 — ARLINGTON HEIGHTS ILLINOIS — PROFESSIONAL ENGINEER

LICENSED PROFESSIONAL - STATE OF WISCONSIN

EXPIRES: 07-31-14 SIGNED: 08-17-12

PROJECT INFORMATION

LATITUDE:	N 43°-02'-40.19" (43.04449626)
LONGITUDE:	W 87°-54'-55.79" (-87.9154961)
SITE TYPE:	ROOFTOP
JURISDICTION:	CITY OF MILWAUKEE
COUNTY:	MILWAUKEE

APPLICANT:	T- MOBILE 8550 W BRYN MAWR AVE, SUITE 100 CHICAGO IL 60631 PHONE: (773) 444-5400
SITE ACQUISITION:	SURE SITE CONSULTING GROUP, LLC CONTACT:JEFF NANCE PHONE: (773) 867-2960
ENGINEERING CONTACT:	CONCORDIA WIRELESS, INC. CONTACT: GM SADAT, PE PHONE: (847) 981-0801 FAX: (847) 981-0803

CODES:

1. INTERNATIONAL BUILDING CODE 2009
2. NATIONAL ELECTRIC CODE (IEEE)
3. AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION
5. TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL TOWER AND ANTENNA SUPPORTING STRUCTURES
6. TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

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UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: JS	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

No.	Revision/Issue	Date	Initial
A	90% REVIEW	06/06/12	JS
B	FINAL	07/16/12	MM
C	REDESIGN	08/17/12	VG

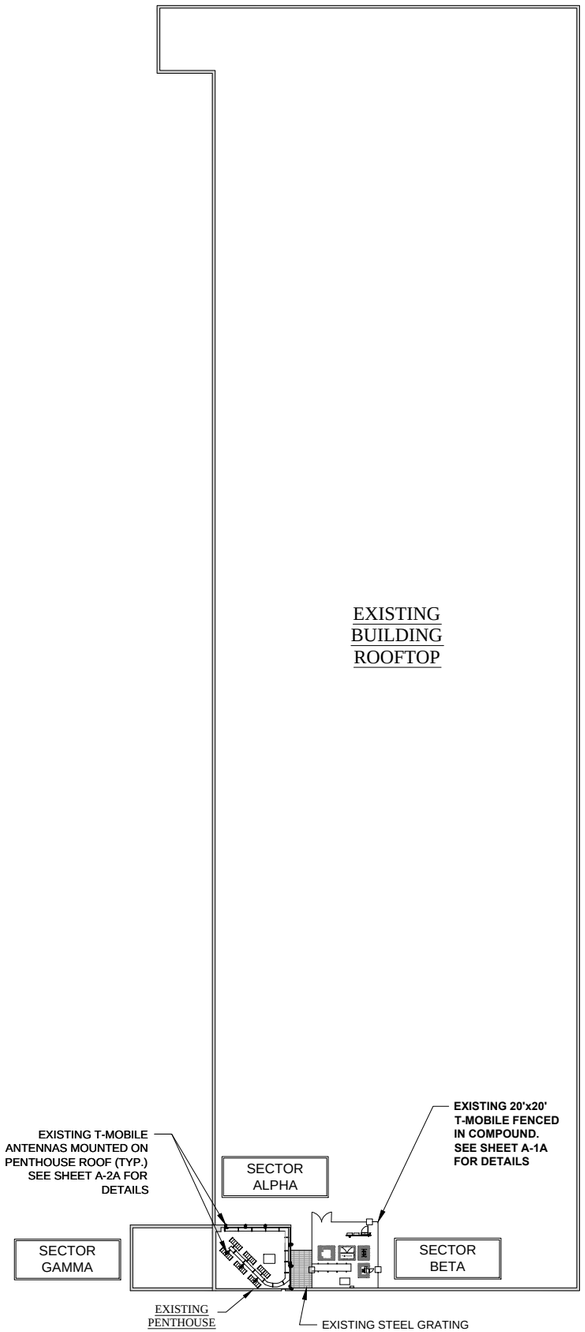
ML10018C
CITY PARKING LOT RT
324 W HIGHLAND AVE
MILWAUKEE, WI 53203

TITLE SHEET

T-1

LEGEND & SYMBOLS

- UTILITY POLE
- SIGN
- TELCO PEDESTAL
- FIRE HYDRANT
- LIGHT STANDARD
- INLET
- CATCH BASIN
- MANHOLE
- TRAFFIC SIGNAL
- ROW MARKER
- IRON PIPE SET
- IRON PIPE FOUND
- BUFFALO BOX
- VALVE BOX
- HORIZONTAL CONTROL POINT
- HANDICAPPED PARKING SPACE
- DT10 — DECIDUOUS TREE W/SIZE
- CT10 — CONIFEROUS TREE W/SIZE
- BRUSH
- TREE LINE
- 666 — CONTOUR W/ELEVATION
- EXISTING GUARDRAIL
- CHAIN LINK FENCE
- IRON FENCE
- WOOD FENCE
- CONCRETE
- ASPHALT
- GRAVEL
- CULTIVATED FIELD
- GRASS AREA



1 ROOF PLAN

SCALE: 1/24"=1'-0" (1/24"=2'-0" IF 11 X 17 SHEET SIZE)

2 SITE PHOTOS

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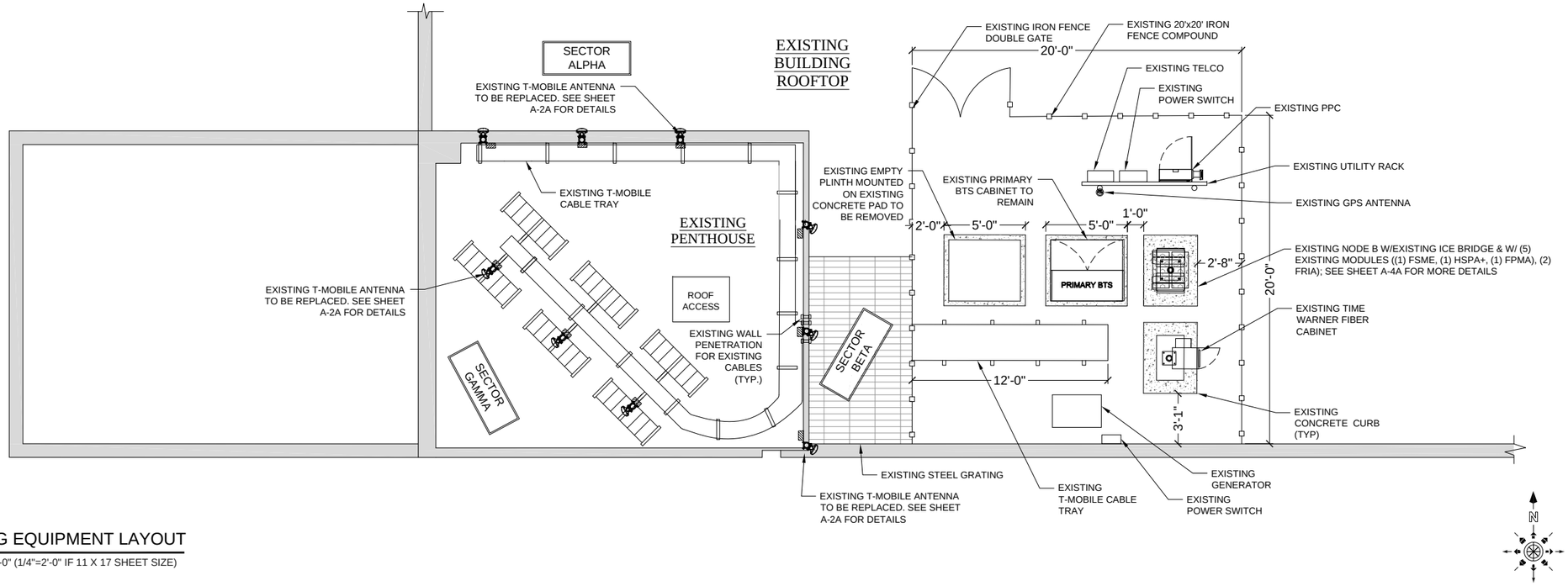
ROOF PLAN & SITE PHOTOS

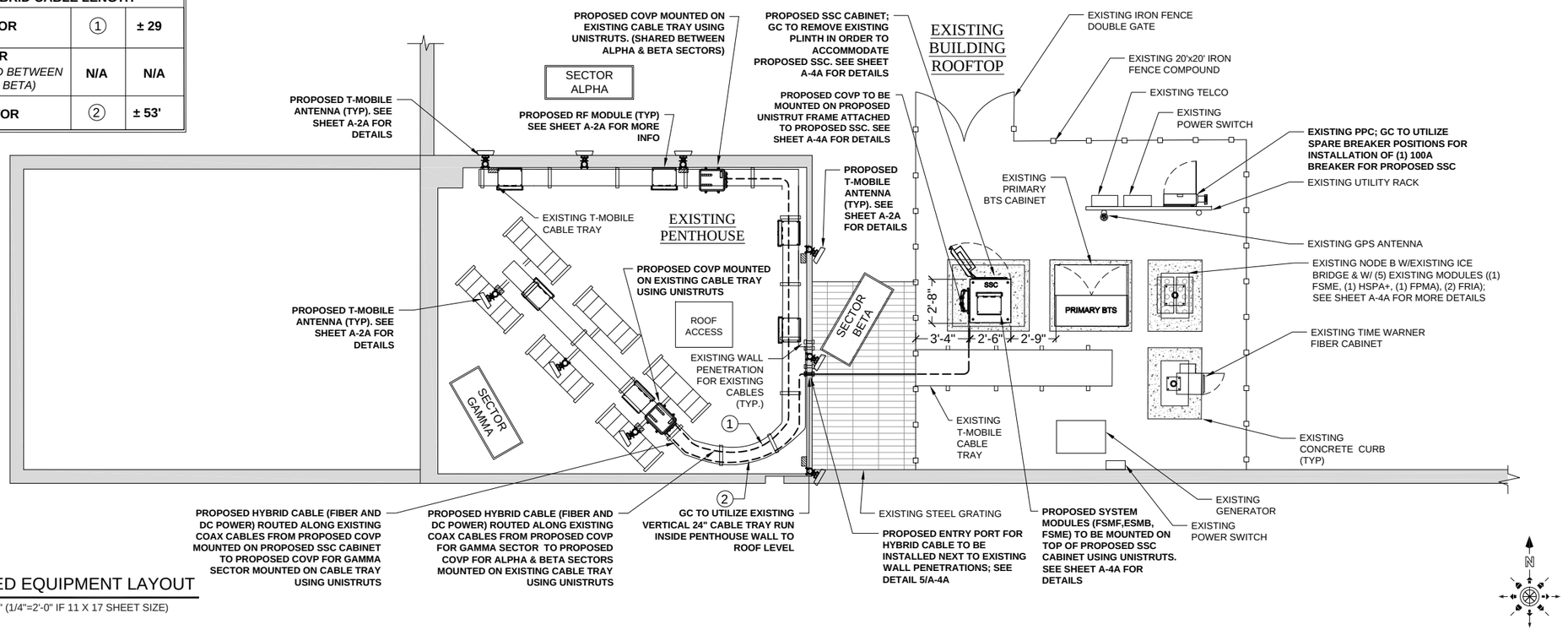
A-1



1 EXISTING EQUIPMENT LAYOUT

SCALE: 1/4"=1'-0" (1/4"=2'-0" IF 11 X 17 SHEET SIZE)

PROPOSED HYBRID CABLE LENGTH		
ALPHA SECTOR	①	± 29
BETA SECTOR *(HSC & COVP IS SHARED BETWEEN SECTORS ALPHA & BETA)*	N/A	N/A
GAMMA SECTOR	②	± 53'



2 PROPOSED EQUIPMENT LAYOUT

SCALE: 1/4"=1'-0" (1/4"=2'-0" IF 11 X 17 SHEET SIZE)

