SECOND AMENDMENT TO LEASE AGREEMENT

THIS SECOND AMENDMENT TO LEASE AGREEMENT (the "Second Amendment") is made this _____day of _____, 2021, between the City of Milwaukee, a Wisconsin municipal corporation with an address located at 200 East Wells Street, Milwaukee, Wisconsin 53202 (hereinafter "LESSOR") and Cellco Partnership d/b/a Verizon Wireless, with its principal offices located at One Verizon Way, Mailstop 4AW100, Basking Ridge, New Jersey 07920 (hereinafter "LESSEE").

WHEREAS, there is now in full force and effect between LESSOR and Verizon Wireless Personal Communications LP d/b/a Verizon Wireless that certain Lease Agreement dated June 6, 2001, as amended by the Amendment To Lease Agreement dated December 6, 2013 (collectively the "Agreement") which provides for the location, installation and operation of LESSEE's communications Equipment within the Leased Space on real property located at 8814 W. Lisbon Avenue, City of Milwaukee, County of Milwaukee, Wisconsin ("Property"); and

WHEREAS, LESSEE is the successor in interest to Verizon Wireless Personal Communications LP d/b/a Verizon Wireless; and

WHEREAS, LESSOR and LESSEE desire to amend the Agreement to allow for modifications to LESSEE's Equipment with the Leased Space as set forth herein; and

WHEREAS, LESSOR agrees that LESSEE shall be entitled to modify its Equipment at the Leased Space; and

WHEREAS, it is now the intention of LESSOR and LESSEE to enter into an agreement amending the Agreement.

NOW THEREFORE, for good and valuable consideration including the mutual covenants and agreements hereinafter set forth, LESSOR and LESSEE agree as follows:

1. **Equipment Modifications.** LESSOR agrees that LESSEE may install and perform the Equipment modifications ("Modifications") as depicted on Exhibit "B-2", attached hereto and incorporated herein. Exhibit "B-1" referred to in the Agreement is hereby deleted and replaced with the attached Exhibit "B-2" which depicts LESSEE's approved Equipment within the Leased Space. Provided that LESSEE has received all necessary permits and approvals from appropriate governing bodies, LESSEE may immediately commence installation of the Modifications as depicted on Exhibit "B-2". LESSOR agrees that the installation plan in the attached Exhibit "B-2" depicting the location and manner of LESSEE's Equipment installation is acceptable.

2. **Exhibit "C-1".** LESSEE's Equipment list identified as Exhibit "C-1" is hereby deleted in its entirety and replaced with Exhibit "C-2" Revised Equipment list attached hereto and made a part of the Agreement.

3. The address for notice to LESSEE as contemplated in Paragraph 16 of the

Agreement is hereby amended with the following:

LESSEE:

Cellco Partnership d/b/a Verizon Wireless
180 Washington Valley Road
Bedminster, NJ 07921
Attn: Network Real Estate

4. All defined terms referenced in this Second Amendment shall have the meaning as stated and defined in the Agreement.

5. Other than as specifically amended herein, all other terms and conditions of the Agreement shall remain in full force and effect. If there is any conflict between the terms of the this Second Amendment and the Agreement, this Second Amendment shall control.

[remainder of page intentionally left blank; signature page follows]

IN WITNESS WHEREOF, the parties hereto have executed in duplicate this Second Amendment on the day and year first above written.

LESSOR:

City of Milwaukee, a Wisconsin municipal corporation

By:_____
Name: Tom Barrett
Title: Mayor

Date:_____

By:_____
Name: James Owezarski
Title: City Clerk

Date:_____

By:_____
Name: Aycha Sawa
Title: Comptroller

Date:_____

LESSEE:

Cellco Partnership d/b/a Verizon Wireless

By: Dena Ranieri
Name:_____
Title: Dena Ranieri
Sr. Manager - Network RE

Date: 10-22-2021

EXHIBIT "B-2"

(Site Sketch of LESSEE's Equipment within the Leased Space)

SCOPE OF WORK

TOWER SCOPE

	QTY	EQUIPMENT	ACTION
REMAIN/RELOCATE			
ANTENNA(S)/EQUIP.	1	RAYCAP SPD(S)	TO REMAIN
DECOMISSION			
ANTENNA(S)/EQUIP.	9	PANEL ANTENNA(S)	TO BE REMOVED
	3	REMOTE RADIO(S)	TO BE REMOVED
	6	DIPLEXER(S)	TO BE REMOVED
TRANSMISSION CABLE(S)	1	HYBRID CABLE(S)	TO BE REMOVED
	6	1-5/8" COAX	TO BE REMOVED
TO BE INSTALLED			
ANTENNA(S)/EQUIP.	9	PANEL ANTENNA(S)	TO BE INSTALLED
	3	AIR6449 ANTENNA/ RADIO(S)	TO BE INSTALLED
	3	4408 RADIO/ ANTENNA(S)	TO BE INSTALLED
	1	RAYCAP SPD(S)	TO BE INSTALLED
	9	REMOTE RADIO(S)	TO BE INSTALLED
	3	DIPLEXER(S)	TO BE INSTALLED
TRANSMISSION CABLE(S)	2	HYBRID CABLE(S)	TO BE INSTALLED
	6	1-5/8" COAX	TO BE INSTALLED

COMPOUND SCOPE

	QTY	EQUIPMENT	ACTION
CABLE ROUTE	-	COAX CONDUIT STUB-UP(S)	ADEQUATE - TO REMAIN
	2	NEW COAX CONDUITS	TO BE INSTALLED

SHELTER INTERIOR SCOPE

	QTY	EQUIPMENT	ACTION
REMAIN/RELOCATE			
EQUIPMENT	1	RAYCAP SPD(S)	TO REMAIN
DECOMISSION			
EQUIPMENT	6	RUL01 B13 RADIO(S)	TO BE REMOVED
	6	DIPLEXER(S)	TO BE REMOVED
TO BE INSTALLED			
EQUIPMENT	1	RAYCAP SPD(S)	TO BE INSTALLED

SPECIAL REQUIREMENTS

MOUNT MODIFICATIONS REQUIRED: SEE MOUNT MODIFICATION REPORT FOR DETAILS

ALL EXISTING 1-5/8" CDMA COAX TO BE REMOVED & REPLACED; NEW CABLES TO BE ROUTED THROUGH NEW 8" BURIED COAX CONDUITS

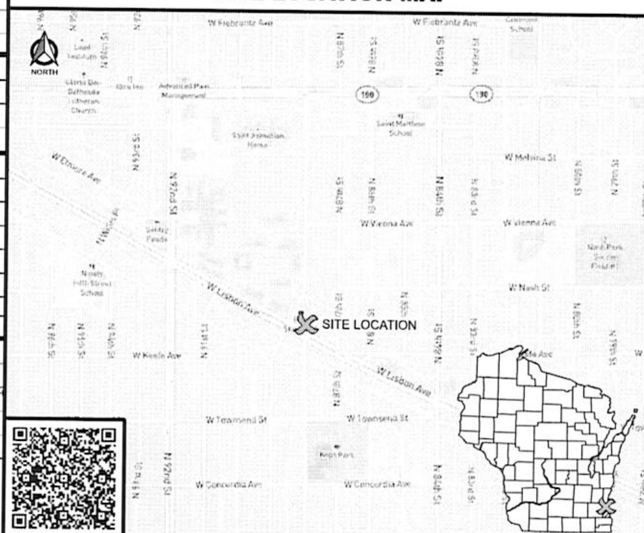
ALL PROPOSED HYBRID CABLES TO BE ROUTED THROUGH NEW 8" BURIED COAX CONDUITS

NEW BURIED 8" COAX CONDUITS REQUIRED: SEE PREVIOUS CDs BY FULLERTON ENGINEERING FOR DETAILS

verizon✓

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN
ANTENNA MOD DRAWINGS
193' MONOPOLE

SITE LOCATION MAP



DIRECTORY

CLIENT:
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008
CONTACT: ALLEN WAITES
EMAIL: allen.waites@verizonwireless.com

ENGINEER:
EDGE CONSULTING ENGINEERS, INC.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
CONTACT: PAUL MOLITOR
PHONE: 608.644.1449

SITE ACQUISITION:
TON 80 REALTY SERVICES, INC.
2331 W. SCHOOL STREET
CHICAGO, IL 60618
CONTACT: PETE SCHAU
PHONE: 773.919.5112

PROJECT INFO

SITE LOCATION:
8814 W. LISBON AVE.
MILWAUKEE, WI 53222

LOCATION #: 112368

FCC #: 1204062

TOWER OWNER:
CITY OF MILWAUKEE
4733 W. VLIET STREET
MILWAUKEE, WI 53208
ATTENTION TO: SAMUEL J. STEFFAN

SITE COORDINATES (PER 1-A CERTIFICATE):
LAT: 43°-05'-0.33"
LONG: 88°-01'-21.30"
GROUND ELEVATION (NAVD 88): 758'

MUNICIPAL REQUIREMENTS

EDGE CONSULTING ENGINEERS, INC. IS THE SUPERVISING ENGINEER FOR THIS PROJECT AND MUST ISSUE A CERTIFICATE OF COMPLIANCE UPON COMPLETION. THIS WILL INVOLVE INSPECTION OF THE SITE DURING AND/OR AFTER CONSTRUCTION. THE CONTRACTOR MUST NOTIFY EDGE CONSULTING APPROXIMATELY (2) WEEKS PRIOR TO COMMENCING WORK AT THE SITE TO DISCUSS THE CONSTRUCTION SCHEDULE AND INSPECTION REQUIREMENTS. IN ADDITION, ANY SIGNIFICANT DEVIATIONS FROM THE PROCEEDING PLANS MUST BE DISCUSSED WITH THE ENGINEER PRIOR TO THE WORK BEING COMPLETED.

SHEET INDEX

NO.:	SHEET TITLE
G-001	TITLE SHEET
C-101	SITE PLAN
C-102	ENLARGED SITE PLAN
A-101	EQUIPMENT ROOM LAYOUT
T-001	EQUIPMENT SPECIFICATIONS
T-002	MOUNTING SPECIFICATIONS
T-003	ANTENNA SPECIFICATIONS
T-004	ANTENNA SPECIFICATIONS
T-201	SITE ELEVATION
T-301	ANTENNA AND EQUIPMENT CONFIGURATION
T-501	ANTENNA SUMMARY
T-502	EQUIPMENT SUMMARY
T-503	PLUMBING DIAGRAM
T-504	CABLING DETAILS
T-505	CABLE ROUTING
T-901	SITE PHOTOS
E-501	GROUNDING DETAILS
•	PREVIOUS CDS BY FULLERTON ENGINEERING
•	MOUNT ANALYSIS BY OTHERS
•	COMPLETED BY OTHERS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS/CONDITIONS ON SITE, IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PERFORMING ANY WORK OR BE RESPONSIBLE FOR THE SAME.

STRUCTURAL

TOWER ANALYSIS:
EDGE CONSULTING ENGINEERS, INC.
REPORT #: 28142
DATED:03/15/2021 CONCLUSION: STRUCTURALLY ADEQUATE
MOUNT ANALYSIS:
PAUL J. FORD & COMPANY
REPORT #: 24320-0708.001.7190
DATED: 01/06/2021 CONCLUSION: FAIL
MOUNT MODIFICATION:
PAUL J. FORD & COMPANY
REPORT #: 24320-0708.002.7191
DATED: 01/28/2021 CONCLUSION: PASS
SITE AUDIT:
TERRA CONSULTING GROUP, LTD.
DATED: 11/20/2020

CONTRACTOR TO REVIEW STRUCTURAL REPORT IN ITS ENTIRETY. ANY DISCREPANCIES OR DISAGREEMENTS BETWEEN THE REPORT AND THESE PLANS SHOULD BE RESOLVED PRIOR TO CONSTRUCTION.

ONE CALL SYSTEMS INTERNATIONAL

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN, CALL DIGGERS HOTLINE

TOLL FREE: 1-800-242-8511
FAX A LOCATE: 1-800-242-5811

WI STATUTE 182.0175 (1974) REQUIRES MIN. OF 3 WORK DAYS NOTICE BEFORE YOU EXCAVATE

ENGINEER SEAL:

WISCONSIN DUSTIN A. BROOKS 47220-6 MADISON, WI PROFESSIONAL ENGINEER 08-11-21

I HEREBY CERTIFY THAT THIS PLAN SET WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION OTHER THAN THE EXCEPTIONS NOTED IN THE SHEET INDEX, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF WISCONSIN.

SIGNATURE: [signature]

DATE: 08-11-21

CONSULTANT:
Edge Consulting Engineers, Inc.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
608.644.1449 VOICE
608.644.1549 FAX
www.edgeconsult.com

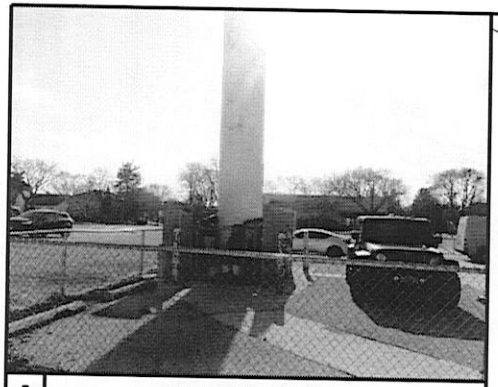
CLIENT:
verizon✓
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

TITLE SHEET
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

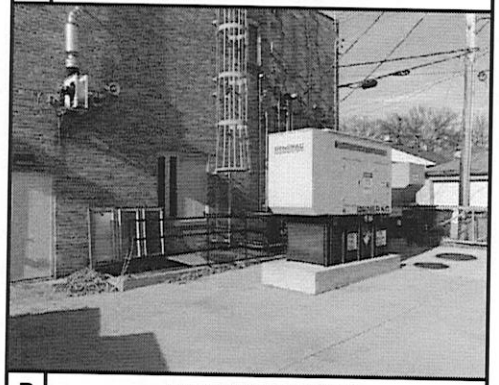
SUBMITTAL:

INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

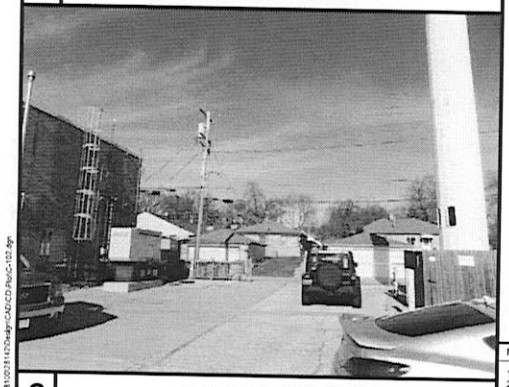
CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	G-001



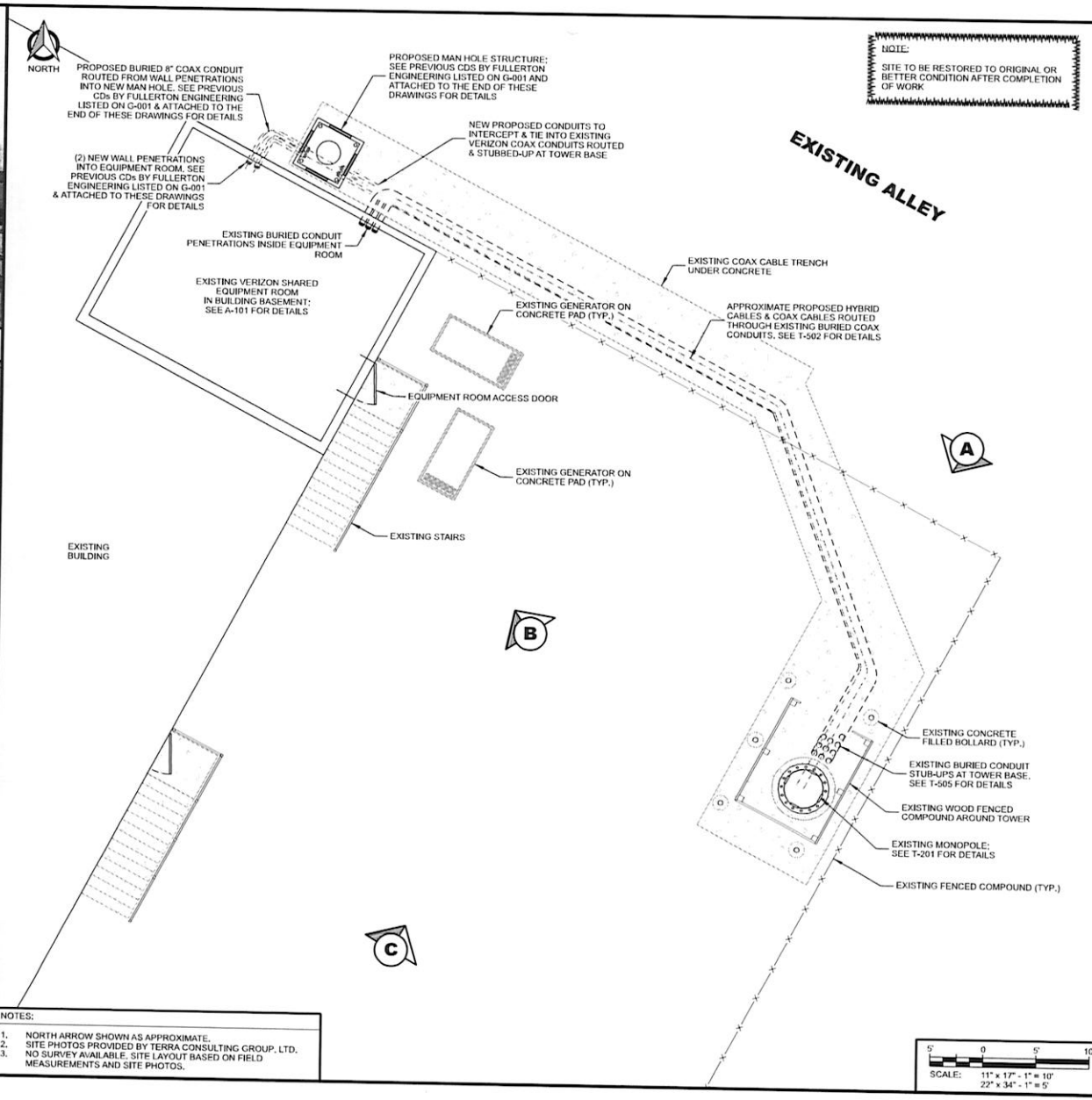
A COMPOUND OVERVIEW



B COMPOUND OVERVIEW



C COMPOUND OVERVIEW



NOTE:

SITE TO BE RESTORED TO ORIGINAL OR BETTER CONDITION AFTER COMPLETION OF WORK

NOTES:

1. NORTH ARROW SHOWN AS APPROXIMATE.
2. SITE PHOTOS PROVIDED BY TERRA CONSULTING GROUP, LTD.
3. NO SURVEY AVAILABLE. SITE LAYOUT BASED ON FIELD MEASUREMENTS AND SITE PHOTOS.

