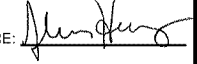


I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE: 
 NAME: Joshua Herzog
 DATE: 10-26-2021
 LICENSE NUMBER: 42392
 STRUCTURAL #: 211426

DESIGN 1
 9973 VALLEY VIEW RD.
 EDEN PRAIRIE, MN 55344
 (952) 903-9299
 WWW.DESIGN1EP.COM

verizon
 10801 BUSH LAKE ROAD
 BLOOMINGTON, MN 55438
 (952) 946-4700

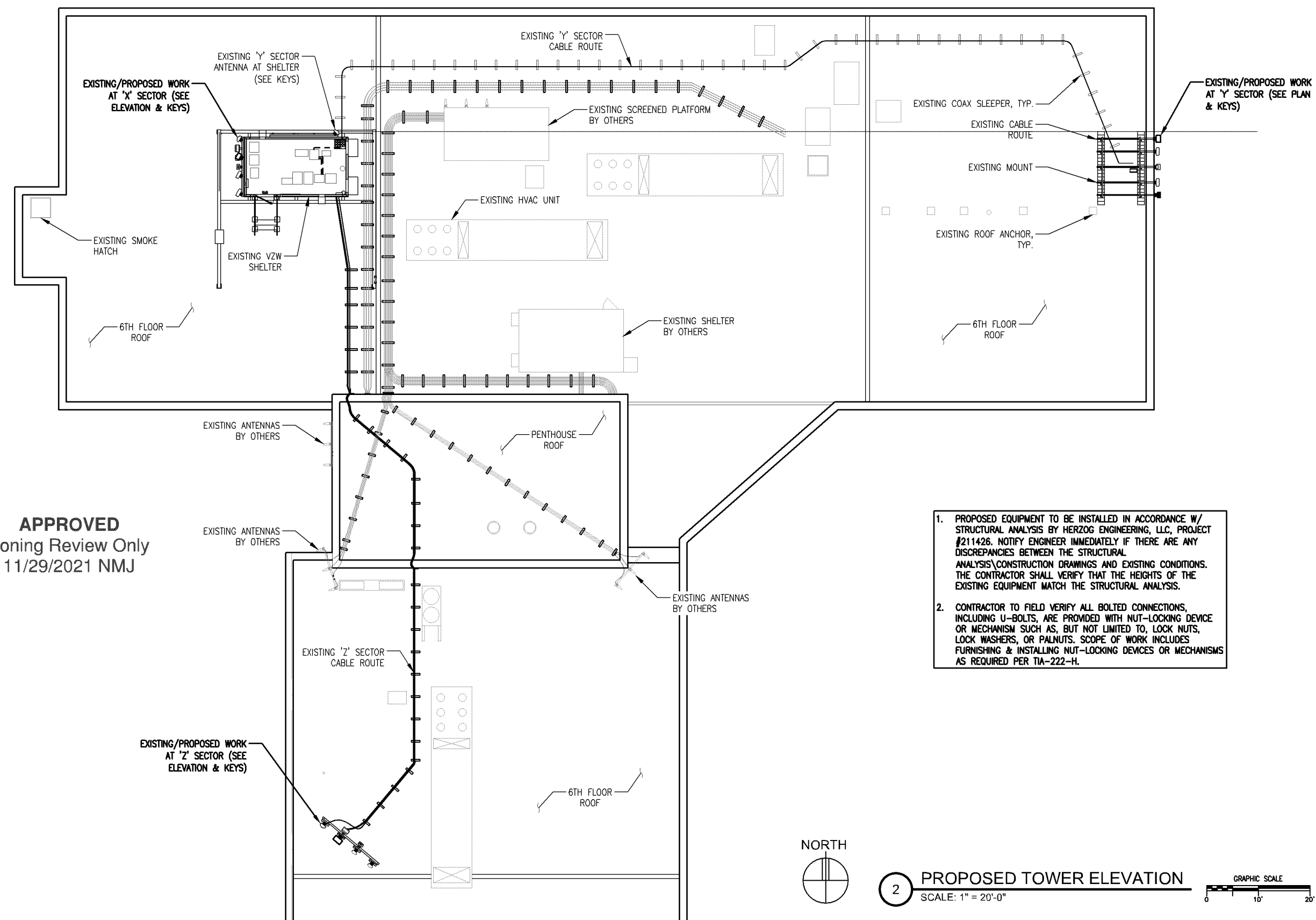
PROJECT
 20212249150
 LOC. CODE # 140361