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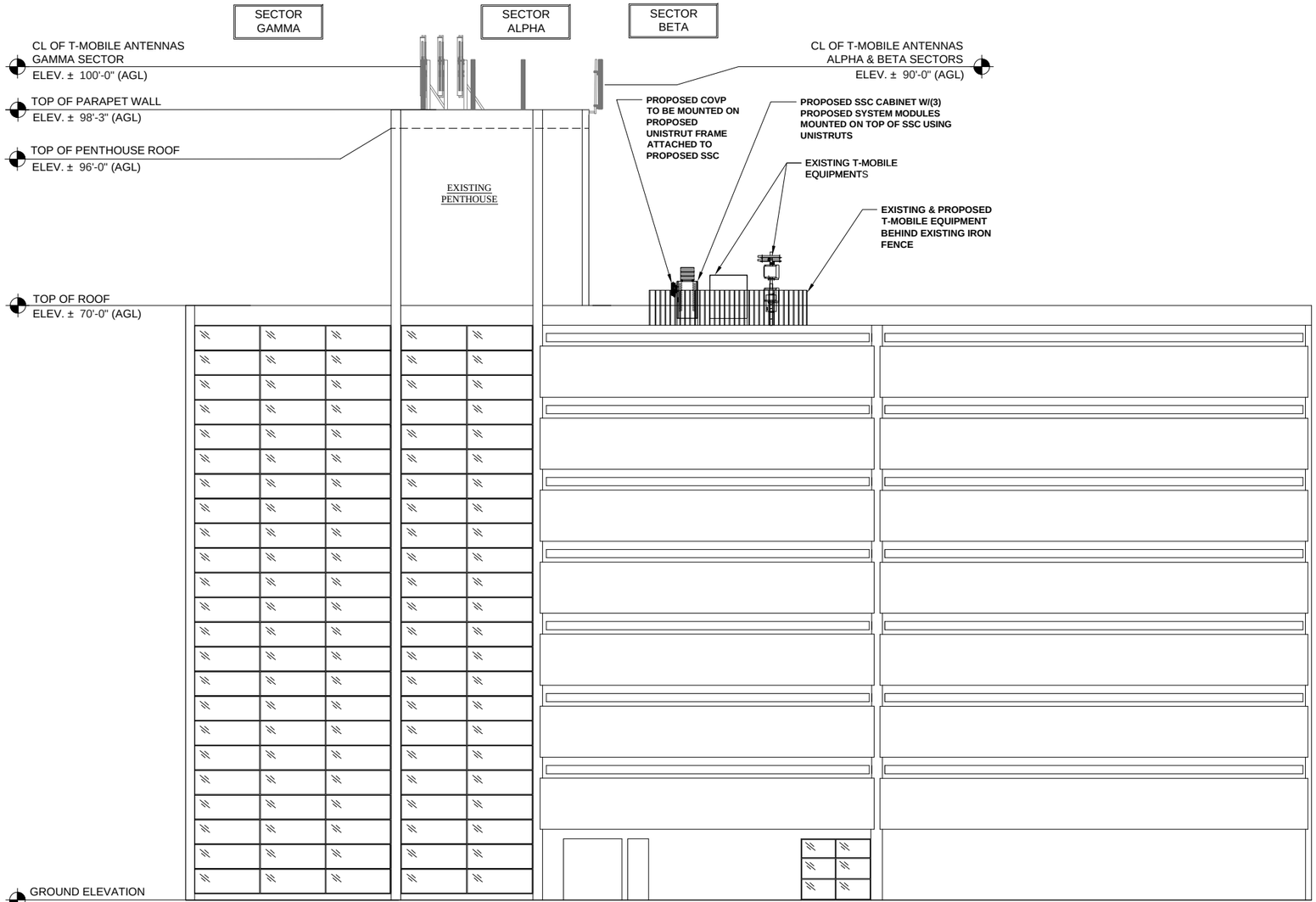
EXISTING AND PROPOSED EQUIPMENT LAYOUT

A-1A



1 SITE ELEVATION
SCALE: 1/8"=1'-0" (1/8"=2'-0" IF 11 X 17 SHEET SIZE)

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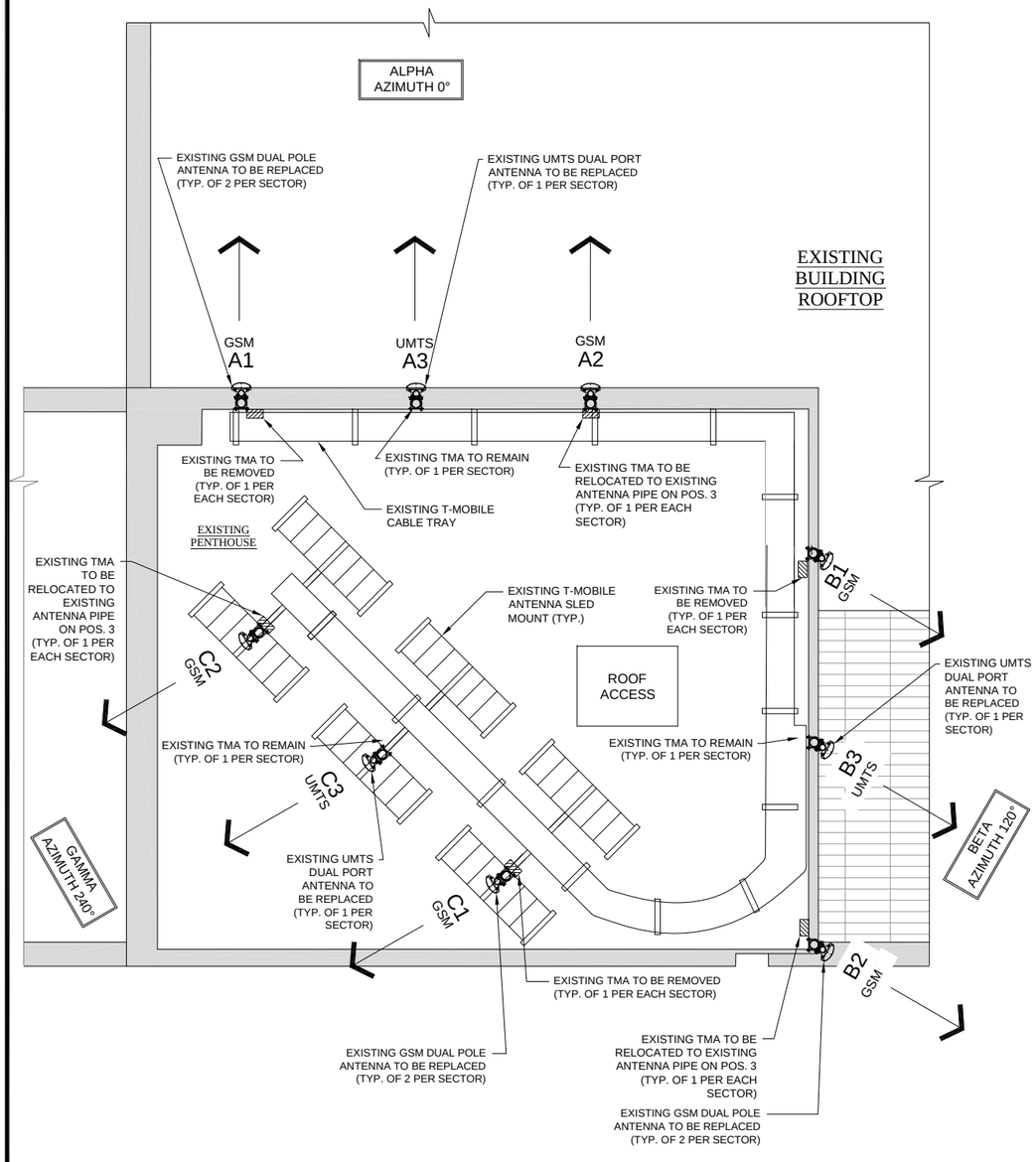
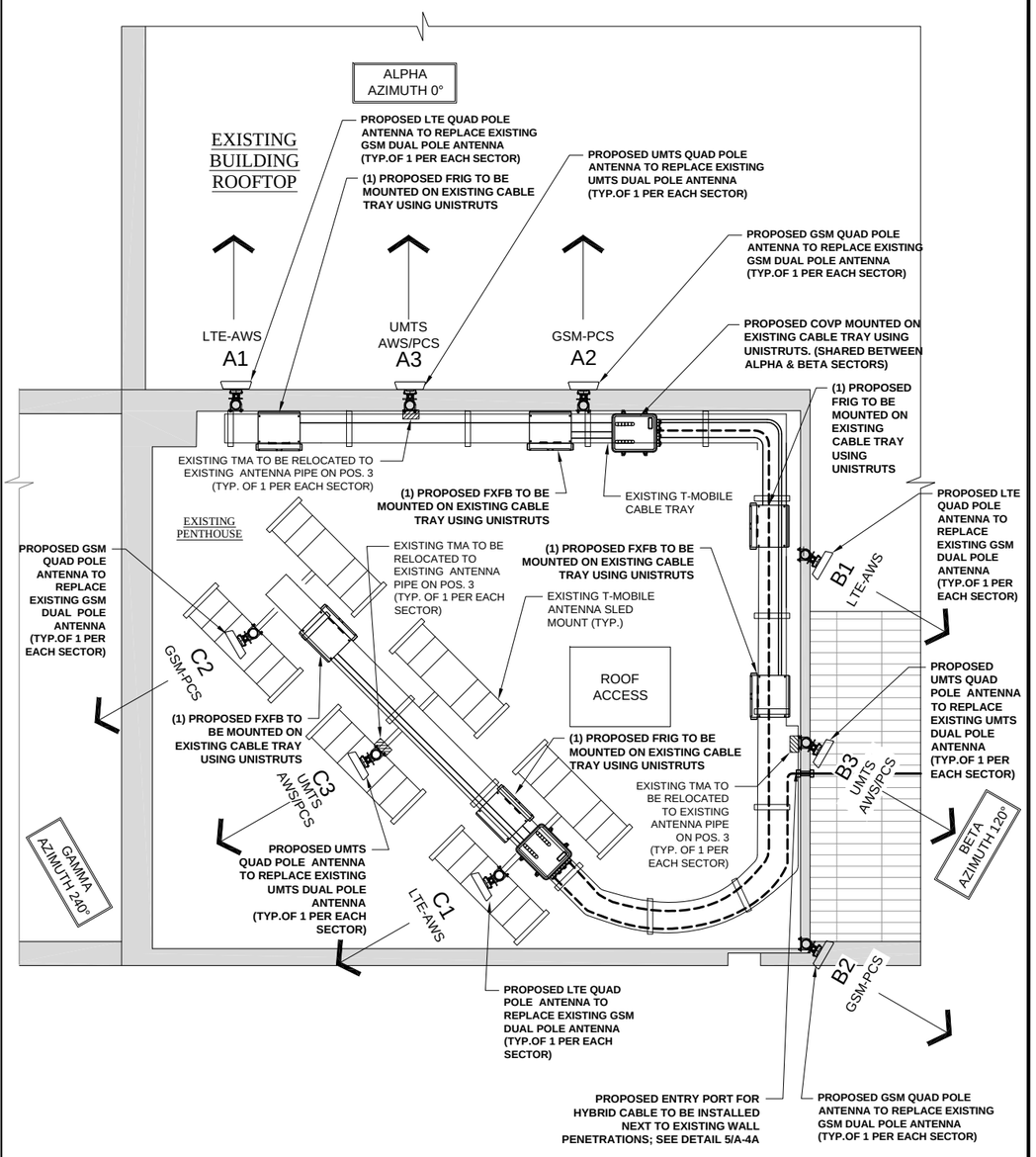
SITE ELEVATION

A-2



EXISTING ANTENNA PLAN



PROPOSED ANTENNA PLAN

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EXISTING & PROPOSED ANTENNA PLANS

A-2A

User: SYOUSUF1

Back to RFDS home

Go Back

RFDS Data Configuration Sheet

Date: 7/20/2012

Print RFDS

Site Information:

Market:	ML	**Radio Vendor:**	NSN	**Plan Year:**	2012
Site Id:	ML10018C	**Site Name:**	City Parking Lot RT	**Type/Class:**	Building / Roof Top Mount
Address:	324 W Highland	**City:**	Milwaukee	**State:**	WI **Zip:** 53203
Latitude:	43.04449626	**Longitude:**	-87.9154961	**Created Date**	Apr 18 2012
RF Manager:	Dominador Galicinao	**RF Engineer:**	Galen Belen	**Last Save Date:**	Jul 20 2012 10:40AM

Cell Site Configuration

Configuration Type: Configuration 2B_U2100 on Ground	**Final Configuration (Antenna/Line/TMA/RRU):** 9/12/3/6	**Solution Type:** Rooftop	**RFDS Status:** Preliminary

Sector Information

PCS GSM Design	A	B	C	D	E	F
Antenna RAD Center:	90	90	100	0	0	0
Antenna Azimuth:	0	120	240	0	0	0
Mechanical Tilt:	2	2	2	0	0	0
Electrical Tilt:	0	0	0	0	0	0

PCS UMTS Design	A	B	C	D	E	F
Antenna RAD Center:	90	90	100	0	0	0
Antenna Azimuth:	0	120	240	0	0	0
Mechanical Tilt:	3	6	4	0	0	0
Electrical Tilt:	4	4	4	0	0	0

AWS UMTS Design	A	B	C	D	E	F
Antenna RAD Center:	90	90	100	0	0	0
Antenna Azimuth:	0	120	240	0	0	0
Mechanical Tilt:	3	6	4	0	0	0
Electrical Tilt:	4	4	4	0	0	0

AWS LTE Design	A	B	C	D	E	F
Antenna RAD Center:	90	90	100	0	0	0
Antenna Azimuth:	0	120	240	0	0	0
Mechanical Tilt:	3	6	4	0	0	0
Electrical Tilt:	4	4	4	0	0	0

Antenna Configuration (Site Level)	PCS GSM	PCS UMTS	AWS UMTS	AWS LTE
Antenna ReUse Existing:				
Antenna ReUse Existing Qty:				
Antenna Model:	Andrew - TMBXX-6517-A2M		Andrew - TMBXX-6517-A2M	Andrew - TMBXX-6517-A2M
Antenna Qty:	3	0	3	3
Antenna and (or) Ports Shared:	No	Antenna Shared with AWS UMTS	Antenna Shared with PCS UMTS	No

TMA Configuration (Site Level)	PCS GSM	PCS UMTS	AWS UMTS	AWS LTE
TMA(Re-use existing TMA/New/Not Needed):			Re-use Existing	
TMA Model:			**Andrew Dual Band - ETT19VS12UB**	
TMA Qty:	**0**	**0**	**3**	0

Diplexer/Combiner Configuration	A	B	C	D	E	F
Diplexer Model (1):						
Diplexer Qty (1):						
Diplexer Model (2):						
Diplexer Qty (2):						
Combinere/Duplexer Model:						
Combinere/Duplexer Qty:						

Antenna Fiber/ Coax Solution (Site Level)

Use HCS (Yes/No)?	Yes
Use NSN Fiber & OVP for Rooftop (Yes/No)?	No
Use Coax Cable (Yes/No)?	Yes

