



DISH Wireless L.L.C. SITE ID:

DNDEN00353B

DISH Wireless L.L.C. SITE ADDRESS:

**7109 MARSHBERN CT
(SOUTH OF CR 50 - HOGDEN RD)
COLORADO SPRINGS, CO 80908**

COLORADO SPRINGS, CO CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-0	EXISTING SURVEY
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A-4	EQUIPMENT DETAILS
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PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.
6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION REMOVAL AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR 1.61000 (B)(7).

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:

- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) PROPOSED STANDOFF ARMS SABRE C10837002C-32788 (1 PER SECTOR)
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:

- INSTALL (1) PROPOSED CONCRETE PAD
- INSTALL (1) PROPOSED CABLE TRAY
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED SAFETY SWITCH (IF REQUIRED)
- INSTALL (1) PROPOSED CIENA BOX (IF REQUIRED)
- INSTALL (1) PROPOSED DISCONNECT
- EXISTING EMPTY METER SOCKET AVAILABLE

SITE PHOTO



UNDERGROUND SERVICE ALERT
UTILITY NOTIFICATION CENTER OF COLORADO
(800) 922-1987
WWW.COLORADO811.ORG



CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

SITE INFORMATION

PROPERTY OWNER: AMERICAN TOWERS LLC
ADDRESS: PO BOX 723597
ATLANTA GA, 31139-0597

TOWER TYPE: SELF SUPPORT

TOWER CO SITE ID: 88791

TOWER APP NUMBER: 13696472

COUNTY: EL PASO

LATITUDE (NAD 83): 39° 02' 46.5" N
39.046250 N

LONGITUDE (NAD 83): 104° 41' 39.9" W
-104.694406 W

ZONING JURISDICTION: EL PASO COUNTY

ZONING DISTRICT: RR-5

PARCEL NUMBER: 5132000002

OCCUPANCY GROUP: U

CONSTRUCTION TYPE: II-B

POWER COMPANY: MOUNTAIN VIEW ELECTRIC
ASSOCIATION INC.

TELEPHONE COMPANY: TBD

PROJECT DIRECTORY

APPLICANT: DISH Wireless L.L.C.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

TOWER OWNER: AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN, MA 01801
JANELLE RENNER
(360) 600-6799

SITE DESIGNER: INFINIGY ENGINEERING, PLLC
PAUL DANNEBERG
(206) 375-3798

SITE ACQUISITION: ASHLEY WALLS /
EMILY SNOW
TBD

CONSTRUCTION MANAGER: SCOTT TOMLINSON
TBD

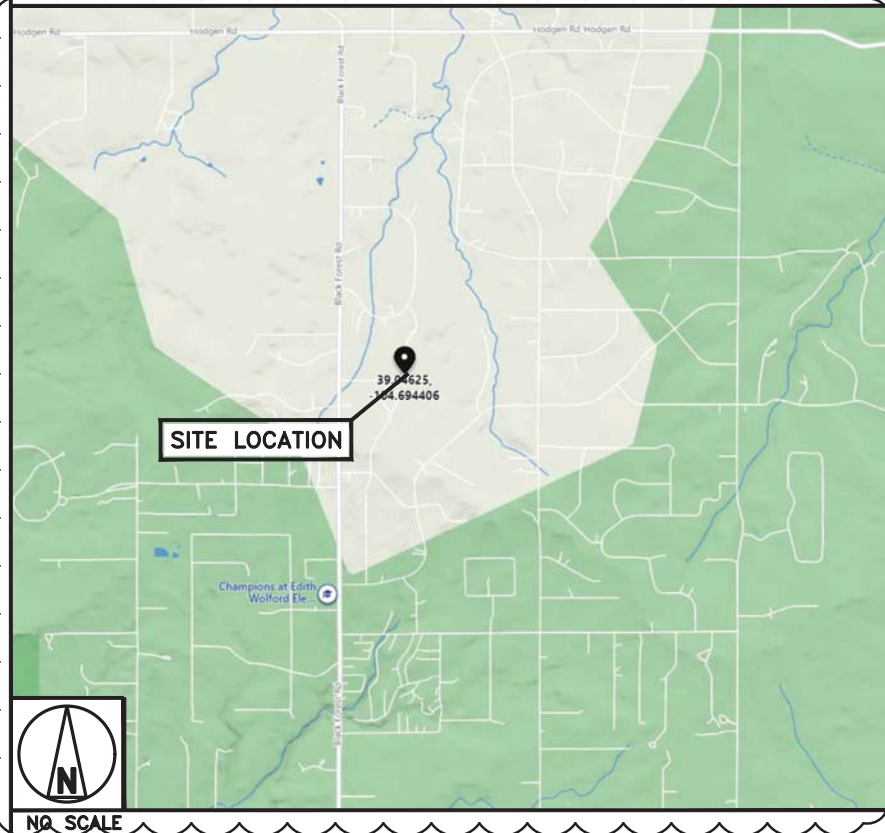
RF ENGINEER: ROBERT CARISTAN
TBD

DIRECTIONS

DIRECTIONS FROM DENVER INTERNATIONAL AIRPORT:

HEAD SOUTH TOWARD PEÑA BLVD (95 FT) FOLLOW E-470 S AND CO-83 S TO HODGEN RD IN BLACK FOREST 1 HR (63.6 MI) CONTINUE ONTO PEÑA BLVD (SIGNS FOR I-70/AIRPORT EXIT/AIRPORT RETURN TO TERMINAL) (4.1 MI) TAKE EXIT 6A TOWARD I-70 S (0.5 MI) KEEP LEFT AT THE FORK AND MERGE ONTO E-470 S (14.1 MI) KEEP LEFT TO STAY ON E-470 S (2.5 MI) KEEP LEFT TO STAY ON E-470 S (5.5 MI) TAKE EXIT 5 FOR CO-83/PARKER ROAD (0.4 MI) USE THE LEFT 2 LANES TO TURN LEFT ONTO CO-83 S/S PARKER RD (7.1 MI) CONTINUE STRAIGHT ONTO CO-83 S/N STATE HWY 83 (29.4 MI) FOLLOW HODGEN RD AND BLACK FOREST RD TO WYANDOTT DR (6.0 MI) TURN LEFT ONTO HODGEN RD (3.3 MI) TURN RIGHT ONTO BLACK FOREST RD (2.2 MI) TURN LEFT ONTO SNOW MASS DR (0.2 MI) TURN LEFT ONTO WYANDOTT DR (0.3 MI)

VICINITY MAP



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DRAWN BY: AS CHECKED BY: PP APPROVED BY: CW

RFDS REV #: 0

CONSTRUCTION DOCUMENTS

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1	11/16/2021	ISSUED FOR CONSTRUCTION

ATC PROJECT NUMBER
88791-13696472

DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HODGEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE
TITLE SHEET

SHEET NUMBER

T-1

BLACK FOREST, AMERICAN TOWER CORPORATION
TELECOMMUNICATION FACILITY

A PARCEL OF LAND SITUATE IN NORTH 1/2 OF THE SOUTHWEST 1/4 OF SECTION 32,
TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO.

LEGAL DESCRIPTION:

Part of the North half of the Southwest quarter of Section 32 in Township 11 South, Range 65 West of the 6th P.M., described as follows: Beginning at a point distance North 89°40' East 1699.0 feet and North 0°20' West 33 feet from the Southwest corner of the North Half of the Southwest Quarter of the said Section 32, thence North 0°20' West 208.7 feet; thence North 89°40' East 208.7 feet; thence South 0°20' East 208.7 feet; thence South 89°40' West 208.7 feet to the point of beginning, containing 1.0 acre of land, also a right of way and easement 33 feet in width for the construction, operation and maintenance of (a) a roadway suitable for vehicular traffic and (b) such aerial or underground electric power and communications lines as the grantee may from time to time desire, consisting of poles, wires, cables, conduits, guy anchors and other fixtures and appurtenances, the center of which right of way and easement is described as follows: Beginning at a point on the West boundary of the above described tract distant Northerly 16-1/2 feet from the Southwest corner thereof and running thence S.89°40' W. a distance of 1699.0 feet to a point on the West boundary of Section 32, Township 11 South, Range 65 West, which is distant Northerly 49-1/2 feet from the Southwest corner of the North half of the Southwest Quarter of said Section 32, situate in El Paso County, Colorado.

CERTIFICATION:

I, Harold J. Ponslerella, Registered Land Surveyor in the State of Colorado, do hereby certify that the tract shown on the accompanying plat was surveyed under my direct supervision and that said plat accurately shows the described tract of land and the subdivision thereof, and that the requirements of title 38 of the Colorado revised statutes, 1999, as amended, have been met to the best of my knowledge and belief.

Date 7-7-2000

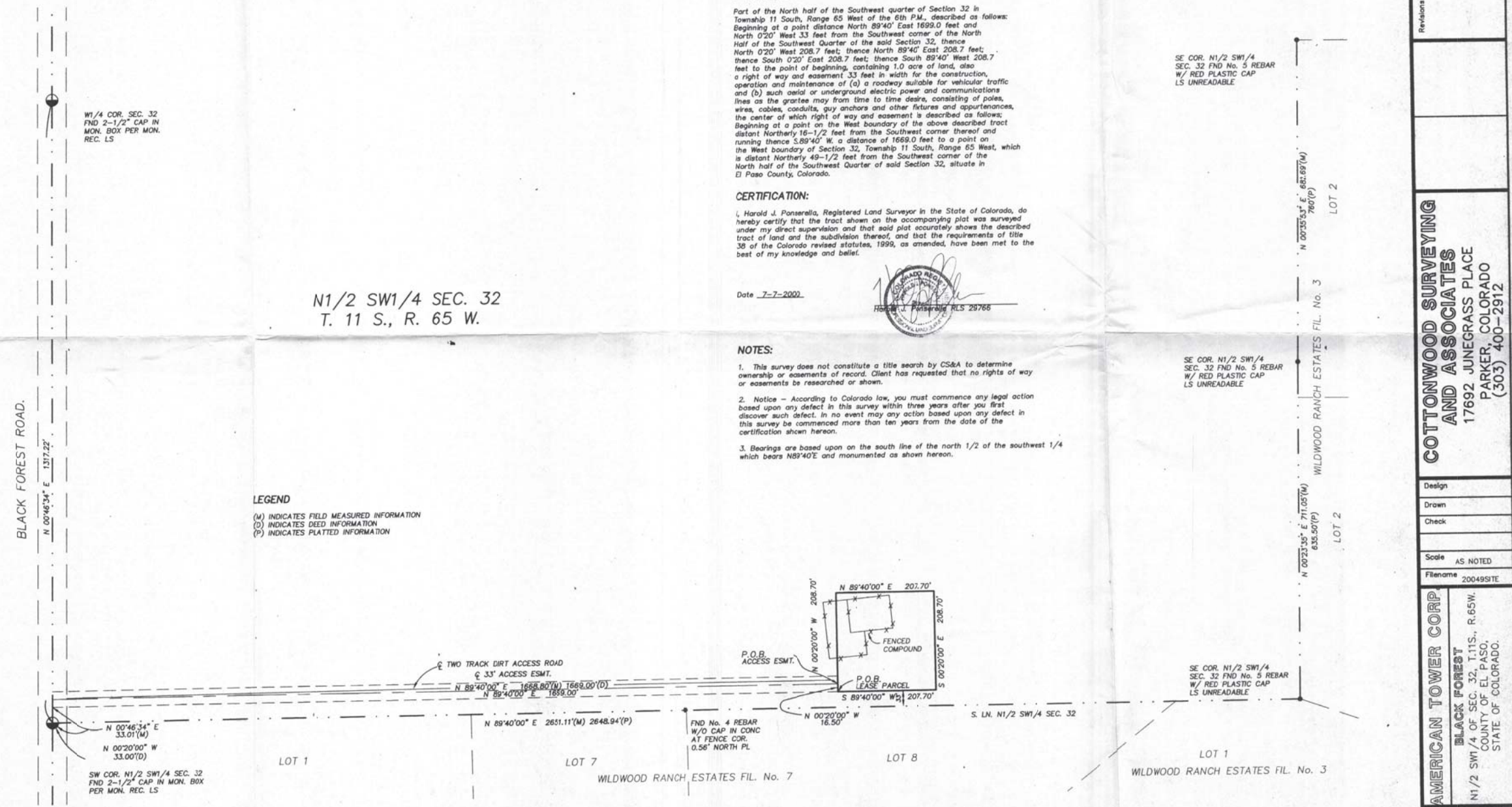


NOTES:

- This survey does not constitute a title search by CS&A to determine ownership or easements of record. Client has requested that no rights of way or easements be researched or shown.
- Notice - According to Colorado law, you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.
- Bearings are based upon on the south line of the north 1/2 of the southwest 1/4 which bears N89°40'E and monumented as shown hereon.