5' 0 5' 10'

SCALE: 11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

CONSULTANT:
Edge Consulting Engineers, Inc.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
608.644.1449 VOICE
608.644.1589 FAX
www.edgeconsult.com

CLIENT:
verizon
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

ENLARGED SITE PLAN

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

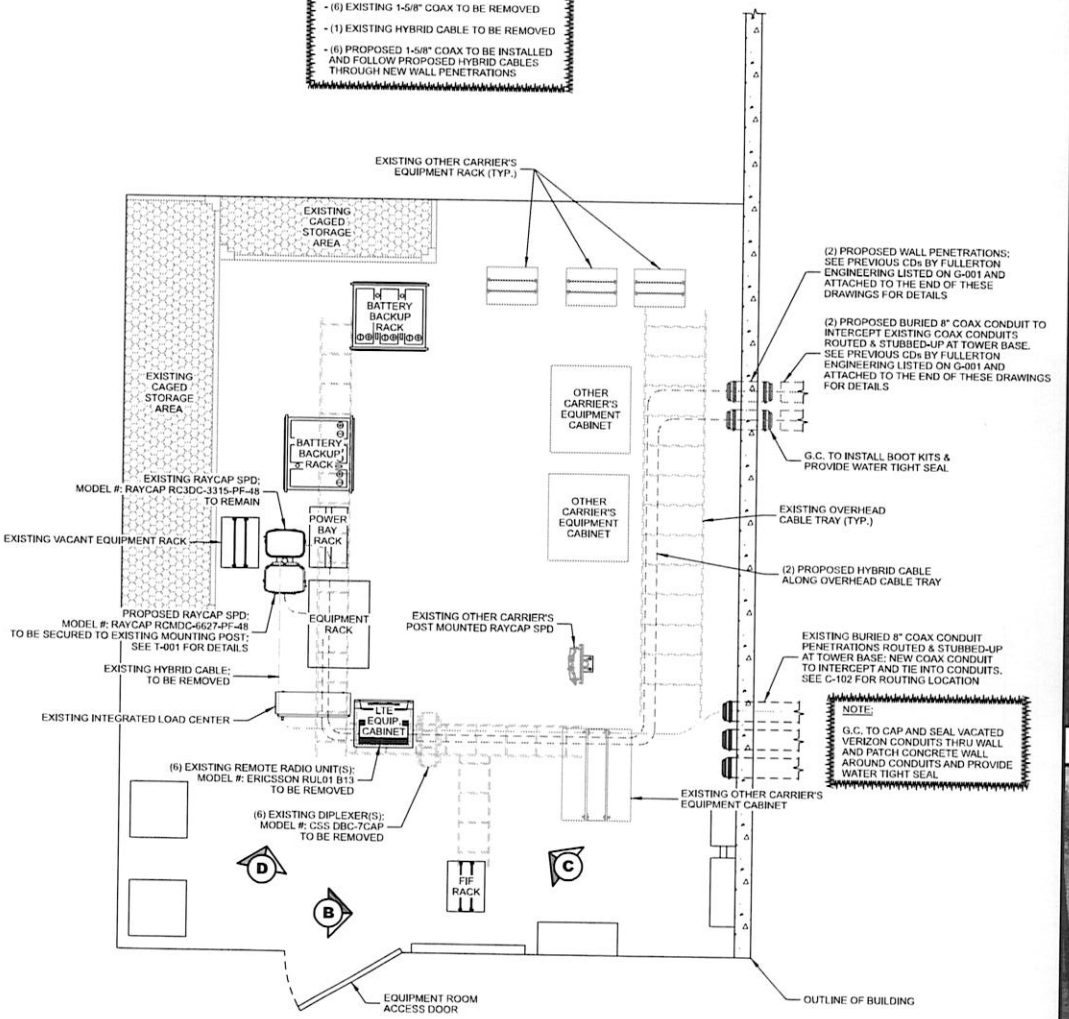
SUBMITTAL:

INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. B

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	C-102

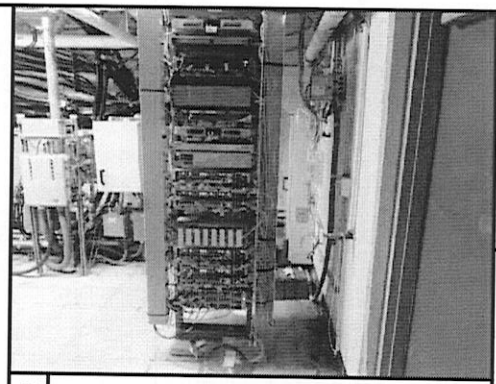
COAX NOTE:

- (6) EXISTING 1-5/8" COAX TO BE REMOVED
- (1) EXISTING HYBRID CABLE TO BE REMOVED
- (6) PROPOSED 1-5/8" COAX TO BE INSTALLED AND FOLLOW PROPOSED HYBRID CABLES THROUGH NEW WALL PENETRATIONS

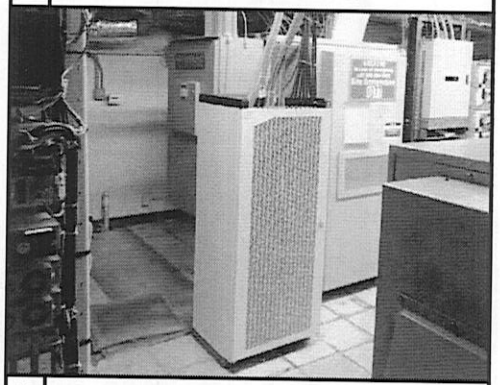


A EQUIPMENT ROOM INTERIOR LAYOUT

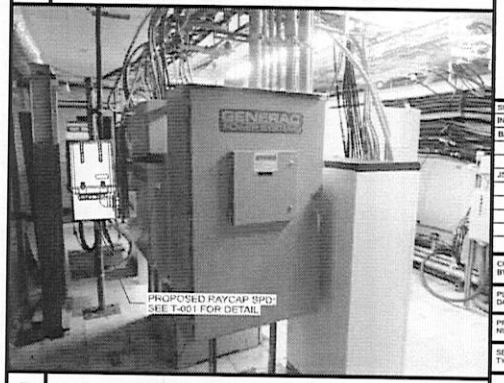
SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"



B EXISTING FIF RACK



C EXISTING LTE EQUIPMENT CABINET



D PROPOSED LOCATION OF RAYCAP SPD

CONSULTANT:
Edge
Consulting Engineers, Inc.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
608.644.1449 VOICE
608.644.1549 FAX
www.edgeconsult.com

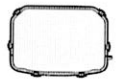
CLIENT:
verizon
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

EQUIPMENT ROOM LAYOUT
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

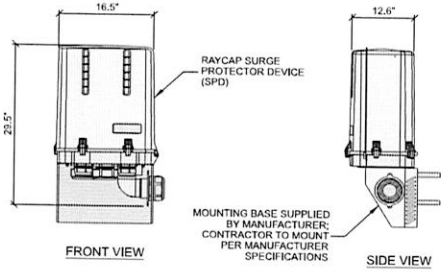
SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	A-101

MANUFACTURER: RAYCAP
MODEL: RCMDC-6627-PF-48
DIMENSIONS: 29.5" x 16.5" x 12.6" (H x W x D)
WEIGHT: 45.15 LBS



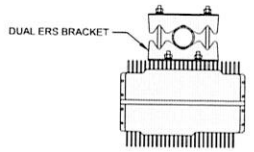
PLAN VIEW



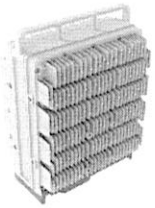
FRONT VIEW SIDE VIEW

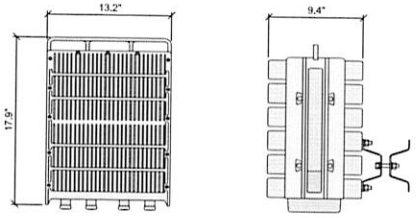
A **RAYCAP SURGE PROTECTOR DEVICE (SPD)**

MANUFACTURER: ERICSSON
MODEL: RADIO 4449
DIMENSIONS: 17.9" x 13.2" x 9.4" (H x W x D)
WEIGHT: 70.5 LBS



PLAN VIEW

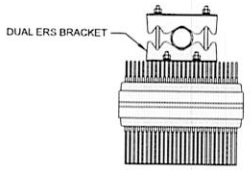




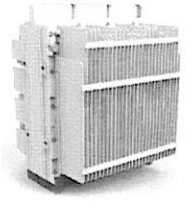
FRONT VIEW SIDE VIEW

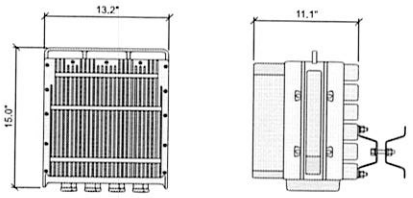
B **ERICSSON RADIO 4449**

MANUFACTURER: ERICSSON
MODEL: RADIO 8843
DIMENSIONS: 15.0" x 13.2" x 11.1" (H x W x D)
WEIGHT: 75 LBS.



PLAN VIEW

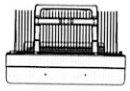




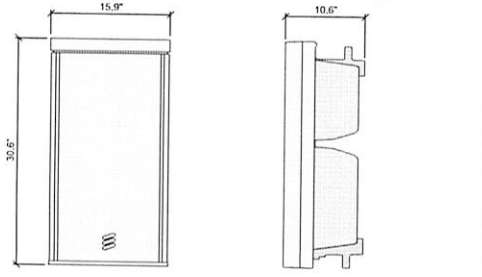
FRONT VIEW SIDE VIEW

C **ERICSSON RADIO 8843**

MANUFACTURER: ERICSSON
MODEL: AIR6449
DIMENSIONS: 30.6" x 15.9" x 10.6" (H x W x D)
WEIGHT: 82.7 LBS.



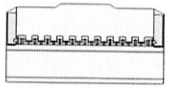
PLAN VIEW



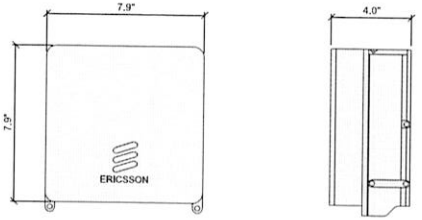
FRONT VIEW SIDE VIEW

D **ERICSSON AIR6449**

MANUFACTURER: ERICSSON
MODEL: RADIO 4408
DIMENSIONS: 7.9" x 7.9" x 4.0" (H x W x D)
WEIGHT: 11.0 LBS.



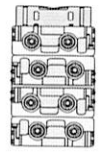
PLAN VIEW



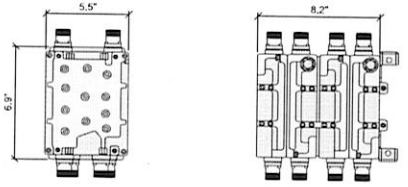
FRONT VIEW SIDE VIEW

E **ERICSSON RADIO 4408**

MANUFACTURER: COMMSCOPE
MODEL: CDX1923Q-DS-43
DIMENSIONS: 6.9" x 5.5" x 8.2" (H x W x D)
WEIGHT: 16.5 LBS



PLAN VIEW



FRONT VIEW SIDE VIEW

F **QUAD DIPLEXER**

CONSULTANT:
Edge
Consulting Engineers, Inc.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
608.644.1449 VOICE
608.644.1549 FAX
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CLIENT:
verizon
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

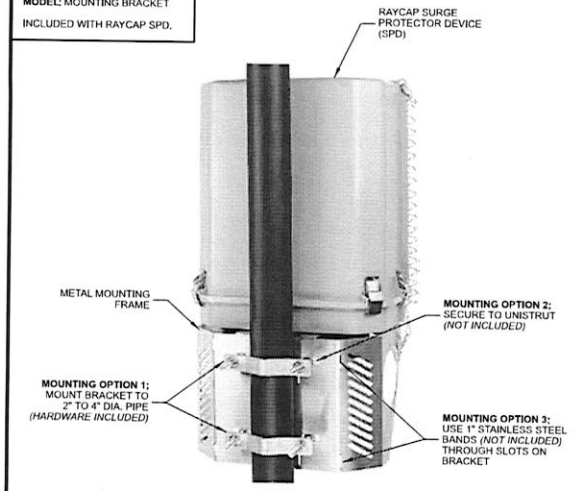
EQUIPMENT SPECIFICATIONS
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	6/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-001

MANUFACTURER: RAYCAP
MODEL: MOUNTING BRACKET

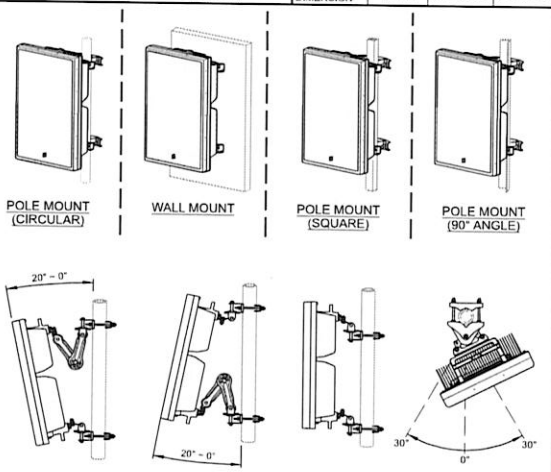
INCLUDED WITH RAYCAP SPD.



A **RAYCAP SURGE PROTECTOR DEVICE (SPD) MOUNT**

MANUFACTURER: ERICSSON
MODEL: SXK 109 2064/1 (SWIVEL ANGLE)
SXK 109 2065/1 (SWIVEL ANGLE AND TILT ANGLE)
WEIGHT: 9.7 LBS. (SWIVEL ANGLE)
13.0 LBS. (SWIVEL ANGLE AND TILT ANGLE)

POLE	CICULAR	SQUARE	90° ANGLE
MIN. OUTER DIMENSION	3" DIA.	2" x 2"	2" x 2"
MAX. OUTER DIMENSION	4.5" DIA.	3.15" x 3.15"	3.15" x 3.15"



B **ERICSSON SWIVEL MOUNT KIT**

MANUFACTURER: ERICSSON
MODEL: SXK 109 1973/2
WEIGHT: 3.75 LBS

BRACKET FOR ATTACHING TWO STANDARD OR HEAVY ERS UNITS WITH A HOLE PATTERN OF CC 30 MM AND/OR CC 80 MM., EITHER TO A POLE, WALL, ANGLE TOWER OR SQUARE TUBE.

BOLTS FOR ATTACHING TWO ERS UNITS ARE SUPPLIED IN THE PACKAGE.

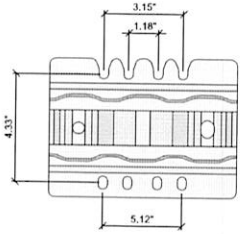
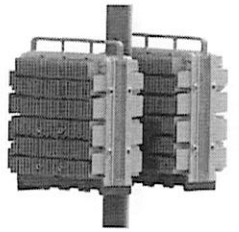
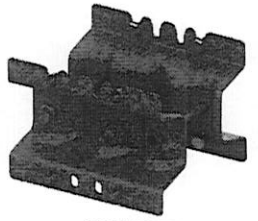


PLATE MOUNTING PATTERN



DUAL RADIO ATTACHMENT



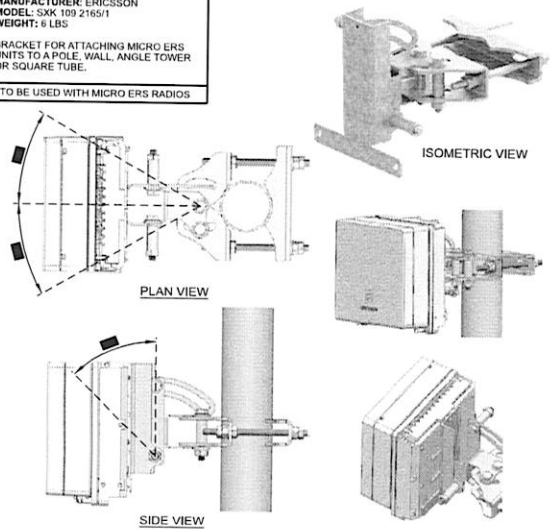
ISOMETRIC VIEW

C **DUAL ERS BRACKET**

MANUFACTURER: ERICSSON
MODEL: SXK 109 2165/1
WEIGHT: 6 LBS

BRACKET FOR ATTACHING MICRO ERS UNITS TO A POLE, WALL, ANGLE TOWER OR SQUARE TUBE.