Hybrid Cable Configuration (Site Level)

Hybrid Cable Type:	
Hybrid Cable Length:	
Hybrid Cable Qty:	

Hybrid Cable Config(Sector Level)	A	B	C	D	E	F
HCS run between Sectors (e.g. Rooftop/ Watertank etc.)	Low Capacity HCS-7/8"		Low Capacity HCS-7/8"			
Hybrid Cable Length (ft):	50	0	75	0	0	0

COVP Configuration (Site Level)

COVP Type (1):	Large COVP	**COVP Qty (1):**	3
COVP Type (2):		**COVP Qty (2):**	

Coax Configuration	A	B	C	D	E	F
Re-use existing coax for TDOA (Yes/No)?	Yes	Yes	Yes			
Qty. of excess coax lines to remove?						
New Coax Type:						
New Coax Length/Line:						
New Coax Qty:						
RET Home-Run Cable:						
RET Home-Run Cable Length(ft):						

System Modules (Site Level)	PCS GSM	PCS UMTS	AWS UMTS	AWS LTE
System Module Type:	ESMB	FSME	FSME	FSMF
System Module Qty:	1	1	1	1

RF Modules (Site Level)	PCS GSM	PCS UMTS	AWS UMTS	AWS LTE
RF Module Type:	FXFB	FXFB	FRIA	FRIG
RF Module Qty:	3	0 (Module Shared with PCS GSM, different PAs)	3	3

Comments/Notes

4/18/2012 - Swap existing dual pole antenna with quad pole antenna. Total of 3 quad pole antenna per sector. PCS UMTS antenna tilts were matched with AWS UMTS.
PCS GSM antenna tilts were kept the same. Move UMTS AWS FRIAs near to antennas.
07/10/2012:MidCapHCSType=Sector A=50 (From Gamma)
07/10/2012:HighCapHCSType=Sector C=75 (From equipment)
07/20/2012 Updated to Ground RRU Config for AWS, TMA Data Edited, and HCS type and length corrected (SY)

Site: ML10018C - Configuration Drawing

1 FINAL RFDS

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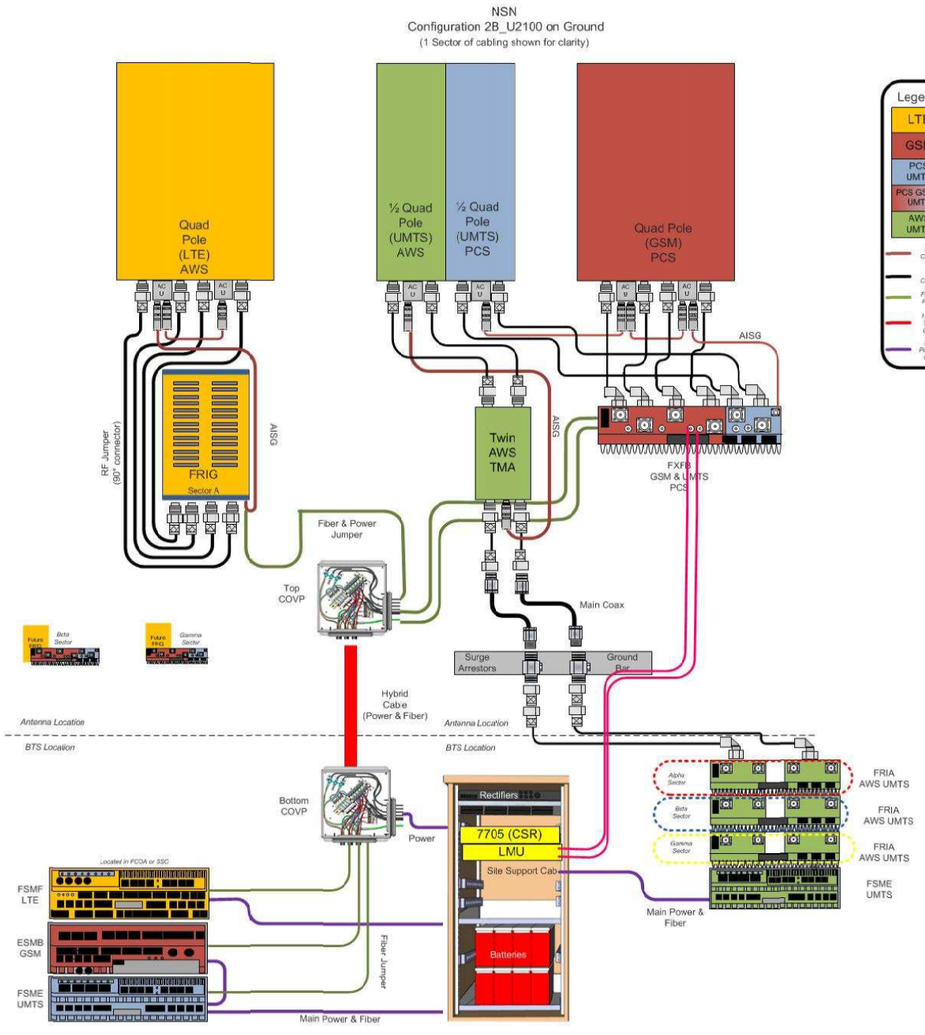
FINAL RFDS SHEET

A-3



1 NSN CONFIGURATION DIAGRAM

PROPOSED ANTENNA AND CABLE SCHEDULE

	LOCATION	AZIMUTH	RAD CENTER	TECHNOLOGY	ANTENNA MODEL #	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	RRU TYPE	CABLE SIZE	CABLE LENGTH	HCS FACTORY LENGTH	JUMPER LENGTH
ALPHA	A1	0°	90'-0"	LTE-AWS	Andrew - TMBXX-6517-A2M	3	4	FRIG	7/8" HYBRID CABLE	29'-0"(****)	50'-0"(*****)	15'-0"(*****)
	A3	0°	90'-0"	UMTS-AWS/PCS	Andrew - TMBXX-6517-A2M	3	4	FRIA(*)(*****)/ FXFB(**)	7/8" HYBRID CABLE & EXISTING COAX	29'-0"(****) & EXISTING	50'-0"(*****) & EXISTING	3'-0"(*****)
	A4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	A2	0°	90'-0"	GSM-PCS	Andrew - TMBXX-6517-A2M	2	0	FXFB(**)	7/8" HYBRID CABLE	29'-0"(****)	50'-0"(*****)	3'-0"(*****)
BETA	B1	120°	90'-0"	LTE-AWS	Andrew - TMBXX-6517-A2M	6	4	FRIG	7/8" HYBRID CABLE	N/A	N/A	9'-0"(*****)
	B3	120°	90'-0"	UMTS-AWS/PCS	Andrew - TMBXX-6517-A2M	6	4	FRIA(*)(*****)/ FXFB(**)	EXISTING COAX	EXISTING	EXISTING	16'-0"(*****)
	B4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	B2	120°	90'-0"	GSM-PCS	Andrew - TMBXX-6517-A2M	2	0	FXFB(**)	7/8" HYBRID CABLE	N/A	N/A	16'-0"(*****)
GAMMA	C1	240°	100'-0"	LTE-AWS	Andrew - TMBXX-6517-A2M	4	4	FRIG	7/8" HYBRID CABLE	53'-0"(***)	75'-0"(***)	3'-0"
	C3	240°	100'-0"	UMTS-AWS/PCS	Andrew - TMBXX-6517-A2M	4	4	FRIA(*)/FXFB(**)	7/8" HYBRID CABLE & EXISTING COAX	53'-0"(***) & EXISTING	75'-0"(***) & EXISTING	12'-0"
	C4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	C2	240°	100'-0"	GSM-PCS	Andrew - TMBXX-6517-A2M	2	0	FXFB(**)	7/8" HYBRID CABLE	53'-0"(***)	75'-0"(***)	12'-0"

(*) - FRIA INSTALLED ON EXISTING T-MOBILE NODE B
(**) - FXFB SHARED BY GSM/PCS AND UMTS/PCS ANTENNAS
(***) -HYBRID CABLE FROM COVP ON SSC CABINET TO GAMMA SECTOR UTILIZED FOR ALPHA & BETA SECTORS
(****) - SECTORS ALPHA AND BETA SHARE THE SAME FRIA
(*****) - SECTORS ALPHA AND BETA SHARE THE SAME COVP & HSC

ANTENNA AND COAXIAL CABLE SCHEDULE

1. ALL ANTENNAS SHALL BE FURNISHED WITH DOWNTILT BRACKETS. CONTRACTOR SHALL COORDINATE REQUIRED MECHANICAL DOWNTILT FOR EACH ANTENNA WITH RF ENGINEER. ANTENNA DOWNTILT SHALL BE SET AND VERIFIED BY A SMART LEVEL.
2. ANTENNA CENTERLINE HEIGHT IS IN REFERENCE TO ELEVATION 0'-0"
3. CONTRACTOR SHALL INSTALL COLOR CODE RINGS ON EACH OF THE HYBRID CABLES AND JUMPER CABLES WITH UV RESISTANT TAPE. ALL CABLE SHALL BE MARKED AT TOP AND BOTTOM WITH 2" COLOR TAPE OR STENCIL TAG. COLOR TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONICS.
4. FINAL HYBRID CABLE LENGTH SHALL BE DETERMINED AFTER FIELD SWEEP TEST.
5. INSTALL NEW HYBRID THRU THE EXISTING CABLE ENTRY PORTS AND ROUTE ALONG EXISTING T-MOBILE COAXIAL CABLES.
6. REMOVE EXISTING T-MOBILE ANTENNA AND RF CABLES AFTER NEW ANTENNA INSTALLATION HAS BEEN TESTED AND APPROVED BY PROJECT MANAGER.

2 PROPOSED ANTENNA AND CABLE SCHEDULE

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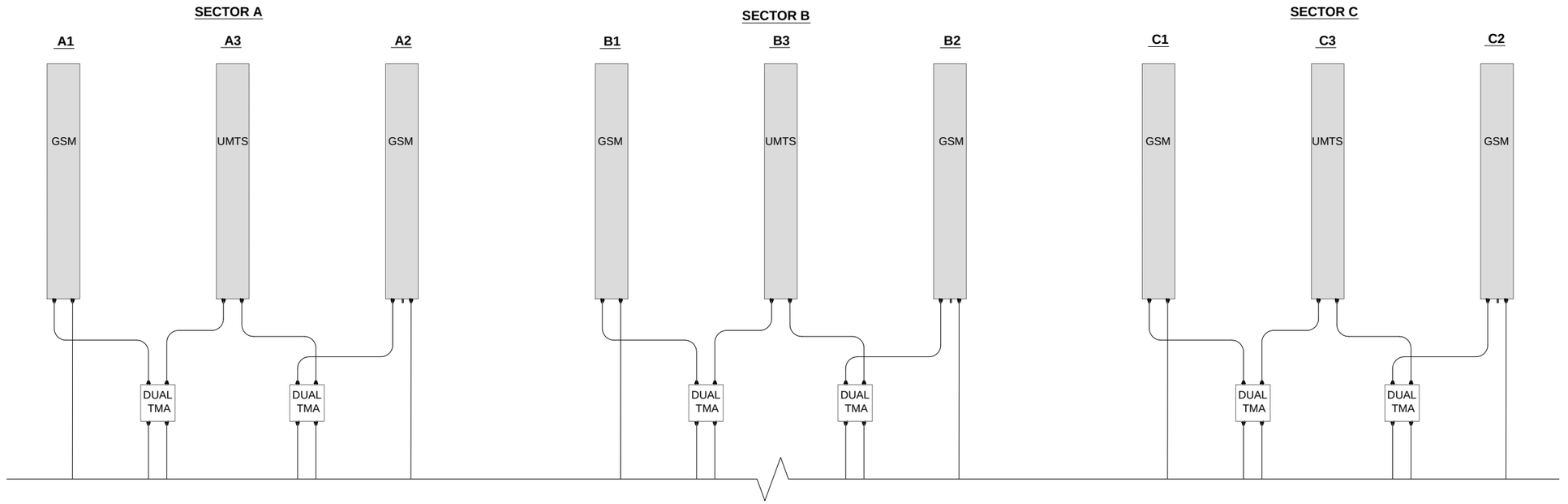
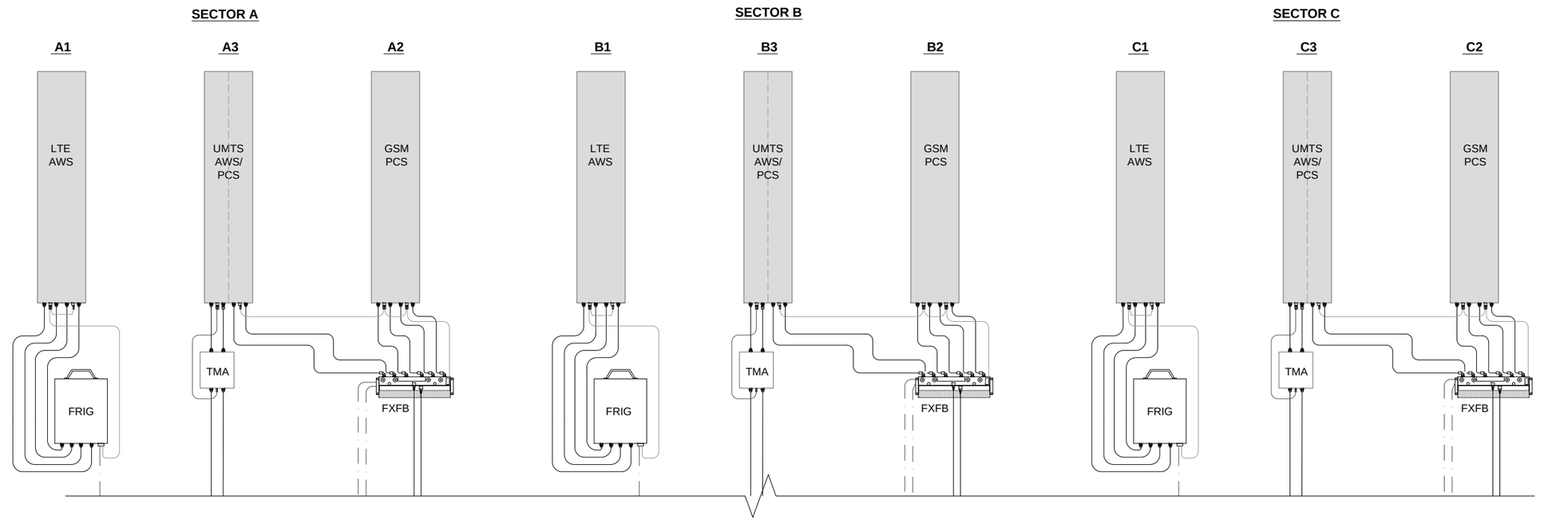
NSN CONFIGURATION DIAGRAM, ANTENNA & CABLE SCHEDULE