LEGEND

- (M) INDICATES FIELD MEASURED INFORMATION
(D) INDICATES DEED INFORMATION
(P) INDICATES PLATTED INFORMATION



COTTONWOOD SURVEYING
AND ASSOCIATES
17692 JUNEGRASS PLACE
PARKER, COLORADO
(303) 400-2912

AMERICAN TOWER CORP.
BLACK FOREST
N1/2 SW1/4 OF SEC. 32, T.11S., R.65W.
COUNTY OF EL PASO,
STATE OF COLORADO.

Date 7-7-2000
Job No. 20049
Sheet 1 of 1

EXISTING SURVEY

NO SCALE

1



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FOR REFERENCE
ONLY

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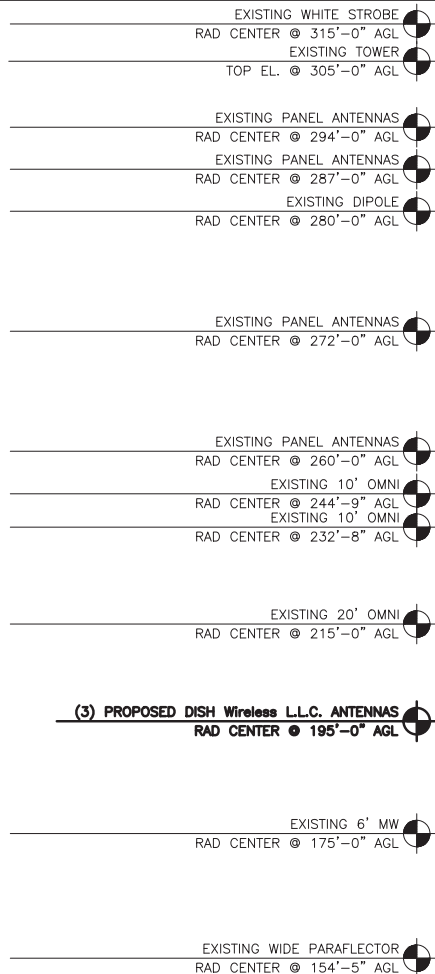
DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE
EXISTING SURVEY

SHEET NUMBER
A-0

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

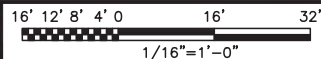


EXISTING SELF-SUPPORT TOWER

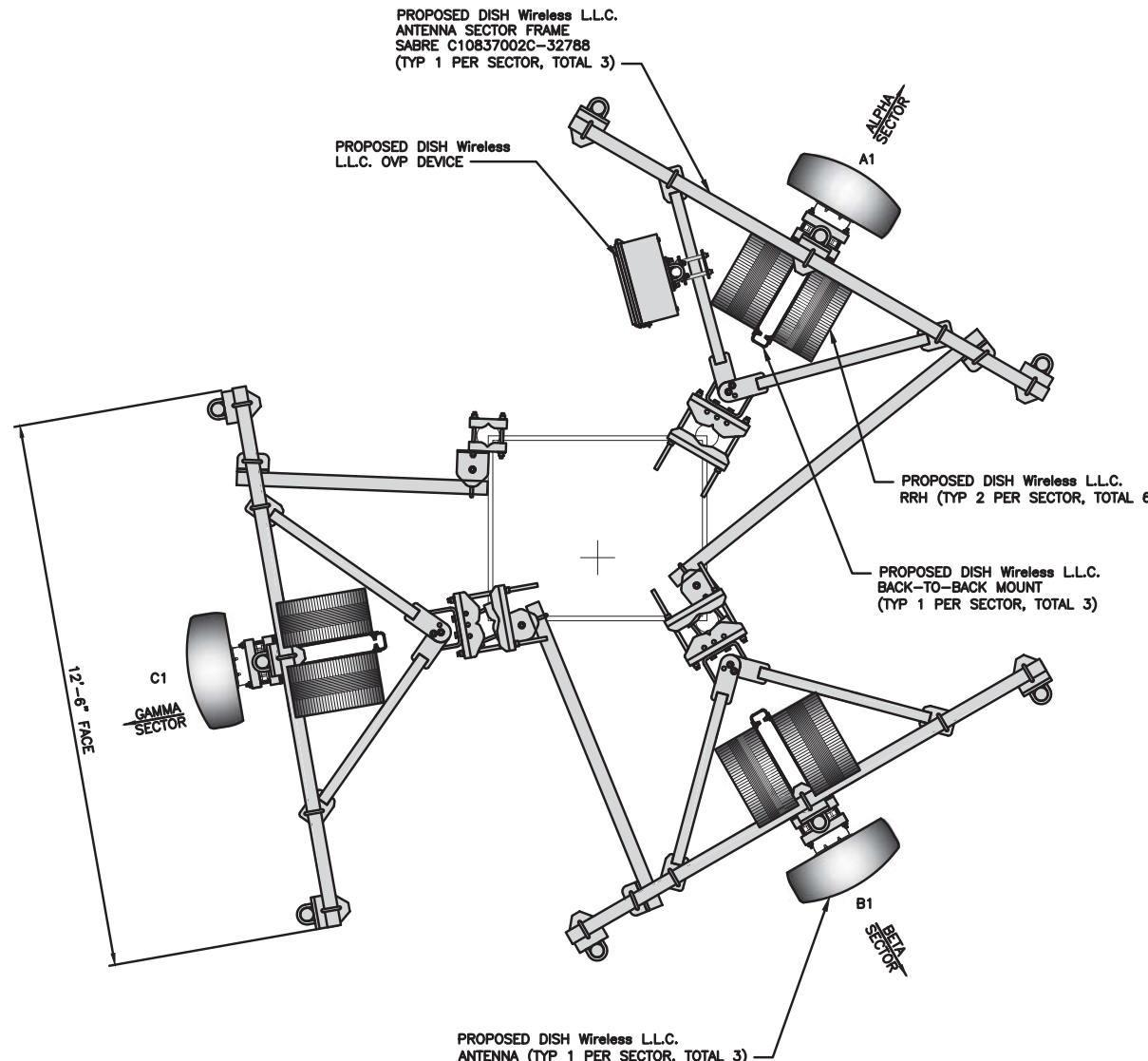
(1) PROPOSED DISH Wireless L.L.C. HYBRID CABLE ON PROPOSED WAVEGUIDE LADDER

PROPOSED DISH Wireless L.L.C. ICE BRIDGE
PROPOSED DISH Wireless L.L.C. GPS UNIT
PROPOSED DISH Wireless L.L.C. EQUIPMENT ON PROPOSED STEEL PLATFORM

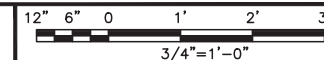
PROPOSED SOUTH ELEVATION



1



ANTENNA LAYOUT



2

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE
		EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH
ALPHA	A1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	30°	195'–0"	(1) HIGH–CAPACITY HYBRID CABLE (240' LONG)
BETA	B1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	150°	195'–0"	
GAMMA	C1	PROPOSED	JMA WIRELESS – MX08FRO665–21	5G	72.0" x 20.0"	280°	195'–0"	
<div>1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.</div> <div>2. ANTENNA OR RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.</div>								
SECTOR	POSITION	RRH		NOTES				
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY					
ALPHA	A1	FUJITSU TA08025–B605	5G					
	A1	FUJITSU TA08025–B604	5G					
BETA	B1	FUJITSU TA08025–B605	5G					
	B1	FUJITSU TA08025–B604	5G					
GAMMA	C1	FUJITSU TA08025–B605	5G					
	C1	FUJITSU TA08025–B604	5G					
<div>1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.</div> <div>2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.</div>								

ANTENNA SCHEDULE

NO SCALE

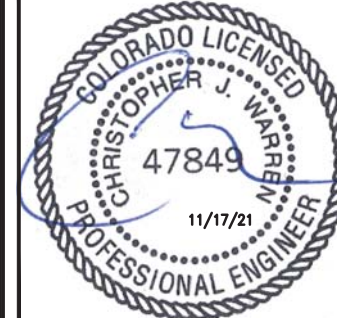
3

dish
wireless.

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AS PP CW

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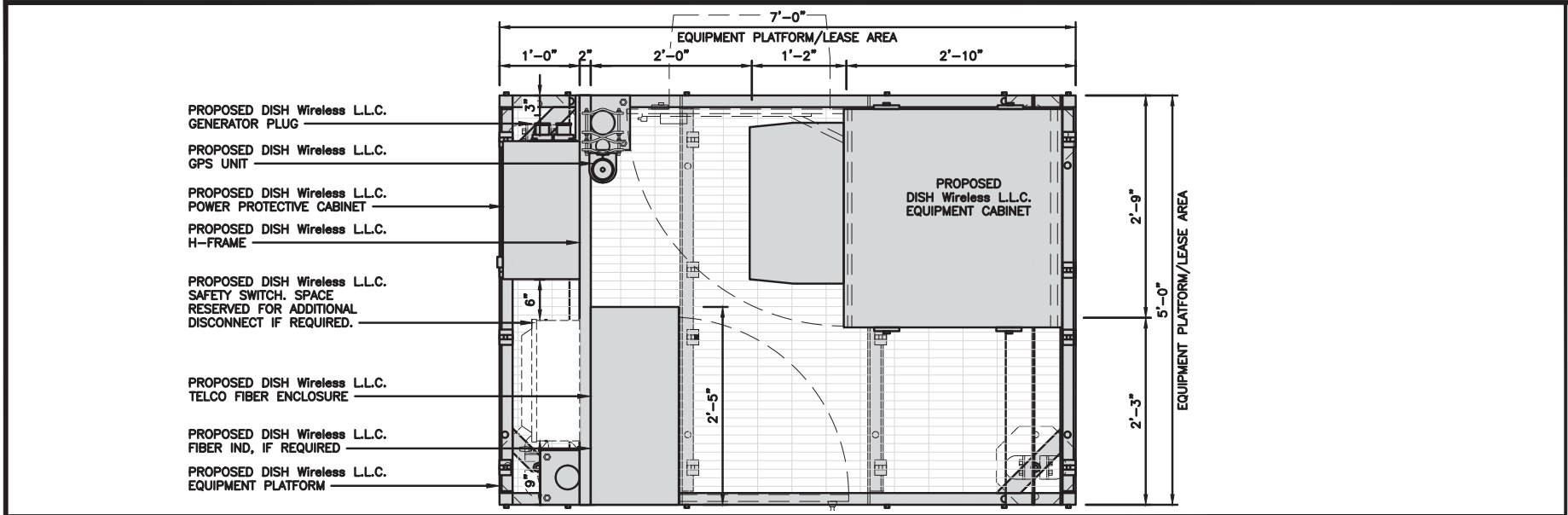
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SHEET TITLE
ELEVATION, ANTENNA
LAYOUT AND SCHEDULE

