



Northeast Site Solutions
Victoria Masse
420 Main St Unit 1 Box 2
Sturbridge, MA 01566
victoria@northeastitesolutions.com

October 20, 2023

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Tower Share Application
75 Wells Road, Wethersfield, CT 06109
Latitude: 41.70586 N
Longitude: -72.66340 W
Site#: BOBDL00106A

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Dish Wireless LLC. Dish Wireless LLC plans to install antennas and related equipment to the monopole site located at 75 Wells Road, Wethersfield, Connecticut.

Dish Wireless LLC proposes to install three (3) 600/1900/2100 5G MHz antenna and six (6) RRUs, at the 85-foot level of the existing 101-foot monopole, one (1) hybrid cable, (2) power cables and (1) ethernet cable will also be installed within the pole. Dish Wireless LLC equipment cabinets will be placed within 10"x15" lease area. Included are plans by Foresite, dated October 19, 2023, Exhibit C. Also included is a structural analysis prepared by Tower Engineering Professionals, dated July 7, 2023 confirming that the existing monopole is structurally capable of supporting the proposed equipment. Attached as Exhibit D. This facility was approved by the Connecticut Siting Council, Petition No. 1012 on December 1, 2011. Please see attached Exhibit A.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of Dish Wireless LLC intent to share a telecommunications facility pursuant to R.C.S.A. 16-50j-88. In accordance with R.C.S.A., a copy of this letter is being sent to Michael L. Rell, Mayor, Denise Bradley, Town Planner, as well as the property owner and tower owner.

The planned modifications of the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-89.

1. The proposed modifications will not result in an increase in the height of the existing structure. The top of the monopole is 101-feet; Dish Wireless LLC proposed antennas will be located at a center line height of 85-feet.
2. The proposed modification will not result in the increase of the site boundary as depicted on the attached site plan.
3. The proposed modification will not increase the noise levels at the facility by six decibels or more, or to levels that exceed local and state criteria. The incremental effect of the proposed changes will be negligible.

420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566



4. The operation of the proposed antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. As indicated in the attached power density calculations, the combined site operations will result in a total density of 17.18% as evidenced by Exhibit F.

Connecticut General Statutes 16-50-aa indicates that the Council must approve the shared use of a telecommunications facility provided it finds the shared use is technically, legally, environmentally, and economically feasible and meets public safety concerns. As demonstrated in this letter, Dish Wireless LLC respectfully indicates that the shared use of this facility satisfies these criteria.

A. **Technical Feasibility.** The existing monopole has been deemed structurally capable of supporting Dish Wireless LLC proposed loading. The structural analysis is included in Exhibit D.

B. **Legal Feasibility.** As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing monopole such as this monopole in Wethersfield. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit Dish Wireless LLC to obtain a building permit for the proposed installation. Further, a letter of Authorization is included as Exhibit G, authorizing Dish Wireless LLC to file this application for shared use.

C. **Environmental Feasibility.** The proposed shared use of this facility would have a minimal environmental impact. The installation of Dish Wireless LLC equipment at the 85-foot level of the existing 101-foot monopole would have an insignificant visual impact on the area around the monopole. Dish Wireless LLC ground equipment would be installed within the existing facility compound. Dish Wireless LLC shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by Exhibit F, the proposed antennas would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.

D. **Economic Feasibility.** Dish Wireless LLC will be entering into an agreement with the owner of this facility to mutually agreeable terms. As previously mentioned, the Letter of Authorization has been provided by the owner to assist Dish Wireless LLC with this tower share application.

E. **Public Safety Concerns.** As discussed above, the water tank is structurally capable of supporting Dish Wireless LLC proposed loading. Dish Wireless LLC is not aware of any public safety concerns relative to the proposed sharing of the existing water tank. Dish Wireless LLC intentions of providing new and improved wireless service through the shared use of this facility is expected to enhance the safety and welfare of local residents and individuals traveling through Wethersfield.

Sincerely,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 1 Box 2, Sturbridge, MA 01566
Email: victoria@northeastsitesolutions.com



Attachments

Cc:

Michael L. Rell, Mayor
Town of Wethersfield
505 Silas Deane Highway
Wethersfield CT

Denise Bradley, Town Planner
Town of Wethersfield
505 Silas Deane Highway
Wethersfield CT

SOUTHERN N E TELEPHONE C/O FRONTI, Property Owner
PO BOX 2629
Addison, TX 75001

EVEREST INFRASTRUCTURE PARTNERS, Tower Owner
EIP COMMUNICATIONS LLC
Two Allegheny Center
Pittsburgh PA 15212

ATTACHMENT 1

Petition No. 1012
MetroPCS
75 Wells Road, Wethersfield, Connecticut
Staff Report
December 1, 2011

On October 26, 2011, the Connecticut Siting Council (Council) received a petition (Petition) from MetroPCS for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to an existing telecommunications facility at 75 Wells Road in Wethersfield. Specifically, MetroPCS seeks to co-locate on an existing 104-foot tall monopole owned by New Cingular Wireless PCS LLC (AT&T). The existing tower, located adjacent to the east side of an existing building, currently supports AT&T. T-Mobile and Verizon have existing leases for tower space but have not located on the tower to date.

MetroPCS seeks to install six panel antennas on t-arms at the 75-foot level of the tower. The tower and foundation would require modifications to support the new equipment.

MetroPCS would install three equipment cabinets adjacent to the existing fenced compound area. The ground equipment would require MetroPCS to expand the existing compound and lease area to the south. The new fenced area would extend 17 feet to the south, then angle 12 feet to the west, terminating at the existing building. The new fence would match the existing. Three new plantings would be installed along the east side of the new fenced area to screen views from Wells Road and Savage Road. Staff recommends one additional evergreen planting along the south side of the compound extension to provide further screening.

There are no wetlands at the site. One evergreen shrub would be removed. The addition of new plantings along the fence line of the compound expansion area would mitigate views of the compound from the south and east. Evergreens along the east side and north side of the existing compound would remain. The maximum worst-case power density including AT&T's existing and T-Mobile's and Verizon's proposed equipment, would be 53 percent of the applicable limit.

ATTACHMENT 4

Unique ID: 205069

Wethersfield

Card No: 1 of 1

Location:	75 WELLS RD				Map/Lot:	205 069		Zone:	SRD/A	Date Printed:	08-05-21	
911 Address:					Exempt			Nbhd:	C30	Last Update:	08-05-21	
Owner Of Record						Volume/Page	Date	Sales Type		Valid	Sale Price	
SOUTHERN N E TELEPHONE CO C/O FRONTI						0121 /0472	11-30-46			NO	0	
PO BOX 2629 ADDISON , TX 75001												
Additional Owners:												
Prior Owner History												
/												
/												
/												
/												
/												
Permit Number	Date	Cost	New Hous	Status	% Comp	Est Completion	Building Permit					
B-20-0245	05-27-20	20,000	No	Closed	100	10-01-20	Upgrade and replacement of equipment at existing telecommunications fac					
B-19-0561	08-29-19	15,000	No	Closed	100	10-01-19	Upgrade and replacement of equipment at existing telecommunications fac					
P-19-0121	06-19-19	82,500	No	Closed	100	08-21-19	REMOVE EXITING UNDERGROUND OIL STORAGE TANK & INSTALL 1 NEW ABOVE GROUN					
B-19-0278	06-11-19	25,000	No	Closed	100	10-01-19	Swap 3 antennas for new models and add 3 new remote radio units to tie					
B-17-502	10-11-18	5,000	No	Closed	100	06-20-18	CELL TOWER WORK (AT&T)					
B-16-545	11-08-16	25,000	No	Permit Issue	100		REMOVE 3 ANTENNA AND REPL WITH 3 NEWER MODELS. ADD 2 NEW RRUS PER SECT					
				State Item Codes				Appraised Value				
Census/Tract	4922	Code	Quantity	Value	Code	Quantity	Value	Total Land Value		594,000		
Dev Map	Dev Lot 3A	22-Comm Bldg	1.00	148,650				Total Building Value		212,351		
Date	05/25/2018	01/25/2019	25-Comm Outbldg	3.00	480,320			Total Outbuilding Value		686,169		
Inspector	EQ		41-PubUtil Land	0.90	415,790			Total Market Value		1,492,520		
Action	Measure	Hearing-No Chng										
Acres							Influence Factors					
Land Type	Acres	490	Rate	Adj	Influence	Total Value	Land Type	Influence	Reason	Comment		
Pub Util Land	0.90	0.00	216,000	1.00	175	594,000	Pub Util Land	175	Intensive Use			
Total	0.90					594,000						
Assessment History (Prior Years as of Oct 1)							490 Appraised Totals					
	Current	2020	2019	2018	2017		Type	Acres	Value	Type	Acres	Value
Land	415,790	415,790	259,870	259,870	92,100							
Building	148,650	148,650	304,570	304,570	286,300							
Outbuilding	480,320	480,320	480,320	480,320	233,500							
Total	1,044,760	1,044,760	1,044,760	1,044,760	611,900					Totals		
Comments												
CELL POLE 4500 A MONTH, 8 CAP RATE 60 X 36 SLATE ROOF; NO OFFICE FIT UP; NO ACCESS TO UQS - STAIRS REMOVED; CONTROL SWITCH BUILDING ZONING CHANGE PER PLANNING												

Unique ID: 205069

Wethersfield

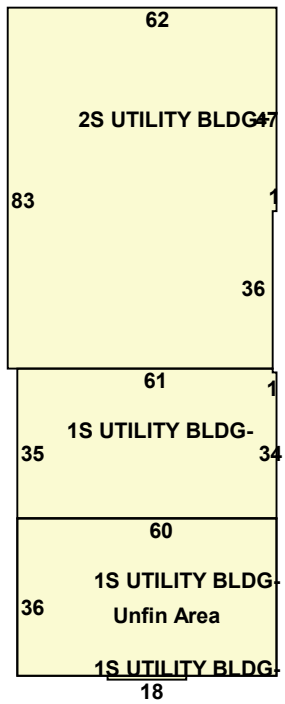
Location: 75 WELLS RD

Unit

FRONTIER							
Use	Class	Quality	Stry	WH	Area	BG	Units
Utility Bldg	Masonry	B	2	10	14,497	NO	

Commercial Building Description	Description	Area/Qty	Value
Building Use Utility Buidin	Base Value	14,497	453,031
Class Masonry	Central Air	453,031	6,795
Overall Condition Very Good	Unfinished Basement Area	5,110	102,200
Construction Quality B	Value Before Depr.	0	562,027
Stories 2.00	Depr/Adjust Amount	0	123,646
Year Built 1939	Final Value (After Depr)	0	438,381
Remodel			
Percent Complete 100			
GLA 14,497			
Basement			
Basement Area 5110			

Basement Unfinished Area	Grade Factor 0	Physical Depreciation % 22
HVAC	Functional Depreciation % 0	Economical Depreciation % 0
Heating Type Hot Water	Attached Component Computations	
Fuel Type Oil	Type	Yr Bilt
Cooling Type Central 100 %	Unfinished Area	1939
Interior	Condition	Area/Qty
Floors Vinyl Tile	Good	2,160
Walls Plaster		48,838
Wall Height 10		
Exterior		
Exterior Walls Brick		
Roof Cover Tar and Gravel		
Special Features		



Detached Component Computations									
Type	Year	Condition	Area/Qty	Value	Type	Year	Condition	Area/Qty	Value
PreCastConCel	2003	Good	200	7,905					
Paving	1999	Good	2,400	3,264					
Cell Tower	2000	Average	1	675,000					
Total Building Value									
Building 1	Value	487,219							
Valuation Method	I								



Property Information

Property ID 205069
Location 75 WELLS RD
Owner SOUTHERN N E TELEPHONE CO



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of Wethersfield, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 11/14/17
Data updated daily

Print map scale is approximate.
Critical layout or measurement activities should not be done using this resource.

ATTACHMENT 5



DISH Wireless L.L.C. SITE ID:

BOBDL00106A

DISH Wireless L.L.C. SITE ADDRESS:

**75 WELLS ROAD
WETHERSFIELD, CT 06109**

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 (2 PER SECTOR)
 - INSTALL (1) PROPOSED ANTENNA PLATFORM MOUNT
 - INSTALL PROPOSED JUMPERS
 - INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
 - INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
 - INSTALL (1) PROPOSED MICROWAVE ANTENNA
 - INSTALL (1) ODU
 - INSTALL (4) PROPOSED CABLES

- GROUND SCOPE OF WORK:**
- INSTALL (1) PROPOSED METAL PLATFORM
 - INSTALL (1) PROPOSED ICE BRIDGE
 - 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
 - INSTALL (1) PROPOSED FIBER NID
 - INSTALL (1) PROPOSED METER SOCKET

SITE PHOTO



UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM
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: SOUTHERN N E TELEPHONE CO C/O FRONTIER COMMUNICATIONS
ADDRESS: PO BOX 2629 ADDISON, TX 75001
TOWER TYPE: MONOPOLE
TOWER CO SITE ID: 701773
TOWER APP NUMBER: TBD
COUNTY: HARTFORD
LATITUDE (NAD 83): 41° 42' 21.096" N 41.70586°
LONGITUDE (NAD 83): 72° 39' 48.24" W -72.66340°
ZONING JURISDICTION: CONNECTICUT SITING COUNCIL
ZONING DISTRICT: SRD/A
PARCEL NUMBER: 205 069
OCCUPANCY GROUP: U
CONSTRUCTION TYPE: II-B
POWER COMPANY: EVERSOURCE CT ELECTRIC
TELEPHONE COMPANY: CROWN CASTLE

PROJECT DIRECTORY

APPLICANT: DISH Wireless L.L.C.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120
TOWER OWNER: EVEREST INFRASTRUCTURE PARTNERS EIP COMMUNICATIONS, LLC
TWO ALLEGHENY CENTER
PITTSBURGH, PA 15212
PHONE # TBD
SITE DESIGNER: FORESITE LLC
462 WALNUT ST. SUITE #1
NEWTON, MA 02460
617-212-3123
SMOSSAVAT@FORESITELLC.COM
SITE ACQUISITION: DAVID GOODFELLOW
DAVID.GOODFELLOW@DISH.COM
CONSTRUCTION MANAGER: CHAD WILCOX
CHAD.WILCOX@DISH.COM
RF ENGINEER: DIPESH PARIKH
DIPESH.PARIKH@DISH.COM

CONNECTICUT CODE OF 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	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

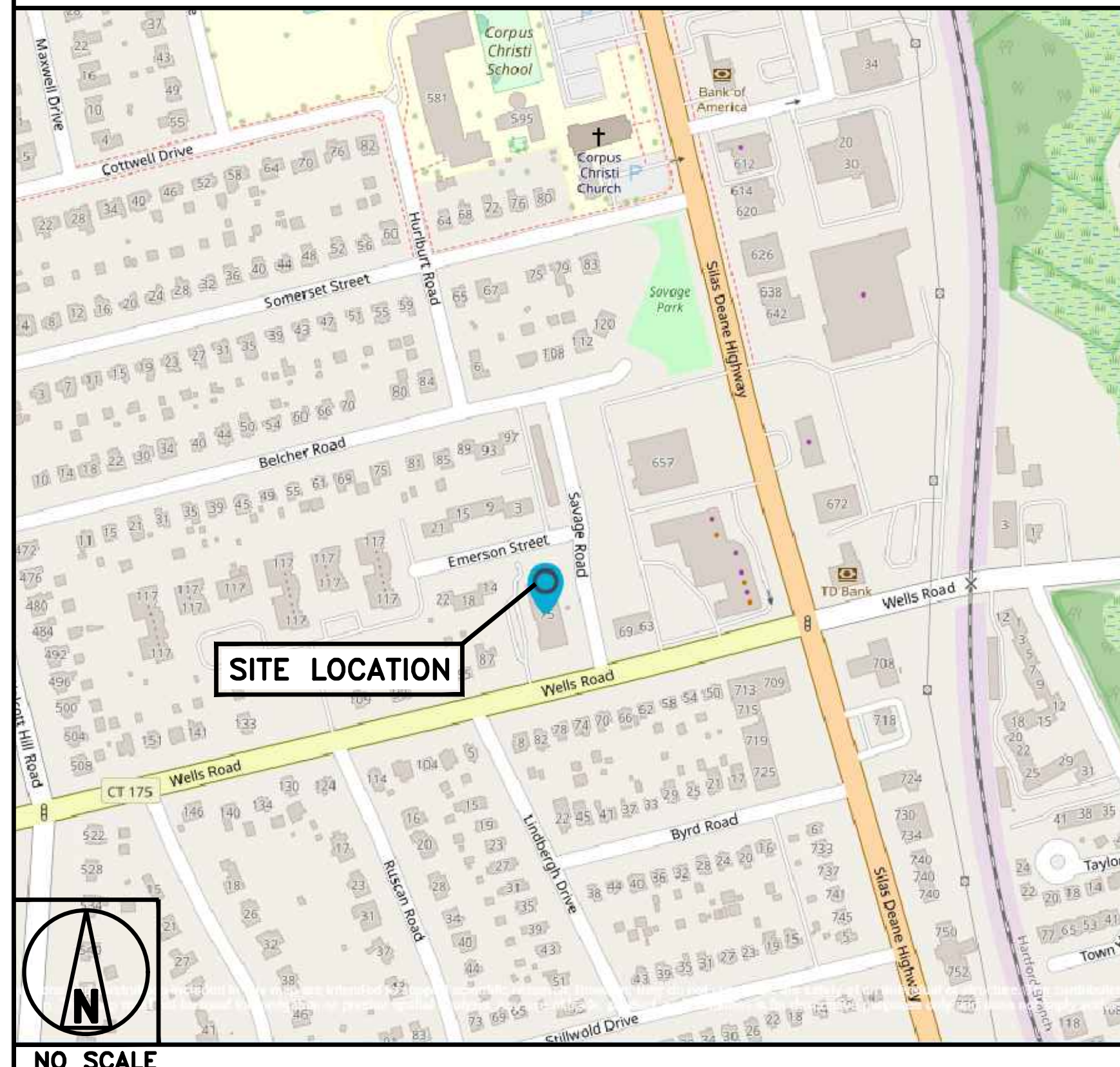
SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
A-1	OVERALL SITE PLAN
A-2	ENLARGED SITE PLANS
A-3	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-4	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
A-7	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
E-4	PPC NEUTRAL-TO-GROUND SCHEMATIC
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
G-4	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	RF SIGNAGE
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES
GN-5	GENERAL NOTES

DIRECTIONS

FROM 1 BRADLEY INTERNATIONAL AIRPORT, WINDSOR LOCKS, CT 06096.
TO 75 WELLS RD, WETHERSFIELD, CT 06109, 22 MIN (19.3 MILES) VIA I-91 S.
GET ON BRADLEY INTERNATIONAL AIRPORT CON 2 MIN (0.6 MI).
TAKE CT-20 E AND I-91 S TO CT-99 S IN WETHERSFIELD.
TAKE EXIT 85 FROM CT-15 S/US-5 S 17 MIN (17.1 MI).
FOLLOW CT-99 S TO WELLS RD 4 MIN (1.6 MI).
75 WELLS RD WETHERSFIELD, CT 06109.