MIN
 KILLEBREW
 C-BAND

2051 KILLEBREW DRIVE
 BLOOMINGTON, MN 55425

SHEET CONTENTS:
 TOWER ELEVATIONS
 NOTES

DRAWN BY: SJD
 CHECKED BY: KNE
 REV. A 09-20-21
 REV. B 09-28-21
 REV. 0 10-26-21

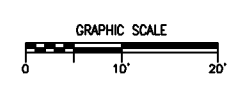


APPROVED
 Zoning Review Only
 11/29/2021 NMJ

1. PROPOSED EQUIPMENT TO BE INSTALLED IN ACCORDANCE W/ STRUCTURAL ANALYSIS BY HERZOG ENGINEERING, LLC, PROJECT #211426. NOTIFY ENGINEER IMMEDIATELY IF THERE ARE ANY DISCREPANCIES BETWEEN THE STRUCTURAL ANALYSIS\CONSTRUCTION DRAWINGS AND EXISTING CONDITIONS. THE CONTRACTOR SHALL VERIFY THAT THE HEIGHTS OF THE EXISTING EQUIPMENT MATCH THE STRUCTURAL ANALYSIS.
2. CONTRACTOR TO FIELD VERIFY ALL BOLTED CONNECTIONS, INCLUDING U-BOLTS, ARE PROVIDED WITH NUT-LOCKING DEVICE OR MECHANISM SUCH AS, BUT NOT LIMITED TO, LOCK NUTS, LOCK WASHERS, OR PALNUTS. SCOPE OF WORK INCLUDES FURNISHING & INSTALLING NUT-LOCKING DEVICES OR MECHANISMS AS REQUIRED PER TIA-222-H.