TO BE USED WITH MICRO ERS RADIOS



D **MICRO ERS TILT BRACKET**

THIS SPACE INTENTIONALLY LEFT BLANK

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PRAIRIE DU SAC, WI 53578
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verizon
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1731 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008

EQUIPMENT MOUNTING
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	6/04/21	REV. A
JSM	8/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-002

8/11/2021 H:\Drafting\CAD\CD Plan\T-002.dgn

NHH-65B-R2B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Effective Projective Area (EPA), frontal	0.26 m² | 2.799 ft²
Effective Projective Area (EPA), lateral	0.22 m² | 2.368 ft²
Grounding Type	RF connector body grounded to reflector and mounting bracket
Performance Note	Outdoor usage | Wind loading figures are validated by wind tunnel measurements described in white paper WP-112534-EN
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	2
RF Connector Quantity, total	6

Remote Electrical Tilt (RET) Information, General

RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	2 female | 2 male

Dimensions

Width	301 mm | 11.85 in
Depth	180 mm | 7.087 in

COMMSCOPE®

NHH-65B-R2B

180° ± 30°, dB						
CPR at Boresight, dB	22	21	23	23	22	19
CPR at Sector, dB	10	7	16	13	11	4

Mechanical Specifications

Wind Loading at Velocity, frontal	278.0 N @ 150 km/h | 63.6 lbf @ 150 km/h
Wind Loading at Velocity, lateral	230.0 N @ 150 km/h | 51.7 lbf @ 150 km/h
Wind Loading at Velocity, maximum	120.7 lbf @ 150 km/h | 537.0 N @ 150 km/h
Wind Loading at Velocity, rear	282.0 N @ 150 km/h | 63.4 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 149.75 mph

Packaging and Weights

Width, packed	409 mm | 16.102 in
Depth, packed	299 mm | 11.772 in
Length, packed	1952 mm | 76.85 in
Net Weight, without mounting kit	19.8 kg | 43.651 lb
Weight, gross	32.3 kg | 71.209 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance
ROHS	Compliant

Included Products

BSAMNT-3	-	Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

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COMMSCOPE®

A ANTENNA SPECIFICATIONS

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TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

ANTENNA SPECIFICATIONS
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-003

Product Specifications

COMMSCOPE®

POWERED BY ANDREW

HBX-9016DS-VTM

Andrew® Antenna, 1710–2180 MHz, 90° horizontal beamwidth, RET compatible

- Excellent gain, USLS, VSWR, and PIM specification to improve network quality
- Ideal solution to maximize coverage and capacity in suburban and rural areas
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- Wide horizontal and narrow vertical beamwidth to maximize coverage and capacity

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain, dBi	17.7	17.7	18.0
Beamwidth, Horizontal, degrees	85	86	87
Beamwidth, Vertical, degrees	5.1	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	28	28	27
CPR at Boresight, dB	21	24	20
CPR at Sector, dB	14	13	11
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-155	-155	-155
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	17.5	17.4	17.6
Gain by all Beam Tilts Tolerance, dB	±0.2	±0.2	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 17.4 3 ° | 17.6 6 ° | 17.4	0 ° | 17.4 3 ° | 17.5 6 ° | 17.3	0 ° | 17.5 3 ° | 17.7 6 ° | 17.4
Beamwidth, Horizontal Tolerance, degrees	±1.4	±1.5	±1.5
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.2	±0.3
USLS, dB	18	18	19
Front-to-Back Total Power at 180° ± 30°, dB	24	23	21
CPR at Boresight, dB	24	26	23
CPR at Sector, dB	14	13	11

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz

Product Specifications

COMMSCOPE®

POWERED BY ANDREW

HBX-9016DS-VTM

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	2
Wind Area, maximum	0.2 m² | 2.9 ft²
Wind Loading, maximum	391.5 N @ 150 km/h 88.0 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	97.0 mm | 3.8 in
Length	1897.0 mm | 74.7 in
Width	172.0 mm | 6.8 in
Net Weight	7.6 kg | 16.8 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBX-9016DS-A1M
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

DB390 — Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Use for narrow panel antennas. Includes two pipe mounts.

DB5098 — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

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A **ANTENNA SPECIFICATIONS**

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ROLLING MEADOW, IL 60008

ANTENNA SPECIFICATIONS
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:

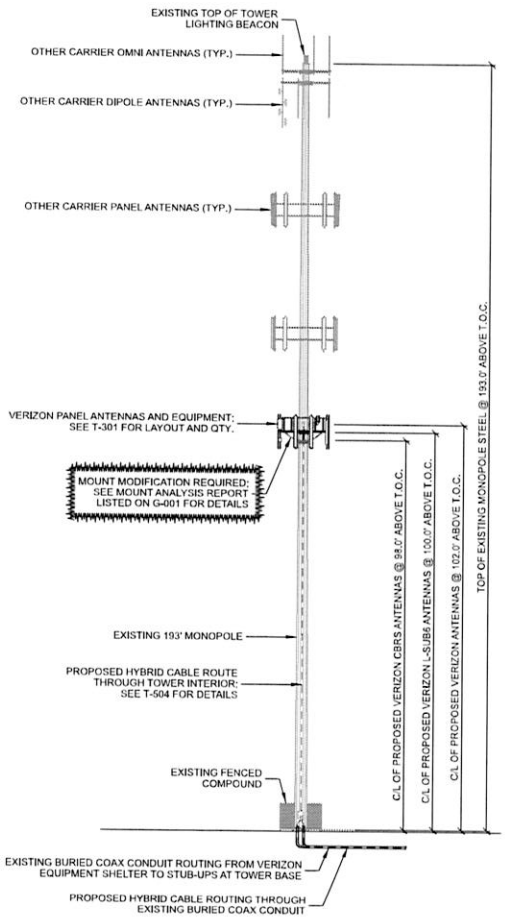
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-004

RF EMISSION REPORT REQUIRED

☐ YES ☒ NO

Date: _____

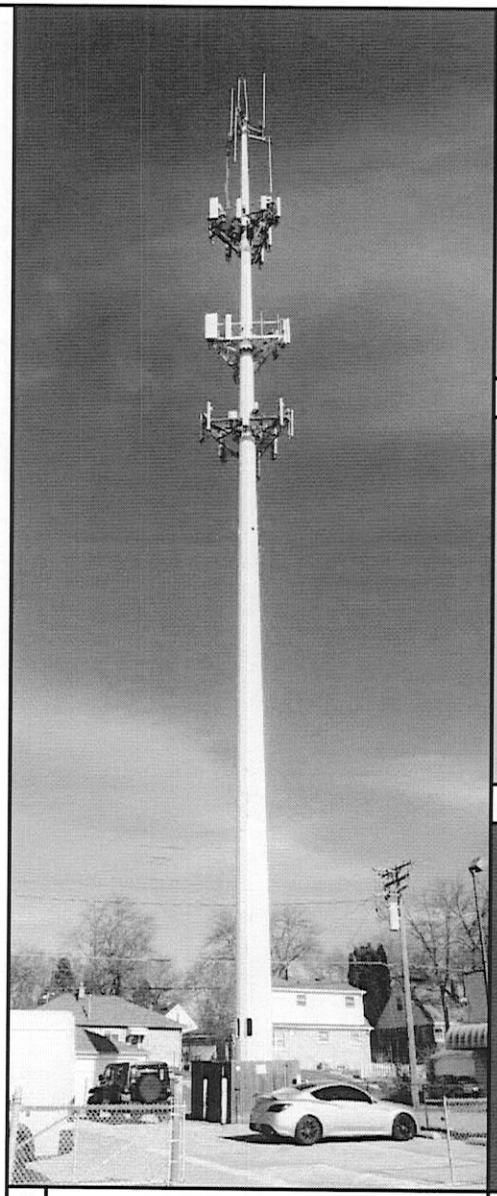


NOTES:

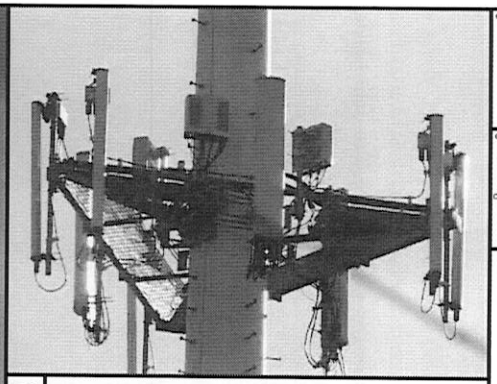
1. CONTRACTOR TO VERIFY HEIGHT AND DIRECTION OF ANTENNAS WITH PROJECT MANAGER AND FINAL RF DESIGN.
2. CONTRACTOR TO VERIFY LIGHTNING ROD EXTENDS 2' MIN. ABOVE ALL ANTENNAS & EQUIPMENT.
3. REFER TO STRUCTURAL REVIEW NOTE ON G-001.

A SITE ELEVATION

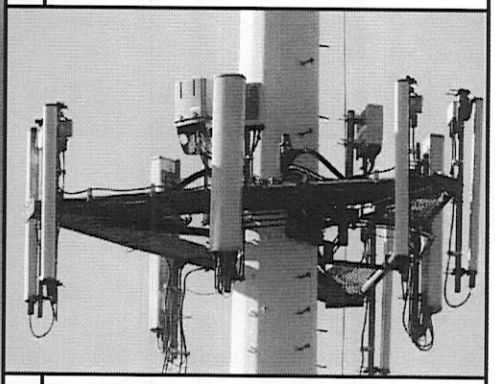
SCALE: 11" x 17" - 1" = 30'-0"
22" x 34" - 1" = 15'-0"



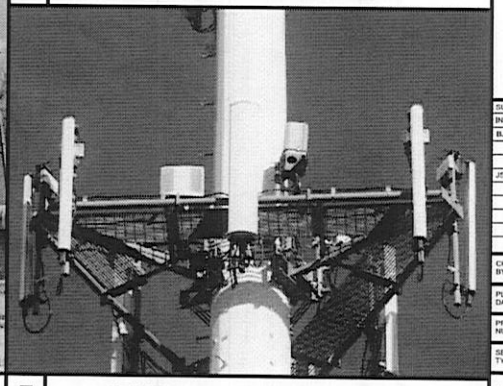
B EXISTING SITE ELEVATION



C VERIZON ALPHA SECTOR ANTENNAS



D VERIZON BETA SECTOR ANTENNAS



E VERIZON GAMMA SECTOR ANTENNAS

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d/b/a VERIZON WIRELESS
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ROLLING MEADOW, IL 60008

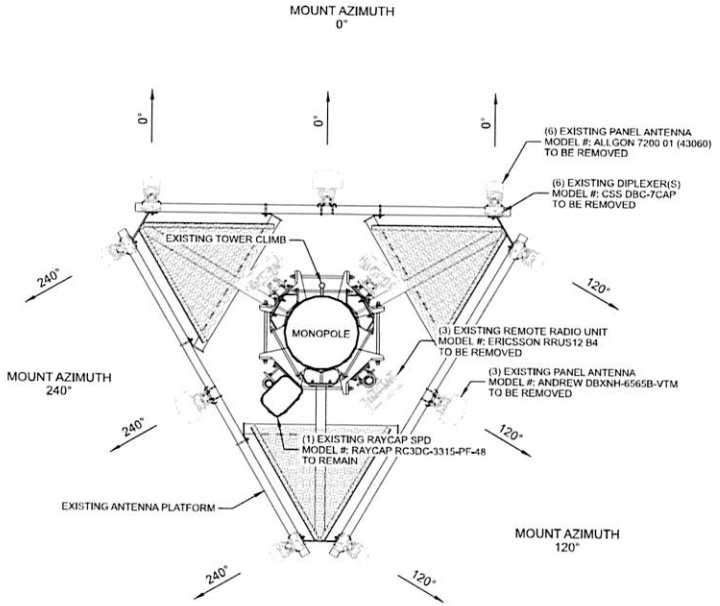
SITE ELEVATION
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:

INT.	DATE:	DESCRIPTION:
BJN	8/04/21	REV. A
JSM	8/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	**T-201**

E:\81\00\31\02\dgn-CAD\CD Plan\T-201.dgn

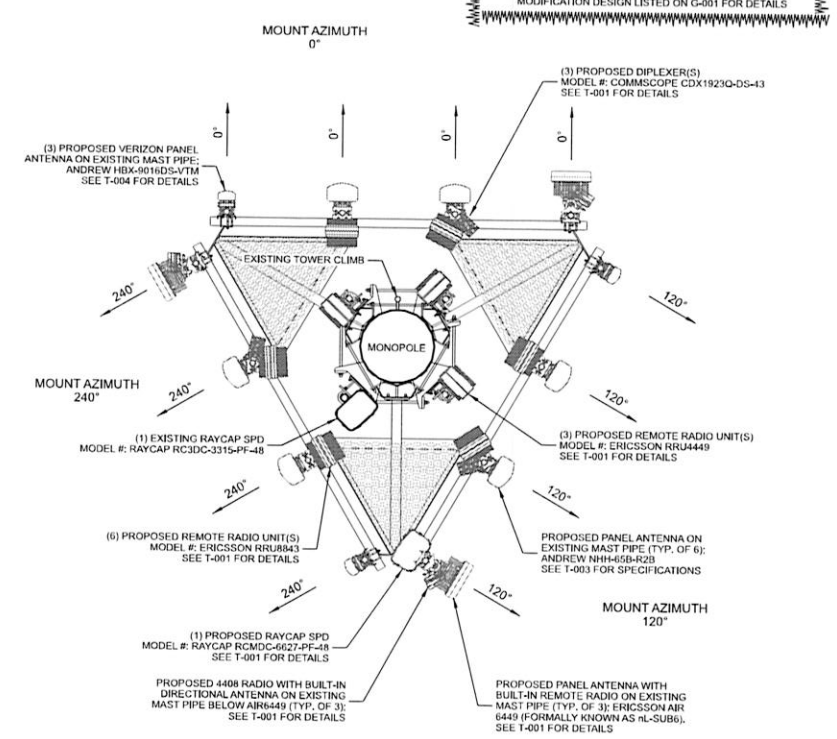


NOTE:

1. ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH.

A EXISTING ANTENNA LAYOUT

SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"



NOTE:

3. ANTENNA LAYOUT IS SHOWN FOR CONVENIENCE ONLY. CONTRACTOR IS TO FOLLOW ANTENNA AND EQUIPMENT PLACEMENT IN ACCORDANCE WITH THE MOUNT ANALYSIS IDENTIFIED ON THE TITLE SHEET AND ATTACHED TO THE END OF THESE PLANS. EDGE CONSULTING ENGINEERS, INC. IS NOT RESPONSIBLE FOR ANY DISCREPANCIES BETWEEN THE MOUNT ANALYSIS AND THE INSTALLATION.

NOTE:

4. MOUNT MODIFICATIONS REQUIRED; SEE MOUNT MODIFICATION DESIGN LISTED ON G-001 FOR DETAILS

NOTES:

1. ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH.
2. CONTRACTOR TO ROTATE ANTENNAS AS NECESSARY TO MATCH PROPOSED ANTENNA AZIMUTHS.

B PROPOSED ANTENNA LAYOUT

SCALE: 11" x 17" - 1/4" = 1'-0"
22" x 34" - 1/2" = 1'-0"

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TOWER 2, SUITE 400
ROLLING MEADOWS, IL 60008

ANTENNA AND EQUIPMENT CONFIGURATION

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-301

verizon
fuze | RFDS

WEST > Upper Midwest > Illinois/Wisconsin > Wisconsin > 88TH & LISBON MFD

Siamof, Mustafa - mustafa.siamof@verizonwireless.com - 8/9/2021 22:31:17

Antenna Summary

Added

700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
	CDMA					ANDREW	HBX-9016DS-VTM	100	103.1	0(D1) 120(D2) 240(D3)	false	false	PHYSICAL	3
LTE	LTE 5G	LTE	LTE			ANDREW	NHH-65B-R2B	100	103	0(0001) 0(01) 120(0002) 120(02) 240(0003) 240(03)	false	false	PHYSICAL	6
				LTE		ERICSSON	KRE105281/1	98	98.3	0(19) 120(20) 240(21)	false	false	PHYSICAL	3
					5G	Ericsson	AIR6449	102	103.3	0(0001) 120(0002) 240(0003)	false	false	PHYSICAL	3

Removed

700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity
	CDMA					ALLGON	7200 01 (43060)	100	103	0(0001) 0(01) 0(D1) 120(0002) 120(02) 120(D2) 240(0003) 240(03) 240(D3)	false	false	PHYSICAL	6
LTE		LTE				ANDREW	DBXNH-6565B-VTM	100	103	0(01) 120(02) 240(03)	false	false	PHYSICAL	3

Retained

700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Centerline	Tip Height	Azimuth	RET	4xRx	Inst. Type	Quantity

No data available.