VICINITY MAP



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01568
PH: 203-275-6669

CONSULTANT:



Architects. Engineers. Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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:

JK SM HV

RFDS REV #: A

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
A	07/24/2023	ISSUED FOR REVIEW
B	07/28/2023	MW ADDITION
C	07/28/2023	MW ELEV. CHANGE
D	07/31/2023	REVISED PER COMMENTS
E	08/06/2023	REVISED PER COMMENTS
F	08/28/2023	REVISED ANTENNA MOUNTS
1	10/19/2023	FINAL ISSUED

A&E PROJECT NUMBER

BOBDL00106A

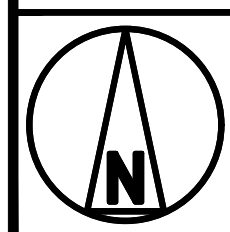
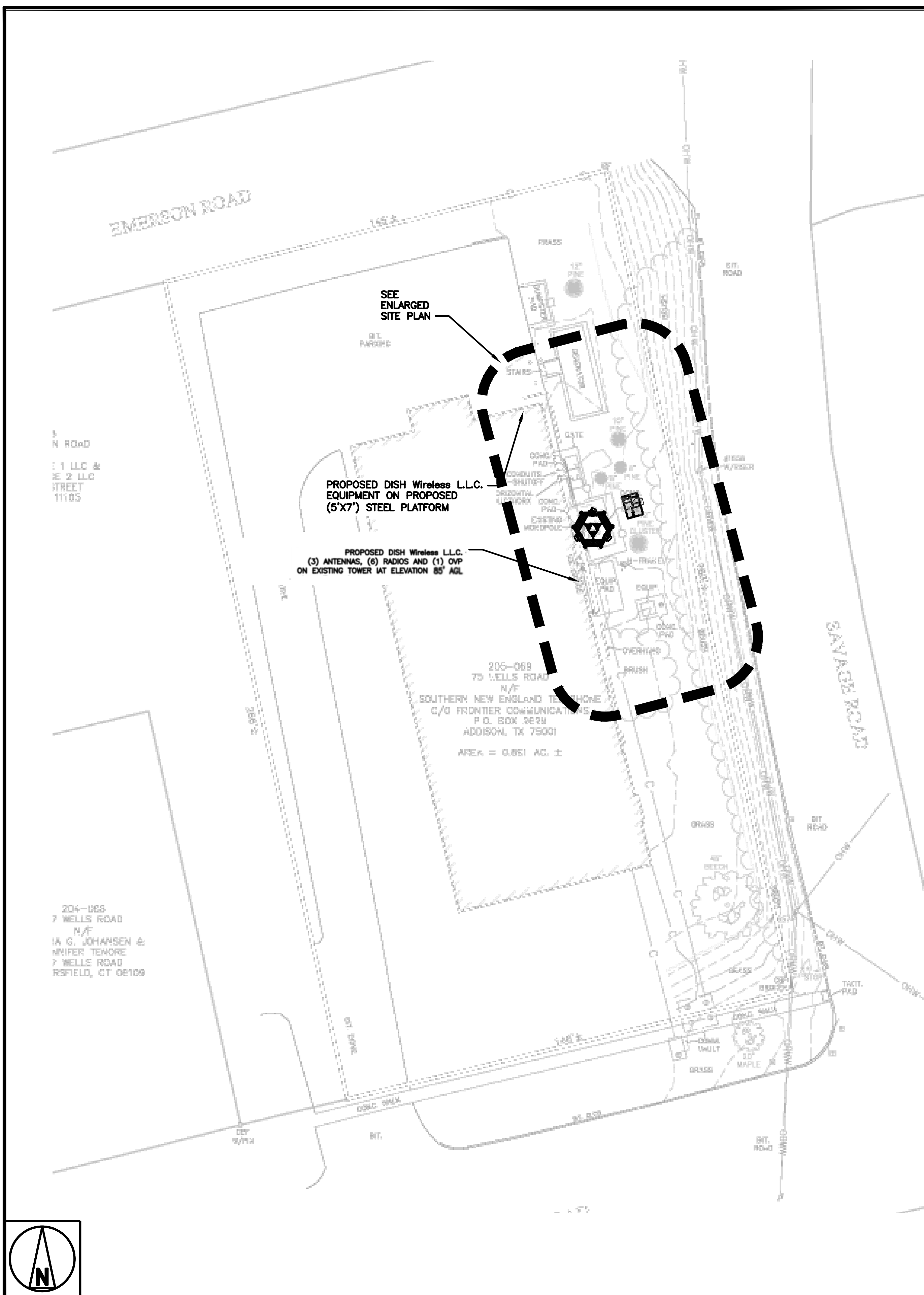
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

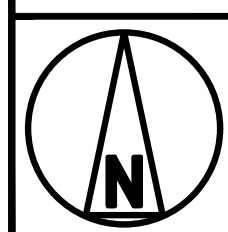
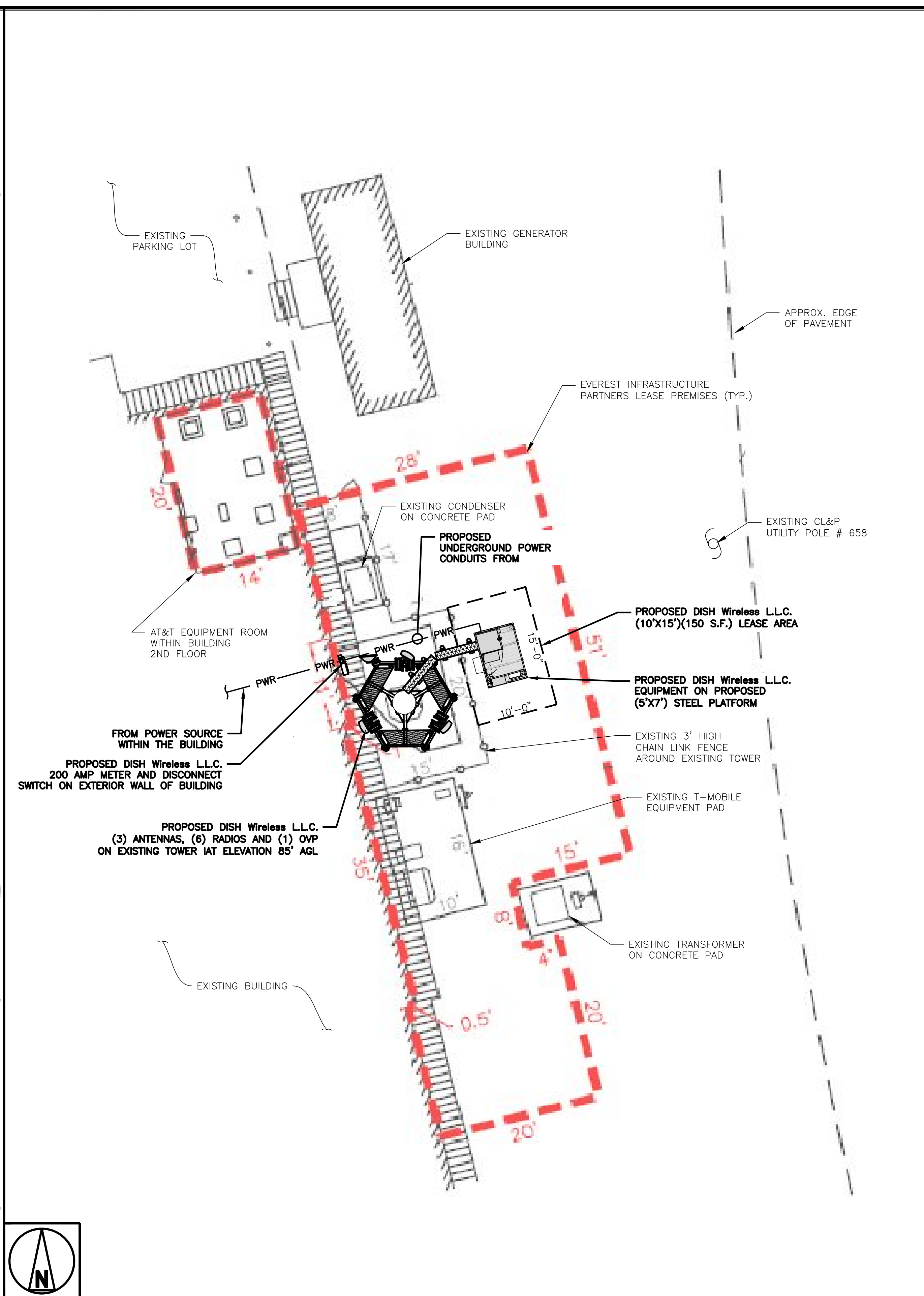
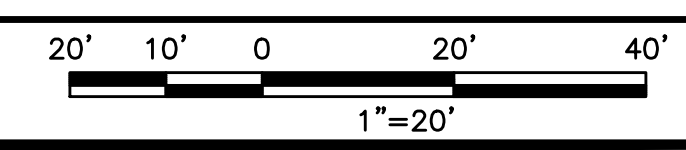
SHEET TITLE
TITLE SHEET

SHEET NUMBER

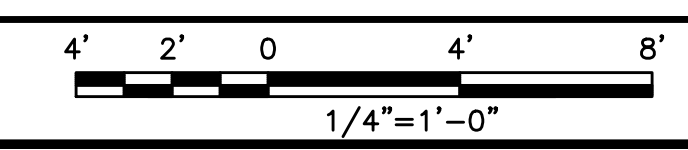
T-1



SITE PLAN



ENLARGED SITE PLAN



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:

NORTHEAST SITE SOLUTIONS
Tandy Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:

FORESITE LLC
Architects, Engineers, Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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WETHERSFIELD, CT 06109

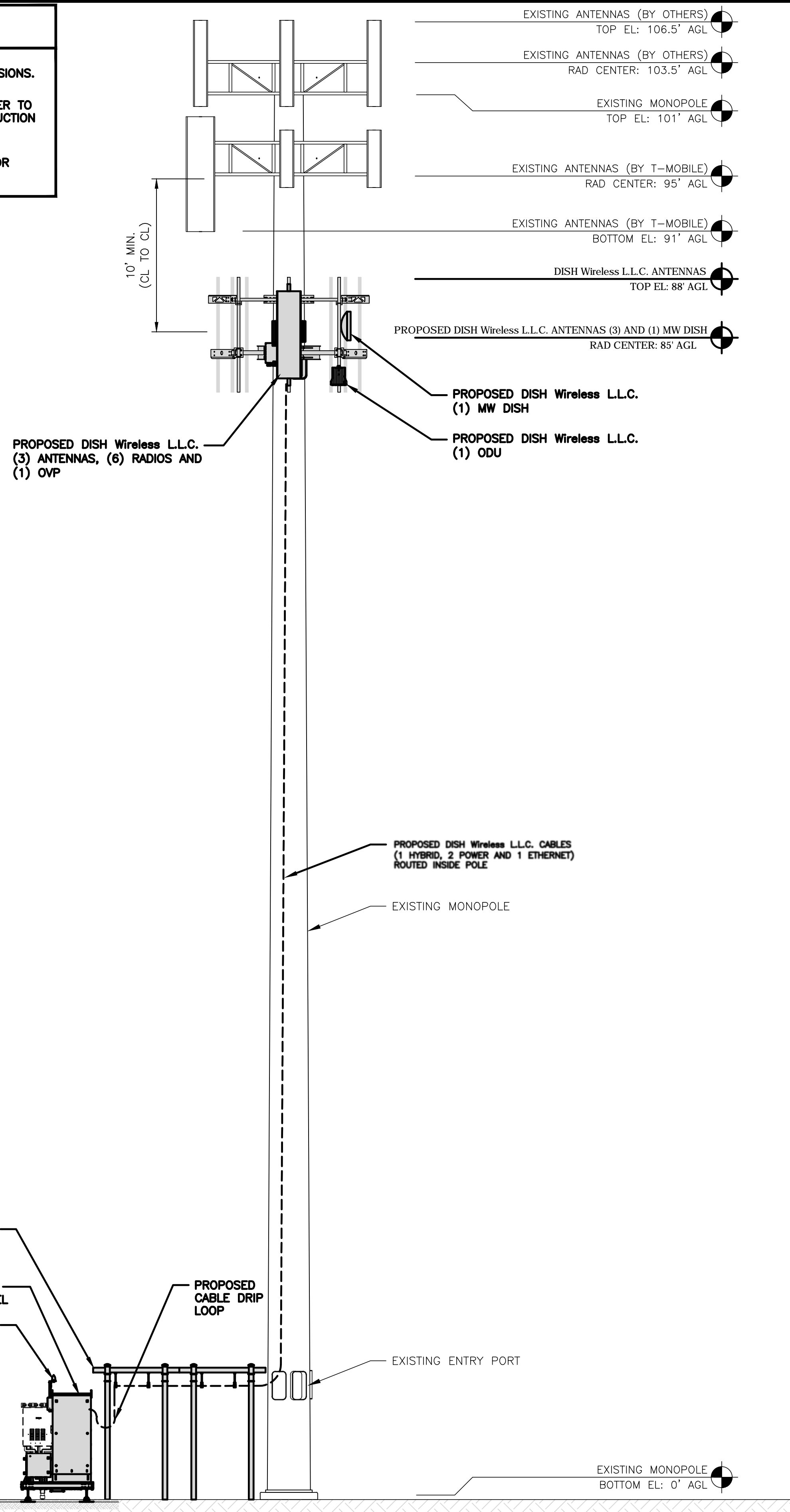
SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

SHEET NUMBER

LE-1

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.