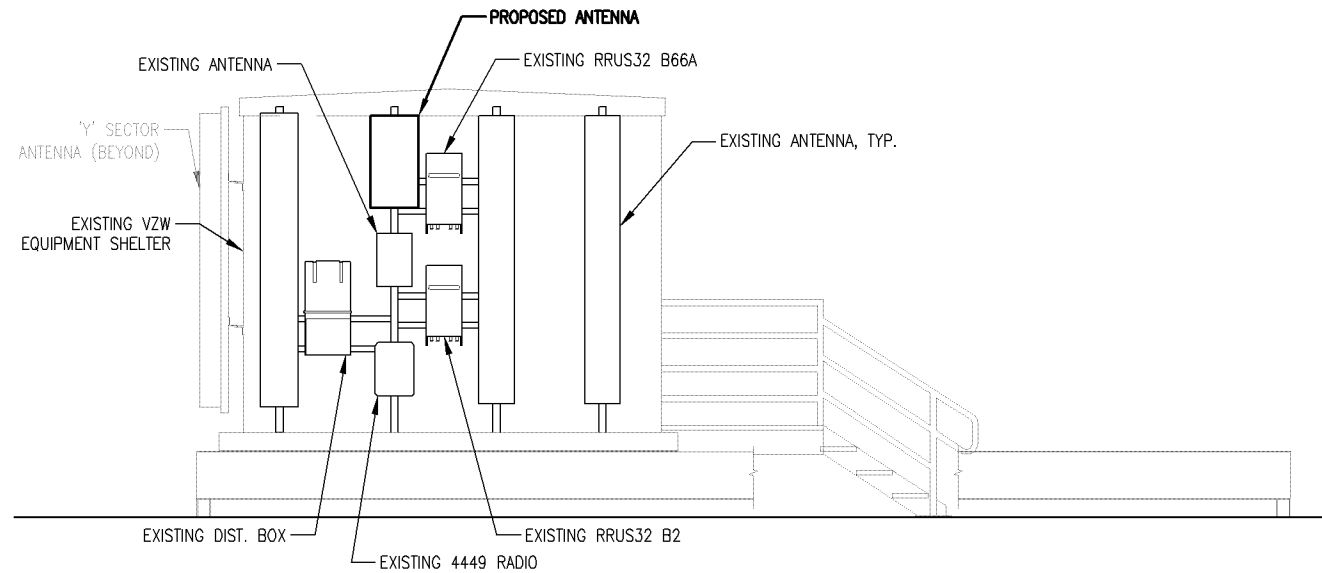


2 PROPOSED TOWER ELEVATION
 SCALE: 1" = 20'-0"

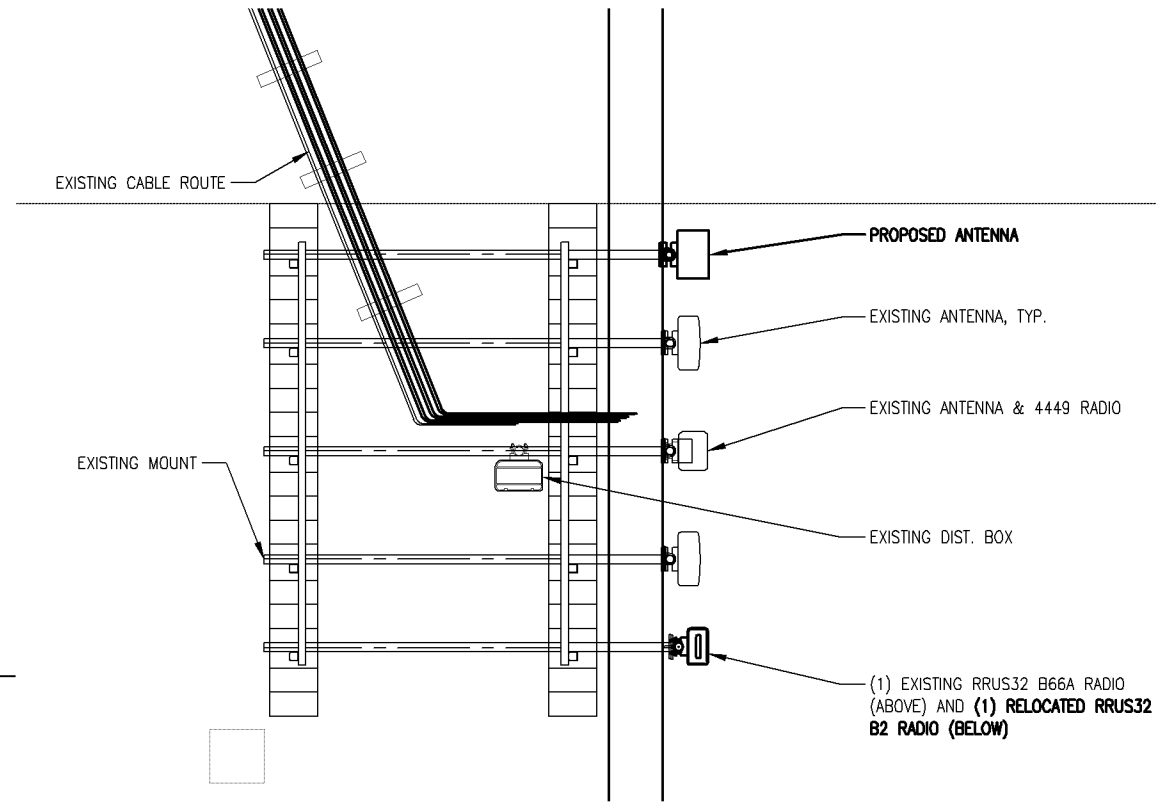