Added: 15 **Removed:** 9 **Retained:** 0

NOTE:

1. RF DESIGN DETAILED ON THIS SHEET PROVIDED BY VERIZON AND IS INCLUDED FOR CONVENIENCE ONLY. FINAL RF DESIGN TO BE VERIFIED WITH VERIZON PRIOR TO CONSTRUCTION. IF SIGNIFICANT CHANGES OR DISCREPANCIES ARE IDENTIFIED, CONTACT ENGINEER PRIOR TO INSTALLATION.

A **ANTENNA SUMMARY**

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ROLLING MEADOW, IL 60008

ANTENNA SUMMARY
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	8/04/21	REV. A
JSM	08/11/21	REV. B

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-501

Equipment Summary

Added

Equipment Type	Location	700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Coaxial Cables	Tower							COAX	Coaxial Cable		1 5/8	PHYSICAL	6
Diplexer	Tower							Commscope	CDX1923Q-DS-43			PHYSICAL	3
RRU	Tower					LTE		Ericsson	4408 B48 DC			PHYSICAL	3
RRU	Tower	LTE						Ericsson	4449			PHYSICAL	3
RRU	Tower			LTE	LTE			Ericsson	8843			PHYSICAL	3
RRU	Tower						5G	Ericsson	AIR6449			PHYSICAL	3
Hybrid Cable	Tower							N/A	12x24			PHYSICAL	1
Hybrid Cable	Tower							N/A	6x12			PHYSICAL	1
OVP Box	Tower							Raycap	6627			PHYSICAL	1
OVP Box	Shelter							Raycap	6627			PHYSICAL	1

Removed

Equipment Type	Location	700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
Coaxial Cables	Tower							COAX	Coaxial Cable		1 5/8	PHYSICAL	6
Diplexer	Tower	LTE	CDMA					CSS	DBC-7CAP			PHYSICAL	6
RRU	Tower			LTE				Ericsson	RRUS12 B4			PHYSICAL	3
RRU	Tower	LTE						Ericsson	RUL01 B13			PHYSICAL	6
Hybrid Cable	Tower							N/A	6x12			PHYSICAL	1
Diplexer	Shelter	LTE	CDMA					CSS	DBC-7CAP			PHYSICAL	6

Retained

Equipment Type	Location	700	1900	AWS	AWS3	CBRS	L-Sub6	Make	Model	Cable Length	Cable Size	Install Type	Quantity
OVP Box	Tower							Raycap	3315			PHYSICAL	1
OVP Box	Shelter							Raycap	3315			PHYSICAL	1
RRU	Move to Tower		LTE 5G					Ericsson	8843			PHYSICAL	3

NOTE:

1. RF DESIGN DETAILED ON THIS SHEET PROVIDED BY VERIZON AND IS INCLUDED FOR CONVENIENCE ONLY. FINAL RF DESIGN TO BE VERIFIED WITH VERIZON PRIOR TO CONSTRUCTION. IF SIGNIFICANT CHANGES OR DISCREPANCIES ARE IDENTIFIED, CONTACT ENGINEER PRIOR TO INSTALLATION.

B EQUIPMENT SUMMARY

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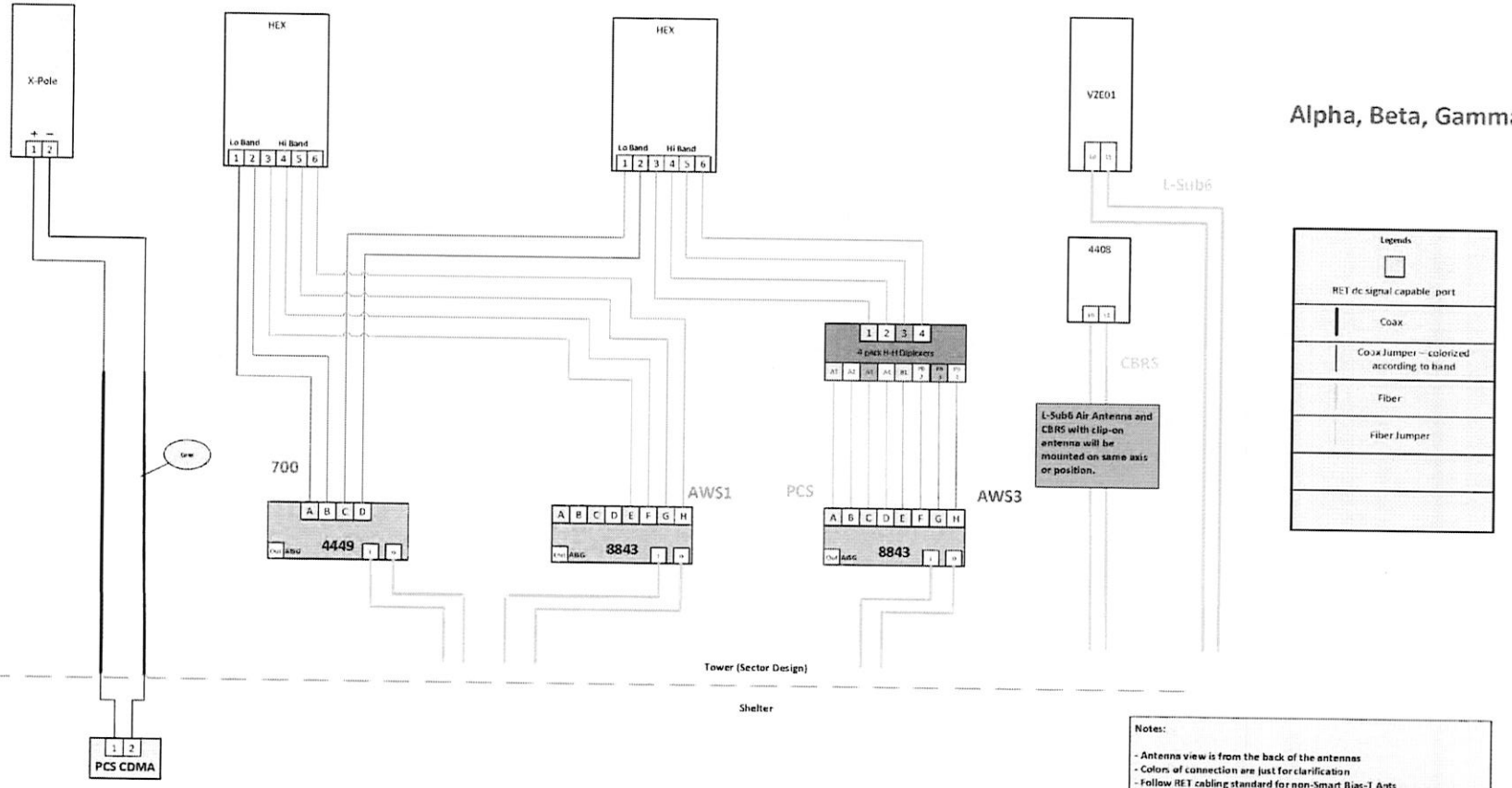
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

EQUIPMENT SUMMARY
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. B

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-502



NOTE:

1. RF DESIGN DETAILED ON THIS SHEET PROVIDED BY VERIZON AND IS INCLUDED FOR CONVENIENCE ONLY. FINAL RF DESIGN TO BE VERIFIED WITH VERIZON PRIOR TO CONSTRUCTION. IF SIGNIFICANT CHANGES OR DISCREPANCIES ARE IDENTIFIED, CONTACT ENGINEER PRIOR TO INSTALLATION.

A PLUMBING DIAGRAM

CONSULTANT:
Edge
Consulting Engineers, Inc.
624 WATER STREET
PRAIRIE DU SAC, WI 53578
608.644.1449 VOICE
608.644.1549 FAX
www.edgeconsult.com

CLIENT:
verizon
CHICAGO SMSA LIMITED PARTNERSHIP
d/b/a VERIZON WIRELESS
1701 GOLF ROAD
TOWER 2, SUITE 400
ROLLING MEADOW, IL 60008

PLUMBING DIAGRAM
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-503

HYBRID CABLE LENGTH	
QUANTITY	2
LENGTH FROM SHELTER SOURCE TO COAX PORT	34 FT
LENGTH FROM SHELTER COAX PORT TO TOWER CENTER	99 FT
LENGTH FROM T.O.C. TO TOWER TOP SURGE PROTECTOR C/L	106 FT
TOTAL LENGTH OF HYBRID CABLE(S)	239 FT
** HYBRID CABLE LENGTH NOT TO EXCEED 367'	

JUMPER CABLE LENGTH CHECK	
IS THE DISTANCE FROM SURGE PROTECTOR TO RADIO UNIT LESS THAN 30'?	
ALPHA SECTOR	YES
BETA SECTOR	YES
GAMMA SECTOR	YES

NOTE:

1. IF CABLING LENGTH EXCEEDS MAXIMUM ALLOWED LENGTH CONTRACTOR SHALL CONTACT CLIENT AND ENGINEER TO RESOLVE PRIOR TO CONSTRUCTION.

A CABLE LENGTHS

Raycap Layout - (1) 3315: (6) OVP per Sector

POWER

3	A - HB/FD MIMO			6	A - Spare
2	A - HB			5	A - Spare
1	A - LB			4	A - Spare

FIBER

1	2	3	4	5	6
A - LB	A - HB	A - HB / FD MIMO	A - Spare	A - CBRS	A - Spare
7	8	9	10	11	12
A - C-Band (1)	A - C-Band (2)	A - C-Band (3)	A - Spare	A - Spare	A - Spare

Raycap Layout - (1) 6627: (6) OVP per Sector

POWER

6	B - Spare			12	G - Spare
5	B - CBRS			11	G - CBRS
4	B - C-Band			10	G - C-Band
3	B - HB/FD MIMO			9	G - HB/FD MIMO
2	B - HB			8	G - HB
1	B - LB			7	G - LB

FIBER

1	2	3	4	5	6
B - LB	B - HB	B - HB / FD MIMO	B - Spare	B - CBRS	B - Spare
7	8	9	10	11	12
B - C-Band (1)	B - C-Band (2)	B - C-Band (3)	B - Spare	B - Spare	B - Spare
13	14	15	16	17	18
G - LB	G - HB	G - HB / FD MIMO	G - Spare	G - CBRS	G - Spare
19	20	21	22	23	24
G - C-Band (1)	G - C-Band (2)	G - C-Band (3)	G - Spare	G - Spare	G - Spare

B SURGE PROTECTOR LAYOUT

THIS SPACE INTENTIONALLY LEFT BLANK

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ROLLING MEADOW, IL 60008

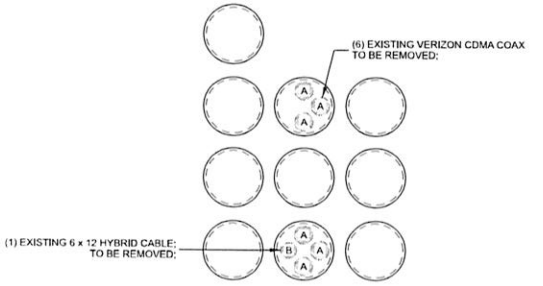
CABLING DETAILS

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

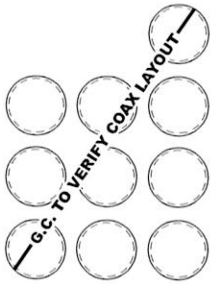
SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	08/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-504

E:\28142\Final\Dwgs\CAD\CD Files\T-504.dgn

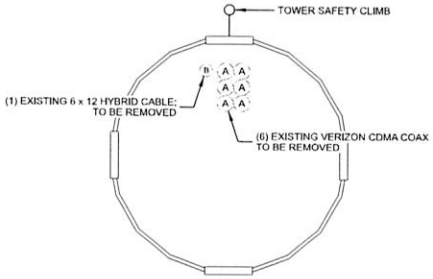


A EXISTING SHELTER COAX PORT (INTERIOR VIEW)



OTHER CARRIER CABLES OMITTED FROM LAYOUT FOR SIMPLICITY

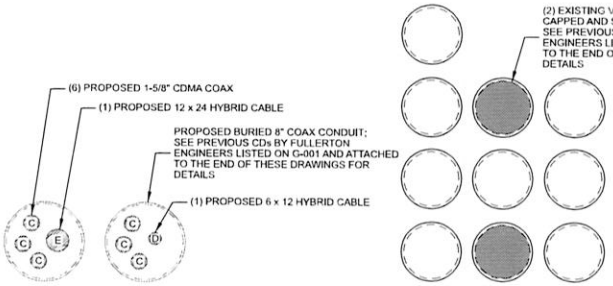
G.C. TO REFER TO PREVIOUS CDs BY FULLERTON ENGINEERING LISTED ON G-001 AND ATTACHED TO THE END OF THESE DRAWINGS FOR ALL PROPOSED CABLE ROUTING DETAILS



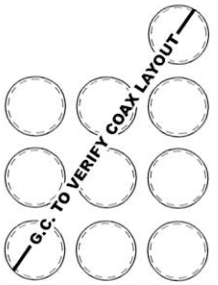
B EXISTING TOWER CABLE LAYOUT

NORTH

COAX SYMBOL	(#) SIZE	MOUNTING TYPE	CARRIER / OWNER	TECHNOLOGY
A	(6) 1-5/8"	TOWER INTERIOR	VERIZON	CDMA
B	(1) 1-1/4"	TOWER INTERIOR	VERIZON	HYBRID



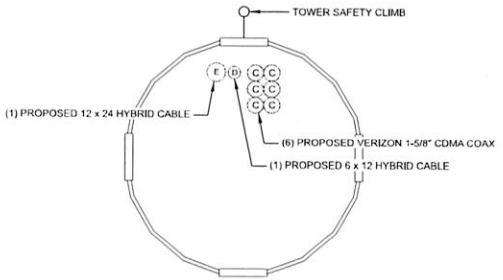
C PROPOSED SHELTER COAX PORT (INTERIOR VIEW)



NOTE:

G.C. TO VERIFY EXACT VERIZON COAX CONDUITS STUBBED AT TOWER BASE AND INSTALL 8" COAX BOOT KITS TO WEATHERPROOF & SEAL CONDUITS

SITE PRO 1 BOOT KITS # BG1584 OR APPROVED EQUIVALENT. BLANK BOOTS CAN BE USED FOR CUSTOM HOLE SIZES OR LAYOUTS. CONTACT SALES STAFF FOR OTHER SIZES



D PROPOSED TOWER CABLE LAYOUT

NORTH

COAX SYMBOL	(#) SIZE	MOUNTING TYPE	CARRIER / OWNER	TECHNOLOGY
A	-	-	-	-
B	-	-	-	-
C	(6) 1-5/8"	TOWER INTERIOR	VERIZON	CDMA
D	(1) 1-1/4"	TOWER INTERIOR	VERIZON	HYBRID
E	(1) 1-1/4"	TOWER INTERIOR	VERIZON	HYBRID

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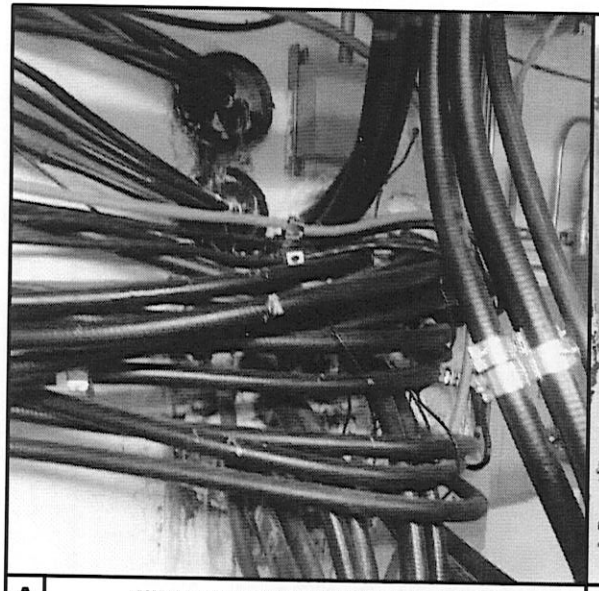
ROLLING MEADOWS, IL 60008

CABLE ROUTING
88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

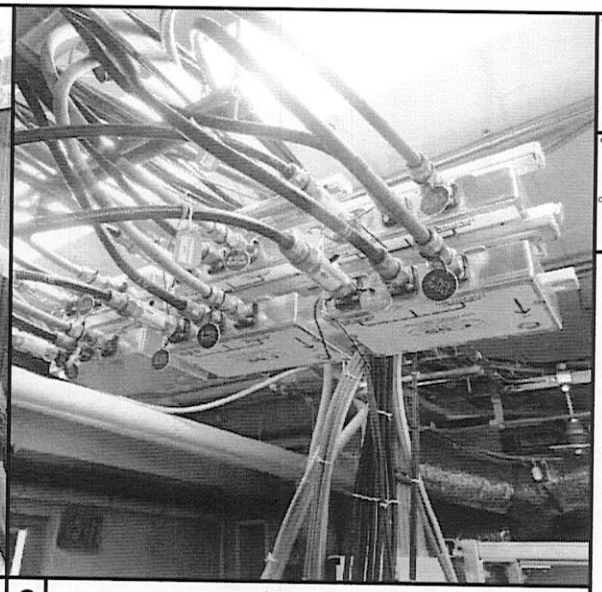
SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-505