PROPOSED SOUTH ELEVATION



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01568
PH: 203-275-6669

CONSULTANT:



Architects. Engineers. Surveyors
462 WALNUT STREET, SUITE 1
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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
OVERALL AND ENLARGED
SITE PLAN

SHEET NUMBER

LE-2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:

NORTHEAST
SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:

FORESITE LLC
Architects - Engineers - Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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JK	SM	HV

RFDS REV #: A

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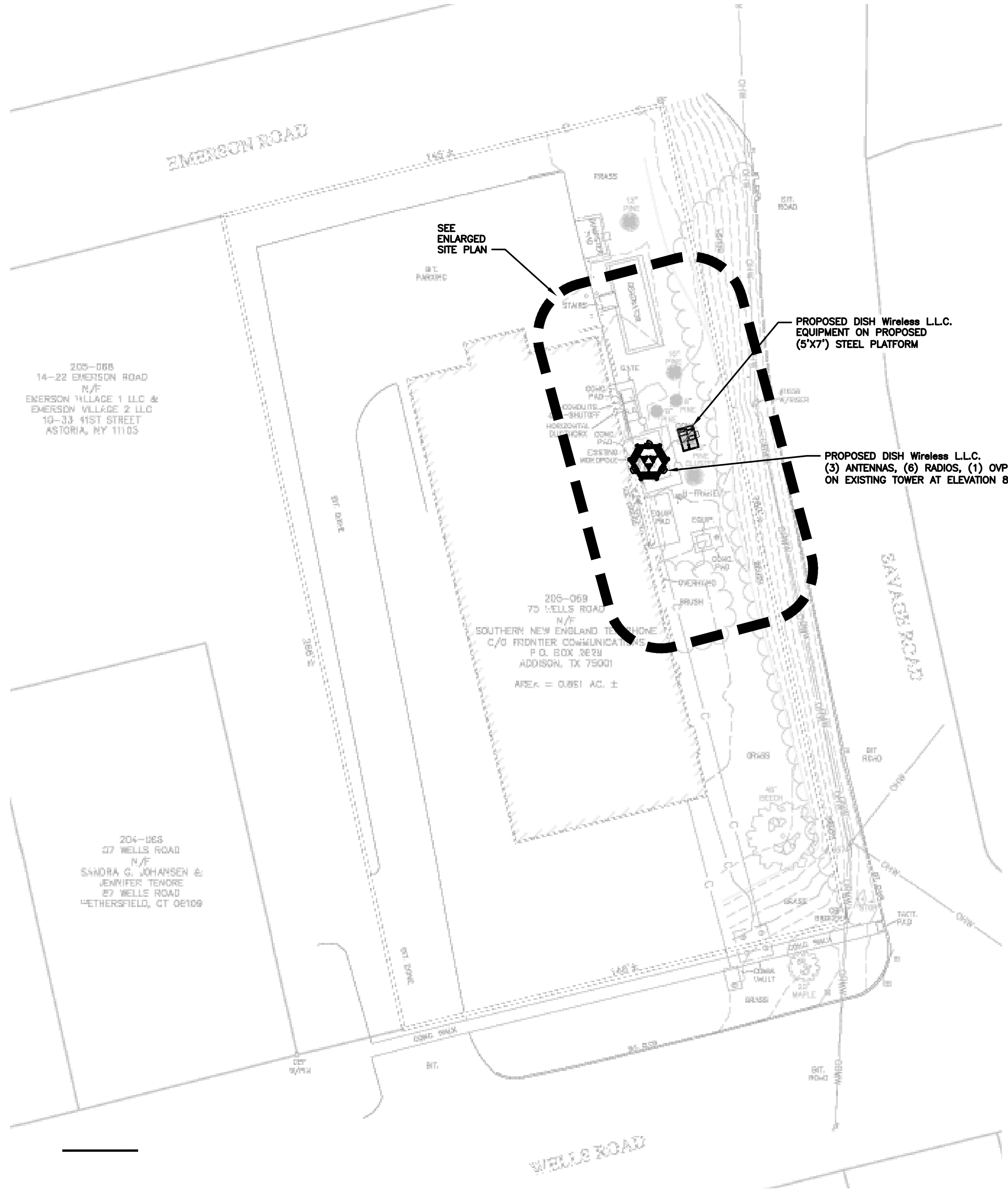
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WETHERSFIELD, CT 06109

SHEET TITLE
OVERALL SITE PLAN

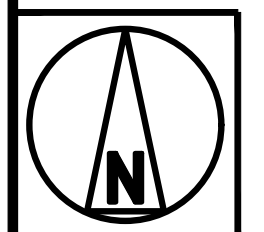
SHEET NUMBER
A-1



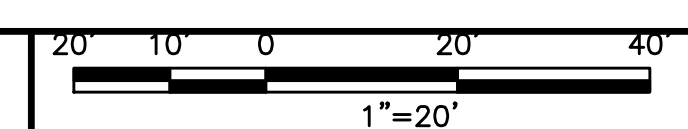
205-088
14-22 EMERSON ROAD
N/F
EMERSON VILLAGE 1 LLC &
EMERSON VILLAGE 2 LLC
10-33 41ST STREET
ASTORIA, NY 11103

205-069
75 WELLS ROAD
N/F
SOUTHERN NEW ENGLAND TELEPHONE
C/O FRONTIER COMMUNICATIONS
P.O. BOX 8838
ADDISON, TX 75001
AREA = 0.951 AC. ±

204-085
27 WELLS ROAD
N/F
SANDRA G. JOHANSEN &
JENNIFER TENORE
27 WELLS ROAD
WETHERSFIELD, CT 06109

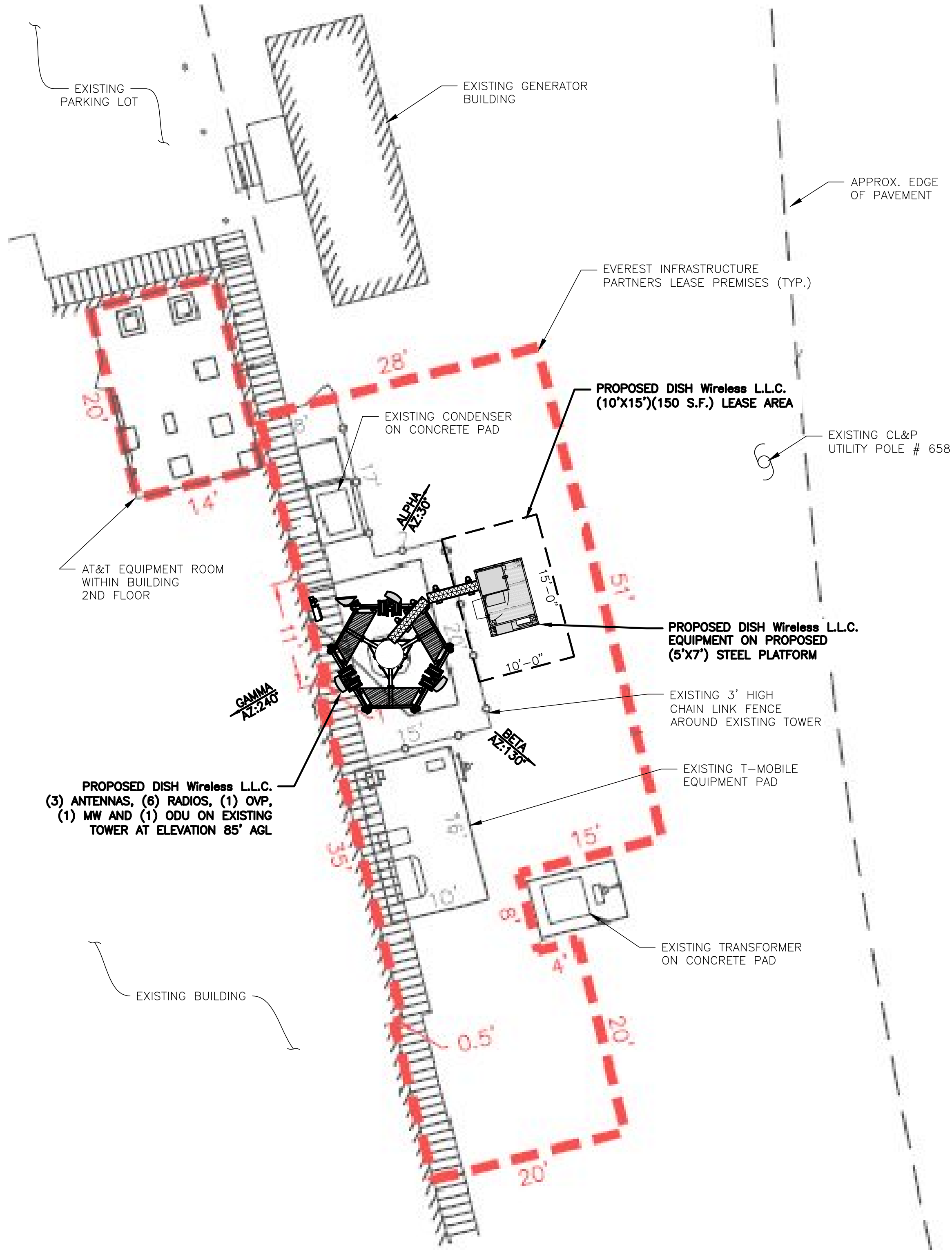


PLOT PLAN

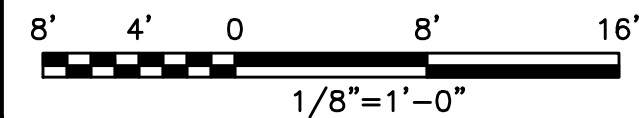


NOTES

- 1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.



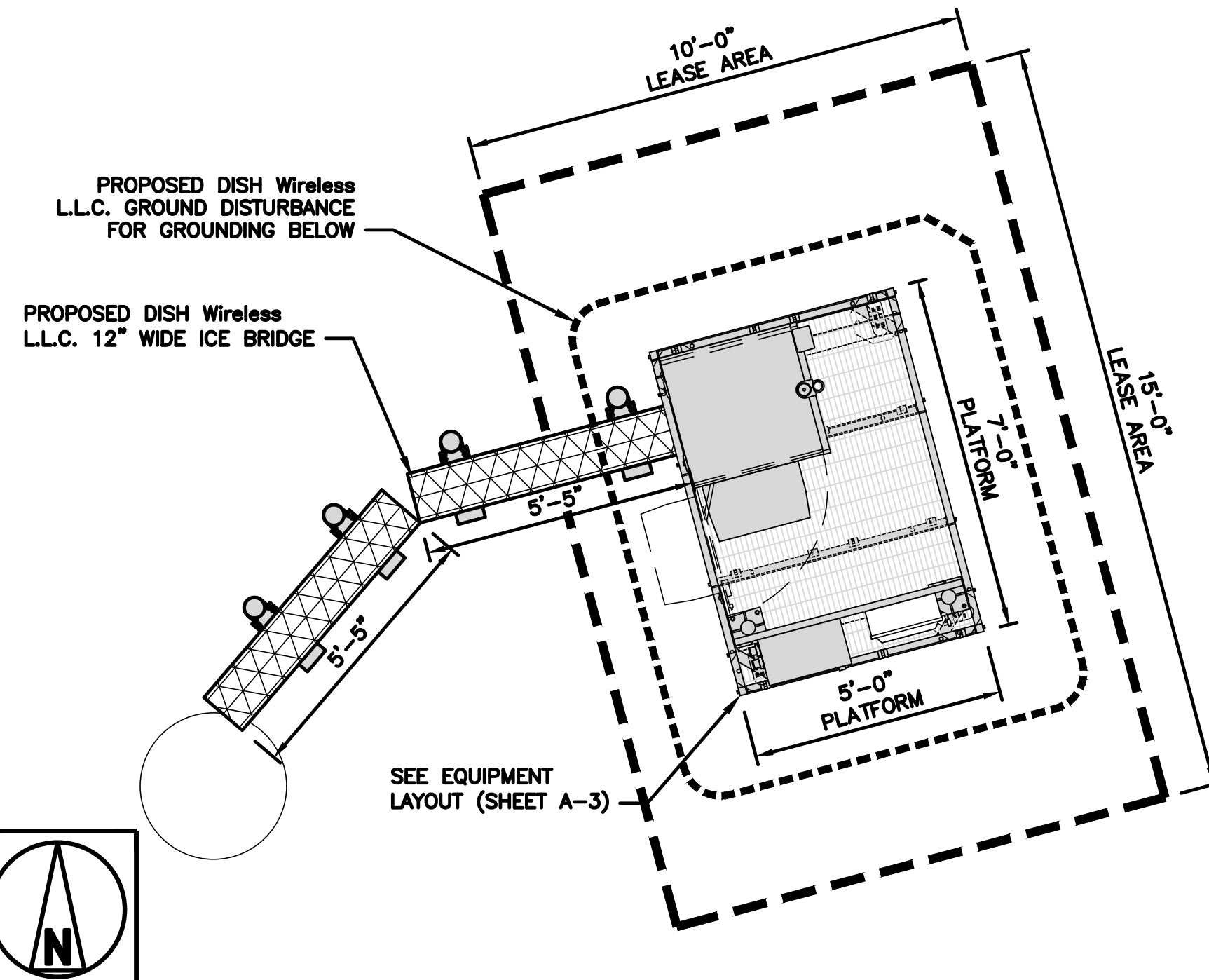
OVERALL SITE PLAN



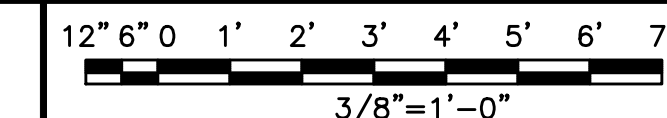
1

NOTES

- 1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
- 2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
- 3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN



2



SATELLITE PHOTO

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:

NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:

FORESITE LLC
Architects. Engineers. Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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DRAWN BY: CHECKED BY: APPROVED BY:

JK SM HV

RFDS REV #: A

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SUBMITTALS		
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1	10/19/2023	FINAL ISSUED

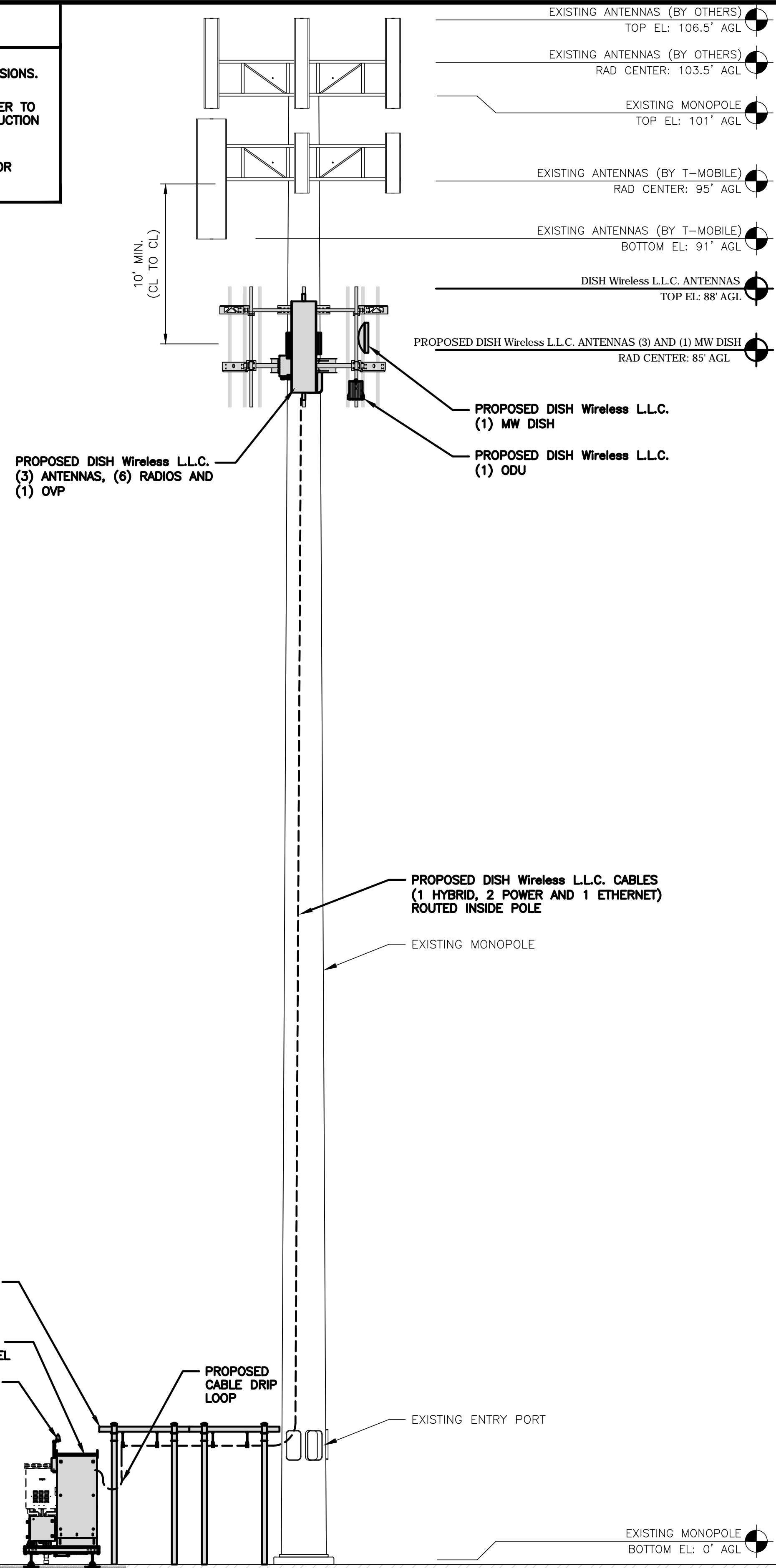
A&E PROJECT NUMBER
BOBDL00106A
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
ENLARGED SITE PLANS