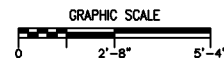


A-1

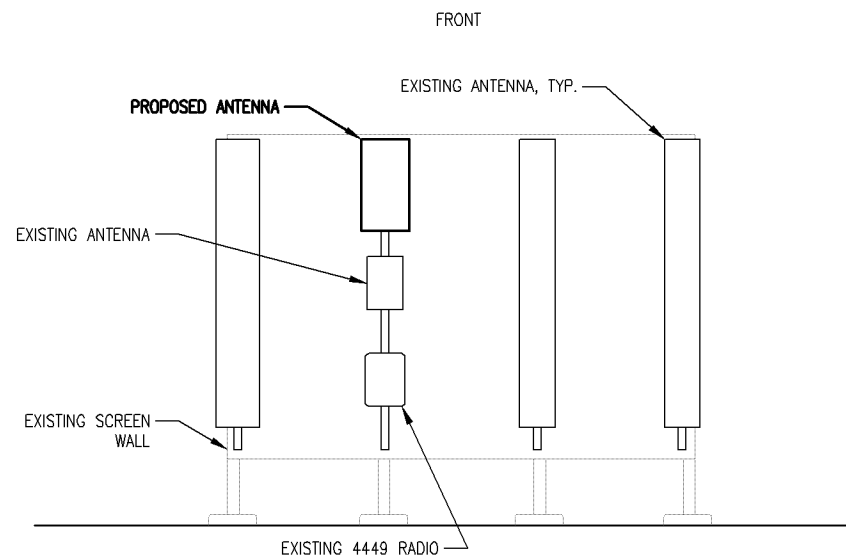
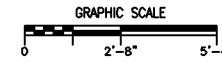
CASE #PL2021-239