A-3A



1 EXISTING ANTENNA DIAGRAM
SCALE: N.T.S.



2 PROPOSED ANTENNA DIAGRAM
SCALE: N.T.S.

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MAIN: (847) 981-0801

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CHECKED BY: RH	APPROVED BY: GMS

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GHAZWAN M. SADAT
40304
ARLINGTON HEIGHTS ILLINOIS
PROFESSIONAL ENGINEER

ML10018C
CITY PARKING LOT RT
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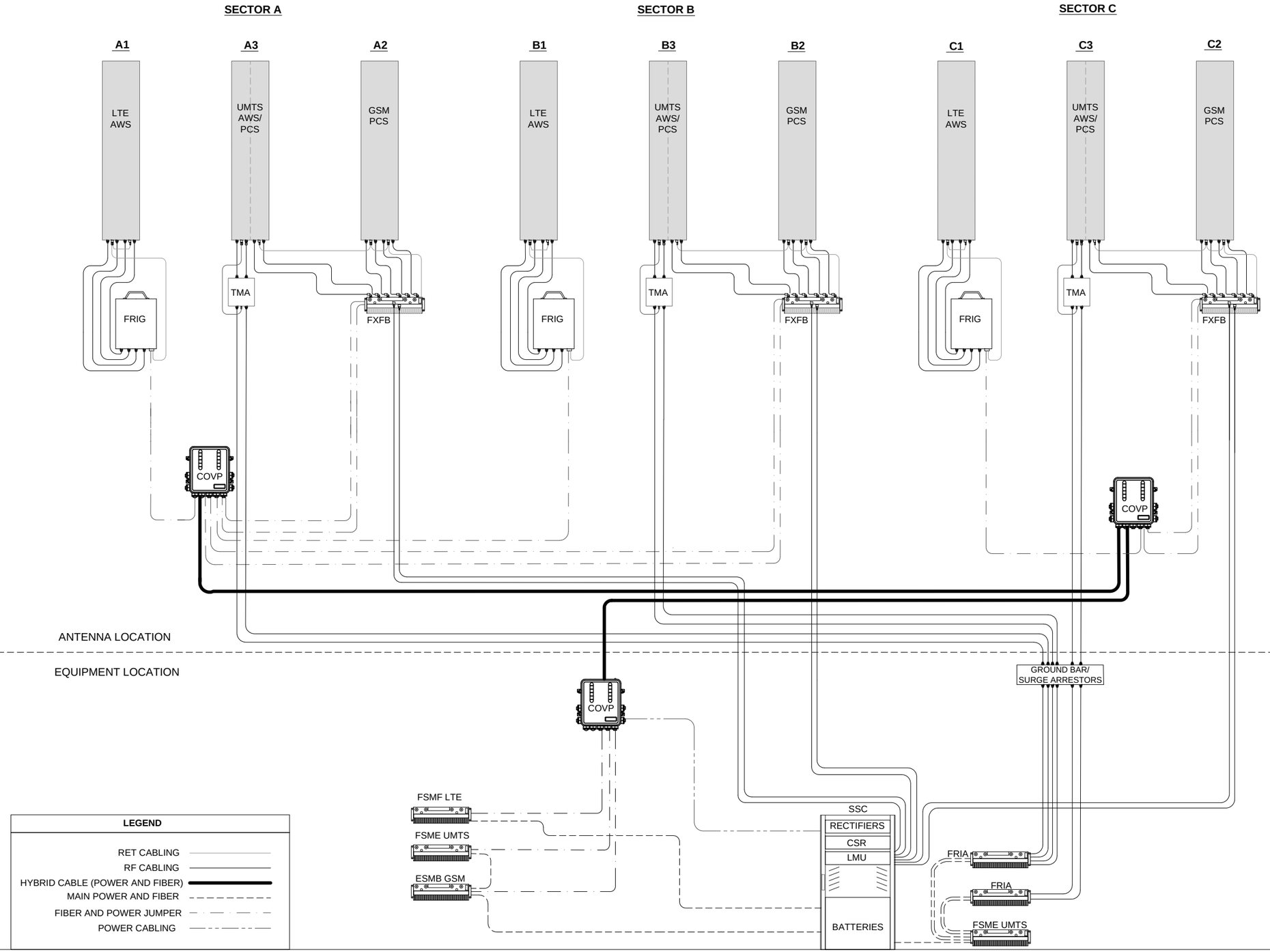
MILWAUKEE, WI 53203

EXISTING AND PROPOSED ANTENNA CABLING DIAGRAMS

A-3B



1 SYSTEM CONNECTION DIAGRAM
N.T.S.

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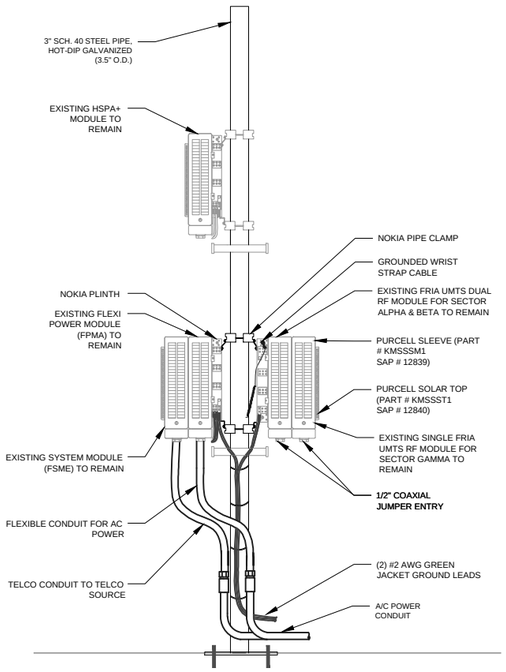
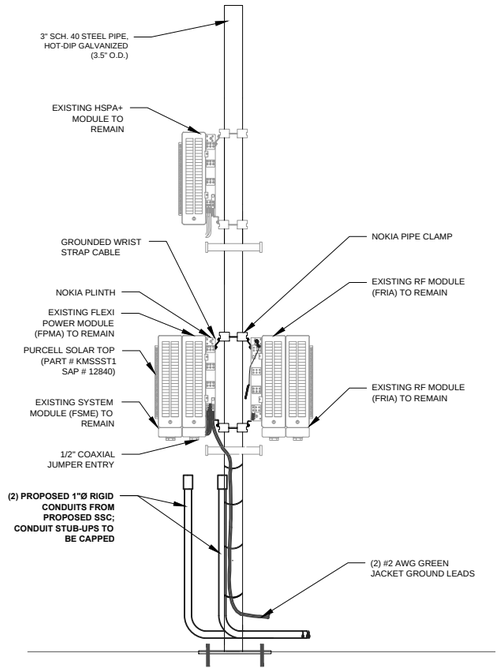
SYSTEM CONNECTION DIAGRAM

A-3C



1 NODE B - EXISTING CONFIGURATION
SCALE: N.T.S.



2 NODE B - PROPOSED CONFIGURATION
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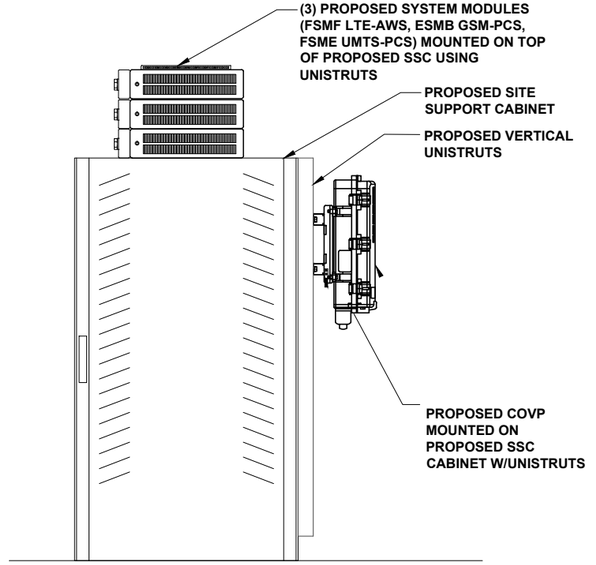
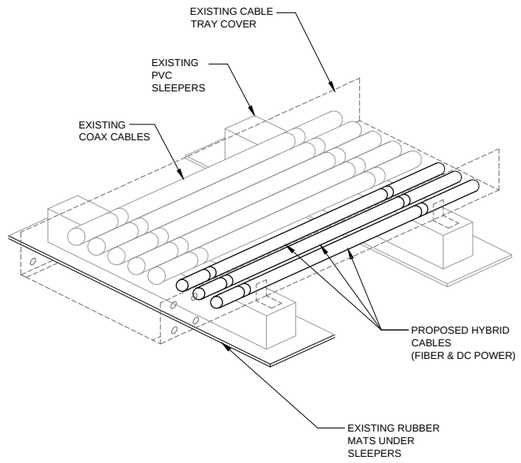
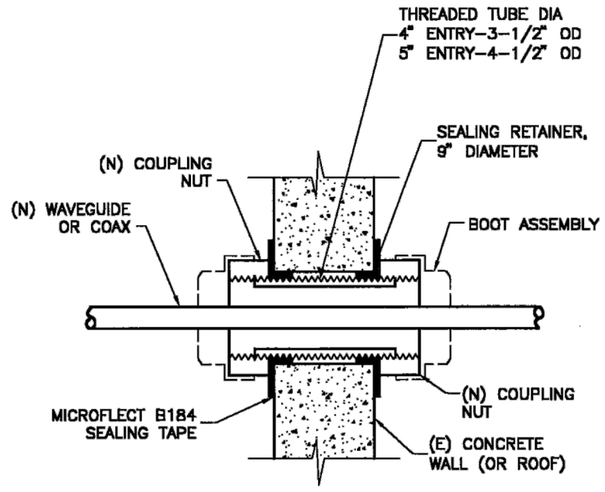


3 PROPOSED SYSTEM MODULES & COVP MOUNTING DETAIL
SCALE: N.T.S.



4 TYPICAL CABLE TRAY SECTION DETAIL
SCALE: N.T.S.



MICROFLECT TUBE ENTRY KIT

5 ROOF/WALL PENETRATION
SCALE: N.T.S.

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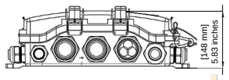
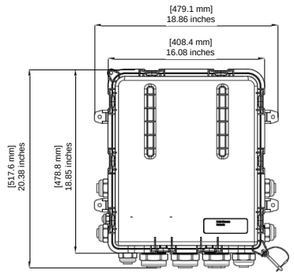
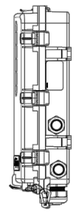
EQUIPMENT MOUNTING DETAILS

A-4A





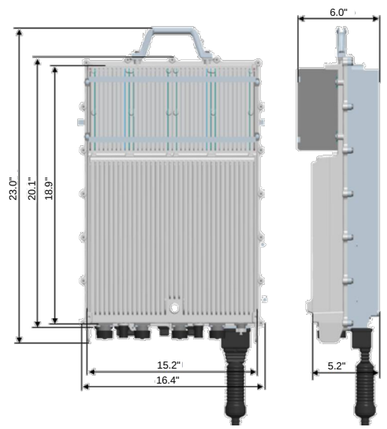


COVP (RAYCAP ASU9338TYP01)

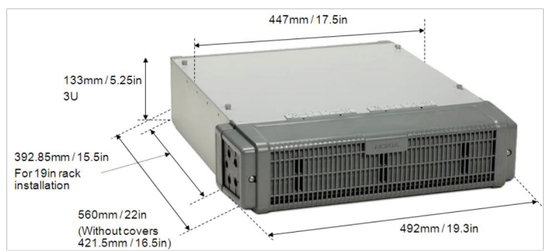
SCALE: N.T.S.

Sub-section	Width (mm)	Height (mm)			Depth (mm)		Qty	Volume (L)
		Filter	PA	Total	Filter	PA		
Overall w/o bosses (3-way)	387	324.5	155	479.5	132.9	151.85	1	26

Note:
1. All the dimensions do not include Flange, Screw Boss & Connectors. Stepping fin height was used separately for Volume calculate.