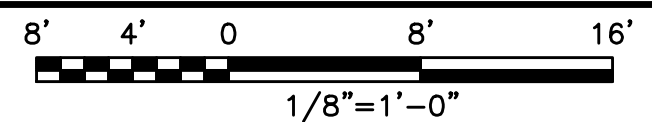
SHEET NUMBER
A-2

NOTES

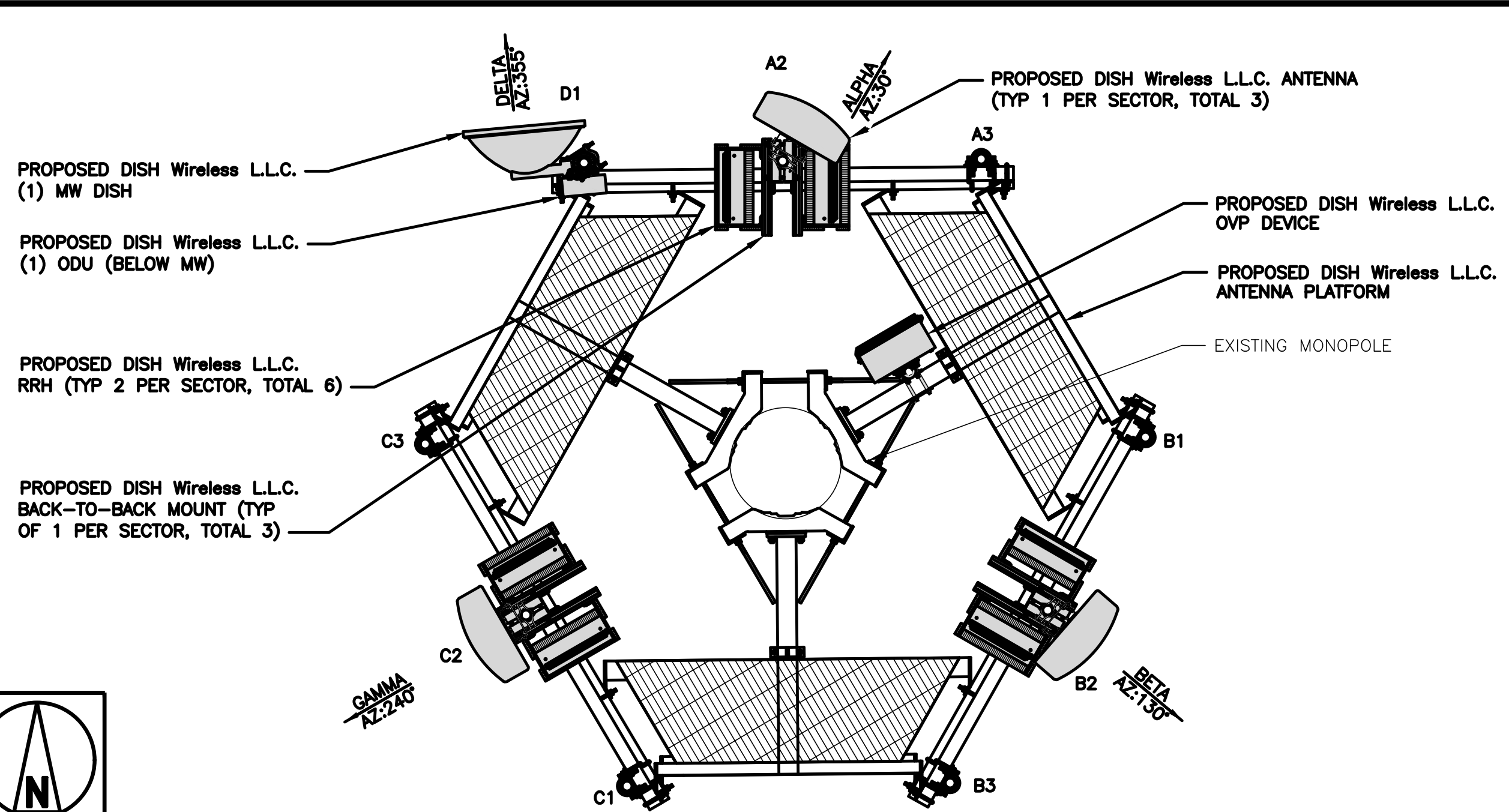
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



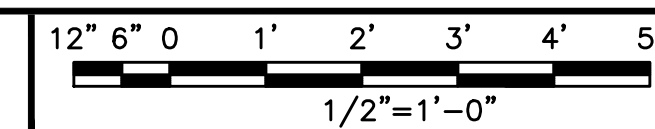
PROPOSED SOUTH ELEVATION



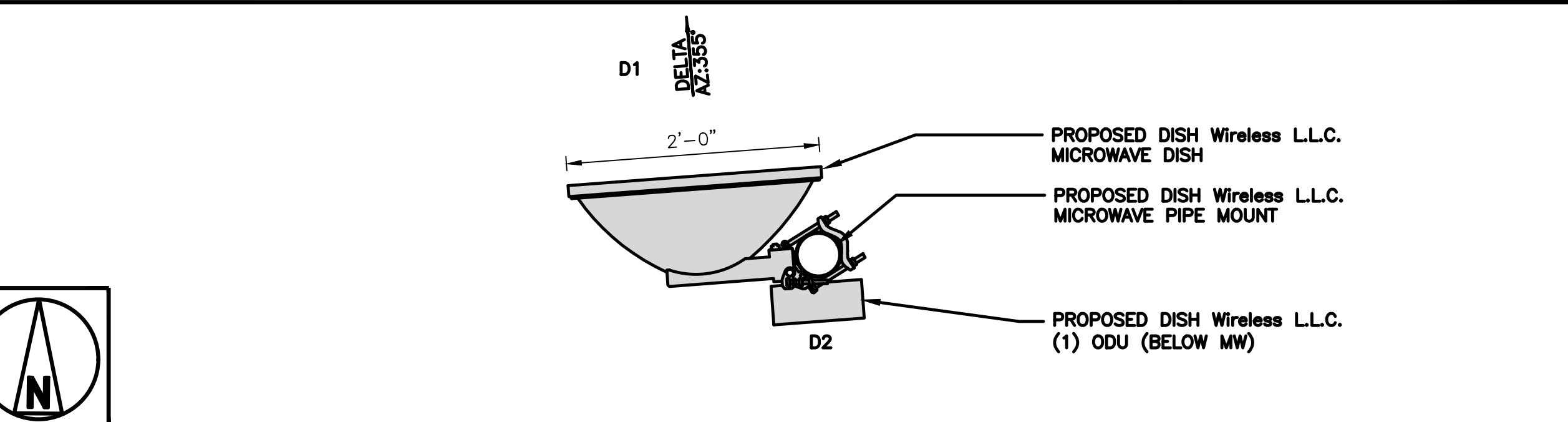
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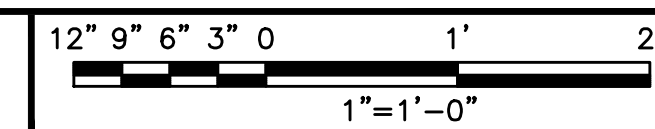
ANTENNA LAYOUT



2



MICROWAVE LAYOUT



3

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECH	AZIMUTH	RAD CENTER		FEED LINE TYPE AND LENGTH	MANUFACTURER - MODEL NUMBER	TECH	
A1	---	---	---	---	---	1 HYBRID, 2 POWER AND 1 ETHERNET CABLES (110' LONG)	FUJITSU - TA08025-B605	5G	A1	RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	JMA - MX08FRO665-21	5G	30°	85'-0"		FUJITSU - TA08025-B604	5G	A2	
A3	---	---	---	---	---		---	---	---	
B1	---	---	---	---	---	SHARED W/ALPHA	FUJITSU - TA08025-B605	5G	A1	SHARED W/ALPHA
B2	PROPOSED	JMA - MX08FRO665-21	5G	130°	85'-0"		FUJITSU - TA08025-B604	5G	A2	
B3	---	---	---	---	---		---	---	---	
C1	---	---	---	---	---	SHARED W/ALPHA	FUJITSU - TA08025-B605	5G	A1	SHARED W/ALPHA
C2	PROPOSED	JMA - MX08FRO665-21	5G	240°	85'-0"		FUJITSU - TA08025-B604	5G	A2	
C3	---	---	---	---	---		---	---	---	
SECTOR POS.	MICROWAVE DISH					TRANSMISSION CABLE	NOTES			
	EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECH	AZIMUTH	RAD CENTER		FEED LINE TYPE AND LENGTH	1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS. 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.		
D1	PROPOSED	COMMSCOPE - VHLP2-18D	5G	355°	85'-0"	TBD (110' LONG)				
D2	PROPOSED	CERAGON - IP-50C (MW RADIO)	5G	N/A	85'-0"					
D3	---	---	---	---	---					

ANTENNA & MW SCHEDULE

NO SCALE 4



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:
NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:
FORESITE LLC
Architects, Engineers, Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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DRAWN BY: JK CHECKED BY: SM APPROVED BY: HV

RFDS REV #: A

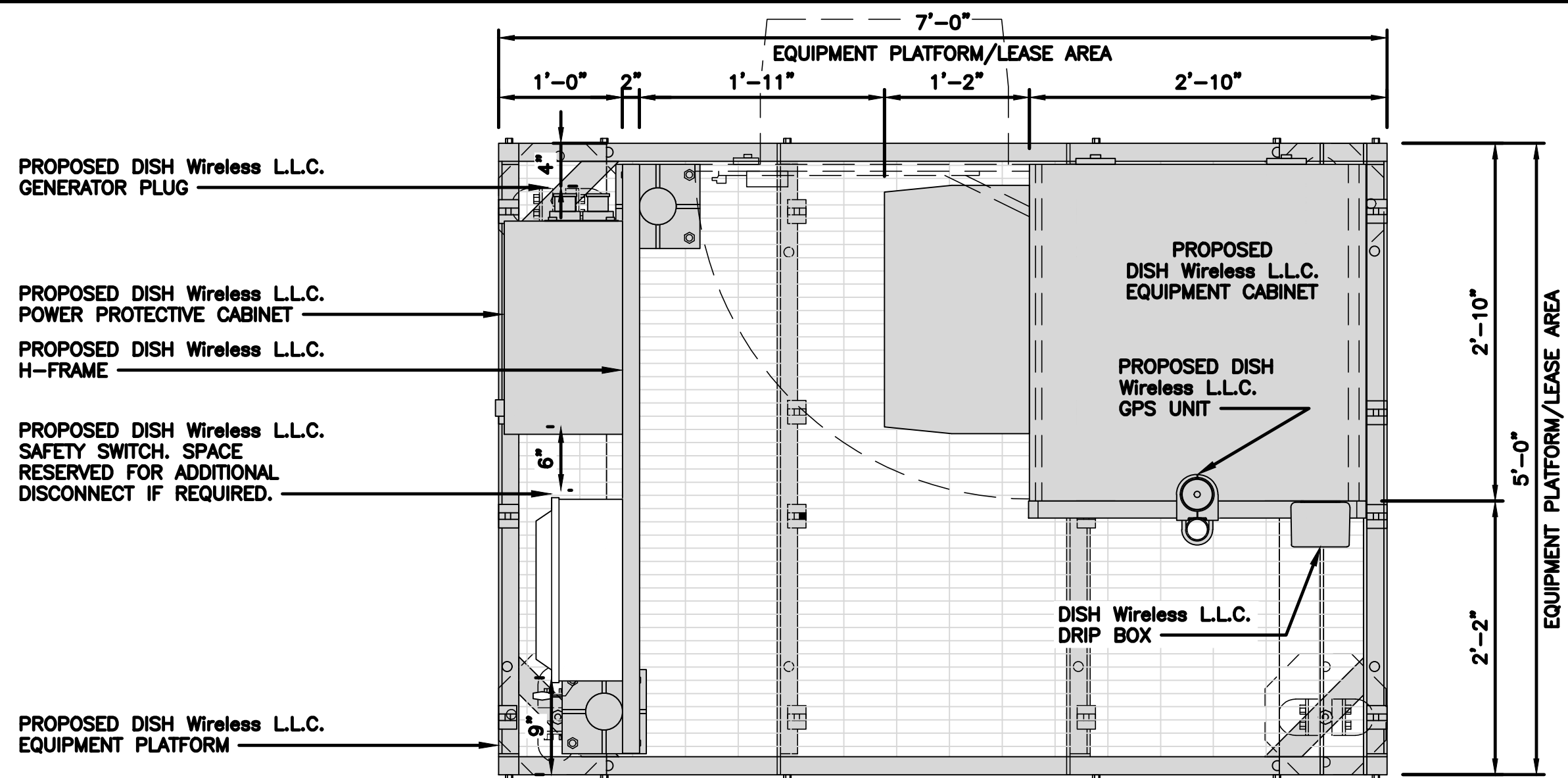
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BOBDL00106A
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

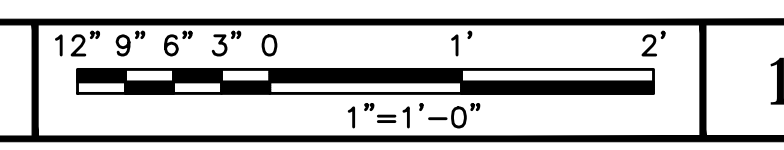
SHEET TITLE
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER
A-3



- ### NOTES
1. INSTALL POSTS BASES TO GRATING JUST INSIDE PLATFORM FRAME. NO DRILLING REQUIRED.
 2. GPS MAY BE MOVED TO ICE BRIDGE OR H-FRAME.
 3. ALL CONDUIT TO BE ROUTED THROUGH PLATFORM GRATING USING LIQUIDTIGHT, EMT, RIGID OR PVC COUPLERS. CONDUIT QUANTITY AND SIZES ARE PER ONE-LINE DIAGRAM ON E-3 SHEET OF CDS. (DC PLANT DEPENDENT.)
 4. CONTRACTOR MAY FIELD INSTALL CONDUIT HOLES IN BOTTOM OF PPC CABINET TO MATCH CONDUIT SIZES. (SEAL TO PPC MANUFACTURER SPECIFICATIONS).
 5. H-FRAME POSTS ARE STAGGERED TO ALLOW FIBER NID BOXES TO BE INSTALLED CLOSE TO PERIMETER FRAME OF PLATFORM.
 6. CONDUITS FROM PPC/FIBER DEMARK CABINETS TO EQUIPMENT CABINET (BBU) SHALL BE INSTALLED INSIDE PERIMETER OF PLATFORM AND UNDER GRATING.