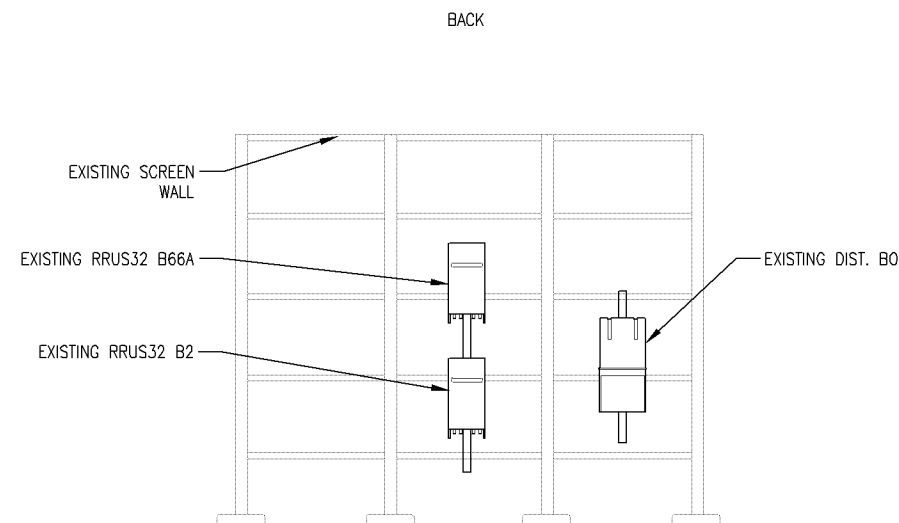
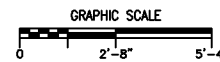
1 'X' SECTOR ELEVATION
SCALE: 3/16" = 1'-0"



2 'Y' SECTOR PLAN
SCALE: 3/16" = 1'-0"



3 'Z' SECTOR ELEVATIONS
SCALE: 3/16" = 1'-0"



APPROVED
Zoning Review Only
11/29/2021 NMJ

HERZOG
ENGINEERING LLC
530 North 3rd Street, Suite 230
Minneapolis, MN 55401
(612) 844 - 1234

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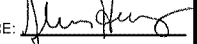
PROJECT
20212249150
LOC. CODE # 140361

MIN
KILLEBREW
C-BAND
2051 KILLEBREW DRIVE
BLOOMINGTON, MN 55425

SHEET CONTENTS:
SECTOR ELEVATIONS
SECTOR PLAN

DRAWN BY:	SJD
CHECKED BY:	KNE
REV. A	09-20-21
REV. B	09-28-21
REV. 0	10-26-21

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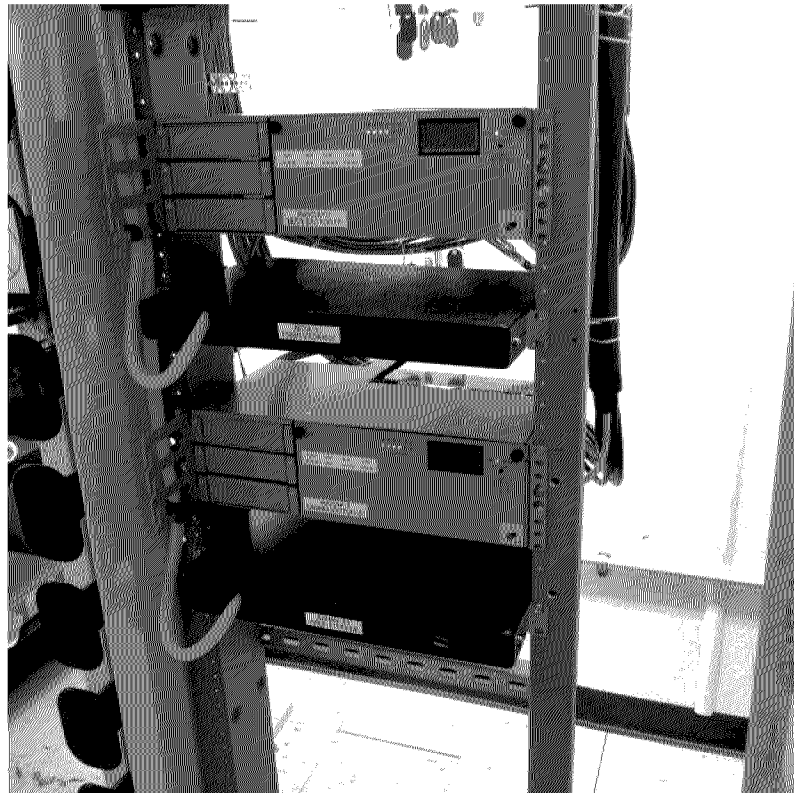
MIN
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C-BAND