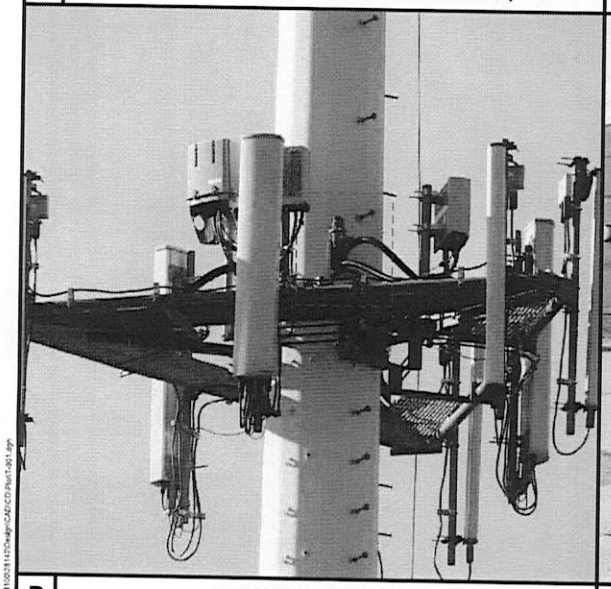


A SHELTER COAX PORT (SHELTER INTERIOR)

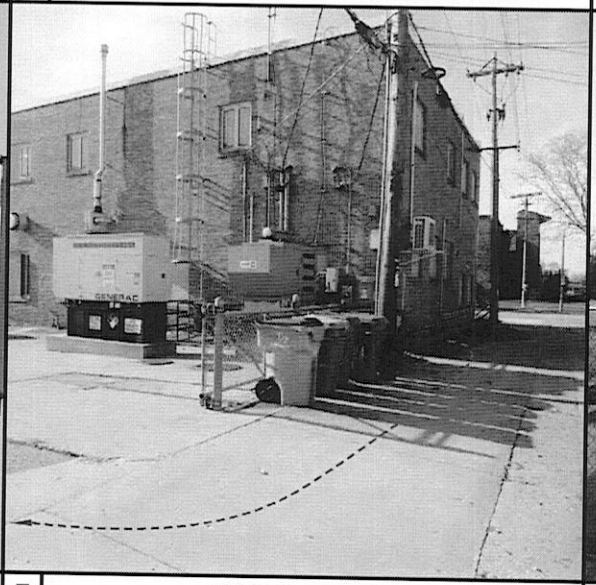
B EXISTING CONDUIT STUB-UPS AT TOWER BASE



C EXISTING DIPLEXERS TO BE REMOVED



D UPPER TOWER COAX PORT



E BURIED CONDUIT ROUTE

E BURIED CONDUIT ROUTE

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verizon
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*701 GOLF ROAD
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ROLLING MEADOW, IL 60008

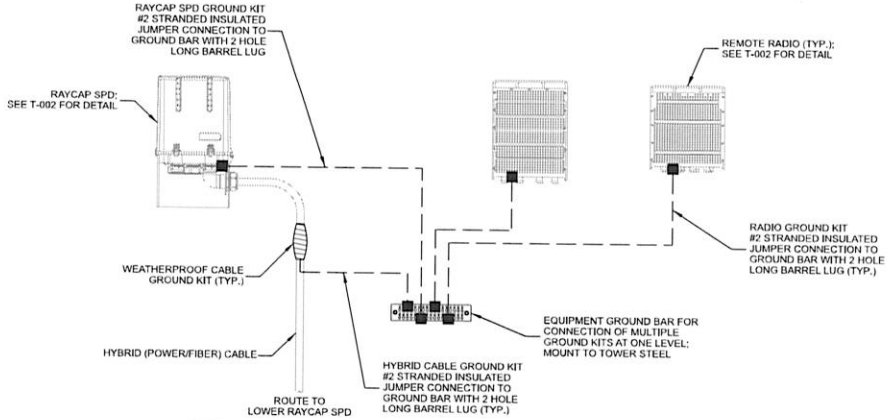
SITE PHOTOS

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. B

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	T-901

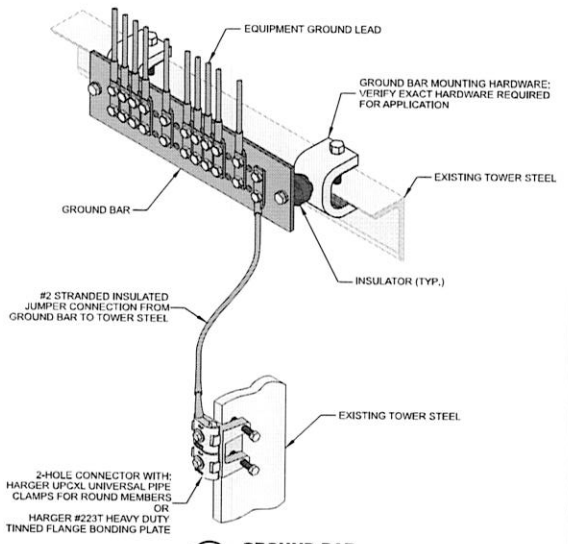
D:\1\28142\Design\CAD\CD Plot\T-901.dgn



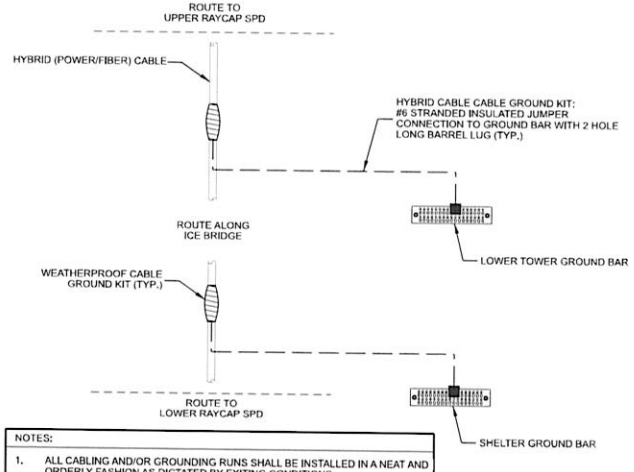
NOTES:

1. ALL CABLING AND/OR GROUNDING RUNS SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION AS DICTATED BY EXITING CONDITIONS.
2. CONTRACTOR SHALL INSTALL PER LATEST EDITION OF THE N.E.C.
3. SCHEMATIC DETAIL ONLY. REFER TO ANTENNA AND EQUIPMENT CONFIGURATION FOR EQUIPMENT QUANTITY AND LOCATION. CONTRACTOR TO VERIFY GROUND BAR CAPACITY AND DETERMINE IF NEW GROUND BAR REQUIRED PRIOR TO CONSTRUCTION.

A **UPPER EQUIPMENT GROUNDING**



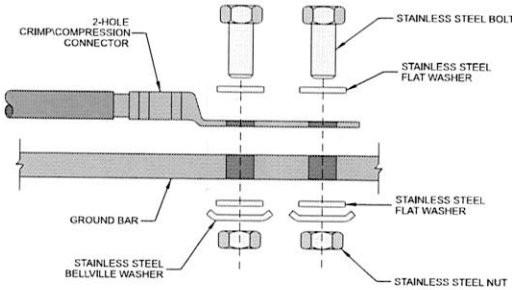
C **GROUND BAR**



NOTES:

1. ALL CABLING AND/OR GROUNDING RUNS SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION AS DICTATED BY EXITING CONDITIONS.
2. CONTRACTOR SHALL INSTALL PER LATEST EDITION OF THE N.E.C.
3. SCHEMATIC DETAIL ONLY. CONTRACTOR TO VERIFY GROUND BAR CAPACITY AND DETERMINE IF NEW GROUND BAR REQUIRED PRIOR TO CONSTRUCTION.

B **LOWER CABLE GROUNDING**



NOTES:

1. ALL OUTDOOR HARDWARE (BOLTS, SCREWS, NUTS, WASHERS) SHALL BE 18-8 STAINLESS STEEL TYPE GRADE, INDOORS, GRADE 5 STEEL HARDWARE MAY BE USED.
2. CHOOSE BOLT LENGTH TO ALLOW THE EXPOSURE OF AT LEAST TWO THREADS.
3. BACK TO BACK LUG CONNECTIONS ARE AN ACCEPTABLE PRACTICE WHEN BONDED TO A GROUND BAR OR STEEL OBJECTS.
4. AT CONNECTIONS MADE TO STEEL OR ANY OTHER DISSIMILAR METALS, A DRAGON TOOTH WASHER MEETING VZW PRACTICES SHALL BE USED BETWEEN THE CONNECTOR AND STEEL.
5. IF NOT USING DRAGON TOOTH WASHERS, THOROUGHLY REMOVE A SECTION OF PAINT OR COATING APPROXIMATELY THE SAME SIZE AS CONNECTOR. REMOVE THE PAINT FROM SURFACE USING A DREMEL TYPE TOOL.
6. USE AN APPROVED ANTI-OXIDATION COMPOUND ON ALL GROUNDING CONNECTIONS. A COPPER COSMOLINE GREASE BASED COMPOUND (NO OX-ID) SHALL BE USED ON ALL COPPER TO COPPER CONNECTIONS. A ZINC BASED (GREY COLORED) COMPOUND SHALL BE USED ON ALL COPPER TO STEEL CONNECTIONS.
7. WHEN BONDING TO A METALLIC OBJECT WHERE ACCESS IS LIMITED TO ONLY ONE SURFACE, DRILLING & TAPPING OR SELF DRILLING SCREWS ARE THE PREFERRED AND ACCEPTABLE MEANS OF CONNECTION. SHEET METAL SCREWS SHALL NOT BE USED.

D **GROUNDING LUG**

CONSULTANT:
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ROLLING MEADOW, IL 60008

GROUNDING DETAILS

88TH & LISBON MFD (FUZE #16274448)
MILWAUKEE, WISCONSIN

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
BJN	03/04/21	REV. A
JSM	08/11/21	REV. 0

CHECKED BY	PCM
PLOT DATE	8/11/2021
PROJECT NUMBER	28142
SET TYPE	FINAL
SHEET NUMBER	**E-501**

SCOPE OF WORK

THE SCOPE OF WORK CONSISTS OF:

EXISTING EQUIPMENT TO BE REMOVED

(9) ANTENNAS, (6) COAX CABLES & (1) HYBRID CABLE
(3) RRUS
(12) DIPLEXERS

NEW EQUIPMENT TO BE INSTALLED

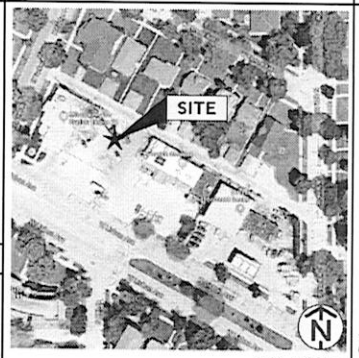
(12) ANTENNAS
(9) RRUS
(3) HYBRID CABLES
(6) COAX CABLES, (3) RAYCAPS
(1) CABLE ENCLOSURE/MANHOLE

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF VERIZON SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

APPROVALS

REAL ESTATE: _____
RF: _____
CONSTRUCTION: _____
OPERATIONS: _____
FACILITIES: _____
EQUIPMENT ENGINEERING: _____

VICINITY MAP



NO SCALE

REGIONAL MAP

NO SCALE

DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP

PROJECT CONSULTANTS

PROJECT MANAGER:	FULLERTON ENGINEERING
ADDRESS:	1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, ILLINOIS 60173
CONTACT:	AARON VALLEY
PHONE:	(847) 908-8453
EMAIL:	avalley@fullertonengineering.com
APPLICANT:	VERIZON PERSONAL COMMUNICATIONS LP d/b/a VERIZON WIRELESS
ADDRESS:	15725 RYERSON RD. NEW BERLIN, WI 53151
ENGINEER/STRUCTURAL:	FULLERTON ENGINEERING
ADDRESS:	1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, ILLINOIS 60173
CONTACT:	DAN SMITH
PHONE:	(847) 908-8521
EMAIL:	dsmith@fullertonengineering.com

MOUNT ANALYSIS STATUS: COMPLETED
MOUNT ANALYSIS RESULTS: PASS
STRUCTURAL ANALYSIS STATUS: COMPLETED
STRUCTURAL ANALYSIS RESULTS:PASS

verizon

VERIZON PERSONAL COMMUNICATIONS LP
d/b/a VERIZON WIRELESS
15725 RYERSON RD.
NEW BERLIN, WI 53151

FULLERTON ENGINEERING DESIGN

1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# 3620-11
www.FullertonEngineering.com

verizon

VERIZON PERSONAL COMMUNICATIONS LP

d/b/a VERIZON WIRELESS
15725 RYERSON RD.
NEW BERLIN, WI 53151

LOCATION NUMBER: 112368
SITE NAME: 88TH & LISBON AVE.
8814 W. LISBON AVE.
MILWAUKEE, WI 53201

PROJECT INFORMATION

SITE NAME:	88TH & LISBON AVE.
LOCATION NUMBER:	112368
SITE ADDRESS:	8814 W. LISBON AVE. MILWAUKEE, WI 53201
PROJECT TYPE:	MODIFICATION
SITE TYPE:	MONOPOLE
COUNTY:	MILWAUKEE
JURISDICTION:	CITY OF MILWAUKEE
SITE COORDINATES:	GOOGLE EARTH
LATITUDE:	43.08342°
LONGITUDE:	-88.0225°
GROUND ELEV. (A.M.S.L.):	757'
TOWER OWNER:	T-MOBLE CENTRAL LLC
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

811 Know what's **below.** **Call** before you dig.

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

BUILDING CODE: 2015 INTERNATIONAL BUILDING CODE

ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE

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

DRAWING INDEX

DRAWING SCALES ARE FOR 11"x17" SHEETS

REV	DATE	DESCRIPTION	BY
A	01/31/18	90% REVIEW	AW
B	5/30/18	REV 90% REVIEW	IH
C	11/27/18	REV 90% REVIEW	IH
D	1/18/19	REV 90% REVIEW	KM
E	2/27/19	REV 90% REVIEW	JPS
0	3/19/19	FINAL	KM

I HEREBY 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 ALL APPLICABLE CODES.

SITE NAME
88TH & LISBON AVE.

LOCATION NUMBER:
112368

SITE ADDRESS
8814 W. LISBON AVE.
MILWAUKEE, WI 53201

SHEET NAME
TITLE SHEET

SHEET NUMBER
T-1

PROJECT# 2017.0339.0090

GENERAL ABBREVIATIONS

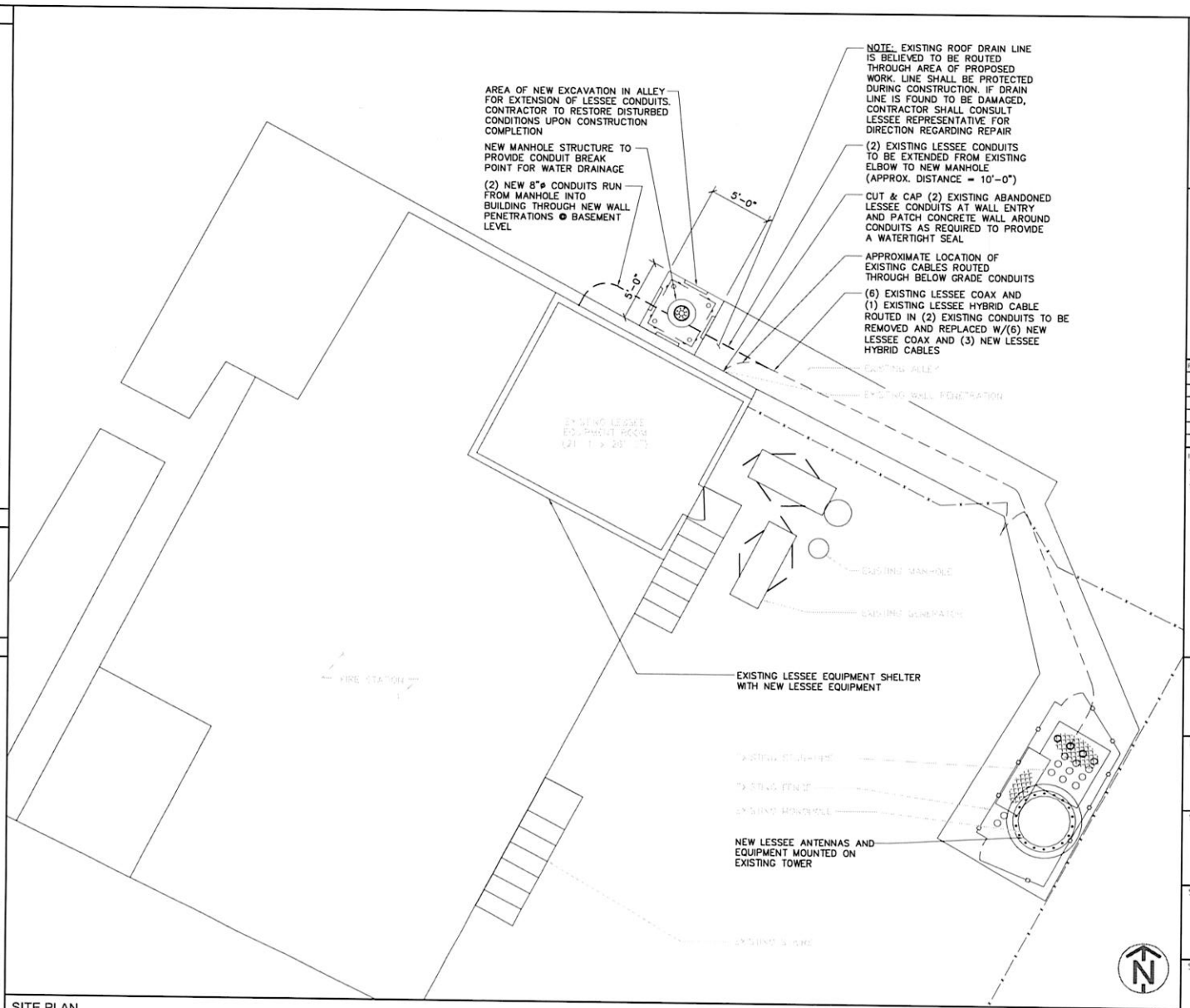
AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
℄	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DIA	DIAMETER
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
LP	LIQUID PROPANE
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERTY LINE
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