SHEET NUMBER

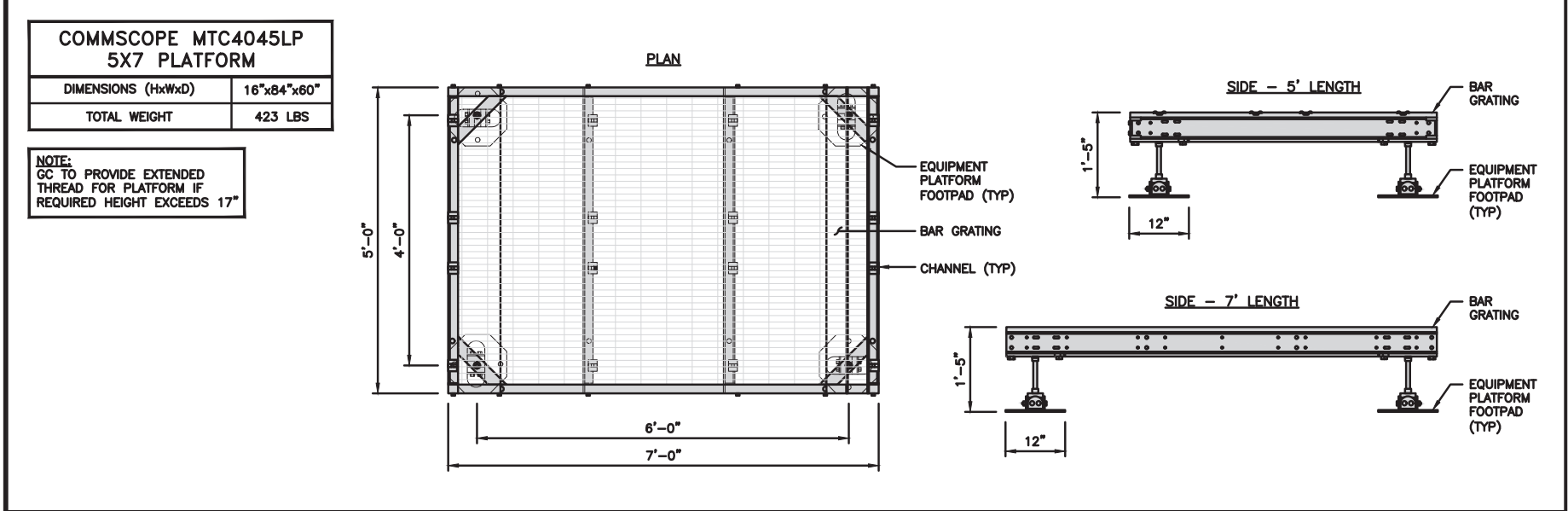
1 A-2



PLATFORM EQUIPMENT PLAN

12" 9" 6" 3" 0" 1' 2'
1"=1'-0"

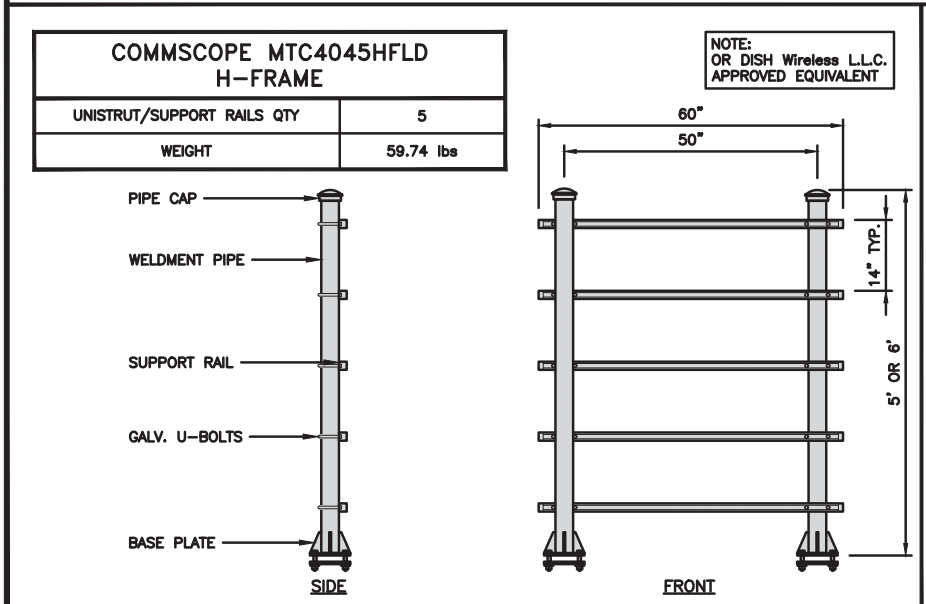
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PLATFORM DETAIL

NO SCALE

2



H-FRAME DETAIL

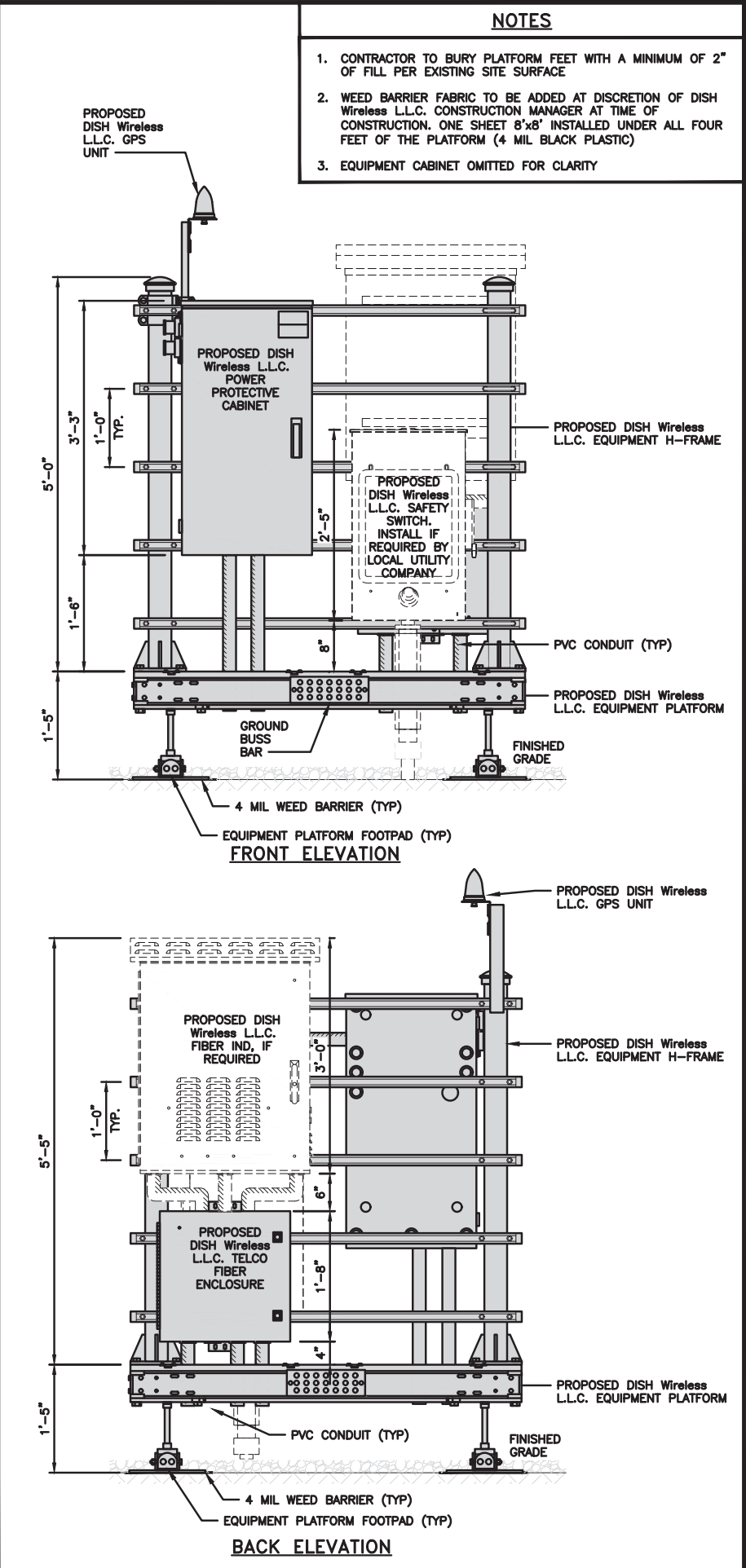
NO SCALE

3

NOT USED

NO SCALE

4



H-FRAME EQUIPMENT ELEVATION

12" 9" 6" 3" 0" 1' 2'
1"=1'-0"

5

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



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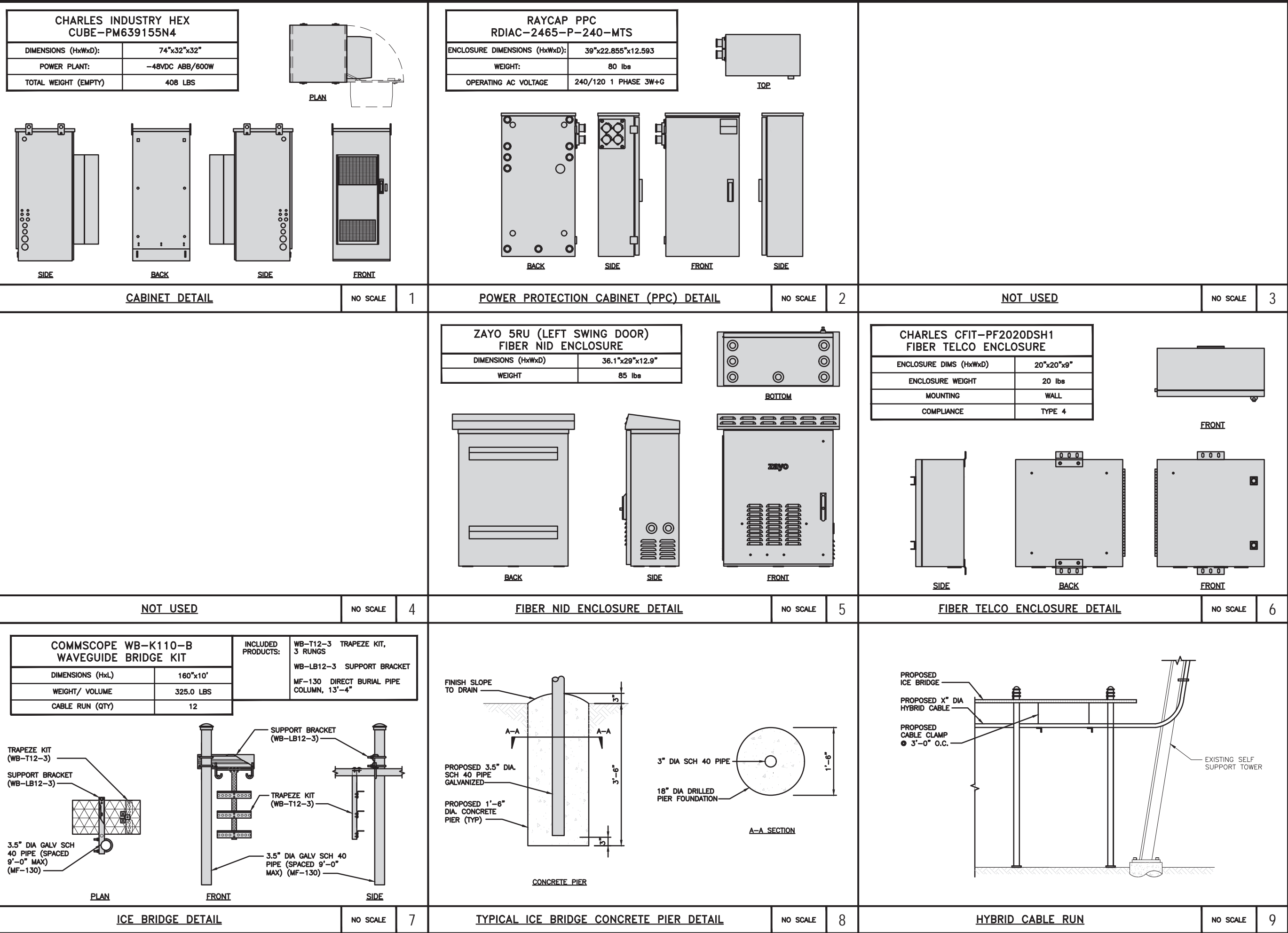
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SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER
A-3



PROPOSED ICE BRIDGE

PROPOSED X" DIA
HYBRID CABLE

PROPOSED
CABLE CLAMP
● 3'-0" O.C.

EXISTING SELF
SUPPORT TOWER

HYBRID CABLE RUN

NO SCALE

9

dish
wireless.