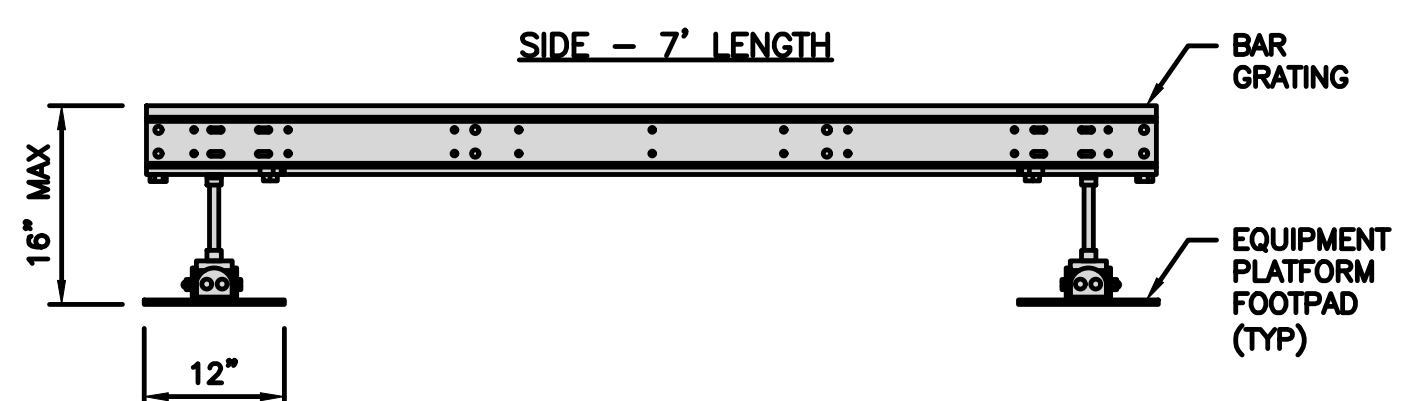
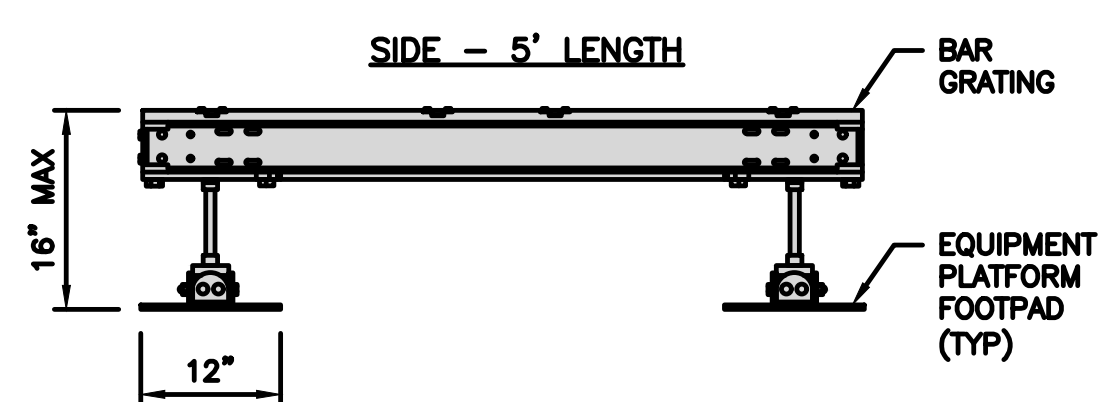
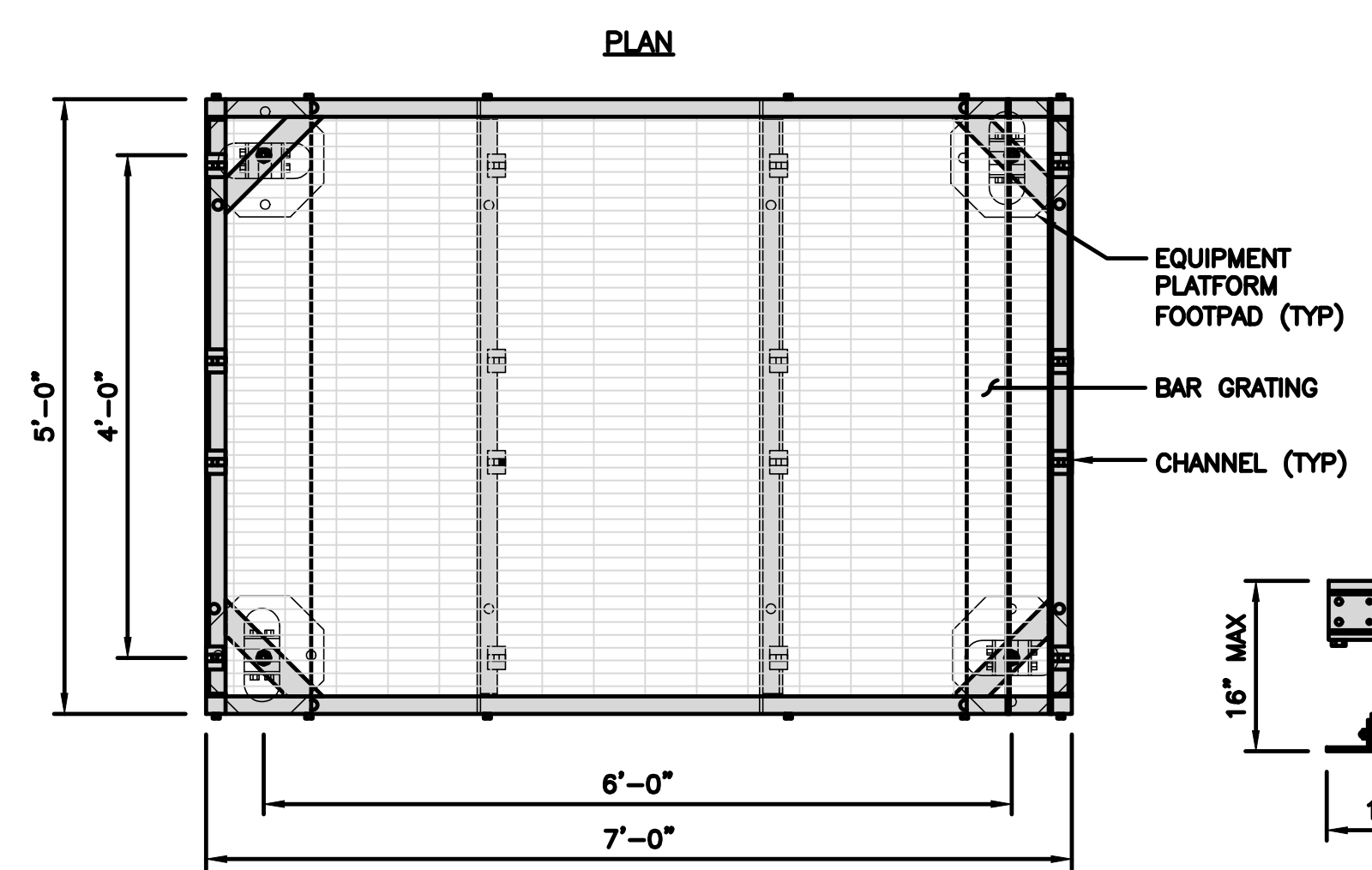
PLATFORM EQUIPMENT PLAN



1

COMMSCOPE MTC4045LP 5X7 PLATFORM	
DIMENSIONS (HxWxD)	16"x84"x60"
TOTAL WEIGHT	423 LBS

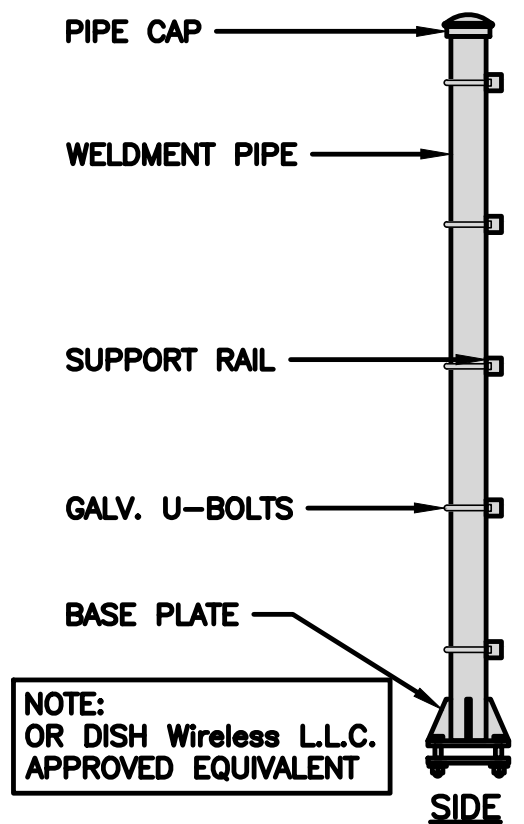
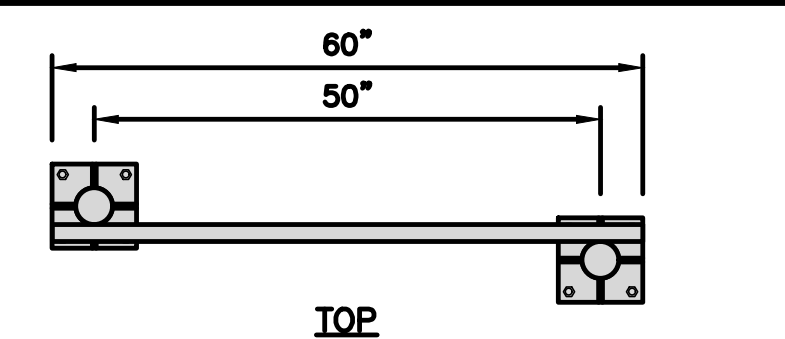
NOTE:
GC TO PROVIDE EXTENDED THREAD FOR PLATFORM IF REQUIRED HEIGHT EXCEEDS 17"



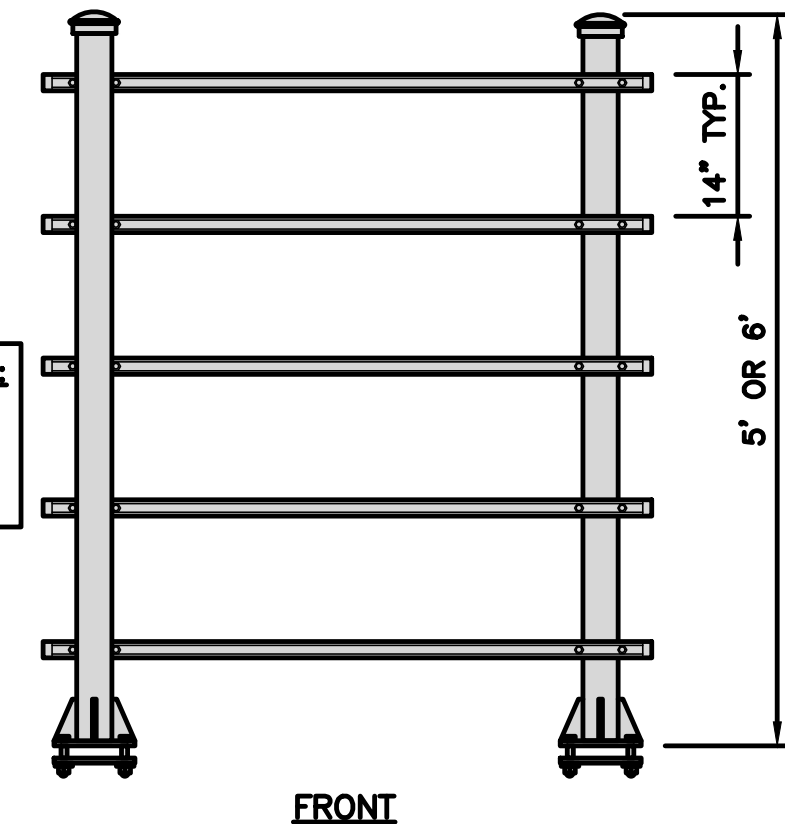
PLATFORM DETAIL

NO SCALE 2

COMMSCOPE MTC4045HFLD H-FRAME - STAGGERED	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



NOTE FOR THE FIELD CREWS:
CONSULT WITH DISH CM FOR H-FRAME POSTS AND UNISTRUT PLACEMENTS.



NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT

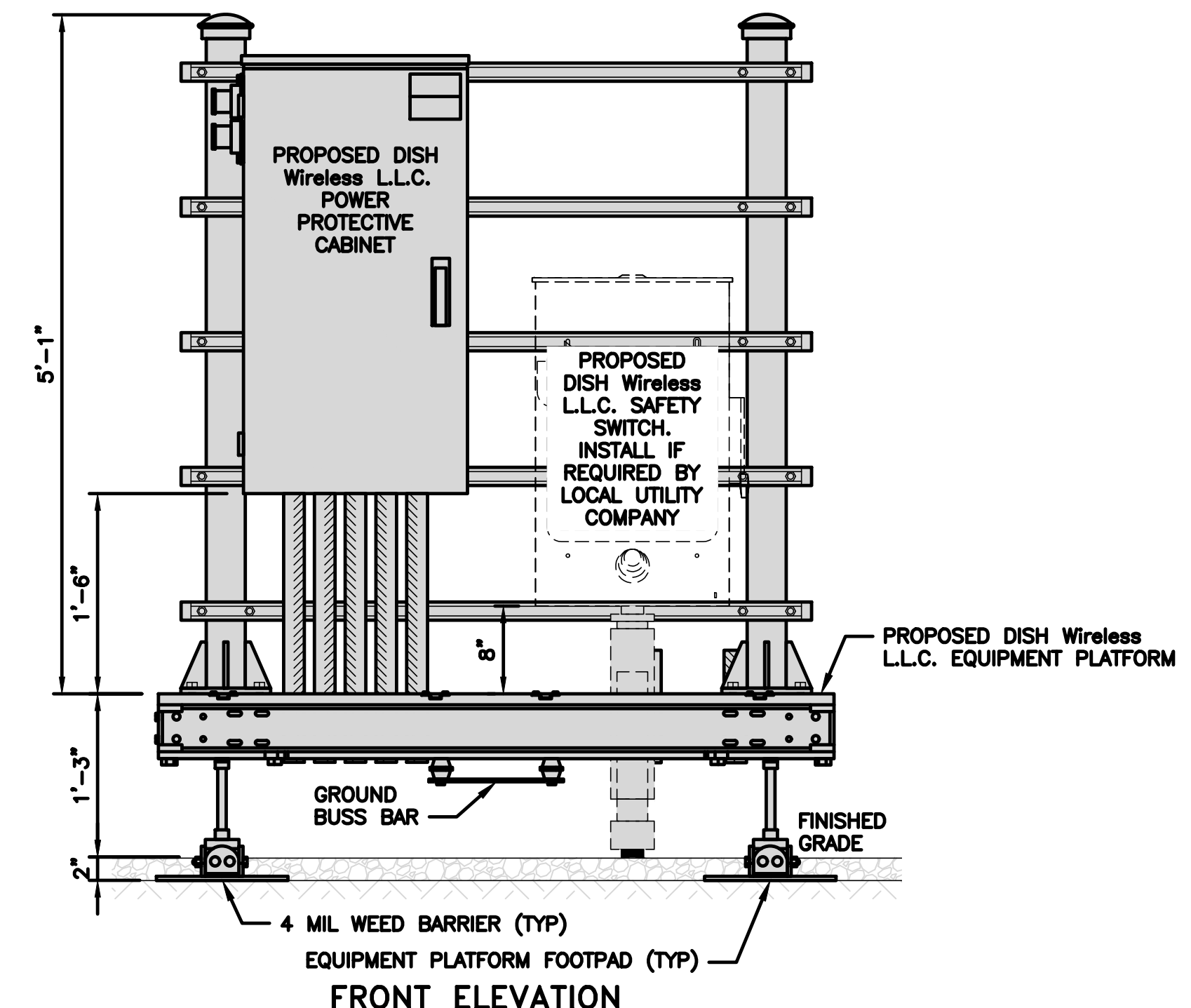
H-FRAME DETAIL

NO SCALE 3

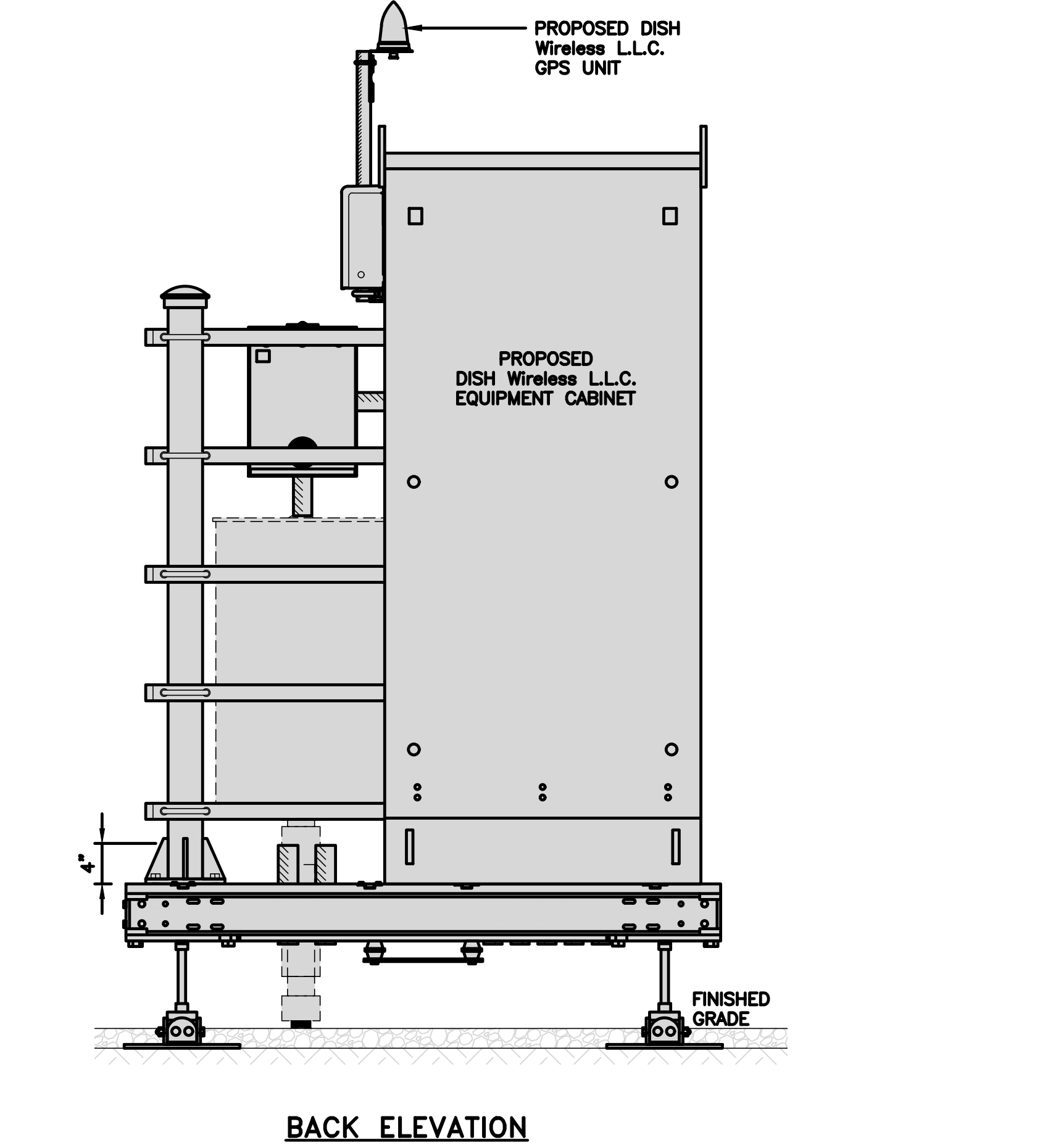
NOT USED

NO SCALE 4

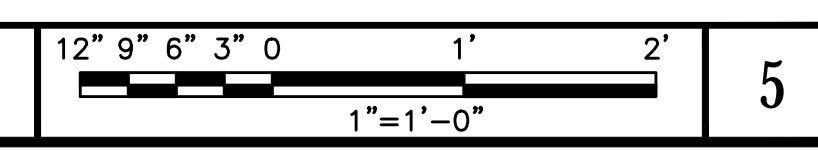
- ### NOTES
1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
 2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)