TELECOM ABBREVIATIONS

AWS	ADVANCED WIRELESS SERVICES
C	CELLULAR
LTE	LONG TERM EVOLUTION
PCS	PERSONAL COMMUNICATIONS SERVICES
RRH	REMOTE RADIO UNIT
TMA	TOWER MOUNTED AMPLIFIER

SYMBOLS

- REVISION
- WORK POINT
- UTILITY POLE
- BRICK
- COMPRESSED STONE
- CONCRETE
- EARTH
- GRAVEL
- CENTERLINE
- PROPERTY LINE
- LEASE LINE
- EASEMENT LINE
- FENCE
  - CHAINLINK
  - WOOD
  - WROUGHT IRON
- ELECTRIC
  - OVERHEAD
  - UNDERGROUND
- FIBER
  - OVERHEAD
  - UNDERGROUND
- TELEPHONE
  - OVERHEAD
  - UNDERGROUND
- DCPOWER



SITE PLAN

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

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VERIZON PERSONAL COMMUNICATIONS LP
d/b/a VERIZON WIRELESS
15725 RYERSON RD.
NEW BERLIN, WI 53151

FULLERTON ENGINEERING DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# 3620-11
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
A	01/31/18	90% REVIEW	AW
B	5/30/18	REV. 90% REVIEW	IH
C	11/27/18	REV. 90% REVIEW	IH
D	1/18/19	REV. 90% REVIEW	KM
E	2/27/19	REV. 90% REVIEW	JPS
0	3/19/19	FINAL	KM

I HEREBY 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 ALL APPLICABLE CODES.

WISCONSIN
DANIEL W. SMITH
44096-6
SCHAUMBURG, IL
PROFESSIONAL ENGINEER

SITE NAME
88TH & LISBON AVE.

LOCATION NUMBER:
112368

SITE ADDRESS
8814 W. LISBON AVE.
MILWAUKEE, WI 53201

SHEET NAME
SITE PLAN

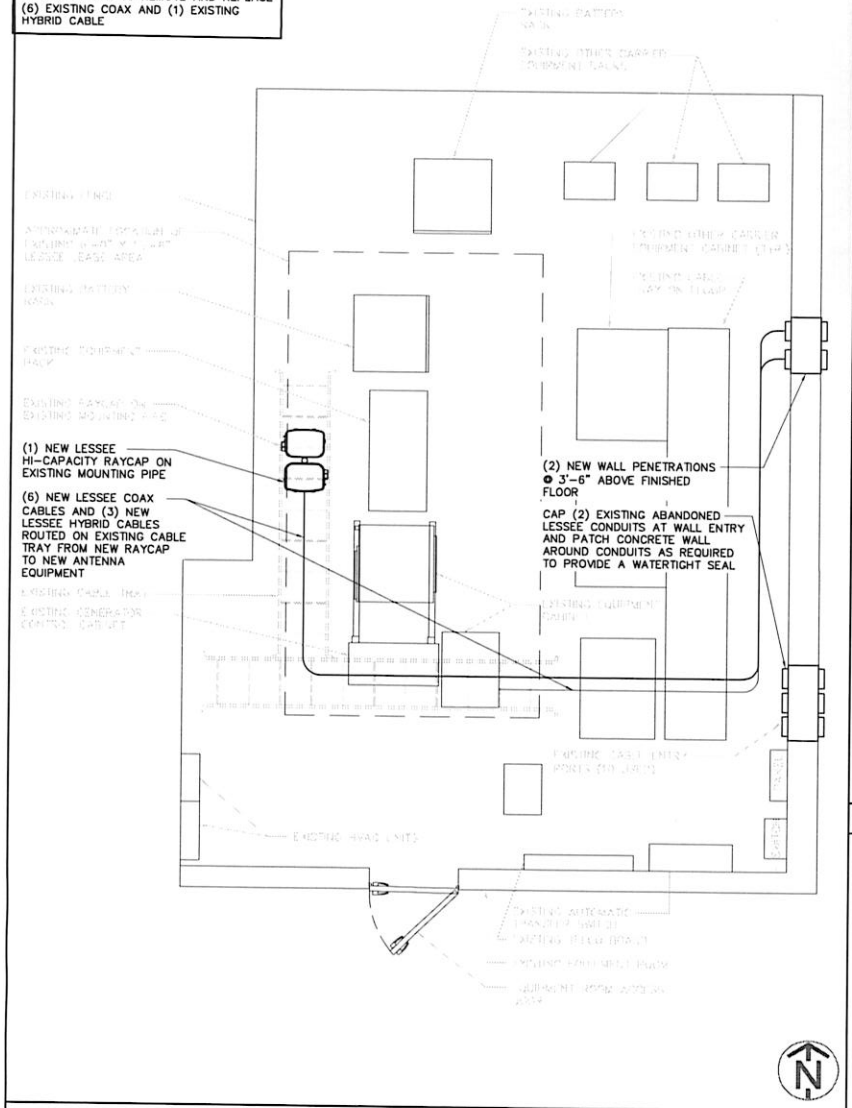
SHEET NUMBER
C-1

PROJECT# 2017.0339.0090

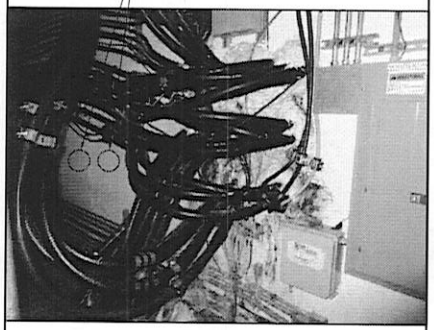
NOTE:

1. (6) EXISTING BIAS-T TO BE REMOVED FROM EXISTING EQUIPMENT RACK

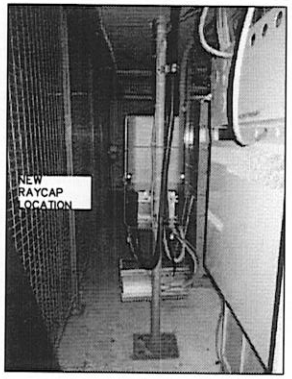
2. CONTRACTOR TO REMOVE AND REPLACE (6) EXISTING COAX AND (1) EXISTING HYBRID CABLE



NEW SHELTER LAYOUT SCALE: 1/4" = 1'-0" | 1

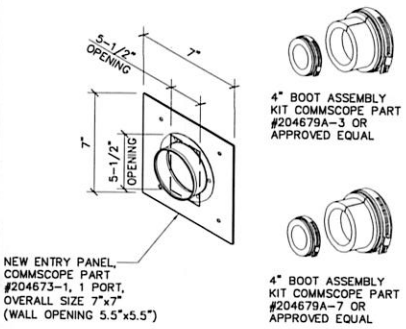


PORT LAYOUT SCALE: N.T.S. | 2



RAYCAP LOCATION SCALE: N.T.S. | 4

NOT USED SCALE: N.T.S. | 5



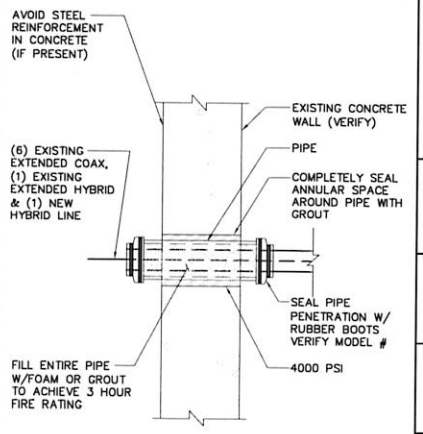
WALL ENTRY PORT DETAIL SCALE: N.T.S. | 3

NOTE:

CONTRACTOR TO X-RAY PRIOR TO DRILLING OR CORING TO LOCATE EXISTING RE-BAR. DO NOT CUT RE-BAR

NOTE:

GROUT AND FIRE RETARDANT SEAL TO ACHIEVE 3-HOUR FIRE RATING



PENETRATION DETAIL SCALE: N.T.S. | 6

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WISCONSIN
DANIEL W. SMITH
44096-6
SCHAUMBURG, IL
PROFESSIONAL ENGINEER

SITE NAME
88TH & LISBON AVE.

LOCATION NUMBER:
112368

SITE ADDRESS
8814 W. LISBON AVE.
MILWAUKEE, WI 53201

SHEET NAME
SHELTER LAYOUT

SHEET NUMBER
C-1A

PROJECT# 2017.0339.0090

STRUCTURAL NOTES:

CONCRETE– 28 DAY COMPRESSIVE F'C=5000 PSI.
- AIR ENTRAINED

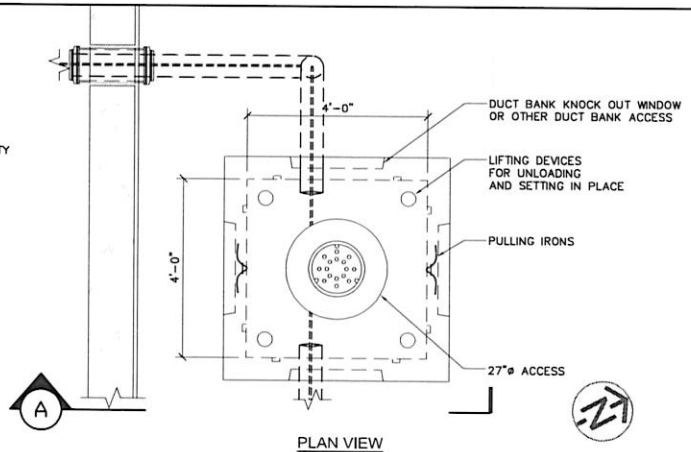
REBAR – ASTM A-615 GRADE 60.

DESIGN – ACI 318-89 BUILDING CODE
- ASTM C-857 MIN. STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY
- HS-20 WHEEL LOAD W/30% IMPACT PER AASHTO
- 120 PCF SOIL DENSITY
- 45 PCF EQUIVALENT FLUID PRESSURE

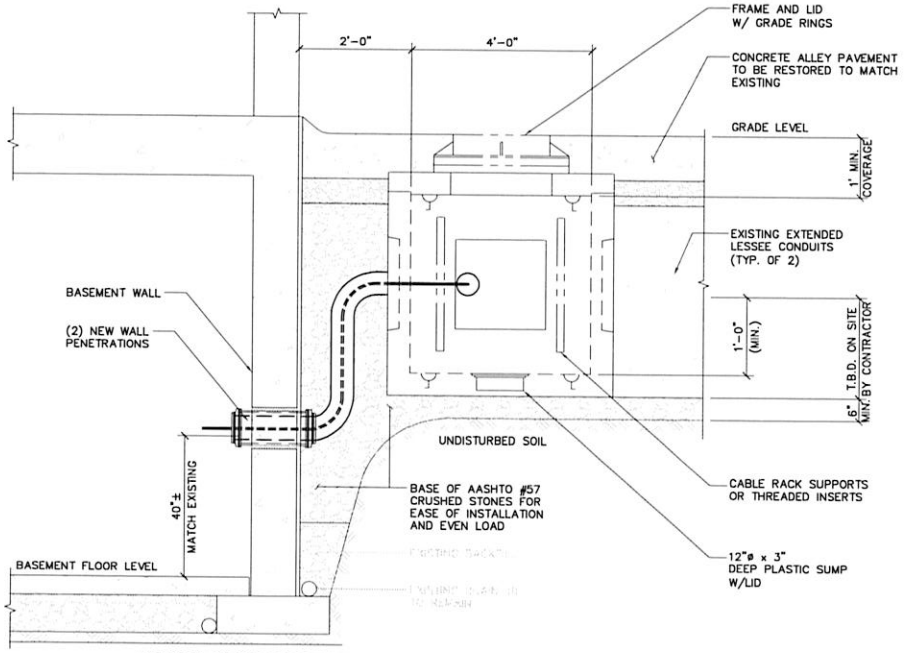
APPROX. WEIGHT:
- TOP SLAB = 1,825 LBS.
- BOTTOM SECTION = 8,700 LBS

NOTE:

MANHOLE STRUCTURE SHALL BE:
ELECTRICAL/UTILITY MANHOLE STANDARD 4'x4'
MADE BY WIESER CONCRETE
W3716 US HWY10.
MAIDEN ROCK, WI 54750
(800) 325-8456
OR APPROVED EQUAL

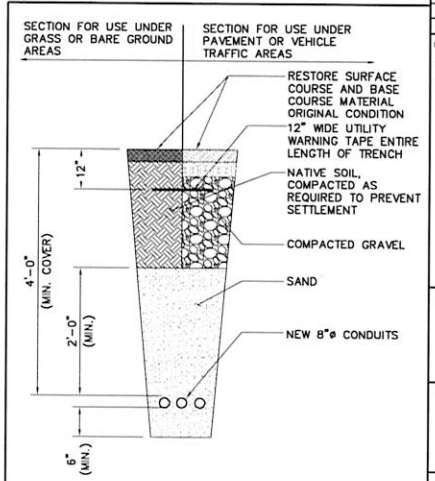


PLAN VIEW



TYPICAL INSTALLATION DETAIL (SECTION A)

ELECTRICAL/ UTILITY HANDHOLE DETAIL SCALE: 3/8" = 1'-0" 1



NOTES:

1. CONTRACTOR TO VERIFY LOCAL UTILITY REQUIREMENTS FOR DEPTH, SIZE & SEPARATION OF CONDUITS PRIOR TO INSTALLATION. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES.
2. CONTRACTOR TO CALL 811, 48 HRS PRIOR TO EXCAVATING FOR UNDERGROUND UTILITY LOCATIONS. LOCATION SURROUNDING EXCAVATED AREA MUST BE PRIVATELY LOCATED FOR NON-PUBLIC UTILITIES.

811 Know what's below. Call before you dig.

TRENCH DETAIL SCALE: N.T.S. 2

verizon

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WISCONSIN DANIEL W. SMITH 44096-6 SCHAUMBURG, IL PROFESSIONAL ENGINEER

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MILWAUKEE, WI 53201

SHEET NAME
SITE DETAILS

SHEET NUMBER
C-4A

PROJECT# 2017.0339.0090

verizon

PAUL J. FORD & COMPANY

Paul J. Ford and Company
250 East Broad Street Suite 600
Columbus, OH 43215
(614)221-6679
jacuna@pauljford.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

Smart Tool Project #: 10032692

Paul J. Ford Project #: 24320-0708.002.7191

January 28, 2021

Site Information	*Site ID:*	*112368-VZW / 88TH LISBON MFD*
	Site Name:	*88TH LISBON MFD*
	Carrier Name:	*Verizon Wireless*
	Address:	*8814 W Lisbon Ave Milwaukee, Wisconsin 53222, Milwaukee County*
	Latitude:	*43.083400°*
	Longitude:	*-88.022580°*
Structure Information	*Tower Type:*	*193-Ft Monopole*
	Mount Type:	*13.58-Ft Platform*

FUZE ID # 16274448

Analysis Results

13.58-Ft Platform: **80.2% Pass**

******Contractor PMI Requirements*:**
Included at the end of this MA report
Available & Submitted via portal at https://pmi.vzwsmart.com
Contractor - Please Review Specific Site PMI Requirements Upon Award
Requirements also Noted on Mount Modification Drawings
Requirements may also be Noted on A & E drawings

Report Prepared By: Jaime Acuna

WISCONSIN
REBEKAH M. DORRIS
E-47595
COLUMBUS, OHIO
PROFESSIONAL ENGINEER

01/28/2021

Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

This analysis is inclusive of the mount structure only, and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	*Verizon RFDS, FUZE 16274448, dated December 4, 2020*
Previous Mount Analysis Report	*Paul J. Ford, Project, Project # 24320-0708.001.7190, dated January 6, 2021*
Site Audit Report	*Terra, Project # 124-1035, dated November 12, 2020*
Mount Specification	*Site Pro 1, P/N # QMSP*
Proposed Mount Modification	*Paul J. Ford, Project, Project # 24320-0708.002.7191, dated January 28, 2021*

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H	
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT}:	106 mph
	Ice Wind Speed (3-sec. Gust):	40 mph
	Design Ice Thickness:	1.50 in
	Risk Category:	II
	Exposure Category:	C
	Topographic Category:	1
	Topographic Feature Considered:	N/A
	Topographic Method:	N/A
	Ground Elevation Factor, K_e:	0.973
Seismic Parameters:	S_S:	0.074
	S_1:	0.048
Maintenance Parameters:	Wind Speed (3-sec. Gust):	30 mph
	Maintenance Live Load, Lv:	250 lbs.
	Maintenance Live Load, Lm:	500 lbs.
Analysis Software:	RISA-3D (V17.0.3)	

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
100.00	102.00	3	Ericsson	VZE01	Added
	100.00	3	Andrew	HBX-9016DS-VTM	
		6	Commscope	NHH-65B-R2B	
		3	Commscope	CDX1923Q-DS-43	
		3	Ericsson	4449	
		6	Ericsson	8843	
		1	Raycap	RCMDC-6627-PF-48	
		1	Raycap	RC3DC-3315-PF-48	Retained
	98.00	3	Ericsson	4408 w/ KRE 105 281/1	Added

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Paul J. Ford and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Paul J. Ford to verify deviation will not adversely impact the analysis.