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COLORADO LICENSED
CHRISTOPHER J. WARREN
47849
11/17/21
PROFESSIONAL ENGINEER

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SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-4

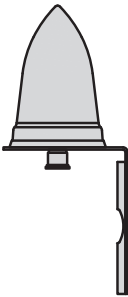
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PCD File No. PPR-21-060

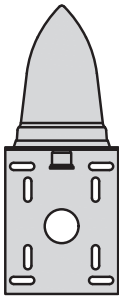
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



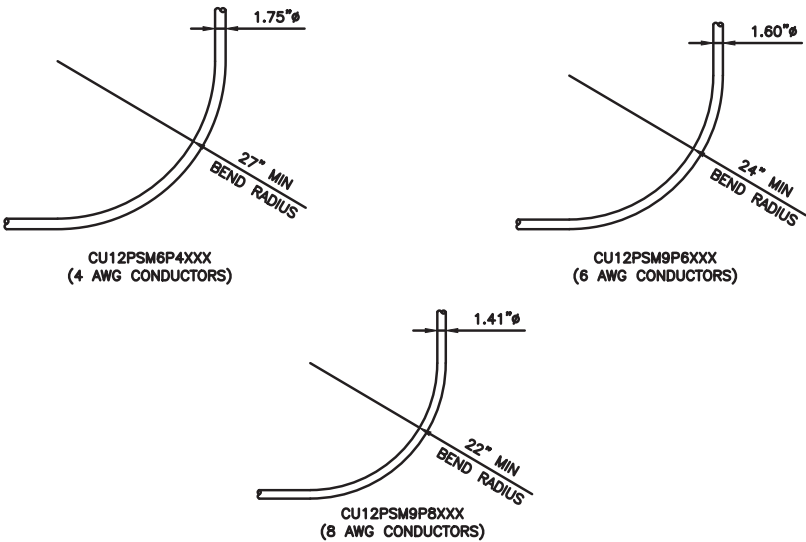
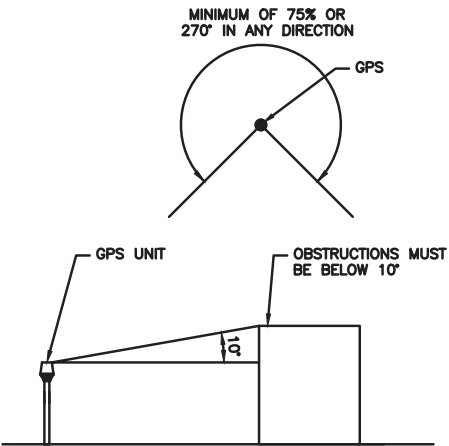
TOP



BACK



SIDE



GPS DETAIL	NO SCALE	1
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NOT USED	NO SCALE	4
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NOT USED	NO SCALE	7
----------	----------	---

GPS MINIMUM SKY VIEW REQUIREMENTS	NO SCALE	2
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NOT USED	NO SCALE	5
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NOT USED	NO SCALE	8
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CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES	NO SCALE	3
--	----------	---

NOT USED	NO SCALE	6
----------	----------	---

NOT USED	NO SCALE	9
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EQUIPMENT DETAILS

SHEET NUMBER
A-5

FUJITSU TA08025-B605 RRH	
DIMENSIONS (HxWxD) (KG/IN)	399x381x232/15.7"x15.0"x9.1"
WEIGHT(KG,LB)/ VOLUME	34kg,75.0lb/ 35L
POWER SUPPLY	DC-58~-36V

PLAN

SIDE

FRONT

REMOTE RADIO HEAD DETAIL

NO SCALE

1

FUJITSU TA08025-B604 RRH	
DIMENSIONS (HxWxD) (KG/IN)	399x381x200/15.7"x15.0"x7.9"
WEIGHT(KG,LB)/ VOLUME	29kg,63.9lb/ 30L
POWER SUPPLY	DC-58~-36V

PLAN

SIDE

FRONT

REMOTE RADIO HEAD DETAIL

NO SCALE

2

COMMSCOPE BACK-TO-BACK MOUNT RR-FA2	
DIMENSIONS (HxWxD)	16.41"x18.0"x3.0"
WEIGHT	39.22 lb
PACKAGE QUANTITY	2

FRONT BRACKET

BACK BRACKET

LARGE STABILIZER

RRU HANGER

5.0"

18.41"

8.63"

18.00"

8.50"

REMOTE RADIO MOUNT DETAIL

NO SCALE

3

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	16.0"x14.0"x8.0"
WEIGHT	21.9 LBS

PLAN

SIDE

BACK

FRONT

SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

4

JMA MX08FRO665-21	
DIMENSIONS (HxWxD)	72"x20.0"x8.0"
RF PORTS, CONNECTOR TYPE	8 x 4.3-10 FEMALE
WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs

PLAN

SIDE

FRONT

ANTENNA DETAIL

NO SCALE

5

JMA 91900318 MOUNTING BRACKET	
WIDTH	8.3" (211mm)
DEPTH	7.5" (191mm)
HEIGHT	11.2" (284mm)
TOTAL WEIGHT (WITH BRACKETS)	18.5 LBS (8.4 Kg)
HOUSING MATERIAL	GALV. HIGH STRENGTH STEEL

MOUNTING PIPE

TOP MOUNTING BRACKET (TYP)

CENTER MOUNTING BRACKET (TYP)

ANTENNA BRACKET, TYP. (NOT A PART)

CENTER MOUNTING BRACKET (TYP)

ANTENNA MOUNTING DETAIL

NO SCALE

6

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11.023 LBS

PLAN PLATE

SIDE PLATE

PLAN U-BOLT

SIDE U-BOLT

CROSSOVER PLATE

ANTENNA PLATFORM (NOT INCLUDED)

ANTENNA PIPE MOUNT (NOT INCLUDED)

OPTION OF EITHER SQUARE OR CIRCULAR U-BOLT

RRH/OVP MOUNT DETAIL

NO SCALE

7

SABRE C10837002C-32788 SECTOR FRAME	
FACE SIZE	12'-0"
WEIGHT	551 lbs

PLAN

FRONT

45"

8'-0"

12'-6"

30"

ANTENNA FRAME DETAIL

NO SCALE

8

SITEPRO1 T600 UNIVERSAL T-BRACKET	
DIMENSIONS (HxWxL)	2.25"x10.0"x15.25"
WEIGHT/ VOLUME	5.60 LBS

TOP

BACK BRACKET

THREADED ROD

T-BRACKET WELDMENT

1.5" TO 6" ROUND LEG

2.5" TO 5" 90° ANGLE LEGS

ISOMETRIC

SIDE

VERTICAL CABLE SUPPORT DETAIL

NO SCALE

9

DISH Wireless L.L.C. TEMPLATE VERSION 38 - 07/23/2021

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APPROVED BY: CW

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DOCUMENTS

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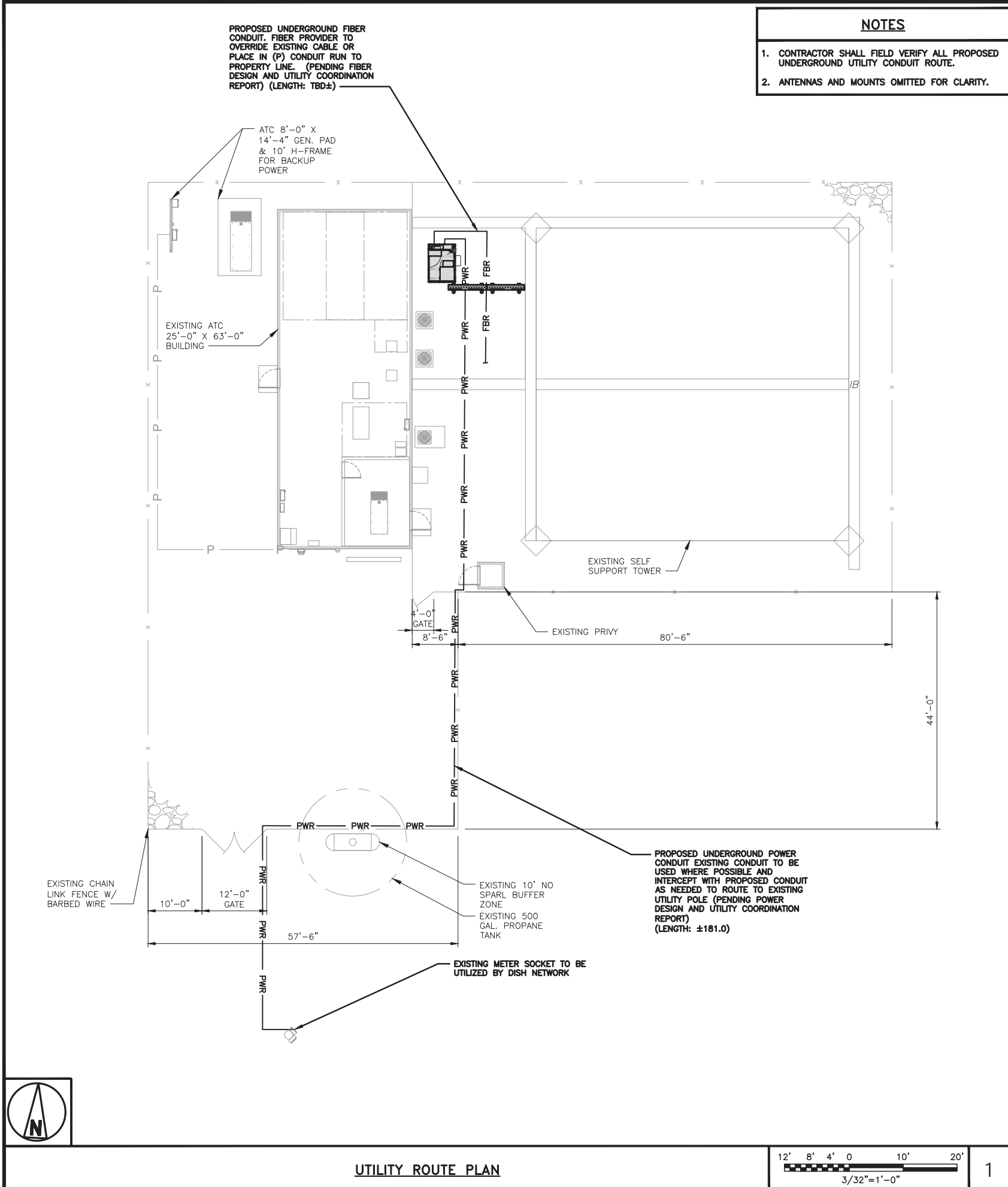
ATC PROJECT NUMBER
88791-13696472

DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HOGDEN RD
COLORADO SPRINGS, CO 80908

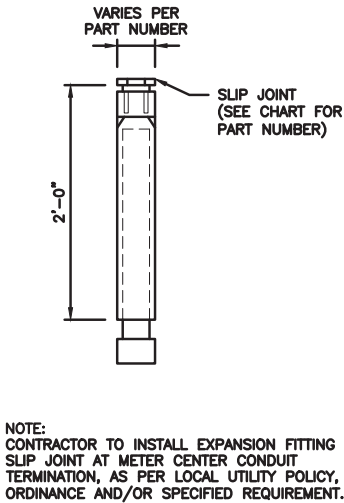
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-6

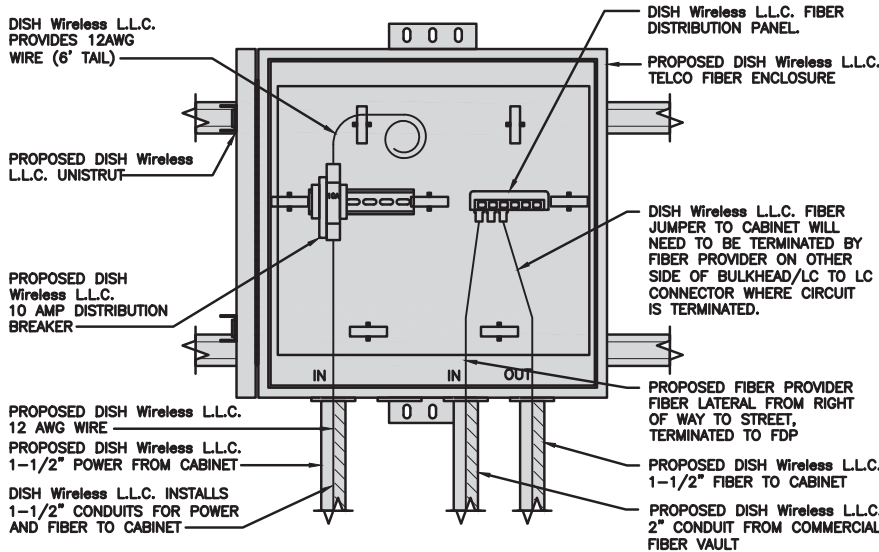
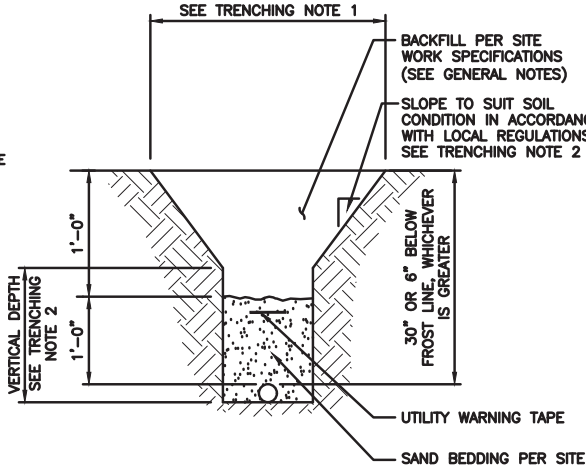
PCD File No. PPR-21-060