2051 KILLEBREW DRIVE
BLOOMINGTON, MN 55425

SHEET CONTENTS:
PROPOSED KEYS

DRAWN BY:	SJD
CHECKED BY:	KNE
REV. A	09-20-21
REV. B	09-28-21
REV. 0	10-26-21

SECTOR	ANTENNA KEY											CABLE KEY						EQUIPMENT KEY									
	AZIMUTH	POSITION	QTY	MANUFACTURER	MODEL	MOD TYPE	ANTENNA LENGTH	ANTENNA TIP	ANTENNA CENTER	ELEC DOWNTILT	MECH DOWNTILT	STATUS	QTY.	COAX TYPE	MANUFACTURER	MODEL	DIELECTRIC	DIAMETER (INCH)	RUN (FEET)	STATUS	QTY.	MANUFACTURER	MODEL	FIBER FEED TAIL	RRU PORT	STATUS	
X	308°	1.1	1	COMMSCOPE	NHH-45C-R2B_PORT	700/850 +45	96"	81'	77'	7'	0'	EXISTING	-	-	-	-	-	-	-	-	1	ERICSSON	4449	COMMSCOPE FIBER FEED TAIL	1	EXISTING	
	-	1.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HFT410-4SHVY-15	2	-	
	-	1.3	-	-	3RD PORT	AWS LTE +45	-	-	-	4'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	EXISTING	
	-	1.4	-	-	4TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	1.5	-	-	5TH PORT	AWS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	1.6	-	-	6TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	300°	2.1	1	COMMSCOPE	NHH-45C-R2B_PORT	700/850 +45	96"	81'	77'	7'	0'	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	3	-	
	-	2.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CONNECT TO REMAINING 4449	4	-
	-	2.3	-	-	3RD PORT	PCS LTE +45	-	-	-	4'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
	-	2.4	-	-	4TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	2.5	-	-	5TH PORT	PCS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	2.6	-	-	6TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	300°	3	1	ERICSSON	KRE 101 2251/2	CBRS	17.7"	77.8'	77'	0'	0'	EXISTING	-	-	-	-	-	-	-	-	-	1	-	-	FIBER FEED TAIL	-	EXISTING
	300°	4.1	1	JMA	X7CQAP-86-865-VR4	FUTURE	96"	81'	77'	-	-	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	4.2	-	-	2ND PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	4.3	-	-	3RD PORT	CDMA	-	-	-	6'	0'	-	-	1	MAIN	ANDREW	AVA5-50	FOAM	7/8"	40'	EXISTING	-	-	-	-	-	-	-
-	4.4	-	-	4TH PORT	CDMA	-	-	-	-	-	-	-	1	MAIN	ANDREW	AVA5-50	FOAM	7/8"	40'	EXISTING	-	-	-	-	-	-	-
-	4.5	-	-	5TH PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	4.6	-	-	6TH PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
300°	5	1	ERICSSON	AR 6449 B77D	C-BAND	30.6"	81'	79.7'	6'	0'	PROPOSED	-	-	-	-	-	-	-	-	-	1	-	-	FIBER FEED TAIL, COMMSCOPE MODEL #HFT410-3SBJ1-15	-	PROPOSED	
Y	90°	1.1	1	COMMSCOPE	NHH-45B-R2B_PORT	700/850 +45	72"	71'	68'	7'	0'	EXISTING	-	-	-	-	-	-	-	-	1	ERICSSON	4449	COMMSCOPE FIBER FEED TAIL	1	EXISTING	
	-	1.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HFT410-4SHVY-15	2	-
	-	1.3	-	-	3RD PORT	AWS LTE +45	-	-	-	4'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
	-	1.4	-	-	4TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	1.5	-	-	5TH PORT	AWS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	1.6	-	-	6TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	90°	2.1	1	COMMSCOPE	NHH-45B-R2B_PORT	700/850 +45	72"	71'	68'	7'	0'	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	3	-	
	-	2.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CONNECT TO REMAINING 4449	4	-
	-	2.3	-	-	3RD PORT	PCS LTE +45	-	-	-	4'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
	-	2.4	-	-	4TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	2.5	-	-	5TH PORT	PCS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	2.6	-	-	6TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	90°	3	1	ERICSSON	KRE 101 2251/2	CBRS	17.7"	68.8'	68'	0'	0'	EXISTING	-	-	-	-	-	-	-	-	-	1	-	-	FIBER FEED TAIL	-	EXISTING
	45°	4.1	1	JMA	X7CQAP-86-865-VR4	FUTURE	96"	81'	77'	-	-	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	4.2	-	-	2ND PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	4.3	-	-	3RD PORT	CDMA	-	-	-	6'	0'	-	-	1	MAIN	ANDREW	AVA5-50	FOAM	7/8"	25'	EXISTING	-	-	-	-	-	-	-
-	4.4	-	-	4TH PORT	CDMA	-	-	-	-	-	-	-	1	MAIN	ANDREW	AVA5-50	FOAM	7/8"	25'	EXISTING	-	-	-	-	-	-	-
-	4.5	-	-	5TH PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	4.6	-	-	6TH PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
90°	5	1	ERICSSON	AR 6449 B77D	C-BAND	30.6"	69.3'	68'	6'	0'	PROPOSED	-	-	-	-	-	-	-	-	-	1	-	-	FIBER FEED TAIL, COMMSCOPE MODEL #HFT410-3SBJ1-15	-	PROPOSED	
Z	220°	1.1	1	COMMSCOPE	NHH-65C-R2B_PORT	700/850 +45	96"	81'	77'	4'	0'	EXISTING	-	-	-	-	-	-	-	-	1	ERICSSON	4449	COMMSCOPE FIBER FEED TAIL	1	EXISTING	
	-	1.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HFT410-4SHVY-15	2	-
	-	1.3	-	-	3RD PORT	AWS LTE +45	-	-	-	4'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	
	-	1.4	-	-	4TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	1.5	-	-	5TH PORT	AWS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	1.6	-	-	6TH PORT	AWS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	220°	2.1	1	COMMSCOPE	NHH-65C-R2B_PORT	700/850 +45	96"	81'	77'	4'	0'	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	3	-	
	-	2.2	-	-	2ND PORT	700/850 -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CONNECT TO REMAINING 4449	4	-
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	-	2.4	-	-	4TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(1) COMMSCOPE Rxx412-4S29-15	2	-
	-	2.5	-	-	5TH PORT	PCS LTE +45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER FEED TAIL SECT. BOX TO RRU	3	-
	-	2.6	-	-	6TH PORT	PCS LTE -45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
	220°	3	1	ERICSSON	KRE 101 2251/2	CBRS	17.7"	77.8'	77'	0'	0'	EXISTING	-	-	-	-	-	-	-	-	-	1	-	-	FIBER FEED TAIL	-	EXISTING
	220°	4.1	1	JMA	X7CQAP-86-865-VR4	FUTURE	96"	81'	77'	-	-	EXISTING	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	4.2	-	-	2ND PORT	FUTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	4.3	-	-	3RD PORT	CDMA	-	-	-	4'	0'	-	-	1	MAIN	ANDREW	AVA7-50	FOAM	1-5/8"	180'	EXISTING	-	-	-	-	-		