PROPOSED FRIG



PROPOSED
FXFB/FRIA/ESMB/FSME/FSMF

PROPOSED RF/SYSTEM MODULES

SCALE: N.T.S.

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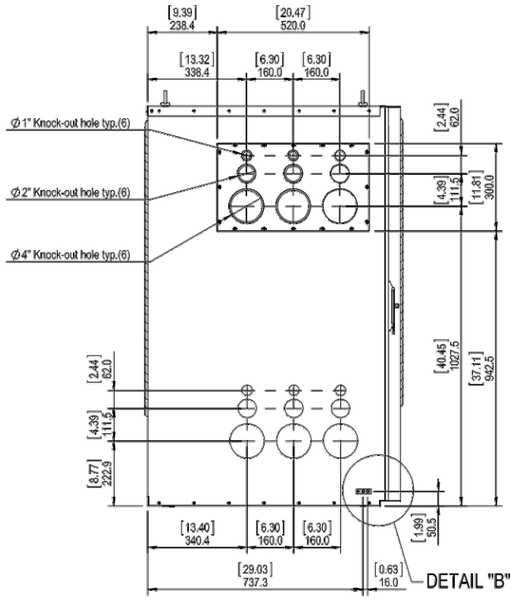
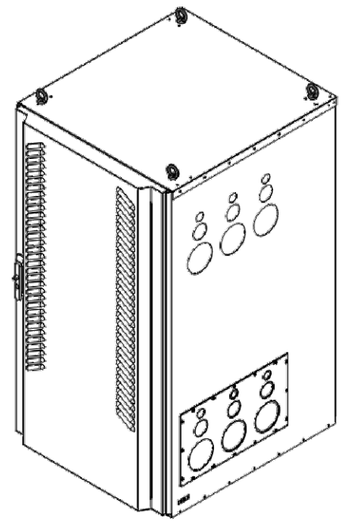
EQUIPMENT SPECIFICATIONS

A-4B



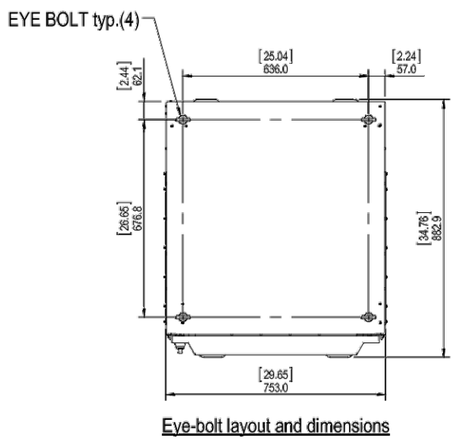
SIDE VIEW

SCALE: N.T.S.



ISOMETRIC VIEW

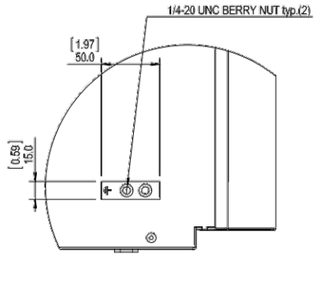
SCALE: N.T.S.



Eye-bolt layout and dimensions

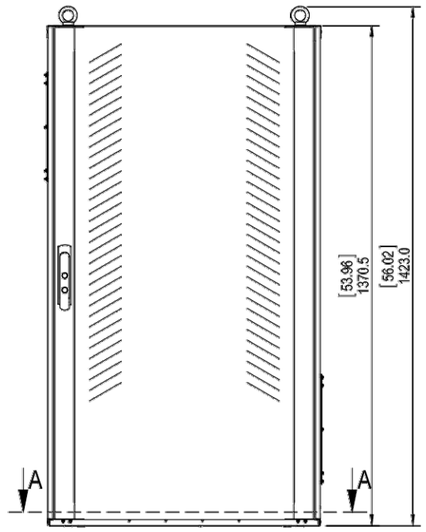
EYE-BOLT LAYOUT AND DIMENSIONS

SCALE: N.T.S.



DETAIL "B" (BOTH SIDE)

SCALE: N.T.S.



FRONT VIEW

SCALE: N.T.S.

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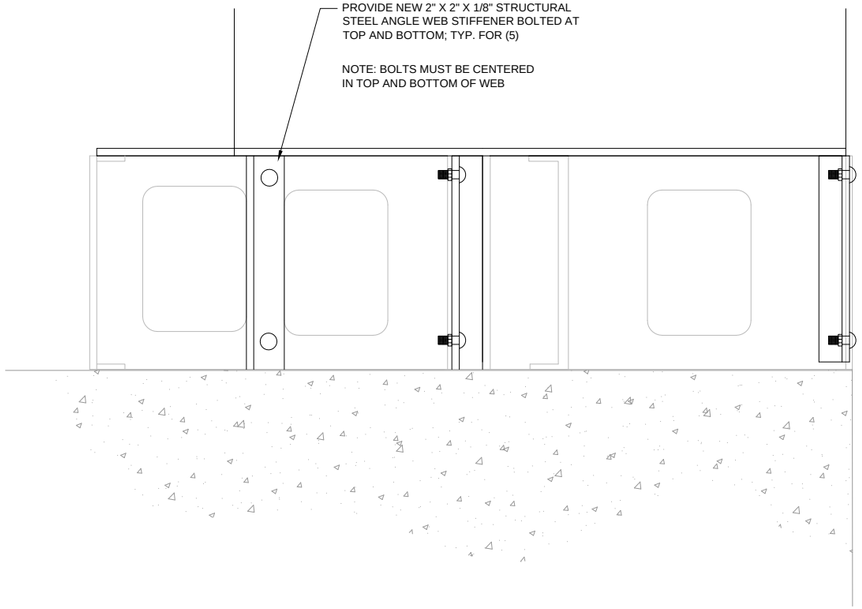
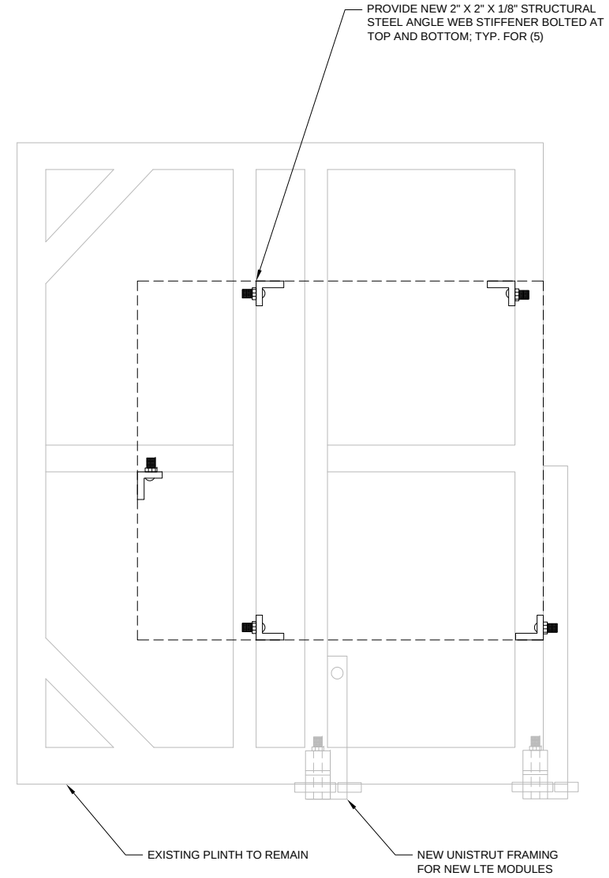
SITE SUPPORT CABINET SPECIFICATIONS

A-4C



1 CABINET PLINTH DETAIL ON EXISTING CONCRETE PAD
SCALE: N.T.S.



2 CABINET PLINTH DETAIL- TOP VIEW
SCALE: N.T.S.

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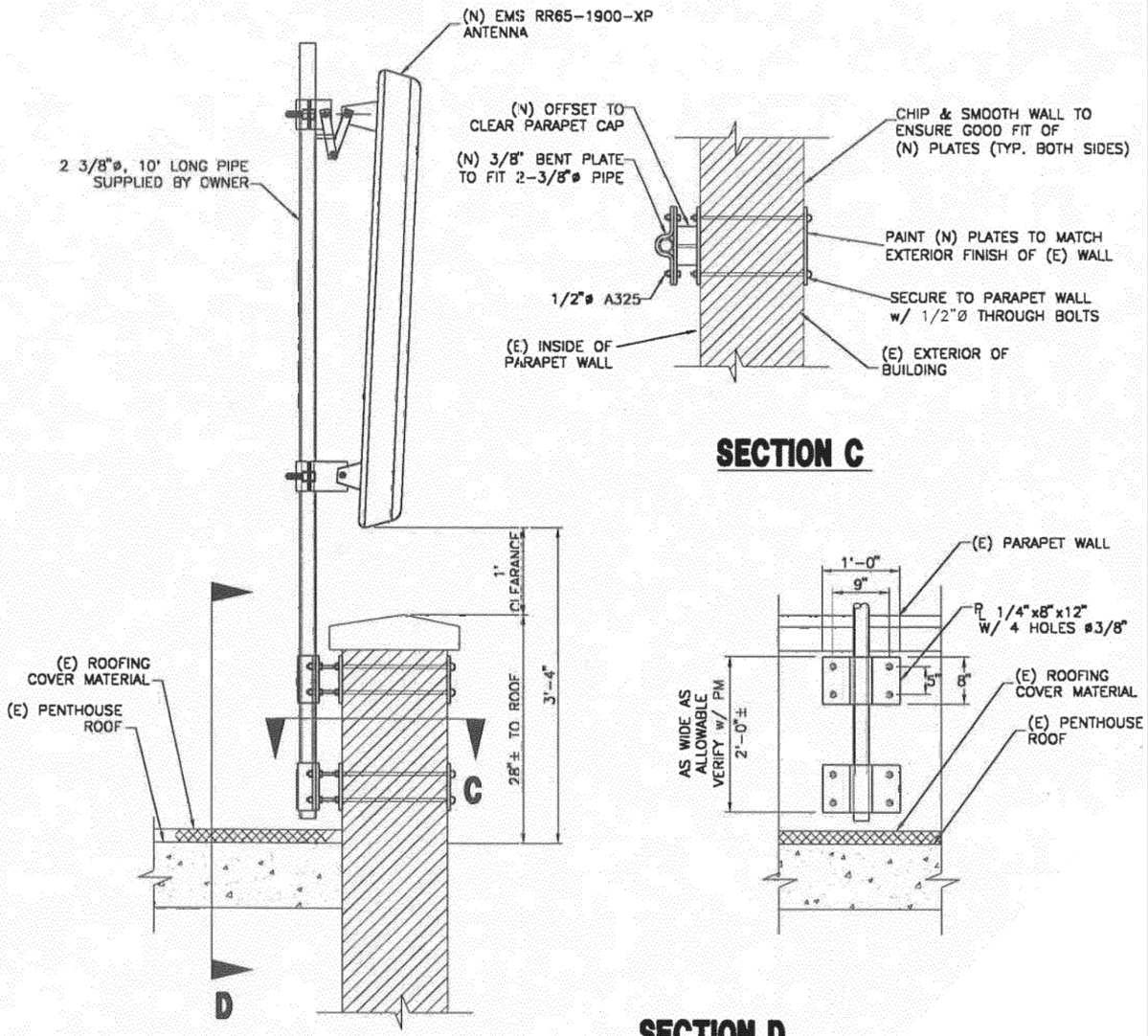
CABINET PLINTH DETAILS

S-1



NOTE:

GC TO V.I.F. INSTALLATION, QUANTITIES & SIZES OF ALL SHOWN MOUNTING HARDWARE

1 PARAPET WALL MOUNT DETAIL

SCALE: N.T.S.

NOTES:

THESE DETAILS WERE REPRODUCED FROM THE DRAWINGS OF THE MANUFACTURER. FOR MORE DETAILS, SEE THE ORGINAL DRAWINGS.

REFER THE STRUCTURAL DETAIL DRAWINGS OF 1 FRAME, WHICH IS DESIGNED BY VOICESTREAM MILWAUKEE AND/OR ITS AFFILIATES.