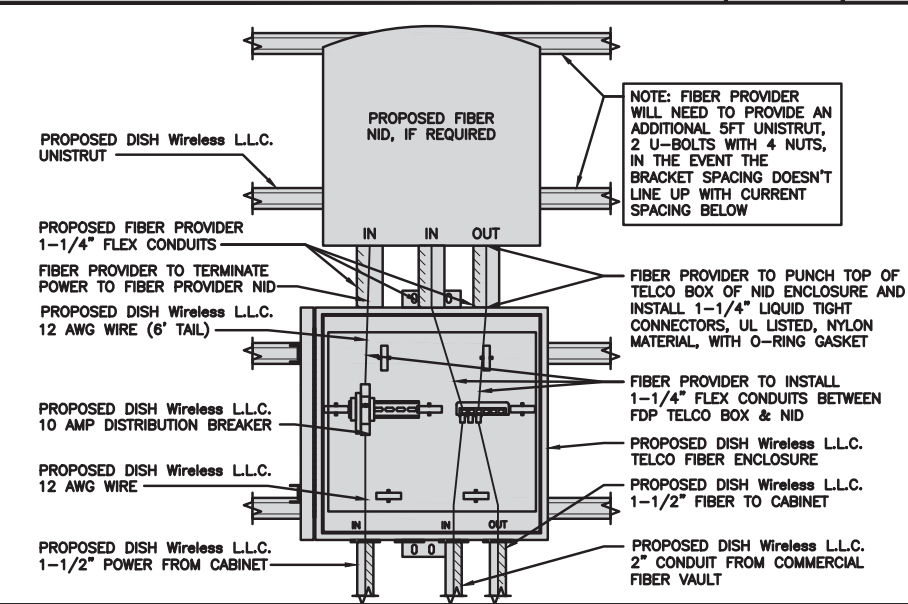
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"



- TRENCHING NOTES**
- CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
 - TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
 - ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



EXPANSION JOINT DETAIL	NO SCALE	1	TYPICAL UNDERGROUND TRENCH DETAIL	NO SCALE	2	DARK TELCO BOX – INTERIOR WIRING LAYOUT	NO SCALE	3
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LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL)	NO SCALE	4	NOT USED	NO SCALE	5	NOT USED	NO SCALE	6
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NOT USED	NO SCALE	7	NOT USED	NO SCALE	8	NOT USED	NO SCALE	9
----------	----------	---	----------	----------	---	----------	----------	---

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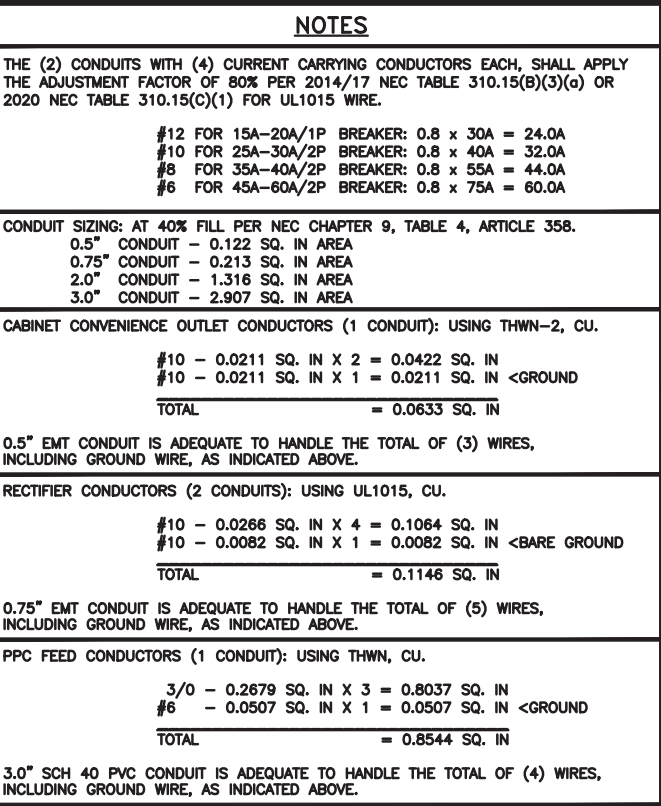
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PROJECT INFORMATION
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BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER
E-2

PCD File No. PPR-21-060



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COLORADO SPRINGS, CO 80908

SHEET TITLE	
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE	

SHEET NUMBER

E-3













PCD File No. PPR-21-060

PPC ONE-LINE DIAGRAM

NO SCALE

1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE		CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED	
	L1	L2			L1	L2			L1	L2		
PPC GFCI OUTLET	180		15A	1		A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1	
CHARLES GFCI OUTLET		180	15A	3		B	4			2880		
-SPACE-				5		A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2	
-SPACE-				7		B	8			2880		
-SPACE-				9		A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3	
-SPACE-				11		B	12			2880		
-SPACE-				13		A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4	
-SPACE-				15		B	16			2880		
-SPACE-				17		A	18				-SPACE-	
-SPACE-				19		B	20				-SPACE-	
-SPACE-				21		A	22				-SPACE-	
-SPACE-				23		B	24				-SPACE-	
VOLTAGE AMPS	180	180								11520	11520	
200A MCB, 1ø, 24 SPACE, 120/240V												
MB RATING: 65,000 AIC												
			L1	L2								
			11700	11700		VOLTAGE AMPS						
			98	98		AMPS						
				98		MAX AMPS						
				123		MAX 125%						

PANEL SCHEDULE

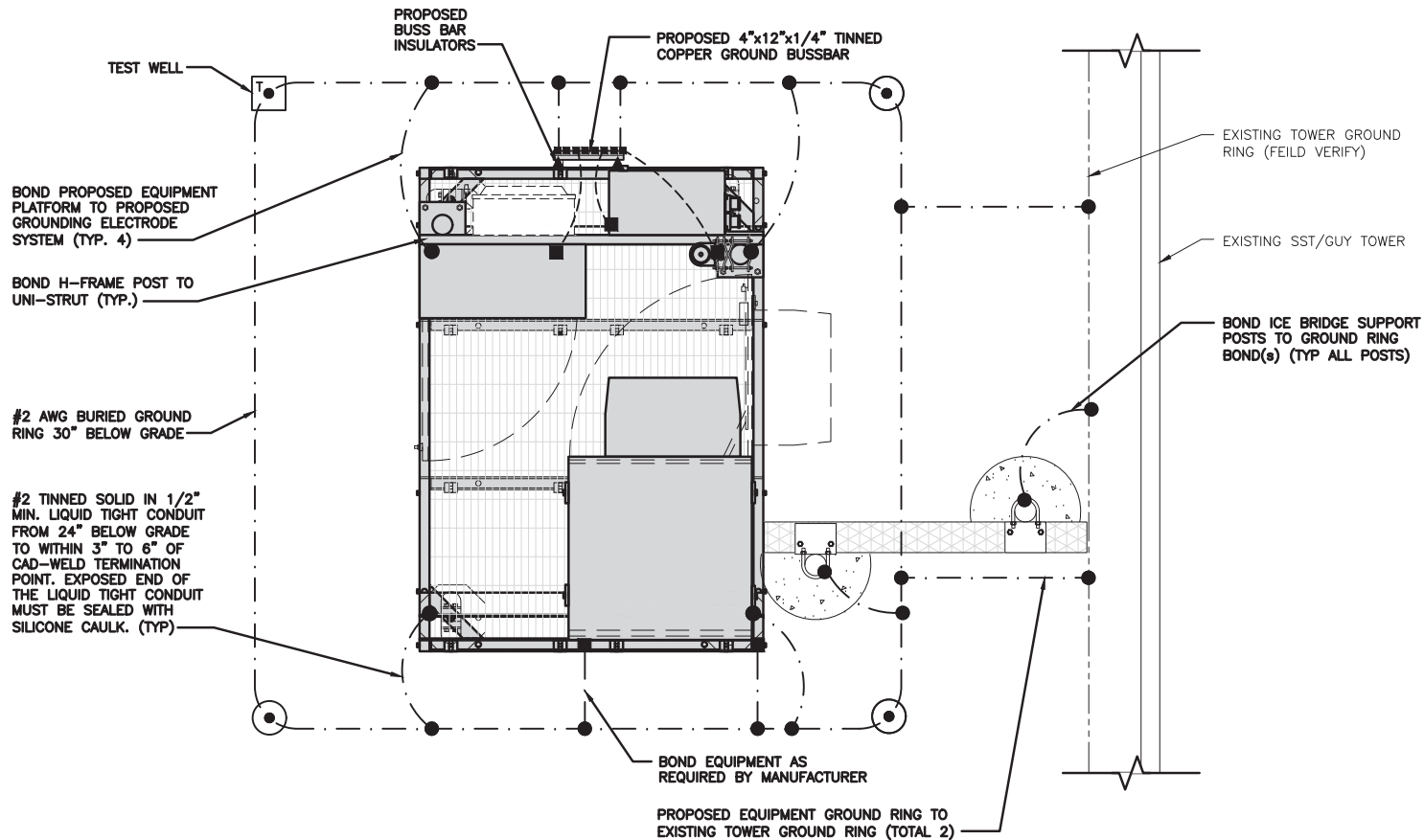
NO SCALE

2

NOT USED

NO SCALE

3



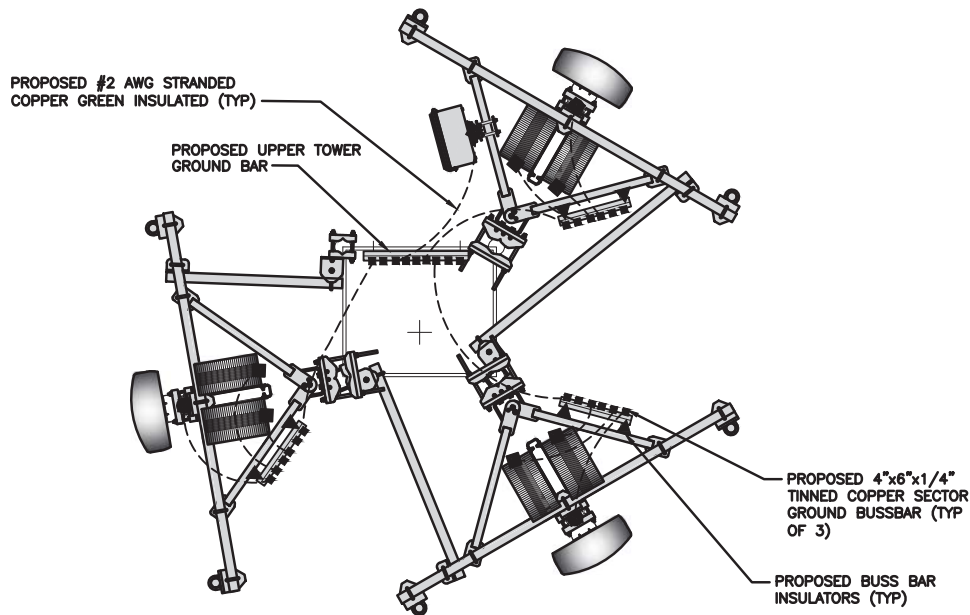
TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE

1

NOTES

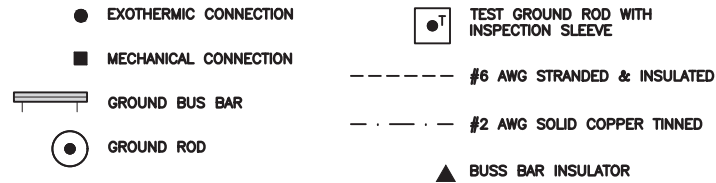
1. ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE ONLY



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2



GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH Wireless L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

- (A) **EXTERIOR GROUND RING:** #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.
- (B) **TOWER GROUND RING:** THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (C) **INTERIOR GROUND RING:** #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.
- (D) **BOND TO INTERIOR GROUND RING:** #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.
- (E) **GROUND ROD:** UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.
- (F) **CELL REFERENCE GROUND BAR:** POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE. STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.
- (G) **HATCH PLATE GROUND BAR:** BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.
- (H) **EXTERIOR CABLE ENTRY PORT GROUND BARS:** LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.
- (I) **TELCO GROUND BAR:** BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.
- (J) **FRAME BONDING:** THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.
- (K) **INTERIOR UNIT BONDS:** METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.
- (L) **FENCE AND GATE GROUNDING:** METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.
- (M) **EXTERIOR UNIT BONDS:** METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE
- (N) **ICE BRIDGE SUPPORTS:** EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.
- (O) **DURING ALL DC POWER SYSTEM CHANGES** INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR
- (P) **TOWER TOP COLLECTOR BUSS BAR** IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE

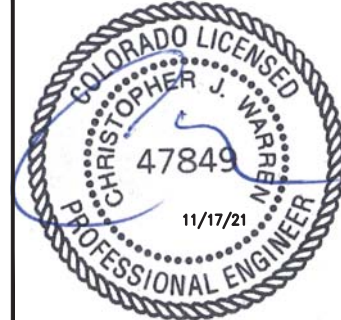
3

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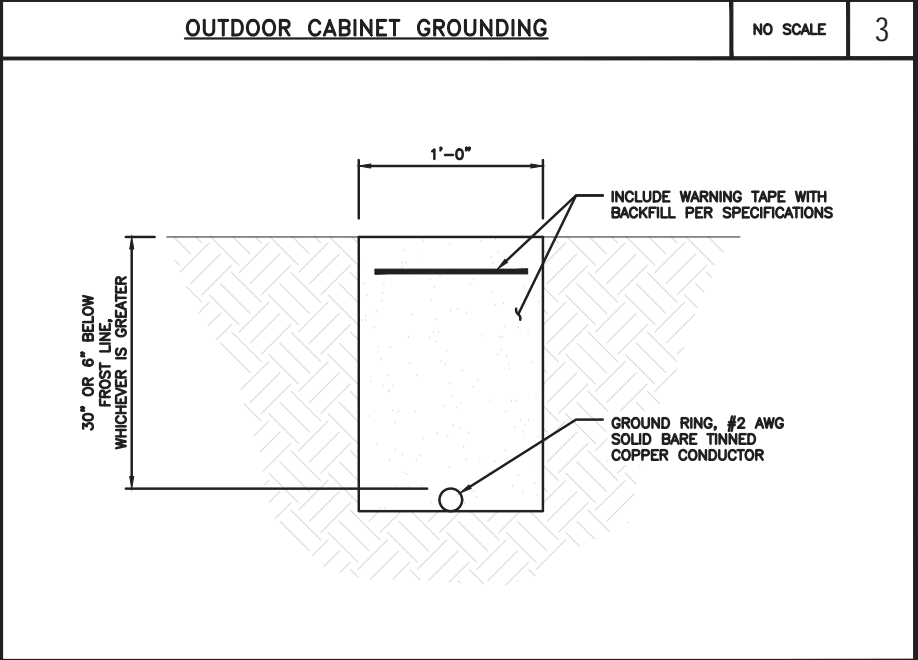
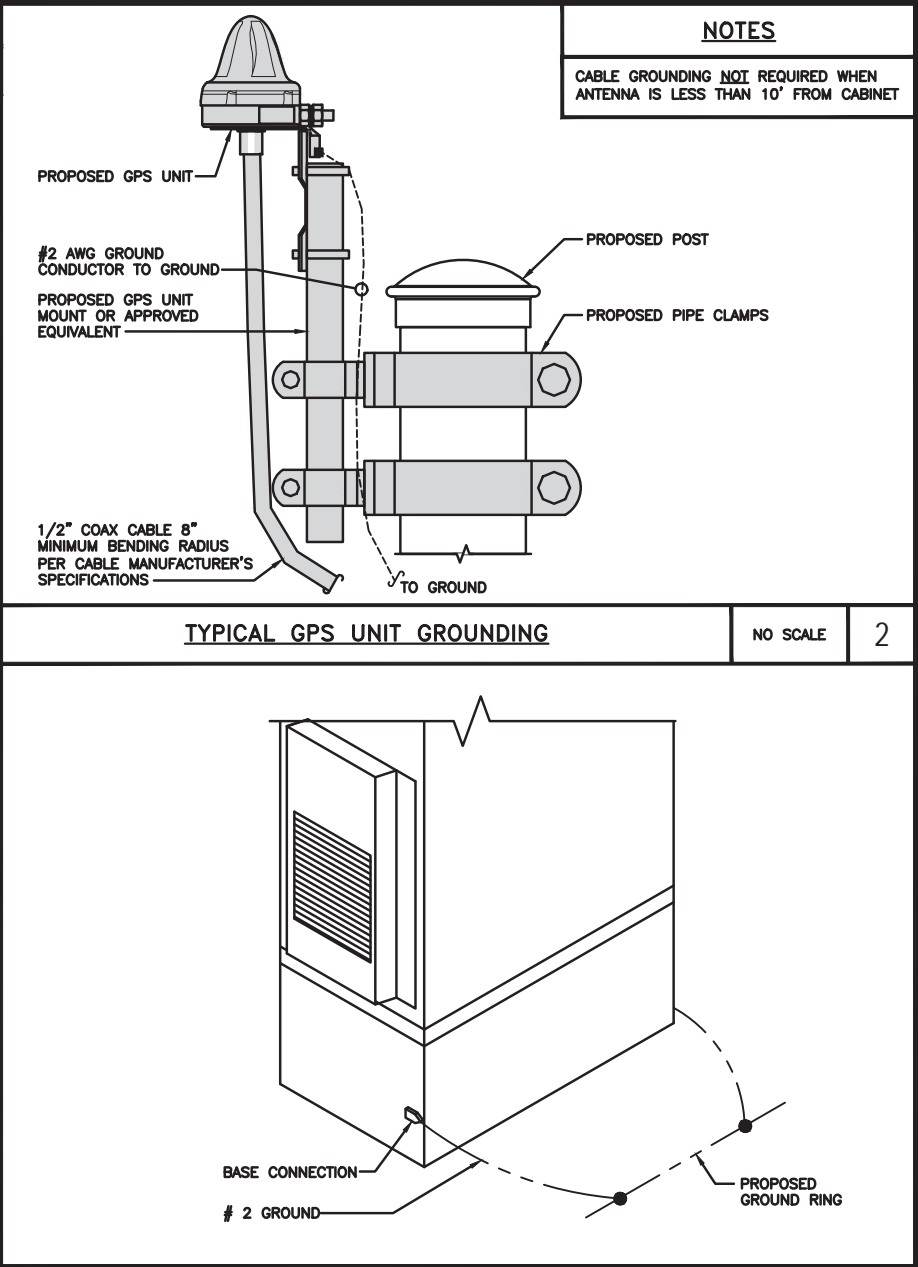
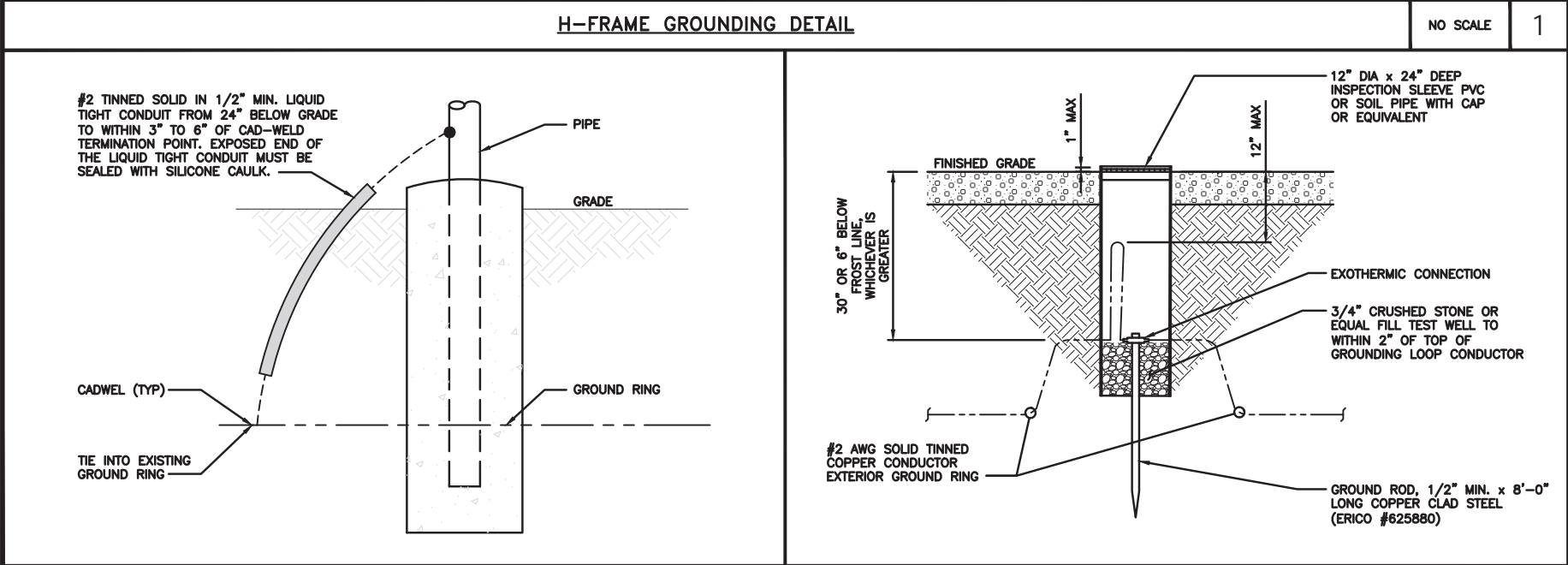
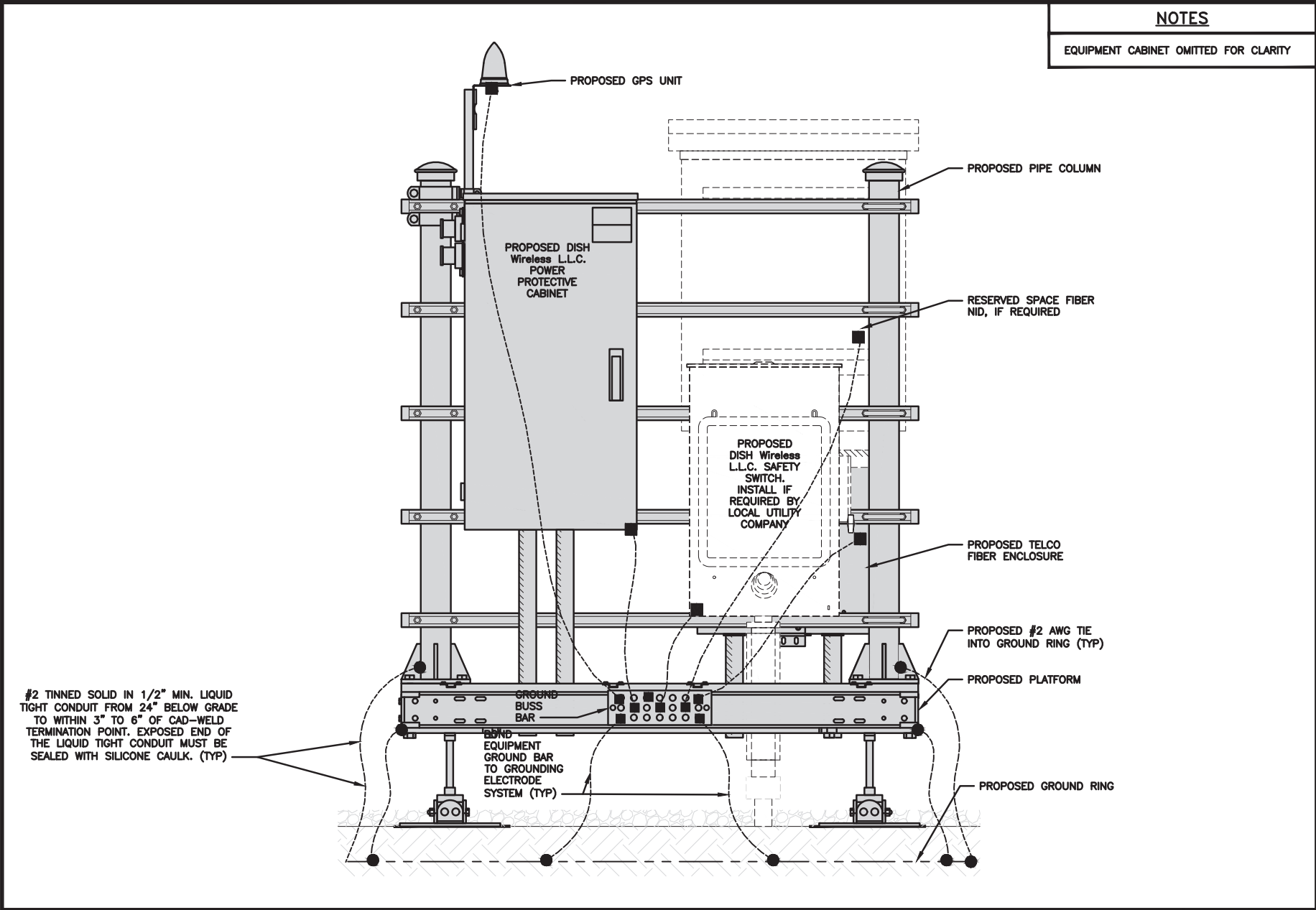
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PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE
GROUNDING PLANS
AND NOTES