1 RAYCAP PHOTO

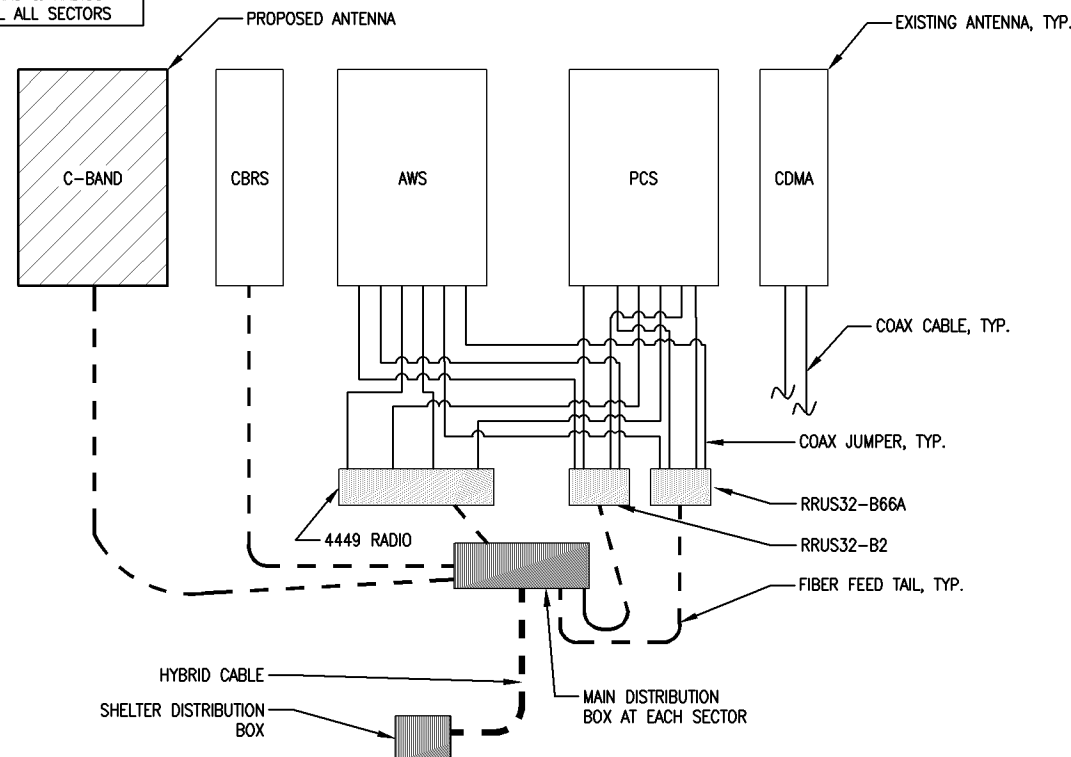


2 CABLE PORT PHOTO



3 POWERSHIFT PHOTO

NOTE:
ONE-LINE DIAGRAM
ANTENNAS & RADIOS
TYPICAL ALL SECTORS



4 ONE-LINE DIAGRAM
SCALE: NTS

General Notes:

- In the event that Special Inspections are not performed in compliance with the contract terms, bid specifications and/or specified form, the General Contractor will be liable for all damages, construction performance, failures, and corrective actions related to the same.
- The following general notes shall apply to drawings and govern unless otherwise noted or specified.
- The work delineated in these drawings and described in the specifications shall conform to codes, standards and regulations that have jurisdiction in the state of MN, and the city of BLOOMINGTON.
- Requirements and regulations pertaining to R.F. safety codes and practices must be incorporated in the work even though they may not be listed individually and separately in either the drawings or the specifications.
- Compare field conditions with drawings. Any discrepancies shall be directed to the Designer/Engineer for clarification prior to fabrication and/or construction. Submit necessary shop drawings prior to fabrication for approval by the Designer/Engineer. No information or details on these sheets may be used without the permission of the owner, or the Designer/Engineer.
- Do not scale drawings!
- Unless otherwise shown or noted, typical details shall be used where applicable.
- Details shall be considered typical at similar conditions.
- Safety measures: The contractor shall be solely and completely responsible for the conditions of the job site, including safety of the persons and property and for independent engineering reviews of these conditions. The job site review is not intended to include review of the adequacy of the contractor's safety measures.
- Within these plans and specifications, "Owner" implies VERIZON WIRELESS.
- The work is the responsibility of the general contractor unless noted otherwise.
- The terms "contractor" and "g.c." refer to the owner's general contractor and the general contractor's sub-contractors. It is the general contractor's responsibility to determine the division of work among sub-contractors.
- The general contractor is responsible in obtaining necessary public and private underground utility locate services prior to start of excavating / construction.