FRONT ELEVATION



BACK ELEVATION



5

H-FRAME EQUIPMENT ELEVATION



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:
NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:
FORESITE LLC
Architects, Engineers, Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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JK SM HV

RFDS REV #: A

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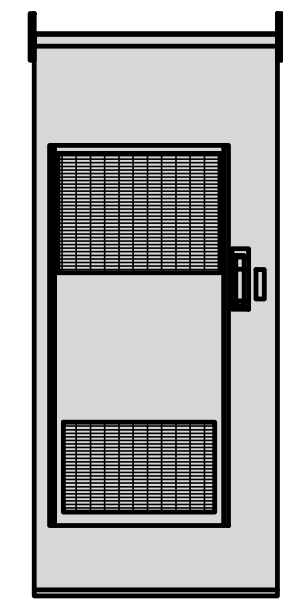
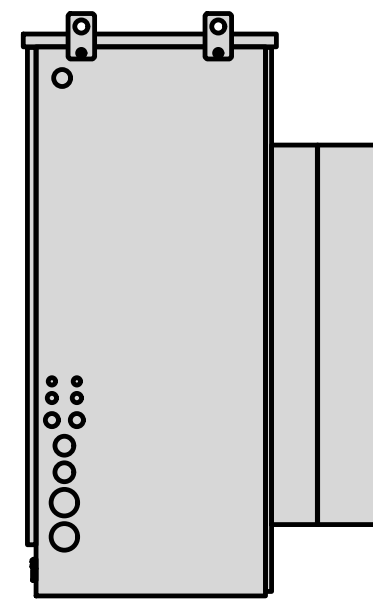
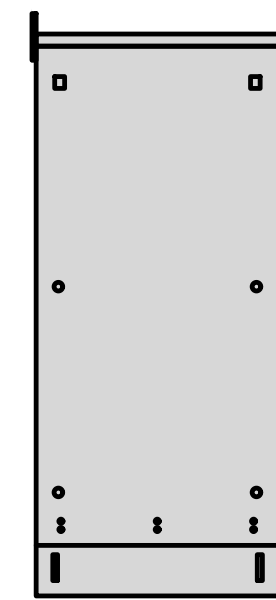
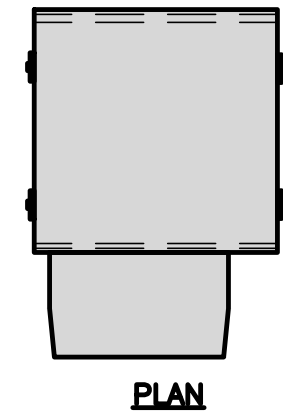
A&E PROJECT NUMBER
BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
EQUIPMENT PLATFORM AND
H-FRAME DETAILS

SHEET NUMBER
A-4

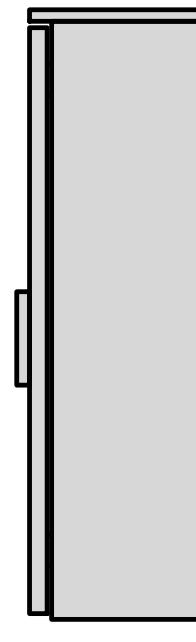
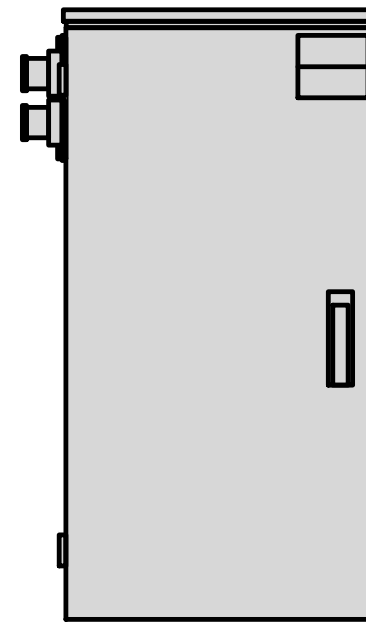
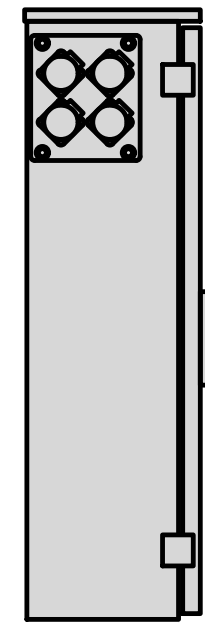
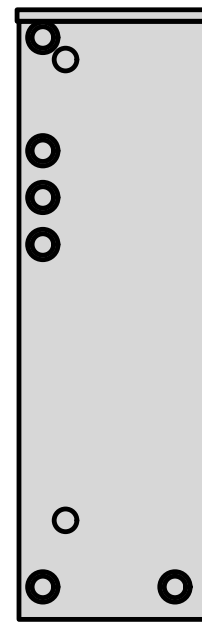
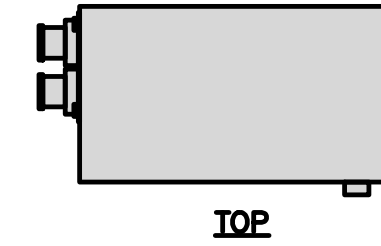
CHARLES INDUSTRY HEX CUBE-PM639155N4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	-48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	408 lbs



CABINET DETAIL

NO SCALE 1

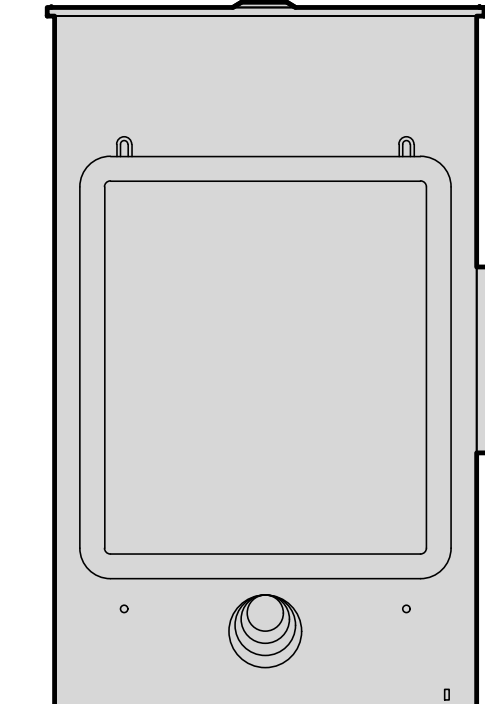
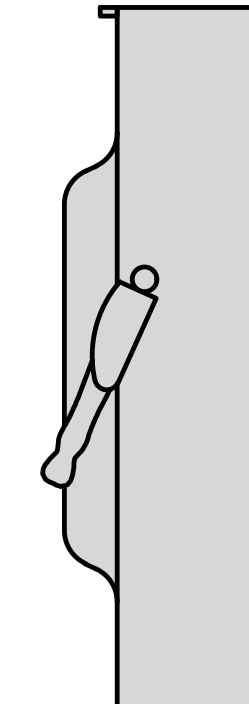
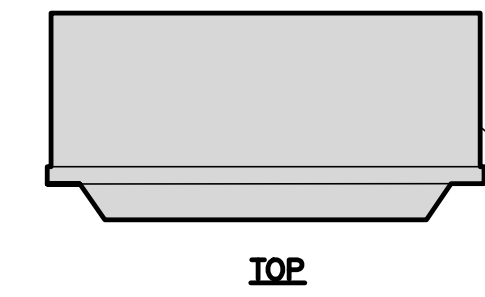
RAYCAP PPC RDIAC-2465-P-240-MTS	
ENCLOSURE DIMENSIONS (HxWxD)	39"x22.855"x12.593
WEIGHT	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G



POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE 2

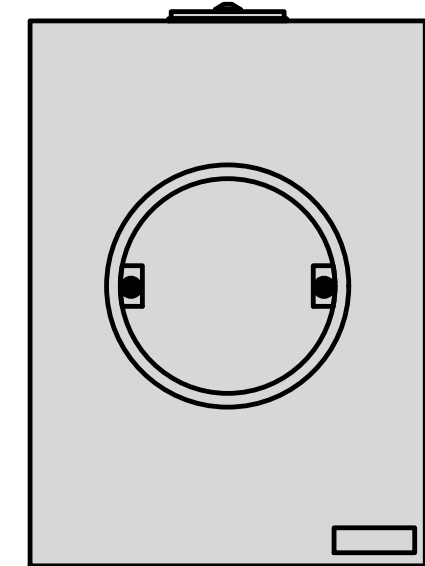
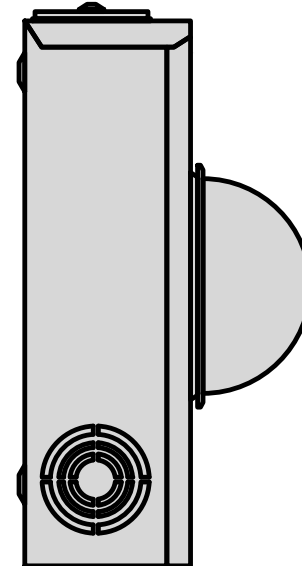
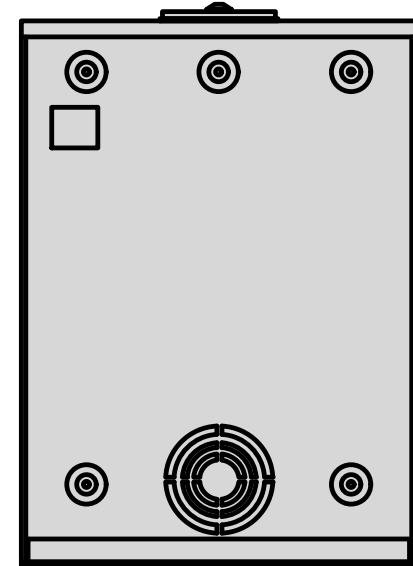
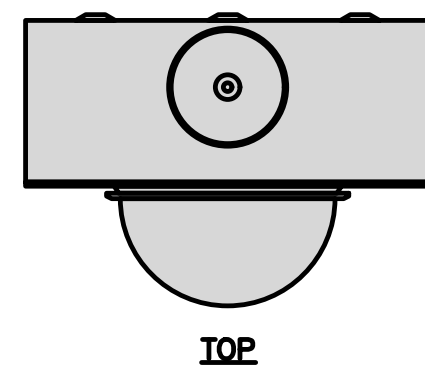
SQUARE D SAFETY SWITCHES D224NRB	
ENCLOSURE DIM (HxWxD)	29.25"x19.00"x8.50"
ENCLOSURE TYPE	NEMA 3R RAINPROOF
UL LISTED	FILE E-2875



SAFETY SWITCH DETAIL

NO SCALE 3

EATON METER SOCKET UNRRS213BEUSE	
DIMENSIONS (HxWxD)	16"x12"x6"
TYPE	RING
AMPERAGE RATING	200 CONT. AMP
WEIGHT	18 lbs



METER BANK DETAIL

NO SCALE 4

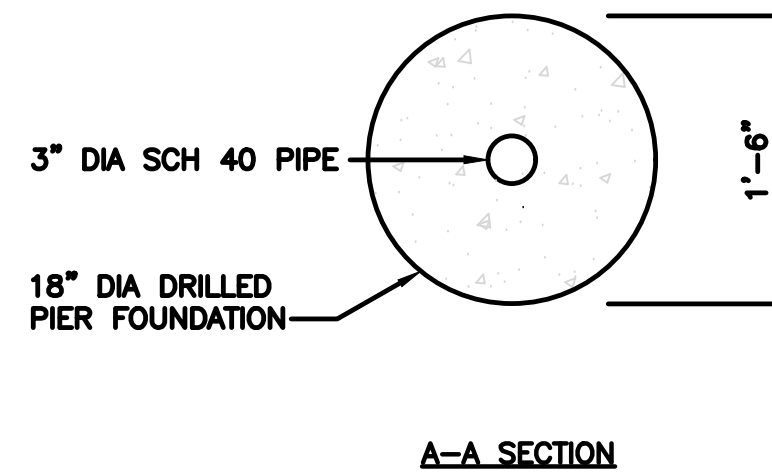
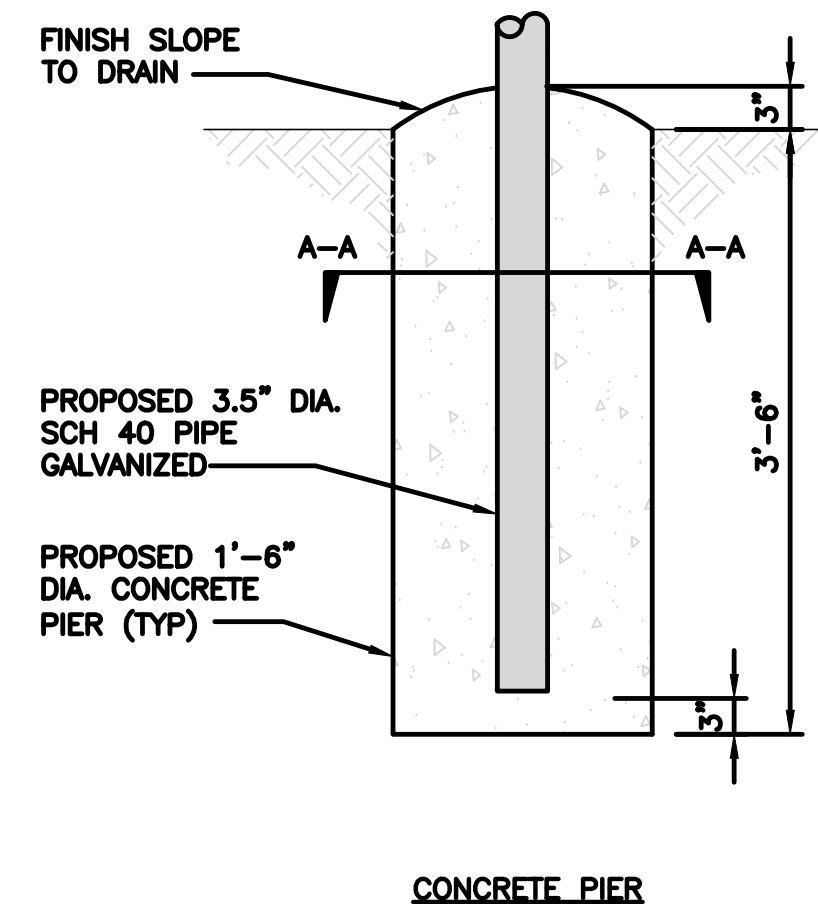
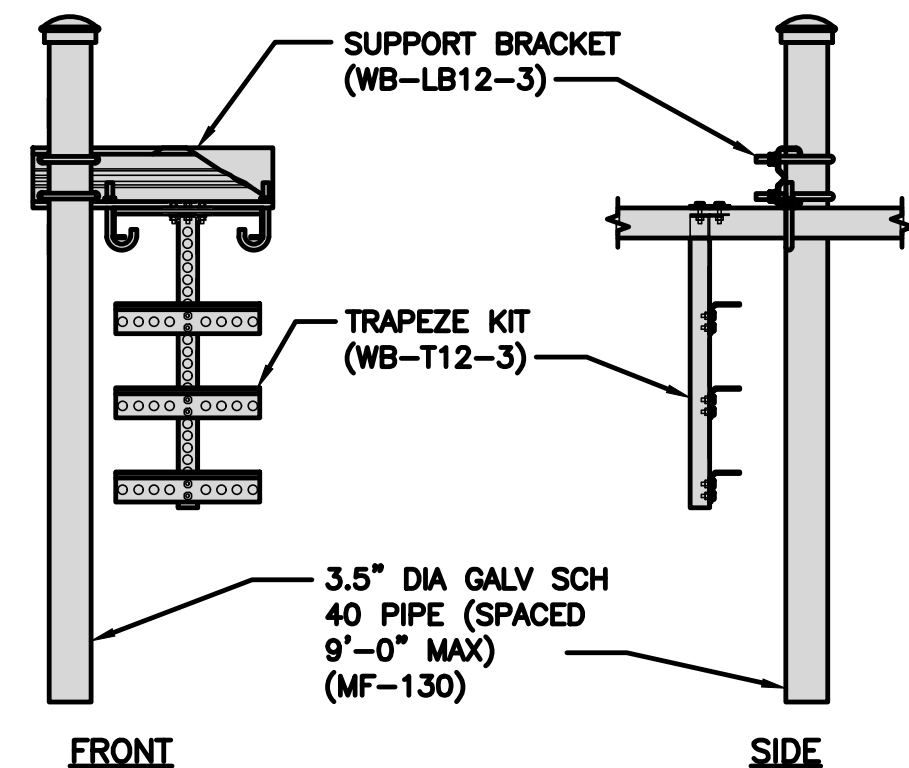
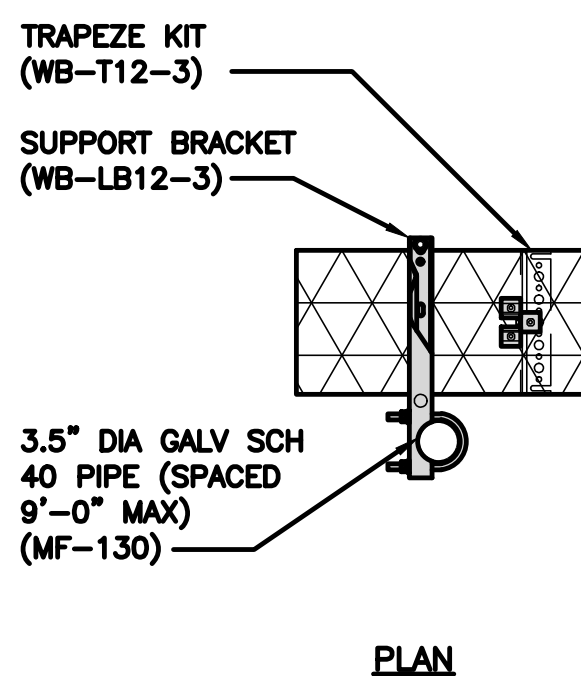
NOT USED