2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

   Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

   The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped by PJF, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.

5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.

6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
   - Channel, Solid Round, Angle, Unistrut — ASTM A53 (GR 35)
   - Pipe — ASTM A53 (GR 35)
   - HSS (Rectangular), Plate — Q235 Gr B (Fy = 34 ksi, Fu = 58 ksi)
   - HSS (Round) — ASTM A53 (GR 35)
   - Connection Bolts — ASTM A325
   - Threaded Rods — SAE J429 (GR2)
   - U-Bolts — SAE J429 (GR2)
8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Paul J. Ford.

Analysis Results:

Component	Utilization %	Pass/Fail
Face Horizontals	*57.1%*	*Pass*
Bracing Members	*19.6%*	*Pass*
Grating Support Members	*80.2%*	*Pass*
Standoff Members	*42.1%*	*Pass*
Corner Plates	*29.7%*	*Pass*
Mount Pipes	*51.2%*	*Pass*
Mount to Tower Connection	*29.6%*	*Pass*

Structure Rating – *(Controlling Utilization of all Components)*	**80.2%**

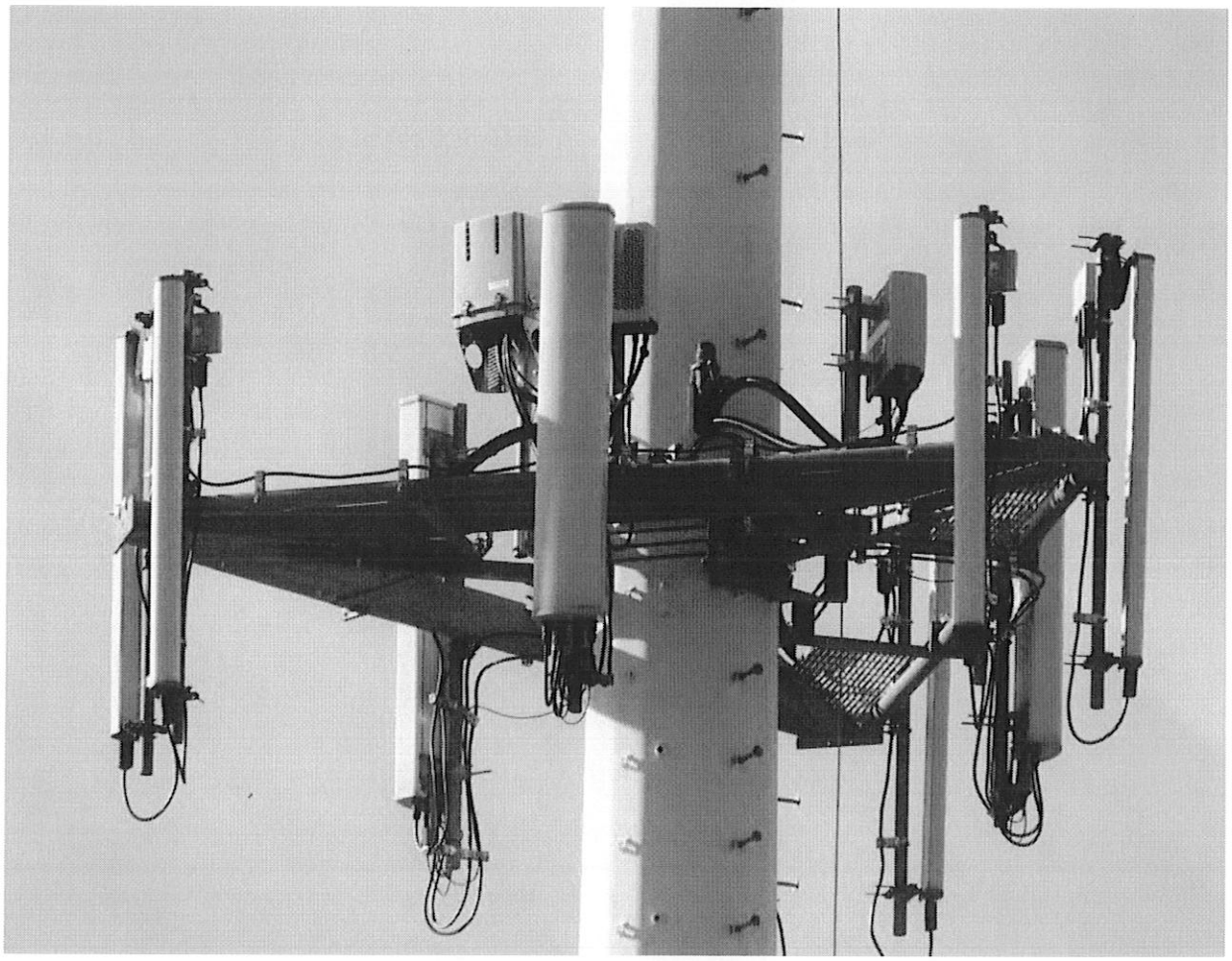
Recommendation:

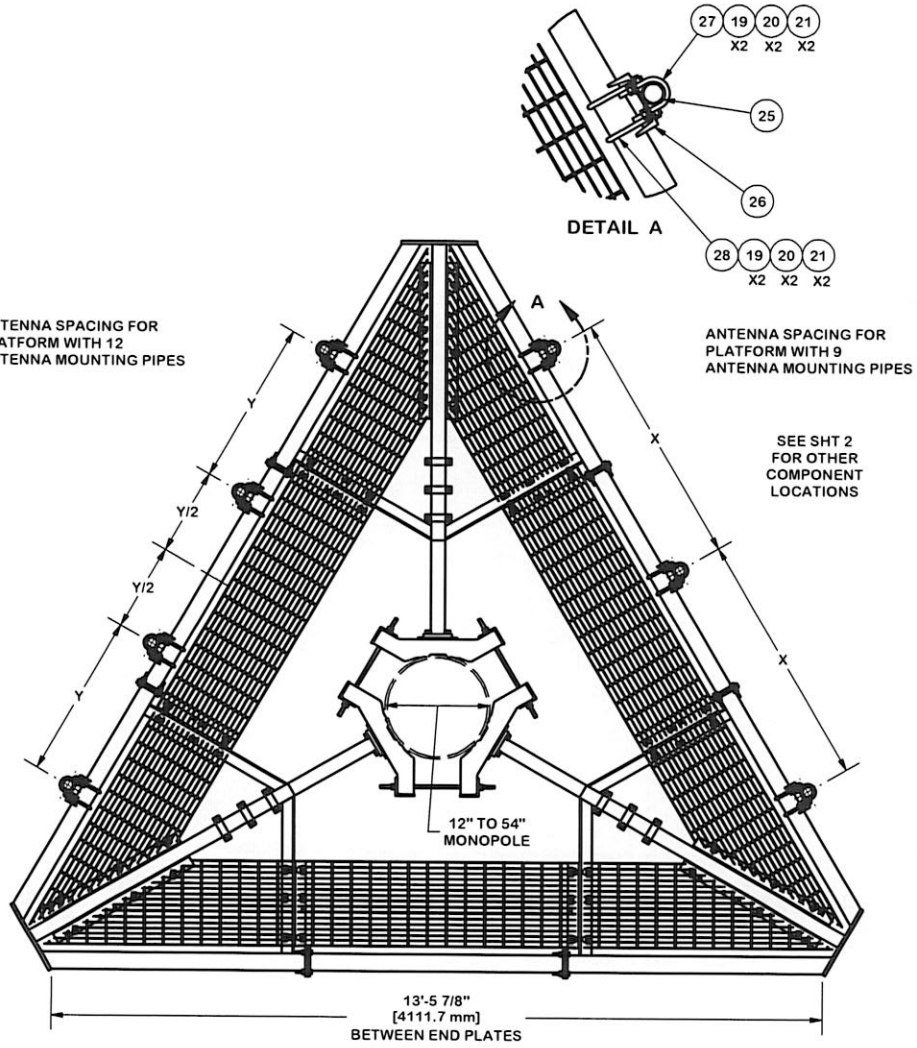
The existing mount will be **SUFFICIENT** for the final loading after the proposed modifications are successfully completed.

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

1. Mount Photos
2. Manufacturer Drawings (for reference only)
3. Analysis Calculations
4. **Contractor Required PMI Report Deliverables**
5. Antenna Placement Diagrams





PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-140649	CORNER SECTION FOR LOW PROFILE PLATFORM		218.70	656.10
2	3	X-140498	RAIL PIPE FOR LOW PROFILE PLATFORM		43.20	129.59
3	3	X-140478	SUPPORT BRACKET WELDMENT FOR PLATFORM		50.72	152.17
4	9	X-140490	FLAT CLAMP FOR CORNER SECTION	5.500 in	1.10	9.91
6	3	X-140486	STEEL GRATING (CENTER PIECE)		44.46	133.39
7	3	X-140484	STEEL GRATING, END PIECE (LEFT HAND)		27.94	83.83
8	3	X-140485	STEEL GRATING, END PIECE (RIGHT HAND)		27.94	83.83
9	54	X-140488	GALVANIZED GRATING CLAMP		0.06	3.14
10	3	X-LWRM	UNIVERSAL RING MOUNT WELDMENT		68.16	204.48
11	6	X-140650	SUPPORT ANGLE FOR CENTER GRATING	34.938 in	4.77	28.62
12	24	G1203	1/2" x 3" HDG HEX BOLT GR5 FULL THREAD	3	0.22	5.21
13	18	G1208	1/2" x 8" HDG HEX BOLT GR5 FULL THREAD	8	0.49	8.88
14	12	G38112	3/8" x 1-1/2" HDG HEX BOLT GR5	1.5"	0.07	0.85
15	12	G38NUT	3/8" HDG HEAVY 2H HEX NUT		0.03	0.41
16	54	G14112	1/4-20 x 1-1/2" HEX BOLT	1.5"	0.03	1.65
17	54	G14LW	1/4-20 LOCKWASHER		0.00	0.13
18	54	G14NUT	1/4-20 HEX NUT		0.01	0.66
19	138	G12FW	1/2" HDG USS FLATWASHER		0.03	4.70
20	138	G12LW	1/2" HDG LOCKWASHER		0.01	1.92
21	138	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	9.88
22	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
23	12	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	1.56
24	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2.25 in.	0.31	3.75
25	B	C	2-3/8" O.D. VERTICAL MOUNT ANTENNA PIPES	D	E	F
26	9	X-SP219	SMALL SUPPORT CROSS PLATE	8.25"	8.61	77.49
26	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.25"	8.61	103.33
27	18	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT	4.5"	0.63	11.34
27	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT	4.5"	0.63	15.00
28	18	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT	6"	0.83	14.94
28	24	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT	6"	0.83	19.88
29	18	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.61
30	18	A58NUT	5/8" HDG A325 HEX NUT		0.13	2.34
31	9	G58R-24	5/8" x 24" THREADED ROD	24"	2.09	18.82
31	9	G58R-48	5/8" x 48" THREADED ROD	48"	4.18	37.63
					TOTAL WT. #	264.35

ASSEMBLY NO. "A"	QTY "B"	PART NO. "C"	LENGTH "D"	UNIT WT. "E"	NET WT. "F"	TOTAL WEIGHT
QMSP-363	9	P263	63"	19.22	172.98	1766.55
QMSP-372	9	P272	72"	21.97	197.73	1791.030
QMSP-384	9	P284	84"	25.63	230.67	1824.24
QMSP-396	9	P296	96"	29.29	263.61	1857.18

ASSEMBLY NO. "A"	QTY "B"	PART NO. "C"	LENGTH "D"	UNIT WT. "E"	NET WT. "F"	TOTAL WEIGHT
QMSP-463	12	P263	63"	19.22	230.64	1824.21
QMSP-472	12	P272	72"	21.97	263.64	1857.21
QMSP-484	12	P284	84"	25.63	307.56	1901.13
QMSP-496	12	P296	96"	29.29	351.48	1945.05

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (±0.030")
DRILLED AND GAS CUT HOLES (±0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (±0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (±0.030")
ALL OTHER ASSEMBLY (±0.060")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UPDATED PARTS LIST & VIEWS		KC8	06/20/2012

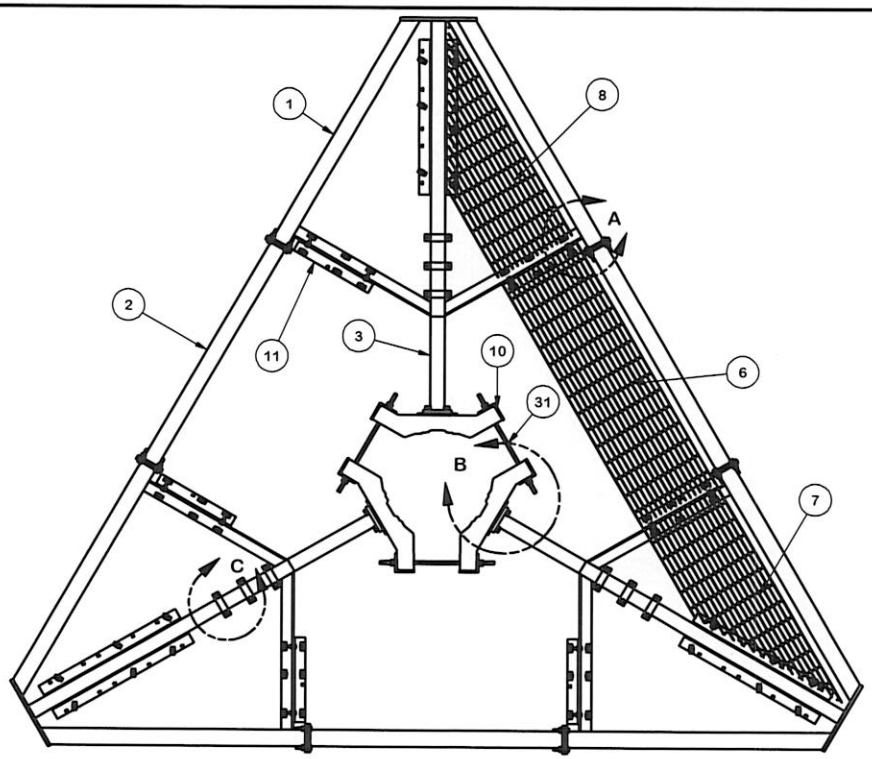
REVISION HISTORY

DESCRIPTION: QUICK-PICK FULL WALKWAY MONOPOLE PLATFORM

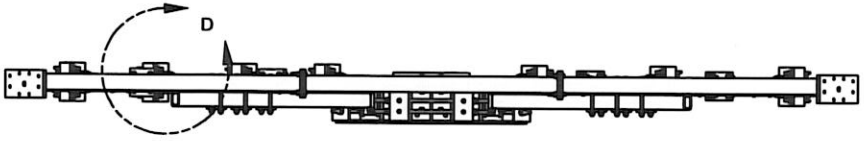
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4537	CEK 5/17/2010		SEE ASSEMBLY "A"

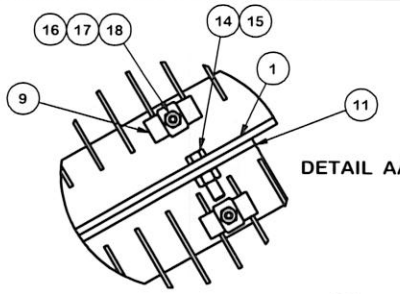
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	CEK 8/23/2012	QMSP

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

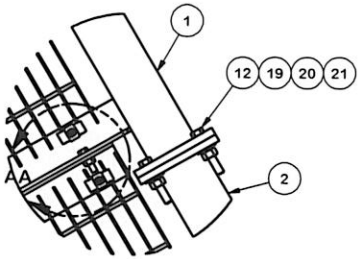


NOTE: ANTENNA PIPES AND MOST OF THE GRATING REMOVED FOR CLARITY.