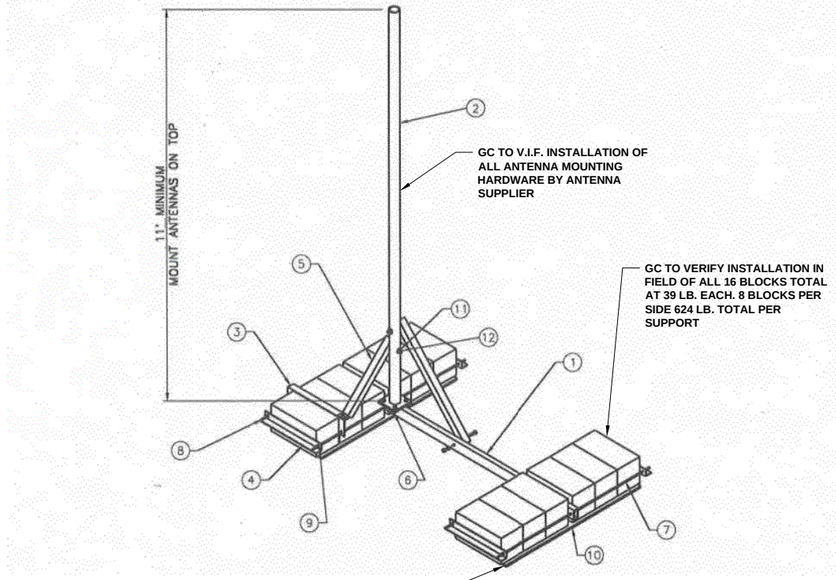
NOTE:

NON-PENETRATING ROOF MOUNT (MTS TO DETERMINE THE AMOUNT OF BALLAST NECESSARY FOR EMS ANTENNAS)

Parts List			
Item	Part No.	Description	Cnt
1	MT-C6579.01	RECT. TUBE SUPPORT	1
2	MT-C6479.02	2-7/8" OD x 11'-0" (MIN.) MAST	1
3	MT-C6579.03	L2x2x3/16" SANDWICH ANGLE	1
4	MT-C6579.04	L2x2x3/16" BRACE	4
5	MT-C6579.05	L2x2x3/16" BRACE ANGLE	1
6	GB-04125	1/2x1-1/4" GALV. BOLT ASSEMBLY	5
7	MT-6579.06	.375x54" GALV. THREADED ROD	4
8	GN-03	3/8" GALV. NUT	16
9	GW-L03	3/8" GALV. LOCK WASHER	8
10	MT-F1637	1/2x18x48" RUBBER MAT	2
11	GW-F04	1/2" GALV. FLAT WASHER	1
12	GB-04405	1/2x4 GALV. BOLT	1
13	MT-F1037	ANTENNA MOUNT (NOT SHOWN)	2

NOTES:

1. SECTIONS MAY VARY IN LENGTH TO ACCOMMODATE LENGTH OF RUN.
2. NON PENETRATING W/ STRUCTURAL ATTACHMENTS (AMOUNT OF BALLAST PER SECTION DETERMINED BY MFGR.).
3. THIS FRAMING IS REPRODUCED FROM MTS FOR INFORMATION ONLY. CONSULT MTS FOR PROPER INSTALLATION REQUIREMENTS. MTS IS RESPONSIBLE FOR STRUCTURAL INTEGRITY OF THE SYSTEM.



NOTE:

GC TO V.I.F. INSTALLATION, QUANTITIES & SIZES OF ALL SHOWN MOUNTING HARDWARE

1 ANTENNA MOUNT ISOMETRIC VIEW

SCALE: N.T.S.

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ANTENNA MOUNTING DETAILS

S-2

GENERAL ELECTRICAL NOTES

1.) NATIONAL ELECTRIC CODE, LATEST EDITION .
2.) ALL ELECTRICAL MATERIALS, EQUIPMENT AND INSTALLATION PROSEDURES TO CONFORM WITH LOCAL JURISDICTION REQUIREMENTS.
3.) CONTRACTOR SHALL PERFORM ALL VERIFICATION TESTS AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ENGINEER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT & DISCREPANCIES.
4.) ELECTRICAL PLANS, DETAILS, AND DIAGRAMS ARE DIAGRAMMATIC ONLY. FIELD CONDITIONS DICTATE THE AMOUNT AND LOCATION OF EQUIPMENT.
5.) ALL MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA, NFPA, AND "UL" LISTED.
6.) THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY UBC, NEC, T-MOBILE, AND ALL APPLICABLE LOCAL CODES.
7.) ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE A MINIMUM INTERRUPTING RATING OF 20,000 AIC WHERE APPLICABLE.
8.) PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
9.) PROVIDE T-MOBILE WITH ONE SET OF COMPLETE ELECTRICAL "AS-BUILT" DRAWINGS AT THE COMPLETION OF THE JOB SHOWING ACTUAL ROUTINGS AND WIRING CONNECTIONS.
10.) LABEL ALL ELECTRICAL EQUIPMENT PER T-MOBILE SPECIFICATIONS.
11.) ALL SINGLE- PHASE SELF- CONTAINED METER CONNECTION DEVICES MUST INCLUDE HORN TYPE BY-PASS PROVISION SO THAT SERVICE WILL NOT BE INTERRUPTED WHEN A METER IS REMOVED FROM THE SOCKET.
12.) ALL ABOVE GROUND CONDUITS AND BUSHING SHALL BE RGS.

CODES AND STANDARDS

NEC	NATIONAL ELECTRICAL CODE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
UL	UNDERWRITERS LABORATORIES, INC.
IBC	INTERNATIONAL BUILDING CODE BUILDING OFFICIAL AND CODE ADMINISTRATORS

SYMBOLS

- (M) METER BASE
- FUSED DISCONNECT SWITCH
- NEW UTILITY POLE
- EXISTING UTILITY POLE

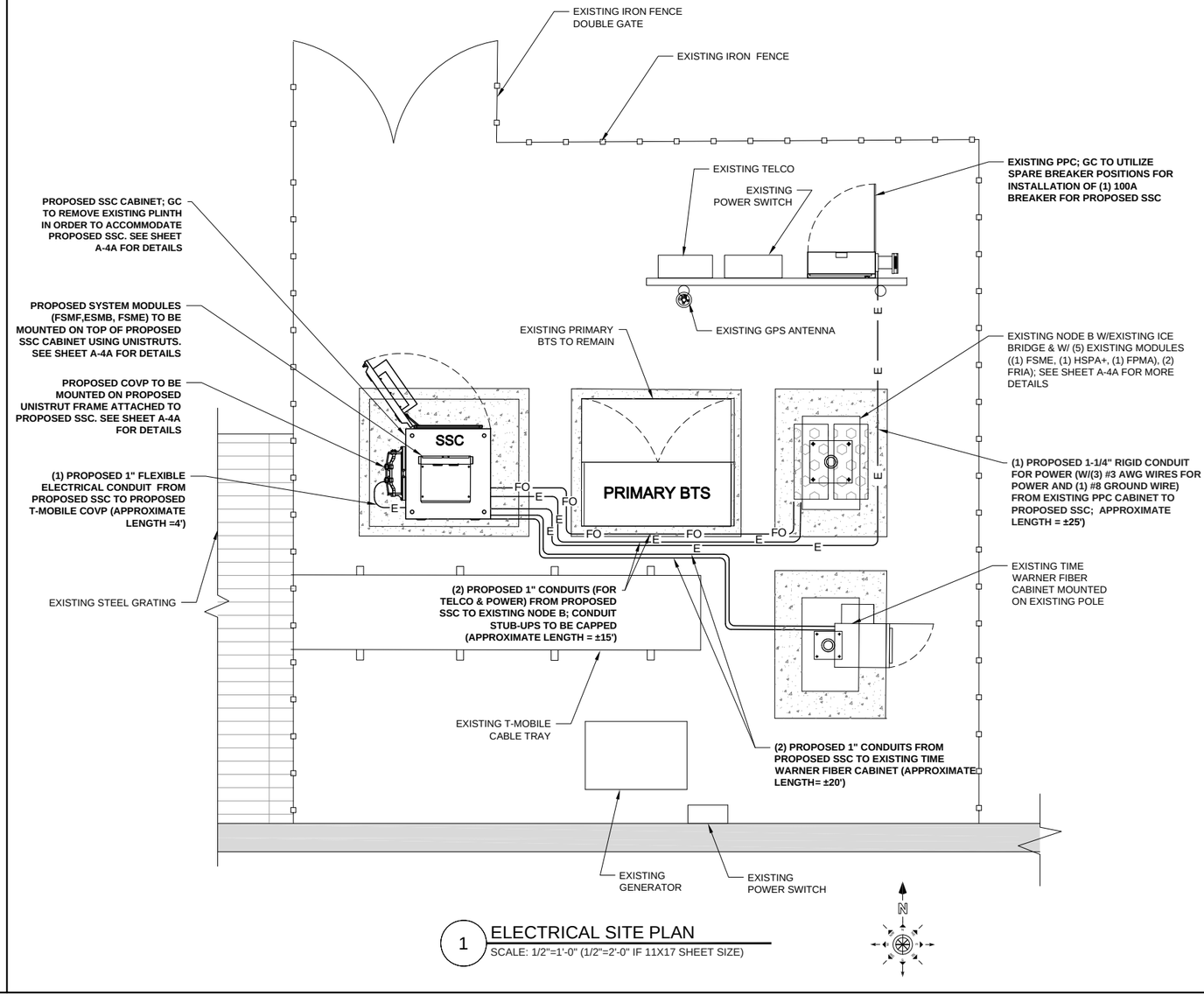
ABBREVIATIONS

AIC	AMPS INTERRUPTING CAPACITY
AWG	AMERICAN WIRE GAUGE
BCW	BARE COPPER WIRE
BTS	BASE TRANSMISSION SYSTEM
C	CONDUIT
CAB	CABINET
DISC	DISCONNECT SWITCH
DWG	DRAWING
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
GEN	GENERATOR
GND	GROUND
GPS	GLOBAL POSITIONING SYSTEM
O/H	OVERHEAD
PCS	PERSONAL COMMUNICATION SYSTEM
PPC	POWER PROTECTION CABINET
RGS	RIGID GALVANIZED STEEL
TYP	TYPICAL
UG	UNDERGROUND GAS
UW	UNDERGROUND WATER
SS	STORM SEWER

LEGEND

- FO — FIBER OPTIC CABLE
- E — DC DISTRIBUTION CABLE

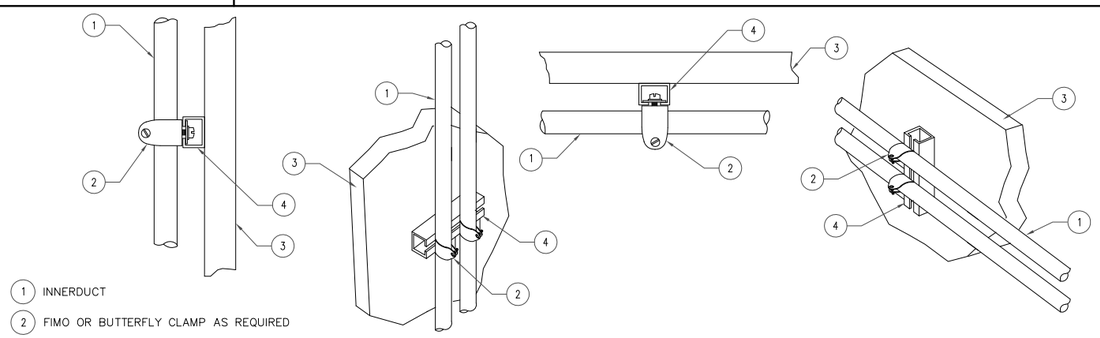
NOTES:
ALL CONDUIT LENGTHS INCLUDE 15% EXTRA



1 ELECTRICAL SITE PLAN
SCALE: 1/2"=1'-0" (1/2"=2'-0" IF 11X17 SHEET SIZE)

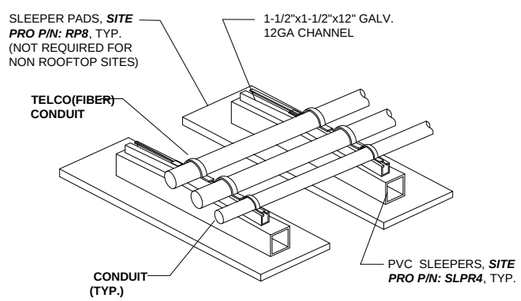
VERTICAL UNISTRUT MOUNTING CHART	
WALL CONSTRUCTION TYPE	USE
HOLLOW	3/8"øTOGGLE BOLT
HOLLOW, AT STUD	3/8"ø LAG SCREW
CONCRETE BLOCK (HOLLOW)	3/8"ø HILTI HY-20 WITH SCREEN, MINIMUM EMBEDMENT 2-1/2"
CONCRETE (SOLID)	3/8"øHILTI HY-150 WITH SCREEN, MINIMUM EMBEDMENT 2-1/2"

NOTE:
USE STANDARD STAINLESS STEEL HARDWARE FOR WALL MOUNT AND CONNECTION OF CHANNELS
SPACE UNITS @ 6'-0" ON CENTER



1. INNERDUCT
2. FIMO OR BUTTERFLY CLAMP AS REQUIRED
3. EXISTING WALL ASSEMBLY
4. VERTICAL "UNISTRUT" P1000 'T' SERIES LENGTH BASED ON NUMBER OF CONDUIT TO BE MOUNTED

2 TYPICAL UTILITY CONDUITS ROUTING DETAIL



NOTE: INSTALL NUMBER OF CONDUITS AS SHOWN ON DRAWINGS.