NO SCALE 5

NOT USED

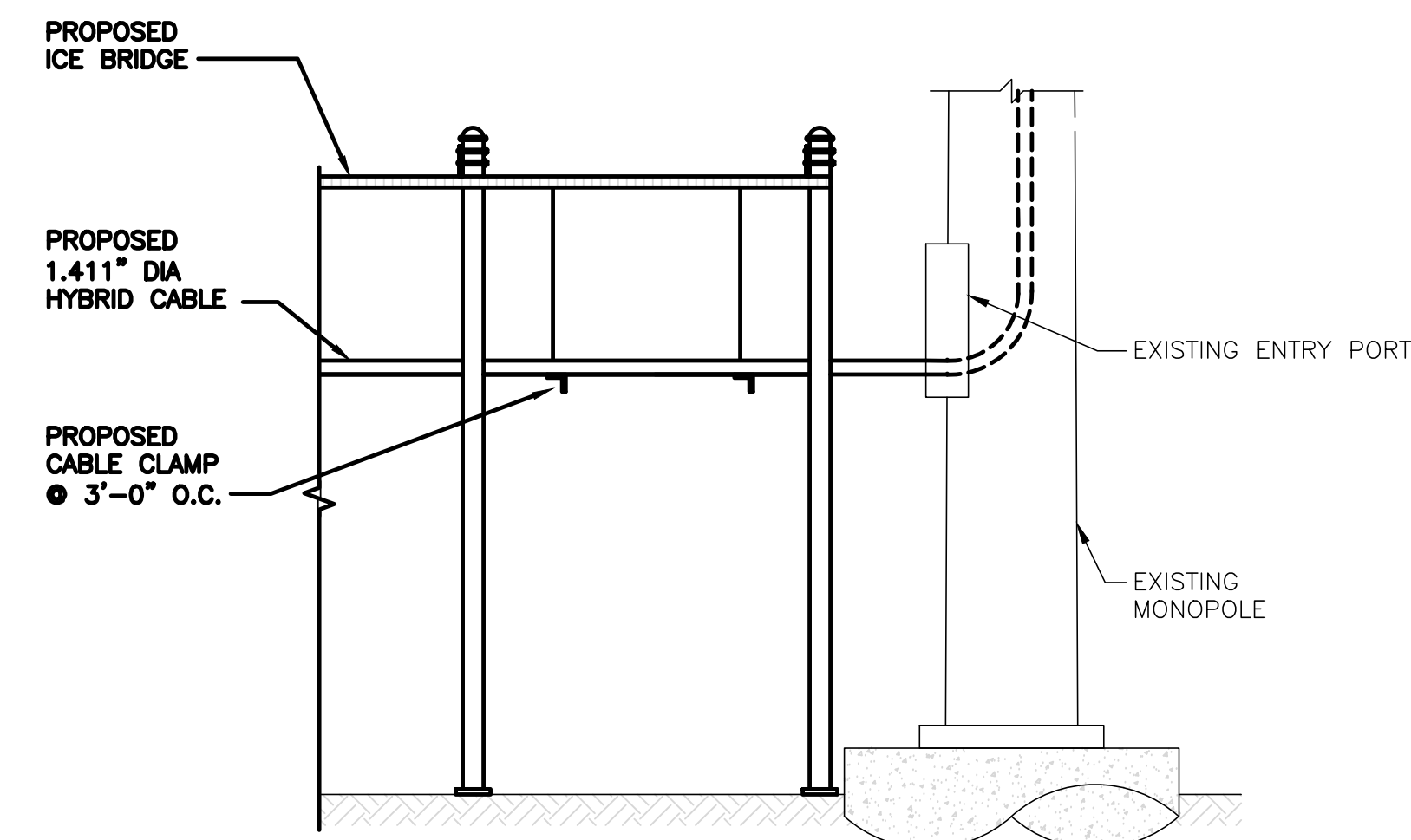
NO SCALE 6

COMMSCOPE WB-K110-B WAVEGUIDE BRIDGE KIT		INCLUDED PRODUCTS:	WB-T12-3 TRAPEZE KIT, 3 RUNGS
DIMENSIONS (HxL)	160"x10"		WB-LB12-3 SUPPORT BRACKET
WEIGHT/ VOLUME	325.0 LBS		MF-130 DIRECT BURIAL PIPE COLUMN, 13'-4"
CABLE RUN (QTY)	12		



TYPICAL ICE BRIDGE CONCRETE PIER DETAIL

NO SCALE 8



HYBRID CABLE RUN

NO SCALE 9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:



Architects - Engineers - Surveyors
462 WALNUT STREET, SUITE 1
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BOBDL00106A

DISH Wireless L.L.C.
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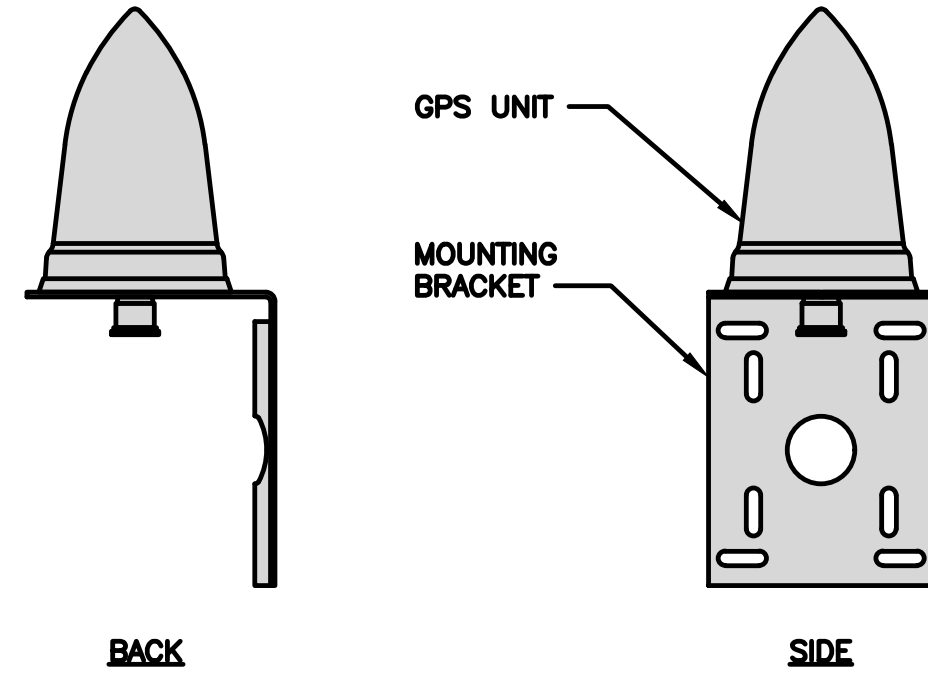
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

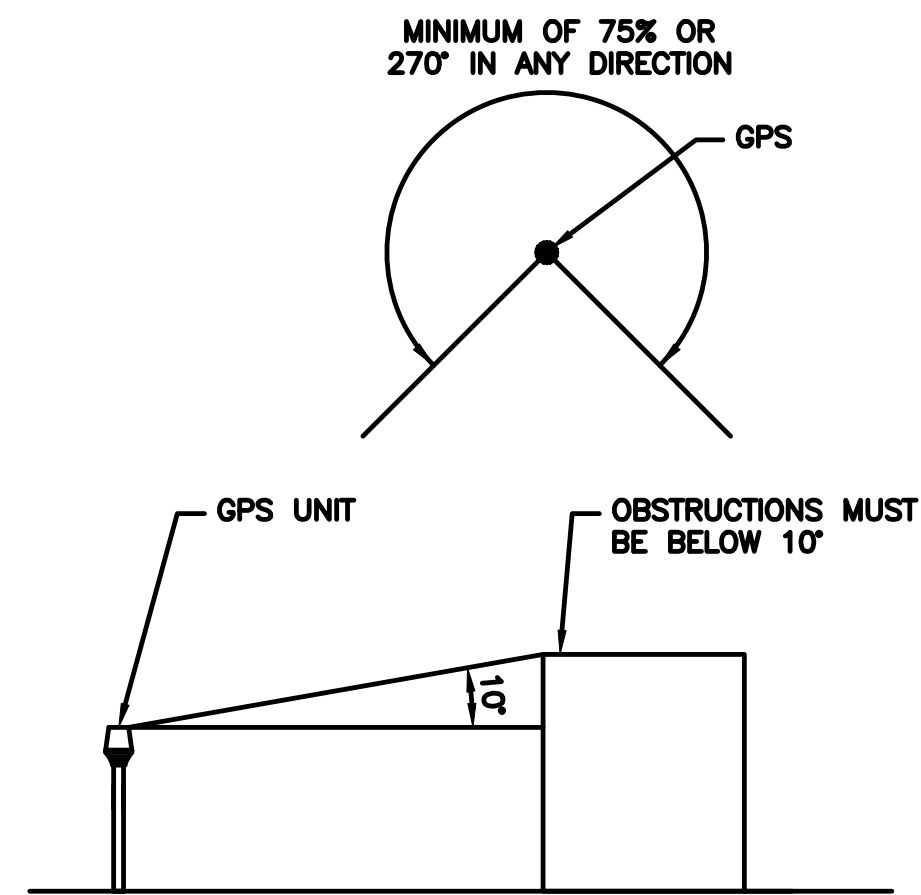
A-5

PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DiaxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	0.75 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