HERZOG
ENGINEERING LLC

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Minneapolis, MN 55401
(612) 844 - 1234

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NAME: Joshua Herzog

DATE: 10-26-2021

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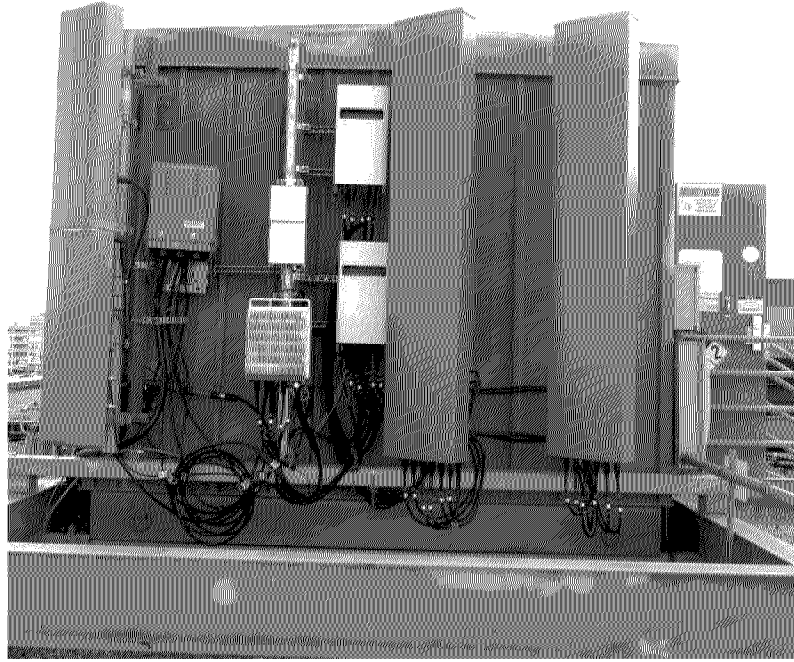
PROJECT
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MIN
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SHEET CONTENTS:
ONE-LINE DIAGRAM
GENERAL NOTES
PHOTOS

DRAWN BY: SJD
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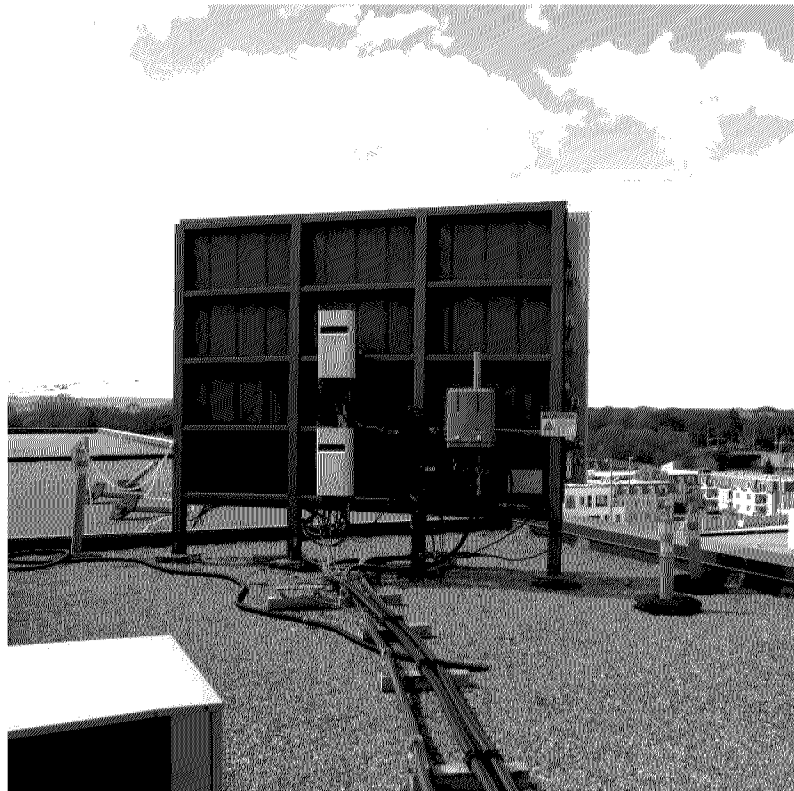
1 'X' SECTOR PHOTO



2 'Y' SECTOR ANTENNA



3 'Y' SECTOR PHOTO



4 'Z' SECTOR PHOTO



5 'Z' SECTOR PHOTO



6 'Y' SECTOR FRAME

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20212249150
LOC. CODE # 140361

MIN
KILLEBREW
C-BAND

2051 KILLEBREW DRIVE
BLOOMINGTON, MN 55425

SHEET CONTENTS:
PHOTOS

DRAWN BY:	SJD
CHECKED BY:	KNE
REV. A	09-20-21
REV. B	09-28-21
REV. 0	10-26-21