SHEET NUMBER

1 G-1

PCD File No. PPR-21-060



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SHEET TITLE

GROUNDING DETAILS

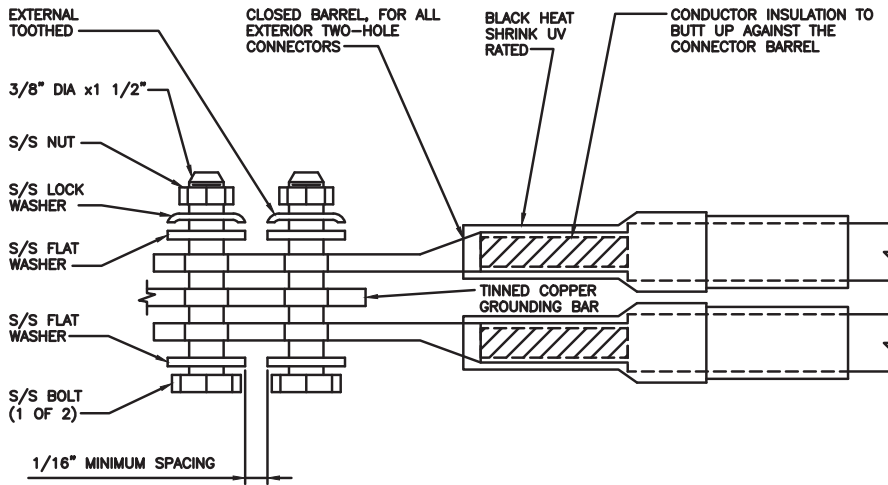
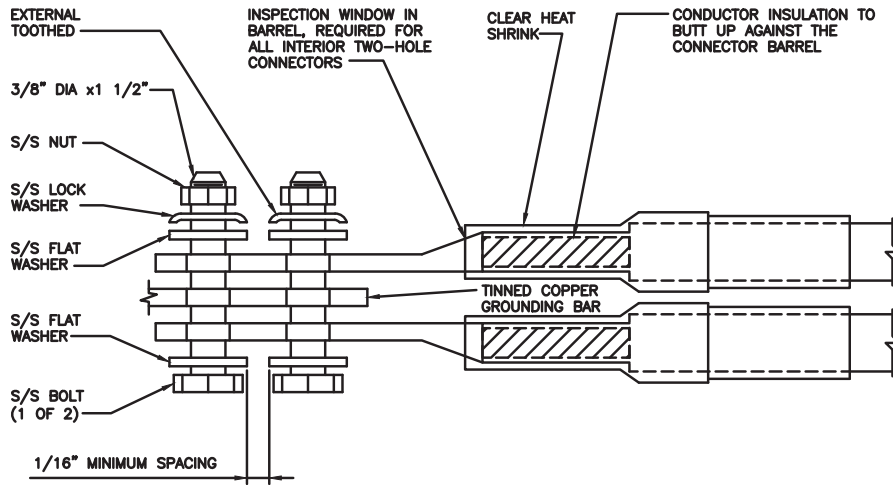
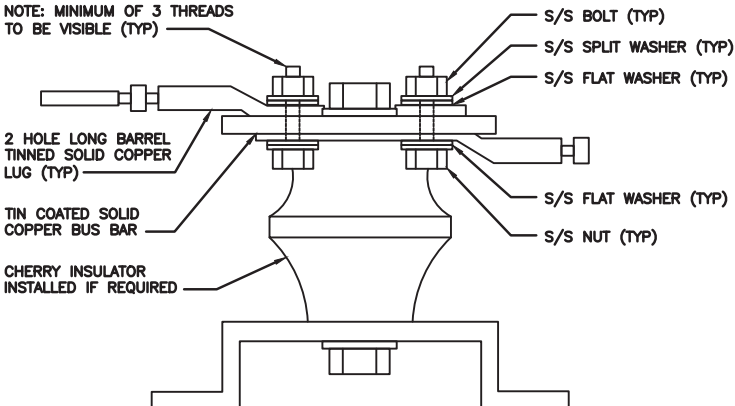
SHEET NUMBER

1

G-2

PCD File No. PPR-21-060

DISH Wireless L.L.C. TEMPLATE VERSION 38 - 07/23/2021

<div>1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR. ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.</div> <div>2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.</div> <div>3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.</div> <div>4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.</div> <div>5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.</div> <div>6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.</div> <div>7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.</div> <div>8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).</div>														
TYPICAL GROUNDING NOTES			NO SCALE	1	TYPICAL EXTERIOR TWO HOLE LUG			NO SCALE	2	TYPICAL INTERIOR TWO HOLE LUG			NO SCALE	3
														
LUG DETAIL			NO SCALE	4	NOT USED			NO SCALE	5	NOT USED			NO SCALE	6
NOT USED			NO SCALE	7	NOT USED			NO SCALE	8	NOT USED			NO SCALE	9



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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

1 G-3

RF JUMPER COLOR CODING				3/4" TAPE WIDTHS WITH 3/4" SPACING								
LOW-BAND RRH – (600MHz N71 BASEBAND) + (850MHz N26 BAND) + (700MHz N29 BAND) – OPTIONAL PER MARKET	ALPHA RRH				BETA RRH				GAMMA RRH			
	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT	PORT 1 + SLANT	PORT 2 – SLANT	PORT 3 + SLANT	PORT 4 – SLANT
	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
	ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
		WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE		WHITE (–) PORT	ORANGE	ORANGE
ADD FREQUENCY COLOR TO SECTOR BAND (CBRS WILL USE YELLOW BANDS)				WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT
MID-BAND RRH – (AWS BANDS N66+N70)	RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
	PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
		WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE		WHITE (–) PORT	PURPLE	PURPLE
				WHITE (–) PORT				WHITE (–) PORT				WHITE (–) PORT
HYBRID/DISCREET CABLES	EXAMPLE 1		EXAMPLE 2		EXAMPLE 3							
	RED		RED		RED							
	BLUE		BLUE		ORANGE							
	GREEN		GREEN		PURPLE							
	ORANGE		YELLOW									
INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS	PURPLE											
EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS												
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS												
FIBER JUMPERS TO RRHs	LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH	
	RED		RED		BLUE		BLUE		GREEN		GREEN	
			PURPLE				PURPLE				PURPLE	
POWER CABLES TO RRHs	LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH		LOW BAND RRH		HIGH BAND RRH	
	RED		RED		BLUE		BLUE		GREEN		GREEN	
			PURPLE				PURPLE				PURPLE	
RET MOTORS AT ANTENNAS	ANTENNA 1 LOW BAND/ "IN"		ANTENNA 1 HIGH BAND/ "IN"		ANTENNA 1 LOW BAND/ "IN"		ANTENNA 1 HIGH BAND/ "IN"		ANTENNA 1 LOW BAND/ "IN"		ANTENNA 1 HIGH BAND/ "IN"	
	RED		RED		BLUE		BLUE		GREEN		GREEN	
			PURPLE				PURPLE				PURPLE	
MICROWAVE RADIO LINKS	FORWARD AZIMUTH OF 0–120 DEGREES				FORWARD AZIMUTH OF 120–240 DEGREES				FORWARD AZIMUTH OF 240–360 DEGREES			
	PRIMARY		SECONDARY		PRIMARY		SECONDARY		PRIMARY		SECONDARY	
	WHITE		WHITE		WHITE		WHITE		WHITE		WHITE	
	RED		RED		BLUE		BLUE		GREEN		GREEN	
	WHITE		WHITE		WHITE		WHITE		WHITE		WHITE	
LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE. ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO.												
MICROWAVE CABLES WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID'S												

RF CABLE COLOR CODES

NO SCALE

1

NOT USED

NO SCALE

4

LOW BANDS (N71+N26)
OPTIONAL – (N29)

ORANGE

AWS
(N66+N70+H-BLOCK)

PURPLE

CBRS TECH
(3 GHz)

YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH

WHITE

ALPHA SECTOR

RED

BETA SECTOR

BLUE

GAMMA SECTOR

GREEN

COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

dish
wireless.

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LITTLETON, CO 80120



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IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

AS

PP

CW

RFDS REV #: 0

CONSTRUCTION
DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/27/2021	ISSUED FOR REVIEW
0	08/26/2021	ISSUED FOR CONSTRUCTION
1	11/16/2021	ISSUED FOR CONSTRUCTION

ATC PROJECT NUMBER

88791–13696472

DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50–HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE