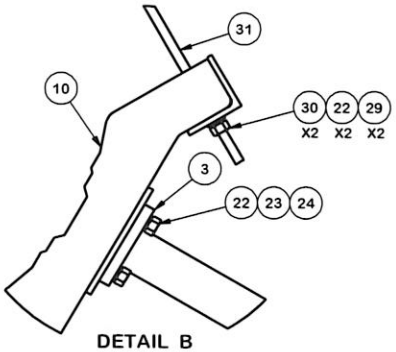




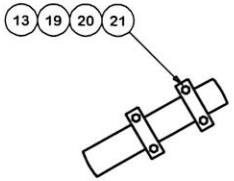
DETAIL AA



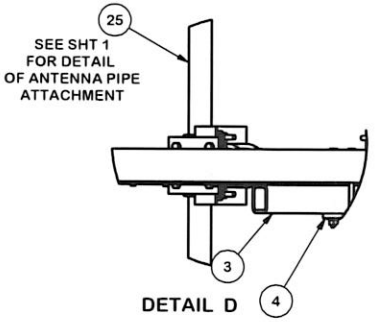
DETAIL A



DETAIL B



DETAIL C



DETAIL D

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (±0.030")
DRILLED AND GAS CUT HOLES (±0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (±0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (±0.030")
ALL OTHER ASSEMBLY (±0.060")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UPDATED VIEWS		KC8	6/20/2012

REVISION HISTORY

DESCRIPTION: QUICK-PICK FULL WALKWAY MONOPOLE PLATFORM

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
4537	CEK 5/17/2010		SEE ASSEMBLY "A"

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	CEK 8/23/2012	QMSP

Structure: 112368-VZW - 88TH LISBON MFD

Sector: A

Structure Type: Monopole

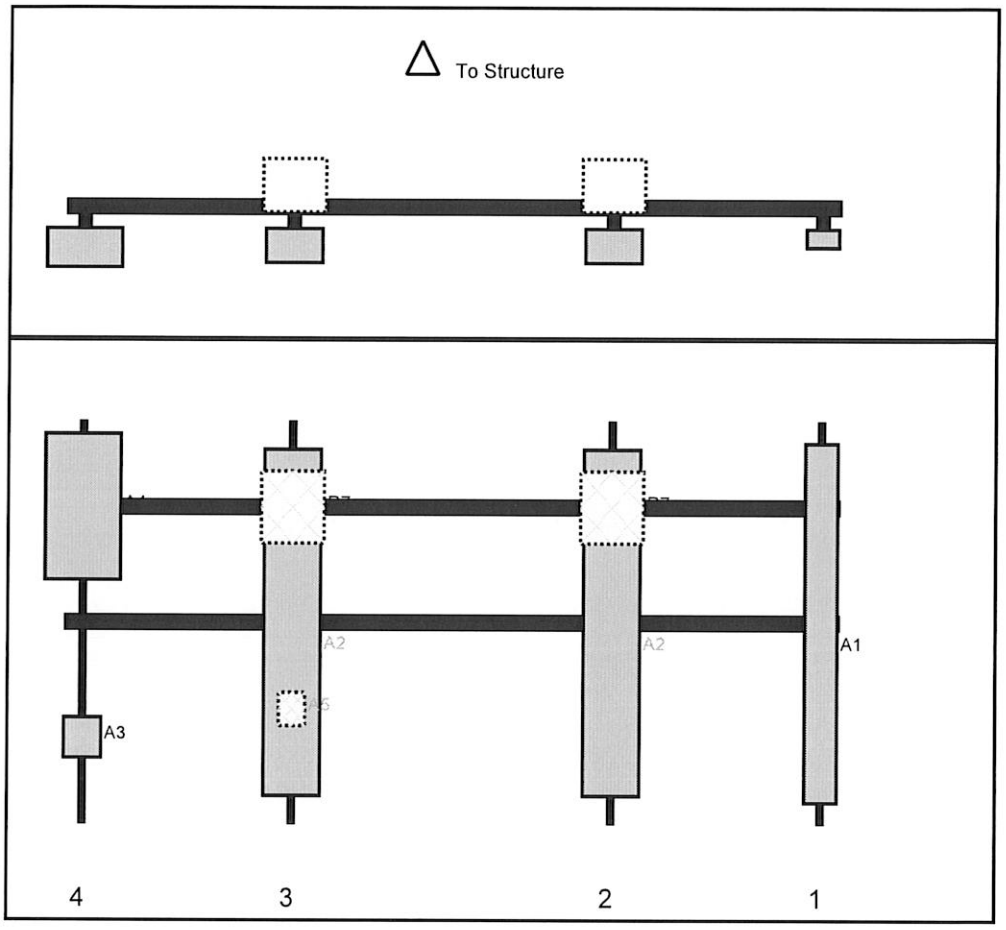
Mount Elev: 97.50

1/28/2021

PAUL J. FORD & COMPANY

Plan View

Front View
Looking at Structure

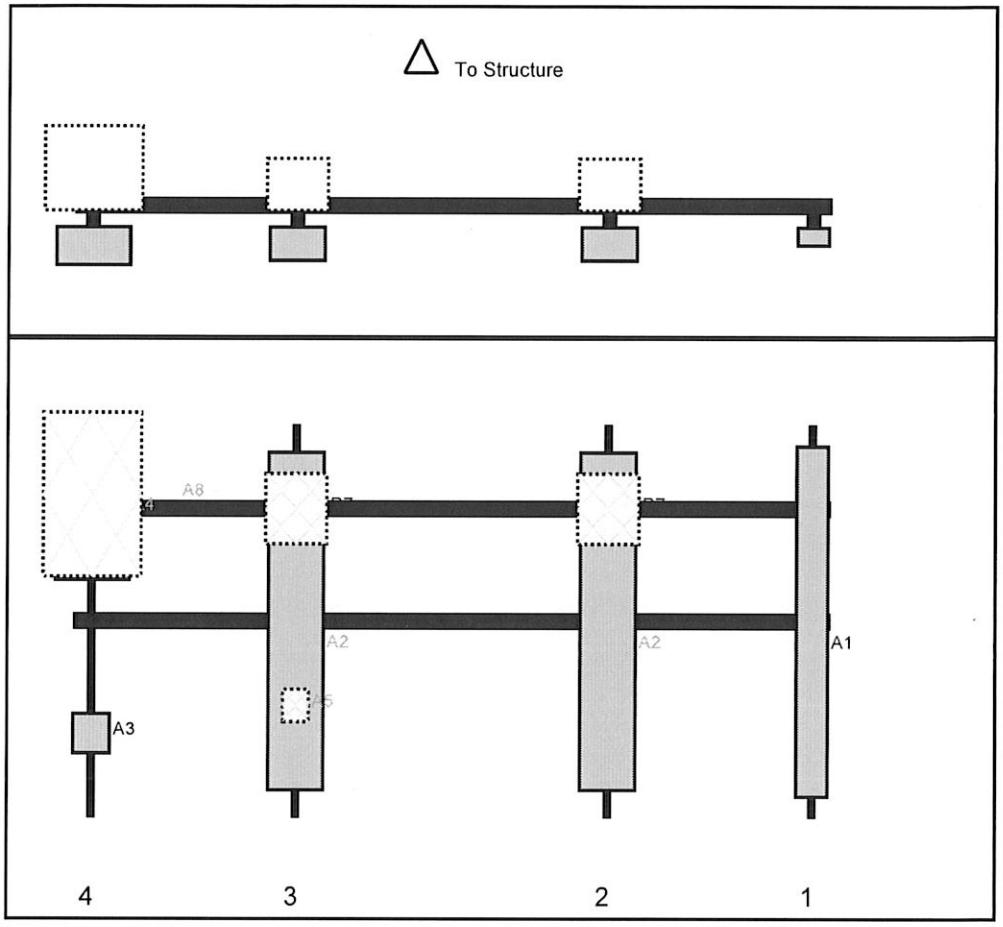


Note:
4449 RRUs NOT SHOWN AS THEY ARE TO BE INSTALLED ON THE STANDOFF PIPES
RC3DC-3315-PF-48 NOT SHOWN AS IS INSTALLED ON THE STANDOFF PIPES

Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A1	HBX-9016DS-VTM	74.7	6.8	159	1	a	Front	42	0	Added	
A2	NHH-65B-R2B	72	11.9	115	2	a	Front	42	0	Added	
R7	8843	15	13.2	115	2	a	Behind	18	0	Added	
A2	NHH-65B-R2B	72	11.9	48	3	a	Front	42	0	Added	
A5	CDX1923Q-DS-43	6.9	5.5	48	3	a	Behind	60	0	Added	
R7	8843	15	13.2	48	3	a	Behind	18	0	Added	
A3	4408 w/ KRE 105 281/1	8.4	7.9	4	4	a	Front	66	0	Added	
A4	VZE01	30.4	15.9	4	4	a	Front	18	0	Added	

Plan View

Front View
Looking at Structure



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RC3DC-3315-PF-48 NOT SHOWN AS IS INSTALLED ON THE STANDOFF PIPES

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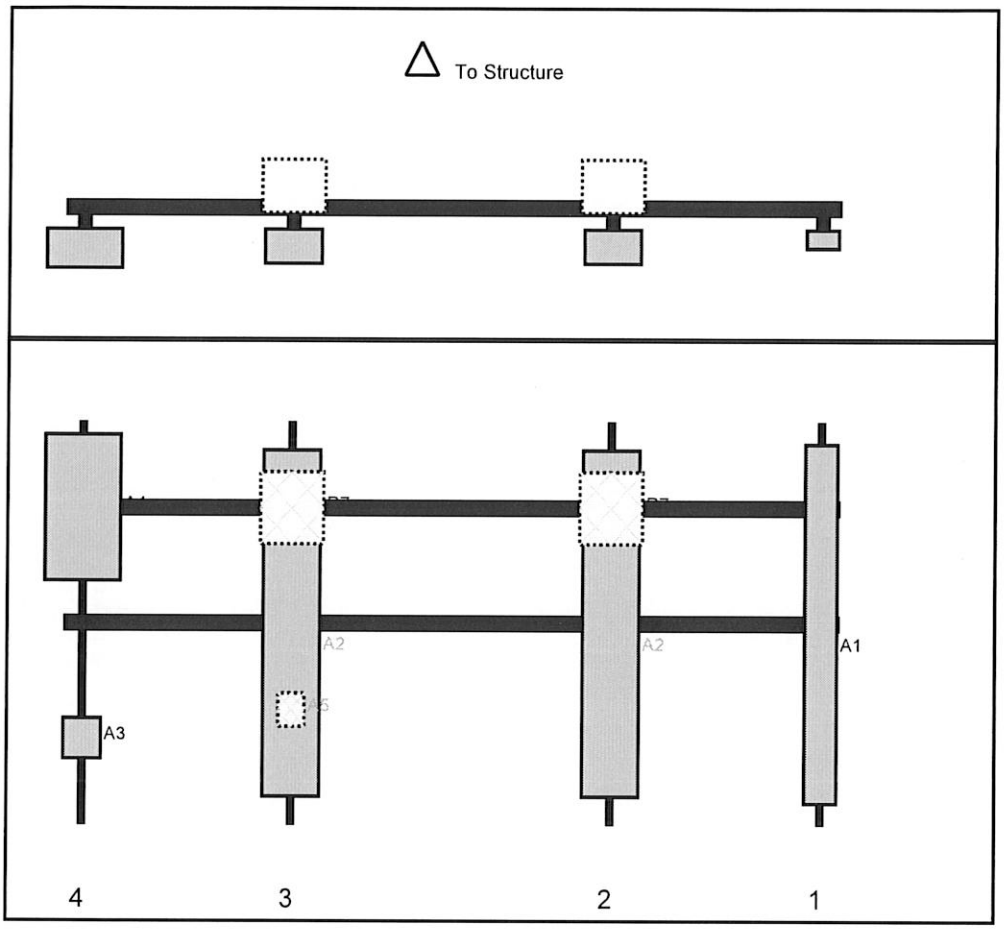
A2	NHH-65B-R2B	72	11.9	115	2	a	Front	42	0	Added	
R7	8843	15	13.2	115	2	a	Behind	18	0	Added	
A2	NHH-65B-R2B	72	11.9	48	3	a	Front	42	0	Added	
A5	CDX1923Q-DS-43	6.9	5.5	48	3	a	Behind	60	0	Added	
R7	8843	15	13.2	48	3	a	Behind	18	0	Added	
A3	4408 w/ KRE 105 281/1	8.4	7.9	4	4	a	Front	66	0	Added	
A4	VZE01	30.4	15.9	4	4	a	Front	18	0	Added	
A8	RCMDC-6627-PF-48	35	21	4	4	a	Behind	15	0	Added	

Plan View

Front View
Looking at Structure



Note:
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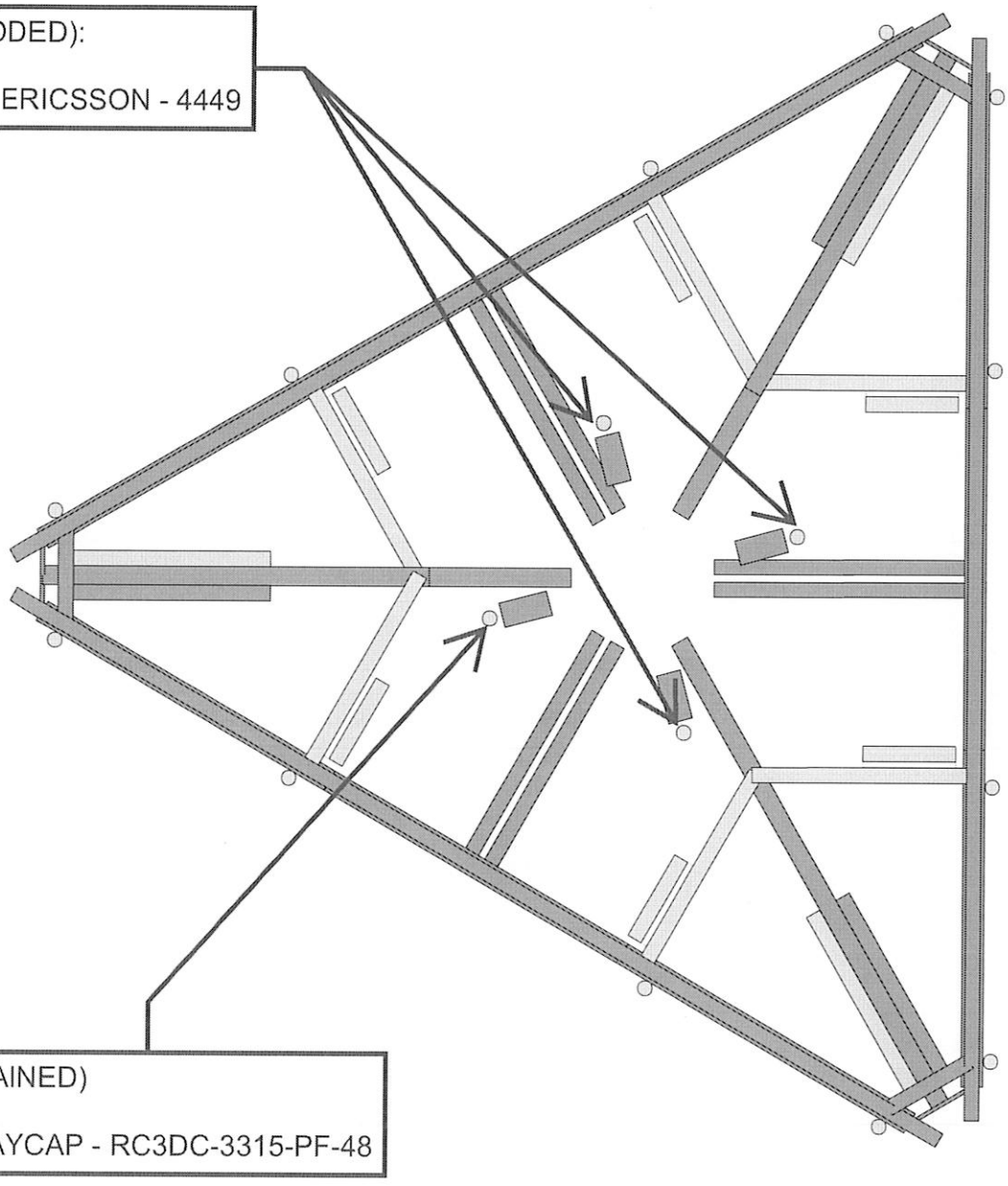
R7	8843	15	13.2	115	2	a	Behind	18	0	Added	
A2	NHH-65B-R2B	72	11.9	48	3	a	Front	42	0	Added	
A5	CDX1923Q-DS-43	6.9	5.5	48	3	a	Behind	60	0	Added	
R7	8843	15	13.2	48	3	a	Behind	18	0	Added	
A3	4408 w/ KRE 105 281/1	8.4	7.9	4	4	a	Front	66	0	Added	
A4	VZE01	30.4	15.9	4	4	a	Front	18	0	Added	

PLATFORM MOUNT PLAN VIEW



Paul J. Ford & Company	112368-VZW_MT_LO_H	SK - 1
JAB		Jan 28, 2021 at 11:27 AM
Project No. 10032692		112368-VZW_MT_LO_H.r3d

EXHIBIT "C-2"

DESCRIPTION OF LESSEE'S REVISED EQUIPMENT

Total of Twelve (12) Antennae:

Three (3) Andrew HBX-9016DS-VTM
Six (6) Andrew NHH-65B-R2B
Three (3)-Ericsson AIR6649 Antenna/RRU (VZWE01)

Necessary Ancillary Equipment, including but not limited to the following:

Three (3) Commscope CDX193Q-DS-43 Diplexers
Three (3) Ericsson 4408 B48 DC RRU w/ KRE105281/1 (Mounted w/AIR6649)
Three (3) Ericsson 4449 RRU
Six (6) Ericsson 8843 RRU
One (1) Raycap 6627
One (1) Raycap 3315
Six (6) 1 5/8" Coaxial Cable
Two (2) 1.5" Hybrid Cable