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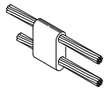
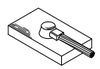
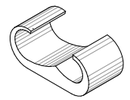
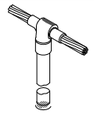
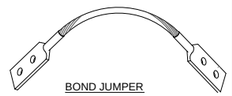
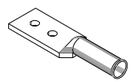
ELECTRICAL SITE PLAN

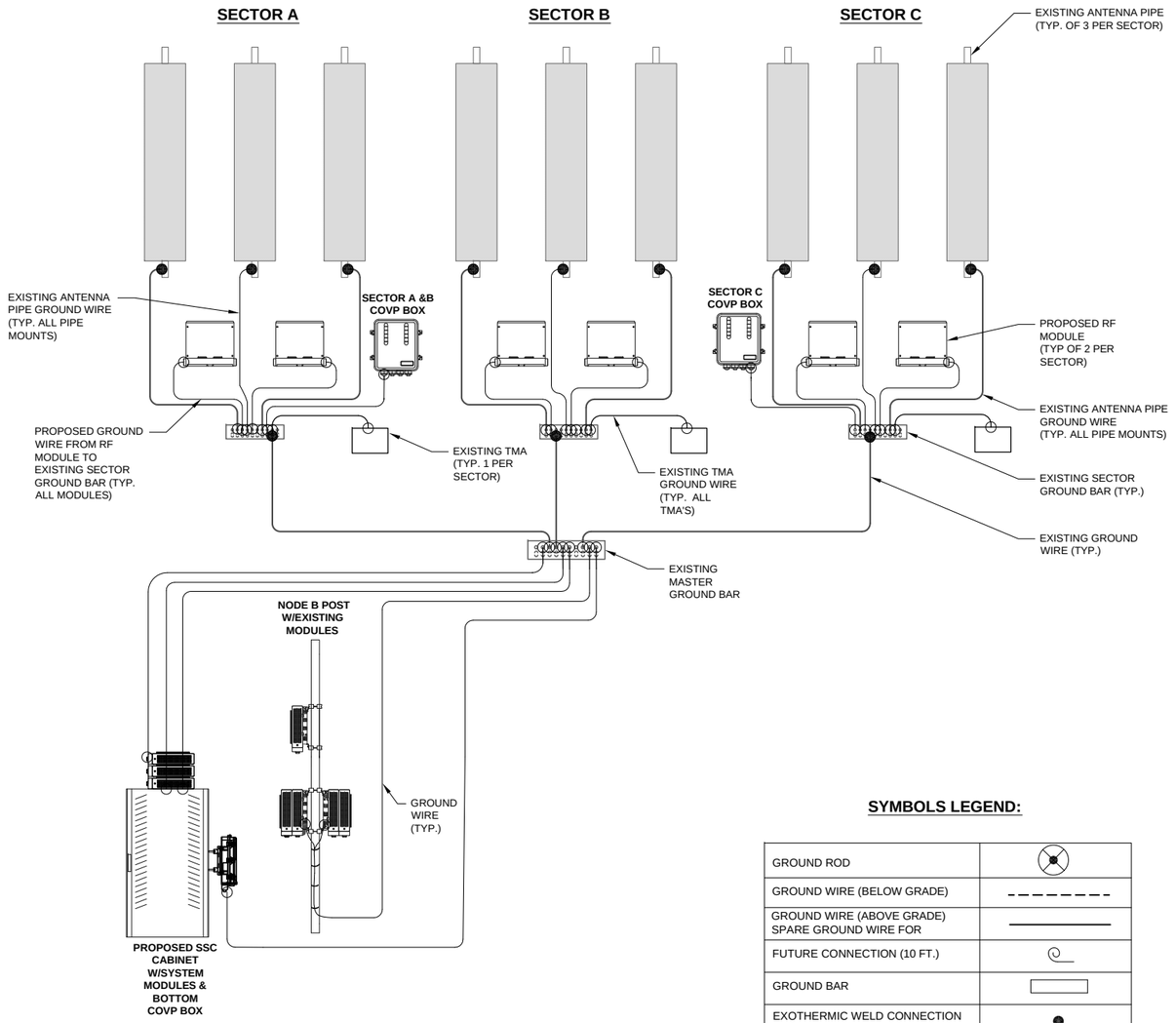
E-1

CADWELD CONNECTIONS OR APPROVED EQUAL		BURNDY CONNECTIONS OR APPROVED EQUAL
 PARALLEL HORIZONTAL CONDUCTORS PARALLEL THROUGH CONNECTION OF HORIZONTAL CABLES TYPE PT	 HORIZONTAL STEEL SURFACE TO FLAT STEEL SURFACE OR HORIZONTAL PIPE TYPE HS	 "C" CONNECTOR HYPRESS TYPE YGHC
 THROUGH CABLE TO GROUND ROD THROUGH CABLE TO TOP OF GROUND ROD TYPE GT	 VERTICAL STEEL SURFACE CABLE DOWN AT 45° TO VERTICAL STEEL SURFACE INCLUDING PIPE TYPE VS	 BOND JUMPER FIELD FABRICATED GREEN STRANDED INSULATED TYPE 2-YA-2
 HORIZONTAL SPLICE SPLICE OF HORIZONTAL CABLES	 VERTICAL PIPE CABLE DOWN AT 45° TO RANGE OF VERTICAL PIPES TYPE VS	 COPPER LUGS TWO HOLE - LONG BARREL LENGTH TYPE YA-2

CADWELD DETAILS

GROUNDING NOTES

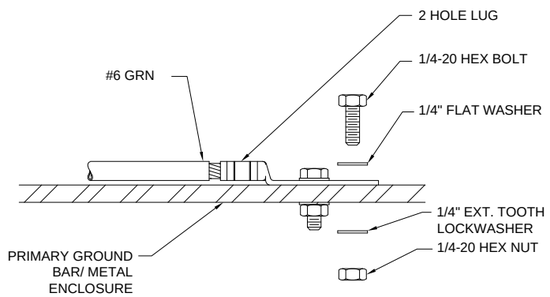
1.) UNDERGROUND AND OVERHEAD UTILITY LENGTHS TO BE DETERMINED FROM SITE PLAN.
2.) SEE ELECTRICAL SPECIFICATIONS SECTION 16000 FOR ALL ELECTRICAL AND GROUNDING INSTALLATION REQUIREMENTS.
3.) FOR ORIENTATION OF SITE LAYOUT SEE SITE PLAN, DRAWING.
4.) UDA CABINET FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
5.) GROUND KITS PROVIDED BY OWNER SHALL BE RETROFITTED TO ACCOMMODATE 2 HOLE LUG CONNECTION AND APPROPRIATE LENGTH.
6.) CONTRACTOR RESPONSIBLE TO PROVIDE OWNER CERTIFICATION OF RESISTIVITY TESTING.
7.) GROUND RODS TO BE INSTALLED AT 10' CENTERS.
8.) ALL GROUND LEADS TO BE SLEEVED IN $\frac{3}{4}$"Ø SCHEDULE 40 PVC CONDUIT AND SEALED W/ SILICON.
9.) GROUND BARS SUPPLIED BY OWNER AND INSTALLED BY CONTRACTOR.
10.) ALL BENDS IN GROUNDING SYSTEM MUST BE SMOOTH AND WELL ROUNDED AND MAINTAIN BENDING RADIUS.
11.) SEE SITE PLAN FOR COAXIAL ROUTING THIS SHEET IS INTENDED FOR GROUNDING CLARITY ONLY AND IS SCHEMATIC IN DETAIL.
12.) GROUND KITS SHALL BE INSTALLED BETWEEN 8"-18" OF ALL CONNECTORS.
13.) TOWER FOUNDATION DESIGN BY OWNER, INSTALLED BY CONTRACTOR.
14.) ADDITIONAL GROUND KITS TO BE PLACED AT 100' WHEN ANTENNA CENTERLINE IS 200' OR ABOVE.
15.) ALL CONDUITS TO BE SEALED W/ SILICONE TO PROVIDE A WATER TIGHT SEAL.



1 PROPOSED GROUNDING DIAGRAM
SCALE: N.T.S.

SYMBOLS LEGEND:

GROUND ROD	⊗
GROUND WIRE (BELOW GRADE)	- - - - - - - -
GROUND WIRE (ABOVE GRADE) SPARE GROUND WIRE FOR	———
FUTURE CONNECTION (10 FT.)	∿
GROUND BAR	▭
EXOTHERMIC WELD CONNECTION	●
MECHANICAL CONNECTION	○



INSTALLATION NOTES:

1. SELECT BOLT LENGTH TO PROVIDE A MINIMUM OF TWO EXPOSED THREADS.

2. BURNISH MOUNTING SURFACE TO REMOVE PAINT IN THE AREA OF LUG CONTACT.

3. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE OF LUG AND WIPE CLEAN EXCESS COMPOUND.

4. USE SOLID COPPER WIRE AND MECHANICAL 2-HOLE LUG FOR ALL EXTERIOR GROUNDING.

2 MECHANICAL GROUND CONNECTION
SCALE: N.T.S.

T-MOBILE
8550 WEST BRYN MAWR AVE.
SUITE 100
CHICAGO, IL 60631
MAIN: (773) 444-5400

SureSite
8770 WEST BRYN MAWR AVE.
SUITE 1300
CHICAGO, IL 60631
MAIN: (216) 593-0400

CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: JS	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

WISCONSIN
GHAZWAN M. SADAT
40304
ARLINGTON HEIGHTS ILLINOIS
PROFESSIONAL ENGINEER

ML10018C
CITY PARKING LOT RT
324 W HIGHLAND AVE
MILWAUKEE, WI 53203

PROPOSED SITE GROUNDING DIAGRAM

E-2

GENERAL NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL:

   A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
   B. AC/TELCO INTERFACE BOX(PPC)
   C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
   D. TOWERS, MONOPOLE
   E. TOWER LIGHTING
   F. GENERATORS & LIQUID PROPANE TANK
   G. ANTENNA STANDARD BRACKETS, FRAMES, AND PIPES FOR MOUNTING.
   H. ANTENNAS (INSTALLED BY OTHERS)
   I. TRANSMISSION LINE
   J. TRANSMISSION LINE JUMPERS
   K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
   L. TRANSMISSION LINE GROUND KITS
   M. HANGERS
   N. HOISTING GRIPS
   O. BTS EQUIPMENT

2. CONTRACTOR TO FURNISH AND INSTALL THE FOLLOWING:

   THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS.
   IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.

3. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATED, PROTECTED AND INSTALLED BY THE

   CONTRACTOR WITH ALL APPURTENCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING UP.

4. ALL EQUIPMENT FURNISHED AND WORK PERFORMED UNDER THE CONTRACT DOCUMENTS SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE, UNLESS NOTED OTHERWISE. ANY FAILURE OF EQUIPMENT OR WORK DUE TO DEFECTS IN MATERIALS OR WORKMANSHIP SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE OWNER.

5. ALL WORK, MATERIAL, AND EQUIPMENT SHALL COMPLY WITH ALL REQUIREMENTS OF THE LATEST EDITIONS AND INTERIM AMENDMENTS OF THE NATIONAL ELECTRICAL CODE (NEC). NATIONAL ELECTRICAL SAFETY CODE, OSHA, AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES. ALL ELECTRICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL BE NEW (EXCEPT WHERE OTHERWISE NOTED) AND SHALL COMPLY WITH THE REQUIREMENTS OF THE UNDERWRITERS' LABORATORIES (U.L.) AND BEAR THE U.L. LABEL.

6. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO THE OWNER OR HIS ARCHITECT/ENGINEER.

7. THE CONTRACTOR SHALL SUPPORT, BRACE AND SECURE EXISTING STRUCTURE AS REQUIRED. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF ANY EXISTING STRUCTURES DURING CONSTRUCTION. FIELD VERIFY ALL EXISTING DIMENSIONS WHICH AFFECT THE NEW CONSTRUCTION.

8. THE CONTRACTOR SHALL NOT ALLOW OR CAUSE ANY OF THE WORK TO BE COVERED UP OR ENCLOSED UNTIL IT HAS BEEN INSPECTED BY THE GOVERNING AUTHORITIES. ANY WORK THAT IS ENCLOSED OR COVERED UP BEFORE SUCH INSPECTION AND TEST SHALL BE UNCOVERED AT THE CONTRACTOR'S EXPENSE; AFTER IT HAS BEEN INSPECTED, THE CONTRACTOR SHALL RESTORE THE WORK TO ITS ORIGINAL CONDITION AT HIS OWN EXPENSE.

9. ALL EXISTING UTILITIES, FACILITIES, CONDITIONS, AND THEIR DIMENSIONS SHOWN ON PLANS HAVE BEEN PLOTTED FROM AVAILABLE RECORDS. THE ARCHITECT/ENGINEER AND OWNER (T-MOBILE) ASSUME NO RESPONSIBILITY WHATEVER AS TO THE SUFFICIENCY OR ACCURACY OF THE INFORMATION SHOWN ON THE PLANS OR THE MANNER OF THEIR REMOVAL OR ADJUSTMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL SAID UTILITIES AND FACILITIES PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL ALSO OBTAIN FROM EACH UTILITY COMPANY DETAILED INFORMATION RELATIVE TO WORKING SCHEDULES AND METHODS OF REMOVING OR ADJUSTING AFFECTED UTILITIES.

GENERAL NOTES (CONT'D):

10. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES BOTH HORIZONTALLY AND VERTICALLY PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES OR DOUBTS AS TO THE INTERPRETATION OF PLANS SHOULD BE IMMEDIATELY REPORTED TO THE PROJECT MANAGER FOR RESOLUTION AND INSTRUCTION, AND NO FURTHER WORK SHALL BE PERFORMED UNTIL DISCREPANCY IS CHECKED AND CORRECTED BY THE ARCHITECT/ENGINEER. FAILURE TO SECURE SUCH INSTRUCTION MEANS CONTRACTOR WILL HAVE WORKED AT HIS OWN RISK AND EXPENSE.

11. CONTRACTORS SHALL CLEAN ENTIRE SITE AFTER CONSTRUCTION SUCH THAT NO PAPERS, TRASH, DEBRIS, WEEDS, BRUSH, OR ANY OTHER DEPOSITS REMAIN. ALL MATERIALS COLLECTED DURING CLEANING OPERATIONS SHALL BE PROPERLY DISPOSED OF OFF-SITE BY THE CONTRACTOR.

12. ALL SITE WORK SHALL BE CAREFULLY COORDINATED BY THE CONTRACTOR WITH LOCAL GAS, ELECTRIC, TELEPHONE, AND ANY OTHER UTILITY COMPANIES HAVING JURISDICTION OVER THIS LOCATION.