RF
CABLE COLOR CODE

SHEET NUMBER

1

RF-1

<div><div>EXOTHERMIC CONNECTION</div><div>MECHANICAL CONNECTION</div><div>BUSS BAR INSULATOR</div><div>CHEMICAL ELECTROLYTIC GROUNDING SYSTEM</div><div>TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM</div><div>EXOTHERMIC WITH INSPECTION SLEEVE</div><div>GROUNDING BAR</div><div>GROUND ROD</div><div>TEST GROUND ROD WITH INSPECTION SLEEVE</div><div>SINGLE POLE SWITCH</div><div>DUPLEX RECEPTACLE</div><div>DUPLEX GFCI RECEPTACLE</div><div>FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8</div><div>SMOKE DETECTION (DC)</div><div>EMERGENCY LIGHTING (DC)</div><div>SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED-1-25A400/51K-SR4-120-PE-DDBTXD</div><div>CHAIN LINK FENCE</div><div>WOOD/WROUGHT IRON FENCE</div><div>WALL STRUCTURE</div><div>LEASE AREA</div><div>PROPERTY LINE (PL)</div><div>SETBACKS</div><div>ICE BRIDGE</div><div>CABLE TRAY</div><div>WATER LINE</div><div>UNDERGROUND POWER</div><div>UNDERGROUND TELCO</div><div>OVERHEAD POWER</div><div>OVERHEAD TELCO</div><div>UNDERGROUND TELCO/POWER</div><div>ABOVE GROUND POWER</div><div>ABOVE GROUND TELCO</div><div>ABOVE GROUND TELCO/POWER</div><div>WORKPOINT</div><div>SECTION REFERENCE</div><div>DETAIL REFERENCE</div></div> <div><div><div><div>●</div><div>■</div><div>▲</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div>— X — X — X — X —</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><div>W</div><div>W</div><div>W</div><div>W</div><div>W</div></div><div><div>UGP</div><div>UGP</div><div>UGP</div><div>UGP</div><div>UGP</div></div><div><div>UGT</div><div>UGT</div><div>UGT</div><div>UGT</div><div>UGT</div></div><div><div>OHP</div><div>OHP</div><div>OHP</div><div>OHP</div></div><div><div>OHT</div><div>OHT</div><div>OHT</div><div>OHT</div></div><div><div>UGT/P</div><div>UGT/P</div><div>UGT/P</div><div>UGT/P</div></div><div><div>AGP</div><div>AGP</div><div>AGP</div><div>AGP</div><div>AGP</div></div><div><div>AGT</div><div>AGT</div><div>AGT</div><div>AGT</div><div>AGT</div></div><div><div>AGT/P</div><div>AGT/P</div><div>AGT/P</div><div>AGT/P</div></div></div><div><div>W.P.</div><div></div><div></div></div></div></div> <div><div><div>AB</div><div>ANCHOR BOLT</div><div>ABV</div><div>ABOVE</div><div>AC</div><div>ALTERNATING CURRENT</div><div>ADDL</div><div>ADDITIONAL</div><div>AFF</div><div>ABOVE FINISHED FLOOR</div><div>AFG</div><div>ABOVE FINISHED GRADE</div><div>AGL</div><div>ABOVE GROUND LEVEL</div><div>AIC</div><div>AMPERAGE INTERRUPTION CAPACITY</div><div>ALUM</div><div>ALUMINUM</div><div>ALT</div><div>ALTERNATE</div><div>ANT</div><div>ANTENNA</div><div>APPROX</div><div>APPROXIMATE</div><div>ARCH</div><div>ARCHITECTURAL</div><div>ATS</div><div>AUTOMATIC TRANSFER SWITCH</div><div>AWG</div><div>AMERICAN WIRE GAUGE</div><div>BATT</div><div>BATTERY</div><div>BLDG</div><div>BUILDING</div><div>BLK</div><div>BLOCK</div><div>BLKG</div><div>BLOCKING</div><div>BM</div><div>BEAM</div><div>BTC</div><div>BARE TINNED COPPER CONDUCTOR</div><div>BOF</div><div>BOTTOM OF FOOTING</div><div>CAB</div><div>CABINET</div><div>CANT</div><div>CANTILEVERED</div><div>CHG</div><div>CHARGING</div><div>CLG</div><div>CEILING</div><div>CLR</div><div>CLEAR</div><div>COL</div><div>COLUMN</div><div>COMM</div><div>COMMON</div><div>CONC</div><div>CONCRETE</div><div>CONSTR</div><div>CONSTRUCTION</div><div>DBL</div><div>DOUBLE</div><div>DC</div><div>DIRECT CURRENT</div><div>DEPT</div><div>DEPARTMENT</div><div>DF</div><div>DOUGLAS FIR</div><div>DIA</div><div>DIAMETER</div><div>DIAG</div><div>DIAGONAL</div><div>DIM</div><div>DIMENSION</div><div>DWG</div><div>DRAWING</div><div>DWL</div><div>DOWEL</div><div>EA</div><div>EACH</div><div>EC</div><div>ELECTRICAL CONDUCTOR</div><div>EL</div><div>ELEVATION</div><div>ELEC</div><div>ELECTRICAL</div><div>EMT</div><div>ELECTRICAL METALLIC TUBING</div><div>ENG</div><div>ENGINEER</div><div>EQ</div><div>EQUAL</div><div>EXP</div><div>EXPANSION</div><div>EXT</div><div>EXTERIOR</div><div>EW</div><div>EACH WAY</div><div>FAB</div><div>FABRICATION</div><div>FF</div><div>FINISH FLOOR</div><div>FG</div><div>FINISH GRADE</div><div>FIF</div><div>FACILITY INTERFACE FRAME</div><div>FIN</div><div>FINISH(ED)</div><div>FLR</div><div>FLOOR</div><div>FDN</div><div>FOUNDATION</div><div>FOC</div><div>FACE OF CONCRETE</div><div>FOM</div><div>FACE OF MASONRY</div><div>FOS</div><div>FACE OF STUD</div><div>FOW</div><div>FACE OF WALL</div><div>FS</div><div>FINISH SURFACE</div><div>FT</div><div>FOOT</div><div>FTG</div><div>FOOTING</div><div>GA</div><div>GAUGE</div><div>GEN</div><div>GENERATOR</div><div>GFCI</div><div>GROUND FAULT CIRCUIT INTERRUPTER</div><div>GLB</div><div>GLUE LAMINATED BEAM</div><div>GLV</div><div>GALVANIZED</div><div>GPS</div><div>GLOBAL POSITIONING SYSTEM</div><div>GND</div><div>GROUND</div><div>GSM</div><div>GLOBAL SYSTEM FOR MOBILE</div><div>HDG</div><div>HOT DIPPED GALVANIZED</div><div>HDR</div><div>HEADER</div><div>HGR</div><div>HANGER</div><div>HVAC</div><div>HEAT/VENTILATION/AIR CONDITIONING</div><div>HT</div><div>HEIGHT</div><div>IGR</div><div>INTERIOR GROUND RING</div></div><div><div><div>IN</div><div>INCH</div><div>INT</div><div>INTERIOR</div><div>LB(S)</div><div>POUND(S)</div><div>LF</div><div>LINEAR FEET</div><div>LTE</div><div>LONG TERM EVOLUTION</div><div>MAS</div><div>MASONRY</div><div>MAX</div><div>MAXIMUM</div><div>MB</div><div>MACHINE BOLT</div><div>MECH</div><div>MECHANICAL</div><div>MFR</div><div>MANUFACTURER</div><div>MGB</div><div>MASTER GROUND BAR</div><div>MIN</div><div>MINIMUM</div><div>MISC</div><div>MISCELLANEOUS</div><div>MTL</div><div>METAL</div><div>MTS</div><div>MANUAL TRANSFER SWITCH</div><div>MW</div><div>MICROWAVE</div><div>NEC</div><div>NATIONAL ELECTRIC CODE</div><div>NM</div><div>NEWTON METERS</div><div>NO.</div><div>NUMBER</div><div>#</div><div>NUMBER</div><div>NTS</div><div>NOT TO SCALE</div><div>OC</div><div>ON-CENTER</div><div>OSHA</div><div>OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION</div><div>OPNG</div><div>OPENING</div><div>P/C</div><div>PRECAST CONCRETE</div><div>PCS</div><div>PERSONAL COMMUNICATION SERVICES</div><div>PCU</div><div>PRIMARY CONTROL UNIT</div><div>PRC</div><div>PRIMARY RADIO CABINET</div><div>PP</div><div>POLARIZING PRESERVING</div><div>PSF</div><div>POUNDS PER SQUARE FOOT</div><div>PSI</div><div>POUNDS PER SQUARE INCH</div><div>PT</div><div>PRESSURE TREATED</div><div>PWR</div><div>POWER CABINET</div><div>QTY</div><div>QUANTITY</div><div>RAD</div><div>RADIUS</div><div>RECT</div><div>RECTIFIER</div><div>REF</div><div>REFERENCE</div><div>REINF</div><div>REINFORCEMENT</div><div>REQ'D</div><div>REQUIRED</div><div>RET</div><div>REMOTE ELECTRIC TILT</div><div>RF</div><div>RADIO FREQUENCY</div><div>RMC</div><div>RIGID METALLIC CONDUIT</div><div>RRH</div><div>REMOTE RADIO HEAD</div><div>RRU</div><div>REMOTE RADIO UNIT</div><div>RWY</div><div>RACEWAY</div><div>SCH</div><div>SCHEDULE</div><div>SHT</div><div>SHEET</div><div>SIAD</div><div>SMART INTEGRATED ACCESS DEVICE</div><div>SIM</div><div>SIMILAR</div><div>SPEC</div><div>SPECIFICATION</div><div>SQ</div><div>SQUARE</div><div>SS</div><div>STAINLESS STEEL</div><div>STD</div><div>STANDARD</div><div>STL</div><div>STEEL</div><div>TEMP</div><div>TEMPORARY</div><div>THK</div><div>THICKNESS</div><div>TMA</div><div>TOWER MOUNTED AMPLIFIER</div><div>TN</div><div>TOE NAIL</div><div>TOA</div><div>TOP OF ANTENNA</div><div>TOC</div><div>TOP OF CURB</div><div>TOF</div><div>TOP OF FOUNDATION</div><div>TOP</div><div>TOP OF PLATE (PARAPET)</div><div>TOS</div><div>TOP OF STEEL</div><div>TOW</div><div>TOP OF WALL</div><div>TVSS</div><div>TRANSIENT VOLTAGE SURGE SUPPRESSION</div><div>TYP</div><div>TYPICAL</div><div>UG</div><div>UNDERGROUND</div><div>UL</div><div>UNDERWRITERS LABORATORY</div><div>UNO</div><div>UNLESS NOTED OTHERWISE</div><div>UMTS</div><div>UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM</div><div>UPS</div><div>UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)</div><div>VIF</div><div>VERIFIED IN FIELD</div><div>W</div><div>WIDE</div><div>W/</div><div>WITH</div><div>WD</div><div>WOOD</div><div>WP</div><div>WEATHERPROOF</div><div>WT</div><div>WEIGHT</div></div></div></div> <div><div><div><div></div><div>5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120</div></div><div><div></div><div>AMERICAN TOWER CORPORATION</div></div><div><div></div><div>FROM ZERO TO INFINIGY the solutions are endless BELLEVUE, WA www.infinigy.com</div></div><div><div></div></div><div><div>IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.</div><div><div>DRAWN BY: AS</div><div>CHECKED BY: PP</div><div>APPROVED BY: CW</div></div><div><div>RFDS REV #:</div><div>0</div></div><div><div>CONSTRUCTION DOCUMENTS</div></div><div><div><div>REV</div><div>DATE</div><div>DESCRIPTION</div></div><div><div>A</div><div>07/27/2021</div><div>ISSUED FOR REVIEW</div></div><div><div>0</div><div>08/28/2021</div><div>ISSUED FOR CONSTRUCTION</div></div><div><div>1</div><div>11/16/2021</div><div>ISSUED FOR CONSTRUCTION</div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div></div><div><div>ATC PROJECT NUMBER</div><div>88791-13696472</div></div><div><div>DISH Wireless L.L.C. PROJECT INFORMATION DNDEN00353B BLACK FOREST CO 7109 MARSHBERN CT SOUTH OF CR 50-HOGDEN RD COLORADO SPRINGS, CO 80908</div></div><div><div>SHEET TITLE</div><div>LEGEND AND ABBREVIATIONS</div></div><div><div>SHEET NUMBER</div><div><div>1</div><div>GN-1</div></div></div><div><div>PCD File No. PPR-21-060</div></div></div><div><div>LEGEND</div><div>ABBREVIATIONS</div></div></div> <div data-bbox="83 1961 506 1975" data-label="Page-Footer"><p>DISH Wireless L.L.C. TEMPLATE VERSION 38 – 07/23/2021</p></div>

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.
2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. 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 CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. 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 DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER’S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR’S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

- 1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER’S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR’S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER’S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.



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RFDS REV #: 0

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ATC PROJECT NUMBER

88791–13696472

DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50–HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE

GENERAL NOTES

SHEET NUMBER



GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER 40 ksi
#5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - CONCRETE EXPOSED TO EARTH OR WEATHER:
 - #6 BARS AND LARGER 2"
 - #5 BARS AND SMALLER 1-1/2"
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
 - SLAB AND WALLS 3/4"
 - BEAMS AND COLUMNS 1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- 4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. TIE WRAPS ARE NOT ALLOWED.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



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ATC PROJECT NUMBER

88791-13696472

DISH Wireless L.L.C.
PROJECT INFORMATION
DNDEN00353B
BLACK FOREST CO
7109 MARSHBERN CT
SOUTH OF CR 50-HOGDEN RD
COLORADO SPRINGS, CO 80908

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

1 GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES’S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4” NON–METALLIC, FLEXIBLE CONDUIT FROM 24” BELOW GRADE TO WITHIN 3” TO 6” OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.



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GN-4