13. DURING CONSTRUCTION, THE CONTRACTOR SHALL AT ALL TIMES MAINTAIN THE UTILITIES OF THE BUILDING/SITE WITHOUT INTERRUPTION. SHOULD IT BE NECESSARY TO INTERRUPT ANY SERVICE OR UTILITY, THE CONTRACTOR SHALL SECURE PERMISSION IN WRITING FROM THE BUILDING/PROPERTY OWNER FOR SUCH INTERRUPTION, AT LEAST 72 HOURS IN ADVANCE. ANY INTERRUPTION SHALL BE MADE WITH A MINIMUM AMOUNT OF INCONVENIENCE TO THE BUILDING/PROPERTY OWNER AND ANY SUCH SHUTDOWN TIME SHALL BE COORDINATED WITH THE BUILDING/PROPERTY OWNER.

14. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION.

15. CONTRACTOR SHALL SUBMIT AT THE END OF THE PROJECT A COMPLETE SET OF AS BUILT DRAWINGS TO T-MOBILE'S PROJECT ENGINEER.

16. GC WILL NOT START THE CONSTRUCTION UNTIL AFTER THEY RECEIVE THE PRE CON PACKAGE AND HAVE A PRE CON WALK WITH THE PROJECT MANAGER.

DIVISION 2 - SITE WORK:

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
   ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE PROJECT MANAGER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR PIER DRILLING AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT LIMITED TO:

   A. FALL PROTECTION
   B. CONFINED SPACE
   C. ELECTRICAL SAFETY
   D. TRENCHING AND EXCAVATION

2. REMOVE FROM SITE/OWNER'S PROPERTY ALL WASTE MATERIALS, UNUSED EXCAVATED MATERIAL INCLUDING MATERIAL CLASSIFIED UNSATISFACTORY, CONTAMINATED OR DANGEROUS TRASH AND DEBRIS, AND DISPOSE OF IN A LEGAL MANNER.

3. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING.

4. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE BUILDING OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, FERTILIZED, SEEDED, AND COVERED WITH MULCH

5. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, AS REQUIRED DURING CONSTRUCTION.

   CONTRACTOR IS RESPONSIBLE FOR LAYOUT AND CONSTRUCTION STAKING. CONTRACTOR SHALL ESTABLISH GRADE AND LINE STAKES PRIOR TO CONSTRUCTION.

   CONCORDIA DOES NOT GUARANTEE OR WARRANT THAT THE AFOREMENTIONED EASEMENTS ARE SUFFICIENT FOR CONSTRUCTION TRAFFIC. GC SHALL CONSULT WITH A T-MOBILE REPRESENTATIVE AND LANDLORD WITH EXACT LOGISTICS TO FACILITATE CONTRACTIBILITY OF THE SITE AND DELIVERY OF CRITICAL MATERIALS SUCH AS THE TOWER, STEEL, CONCRETE AND CRANES TO THE PROPOSED LEASE AREA. GC SHALL RESTORE SITE TO ORIGINAL CONDITIONS AND REPLACE ANY AND ALL DISTURBED TREES OR LANDSCAPING.

   CONCORDIA IS NOT RESPONSIBLE FOR THE MAINTENANCE AND/OR OPERATIONAL FEASIBILITY.

   SCOPE OF WORK FOR THESE PLANS DOES NOT INVOLVE VALUE ENGINEERING AS WELL AS MAINTAINABILITY OPERATIONS OF THE SITE, ACCESS OR UTILITIES.

DIVISION 3 - CONCRETE:

1. MINIMUM ALLOWABLE CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH THE AMERICAN SOCIETY FOR TESTING AND MATERIALS METHODS STANDARDS ASTM C172, ASTM C31 AND ASTM C39 UNLESS OTHERWISE NOTED.

2. CONCRETE FOR ALL FOUNDATIONS: 540 LBS PER CUBIC YARD OF CONCRETE MINIMUM CEMENT CONTENT FOR 1-INCH MAXIMUM SIZE AGGREGATE, SLUMP RANGE 3 INCHES TO 5 INCHES, TOTAL AIR CONTENT 4 PERCENT TO 7 PERCENT BY VOLUME. AIR ENTRAINING ADMIXTURE REQUIRED TO CONTROL TOTAL AIR CONTENT, WATER REDUCING ADMIXTURE PERMITTED TO OBTAIN SLUMP OVER 3-INCHES.

3. ALL CONCRETE CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI 318) BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE AND (ACI 301) STANDARD SPECIFICATION FOR STRUCTURAL CONCRETE.

4. REBARS SHALL BE ASTM A-615 DEFORMED TYPE WITH MINIMUM YIELD STRENGTH OF 60,000 PSI (40,000 PSI GRADE MAY BE USED FOR TIES & STIRRUPS).

   WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185.

5. DETAILING SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE OF DETAILING REINFORCED CONCRETE STRUCTURES (ACI STD-315 LATEST EDITION).

6. CHAMFER ALL EXPOSED EDGES OF CONCRETE 3/4".UNLESS OTHERWISE NOTED.

7. REINFORCING STEEL SHALL BE ACCURATELY PLACED AND ADEQUATELY SECURED IN POSITION. LOCATION OF REINFORCEMENT SHALL BE INDICATED ON THE DRAWINGS. THE FOLLOWING MINIMUM COVER (INCHES) FOR REINFORCEMENT SHALL BE PROVIDED, EXCEPT AS NOTED ON DRAWINGS.

   MINIMUM COVER (INCHES)
   CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH ... 3"
   EXPOSED TO EARTH OR WEATHER:
   #6 THROUGH #18 ... 2"
   #5 BAR AND SMALLER ... 1-1/2"

8. TESTS
   CONCRETE MATERIALS AND OPERATIONS SHALL BE TESTED AND INSPECTED BY THE ENGINEER AS THE WORK PROGRESSES. FAILURE TO DETECT ANY DEFECTIVE WORK OR MATERIAL SHALL NOT IN ANY WAY PREVENT LATER REJECTION WHEN SUCH DEFECT IS DISCOVERED NOR SHALL IT OBLIGATE THE ENGINEER FOR FINAL ACCEPTANCE.

   A. FIVE CONCRETE TEST CYLINDERS SHALL BE TAKEN OF THE TOWER PIER FOUNDATION. TWO SHALL BE TESTED @ THREE DAYS, TWO @ TWENTY-EIGHT DAYS. THE FIFTH CYLINDER SHALL BE KEPT SEPARATELY, IF REQUIRED TO BE USED IN THE FUTURE.

   B. ONE ADDITIONAL TEST CYLINDER SHALL BE TAKEN DURING COLD WEATHER AND CURED ON SITE UNDER SAME CONDITIONS AS CONCRETE IT REPRESENTS.

   C. ONE SLUMP TEST SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.

9. PLACING CONCRETE
   A. THE ENGINEER SHALL BE NOTIFIED NOT LESS THAT 24 HOURS IN ADVANCE OF CONCRETE PLACEMENT, UNLESS INSPECTION IS WAIVED IN EACH CASE, PLACING OF CONCRETE SHALL BE PERFORMED ONLY IN THE PRESENCE OF THE ENGINEER. CONCRETE SHALL NOT BE PLACED UNTIL ALL FORMWORK, EMBEDDED PARTS, STEEL REINFORCEMENT, FOUNDATION SURFACES AND JOINTS INVOLVED IN THE PLACING HAVE BEEN APPROVED, AND UNTIL FACILITIES ACCEPTABLE TO THE T-MOBILE REPRESENTATIVE HAVE BEEN PROVIDED AND MADE READY FOR ACCOMPLISHMENT OF THE WORK AS SPECIFIED. CONCRETE MAY NOT BE ORDERED FOR PLACEMENT UNTIL ALL ITEMS HAVE BEEN APPROVED AND T-MOBILE HAS PERFORMED A FINAL INSPECTION AND GIVEN APPROVAL TO START PLACEMENT IN WRITING.

   B. PLACEMENT OF CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301.

10. PROTECTION
    A. IMMEDIATELY AFTER PLACEMENT, THE CONTRACTOR SHALL PROTECT THE CONCRETE FROM PREMATURE DRYING, EXCESSIVELY HOT OR COLD TEMPERATURES, AND MECHANICAL INJURY. FINISHED WORK SHALL BE PROTECTED.

    B. CONCRETE SHALL BE MAINTAINED WITH MINIMAL MOISTURE LOSS AT RELATIVELY CONSTANT TEMPERATURE FOR A PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.

    C. ALL CONCRETE SHALL BE WATER CURED BY CONTINUOUS (NOT PERIODIC) FINE MIST SPRAYING OR SPRINKLING ALL EXPOSED SURFACES. WATER SHALL BE CLEAN AND FREE FROM ACID, ALKALI, SALTS, OIL SEDIMENT, AND ORGANIC MATTER. SUCCESSFUL CURING SHALL BE OBTAINED BY USE OF AN AMPLE WATER SUPPLY UNDER PRESSURE IN PIPES, WITH ALL NECESSARY APPLIANCES OF SPRINKLERS, AND SPRAYING DEVICES.

ELECTRICAL NOTES:

1. ELECTRICAL DESIGN SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. STRUCTRUAL DESIGN SHALL BE PERFORMED BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL WORK COMPLIES WITH ALL APPLICABLE LOCAL AND STATE CODES AND NATIONAL ELECTRICAL CODE.

2. ALL SUGGESTED ELECTRICAL ELEMENTS (SUCH AS BREAKER SIZES, WIRE SIZES, CONDUITS SIZES ARE FOR ZONING PURPOSES ONLY. IT IS THE RESPONSIBILITY TO OF THE ELECTRICAL CONTRACTOR TO CONFIRM COMPLIANCE WITH LOCAL ELECTRICAL CODES AND PASS ALL APPLICABLE AND NECESSARY INSPECTIONS. IN SOME EVENTS, IT MAY BE NECESSARY TO PERFORM AN ELECTRICAL LOAD STUDY TO VERIFY THE CAPACITY OF THE EXISTING SERVICE. THIS IS NOT THE RESPONSIBILITY OF CONCORDIA. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

3. CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUND LINES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUND LINES THAT MAY BECOME DISTURBED OR CONFLICTING IN THE COURSE OF CONSTRUCTION.

DIVISION 5 - STRUCTURAL STEEL:

1. DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE LATEST AISC MANUAL OF STEEL CONSTRUCTION (ASD), AWS D1.1, AND THE BASIC BUILDING CODE. STRUCTURAL STEEL SHALL BE AS FOLLOWS:

   A. ASTM A36, GRADE 36; ROLLED STEEL, RODS, PLATES, U-BOLTS AND ANCHOR BOLTS.
   B. ASTM A325 BOLTS, BEARING TYPE
   C. ALL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.

2. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE REQUIRED DURING CONSTRUCTION UNTIL ALL CONNECTIONS ARE COMPLETE.

3. ANY FIELD CHANGES OR SUBSTITUTIONS SHALL HAVE PRIOR APPROVAL FROM THE ENGINEER, AND T- MOBILE PROJECT MANAGER IN WRITING

4. TIGHTEN HIGH STRENGTH BOLTS TO A SNUG TIGHT CONDITION WHERE ALL PLIES IN A JOINT ARE IN FIRM CONTACT BY EITHER

   A. A FEW IMPACTS OF A IMPACT WRENCH
   B. THE FULL EFFORT OF A PERSON USING A SPUD WRENCH.

5. WELDING
   A. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS. CERTIFICATION DOCUMENTS SHALL BE MADE AVAILABLE FOR ENGINEER'S AND/OR OWNER'S REVIEW IF REQUESTED.
   B. WELDING ELECTRODES FOR MANUAL SHIELDED METAL ARC WELDING SHALL CONFORM TO ASTM A-233, E70 SERIES. BARE ELECTRODES AND GRANULAR FLUX USED IN THE SUBMERGED ARC PROCESS SHALL CONFORM TO AISC SPECIFICATIONS.
   C. FIELD WELDING SHALL BE DONE AS PER AWSD1.1 REQUIREMENTS VISUAL INSPECTION IS ACCEPTABLE.

6. PROTECTION
   A. UPON COMPLETION OF ERECTION INSPECT ALL GALVANIZED STEEL AND PAINT ANY FIELD CUTS, WELDS, OR GALVANIZED BREAKS WITH ZINC BASED PAINT. COLOR TO MATCH THE GALVANIZING PROCESS.

DIVISION 13 - SPECIAL CONSTRUCTION ANTENNA INSTALLATION

1. WORK INCLUDED:
   A. ANTENNAS AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND PROPERTY.
   B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
   C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
   D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.
   E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
   F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
   G. ANTENNA AND COAXIAL CABLE GROUNDING:
      1. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTOR/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.
      2. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS).

CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUND LINES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUND LINES THAT MAY BECOME DISTURBED OR CONFLICTING IN THE COURSE OF CONSTRUCTION.

T-MOBILE
8550 WEST BRYN MAWR AVE.
SUITE 100
CHICAGO, IL 60631
MAIN: (773) 444-5400

SureSite
8770 WEST BRYN MAWR AVE.
SUITE 1300
CHICAGO, IL 60631
MAIN: (216) 593-0400

CONCORDIA, LTD
A PROFESSIONAL DESIGN FIRM
LICENSE # 3323-011- D.B.A.
CONCORDIA WIRELESS, INC.
361 RANDY ROAD
UNIT 101
CAROL STREAM,IL 60188
MAIN: (847) 981-0801

DRAWN BY: JS	CHECKED BY: GMS
CHECKED BY: RH	APPROVED BY: GMS

WISCONSIN
GHAZWAN M. SADAT
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ILLINOIS
PROFESSIONAL ENGINEER

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GENERAL NOTES & SPECIFICATIONS

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