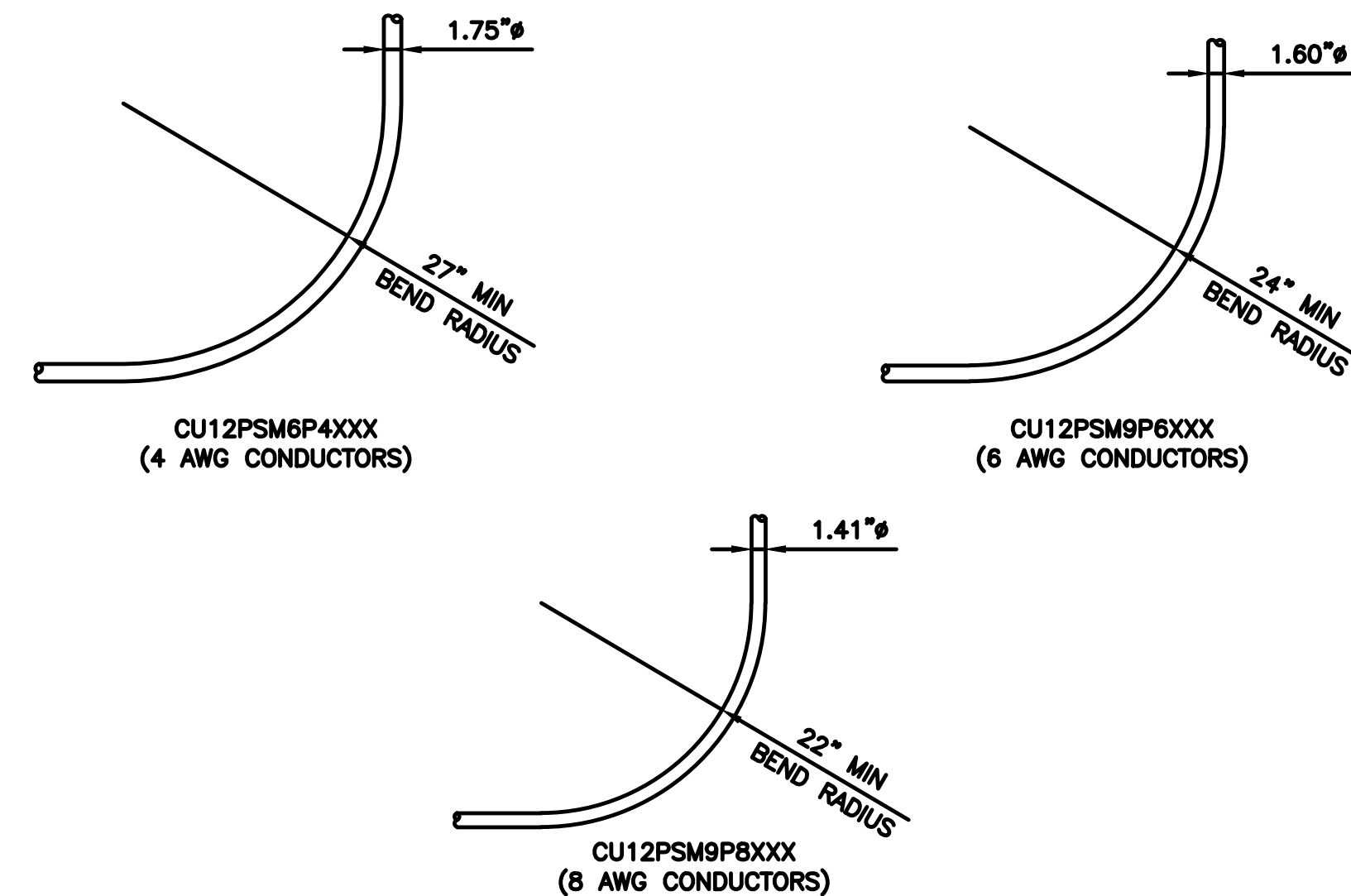
GPS DETAIL

NO SCALE 1



GPS MINIMUM SKY VIEW REQUIREMENTS

NO SCALE 2



CABLES UNLIMITED HYBRID CABLE
MINIMUM BEND RADIUS

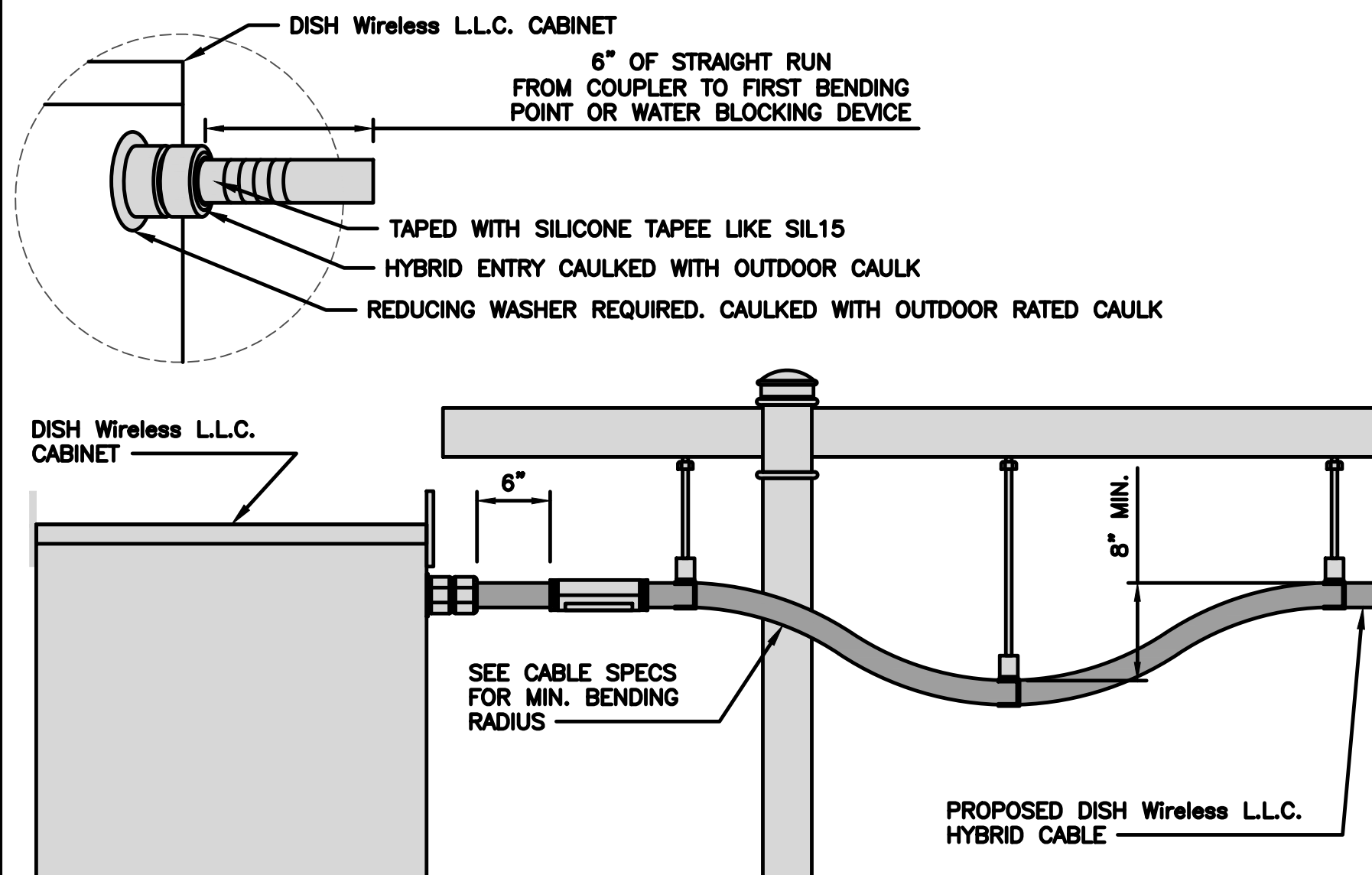
NO SCALE 3

NOTE:

CONTRACTOR SHALL NOT LOOP EXCESS HYBRID OUTSIDE CABINET. EXCESS HYBRID LENGTH IS TO BE ADJUSTED BY STRIPPING JACKET AND SHIELDING AND TERMINATING DC CABLE TO LENGTH. FIBER EXCESS IS TO BE COILED IN FIBER SLACK TRAY INSIDE NETWORK CABINET.

HYBRID CABLE INSTALLATION NOTE

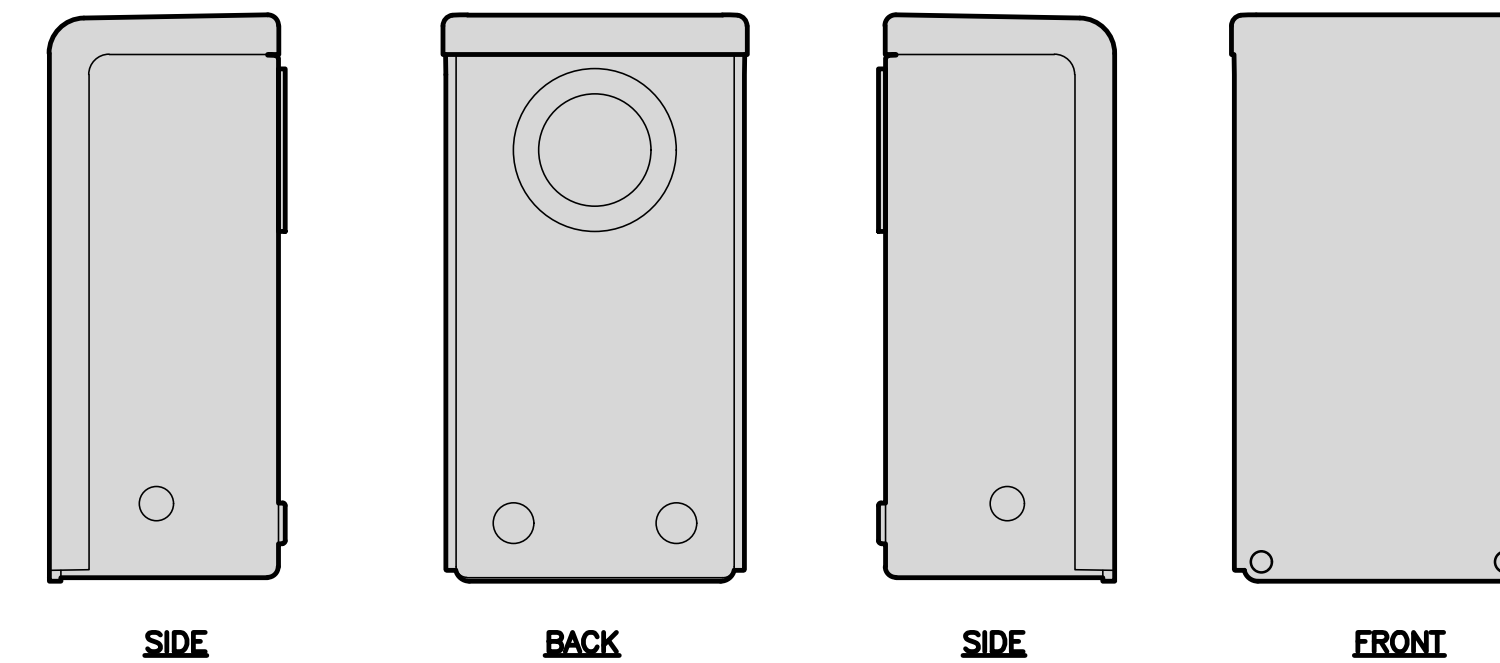
NO SCALE 4



HYBRID CABLE INSTALLATION DETAIL

NO SCALE 5

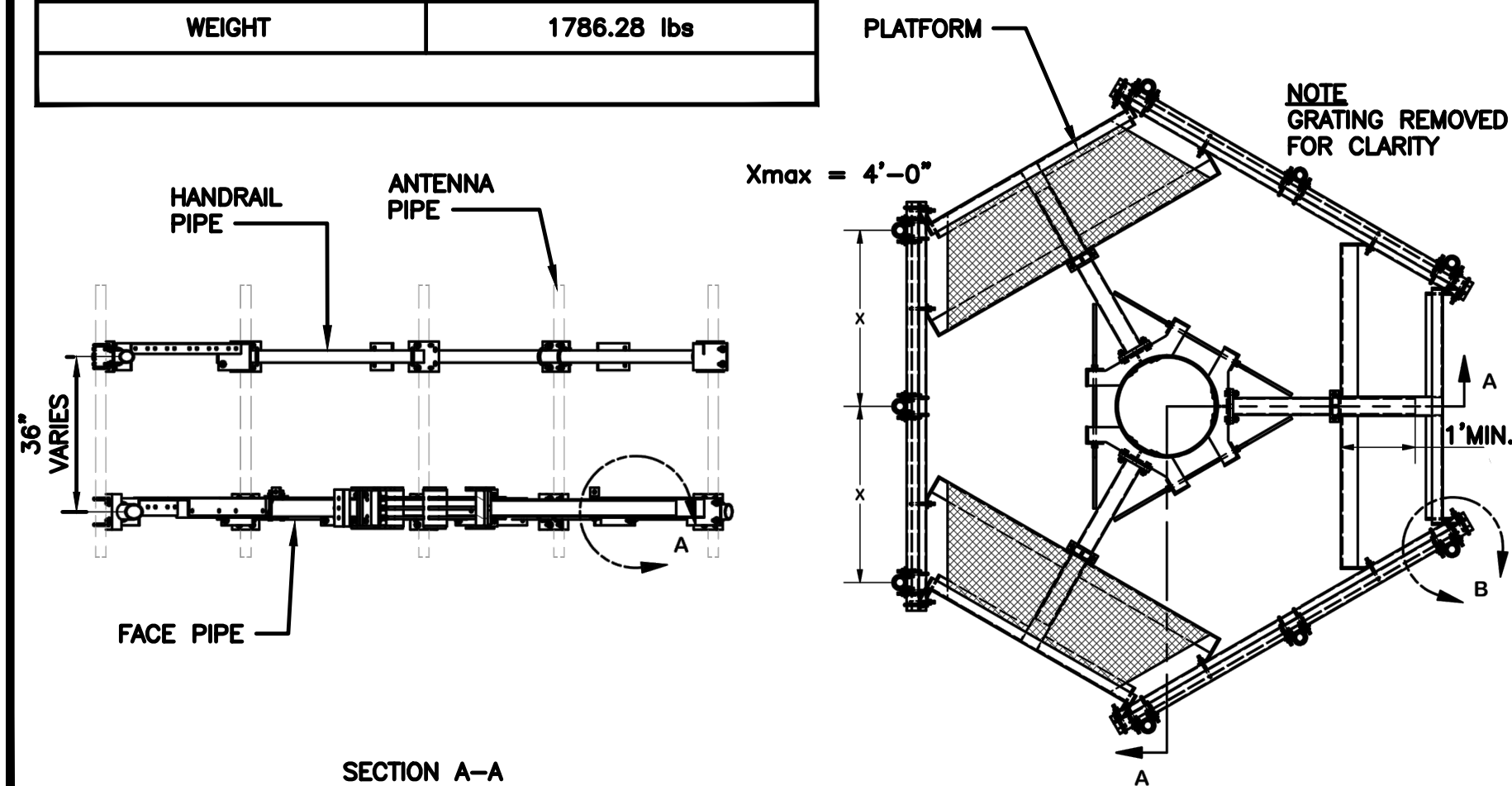
DISH Wireless L.L.C. DRIP BOX	
DIMENSIONS (HxWxD)	10-1/4" x 5-5/8" x 4-3/8"
ESTIMATED WEIGHT	<5 lbs



DISH Wireless L.L.C. DRIP BOX DETAIL

NO SCALE 6

VALMONT/SITE PRO 1 SNP8HR-396	
FACE WIDTH	96"
WEIGHT	1786.28 lbs



ANTENNA PLATFORM DETAIL

NO SCALE 7

NOT USED

NO SCALE 8

NOT USED

NO SCALE 9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



CONSULTANT:



462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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DRAWN BY: CHECKED BY: APPROVED BY:

JK SM HV

RFDS REV #: A

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1	10/19/2023	FINAL ISSUED

A&E PROJECT NUMBER

BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION

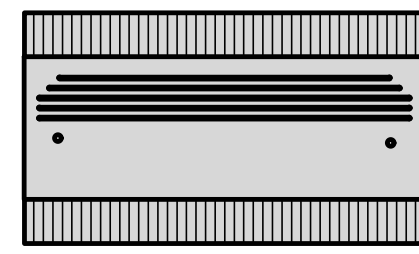
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
EQUIPMENT DETAILS

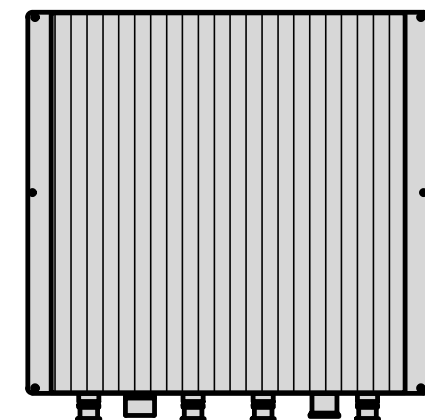
SHEET NUMBER

A-6

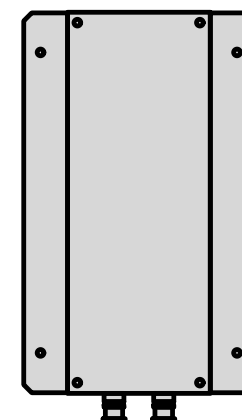
FUJITSU TRIPLE BAND TA08025-B605	
DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



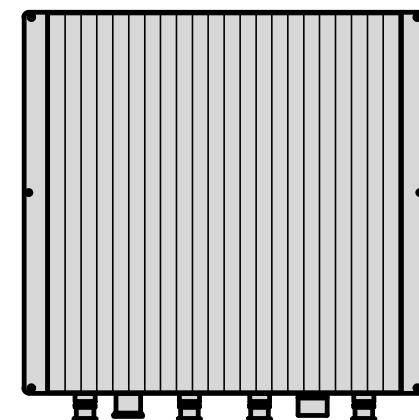
PLAN



BACK

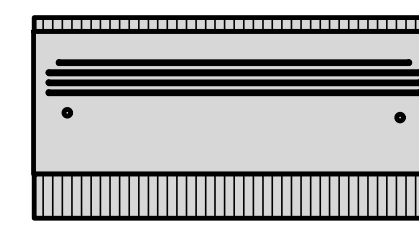


SIDE

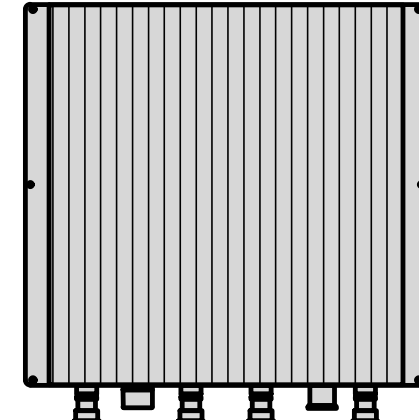


FRONT

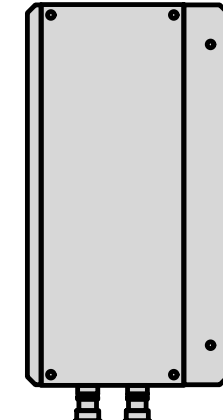
FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



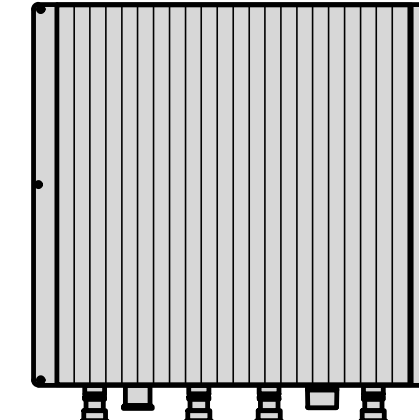
PLAN



BACK



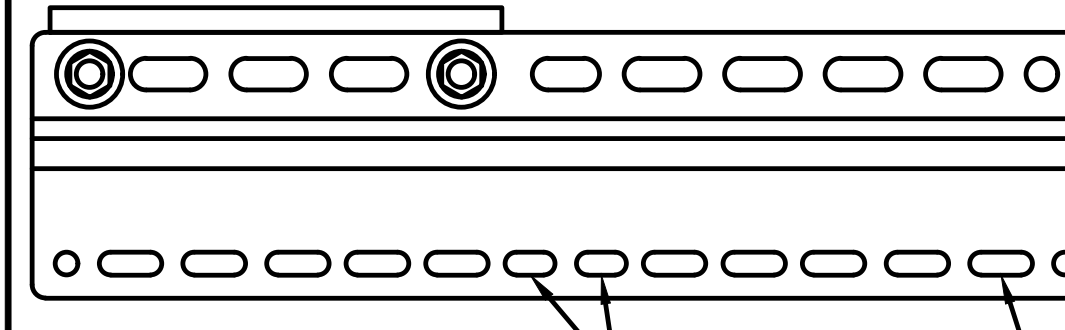
SIDE



FRONT

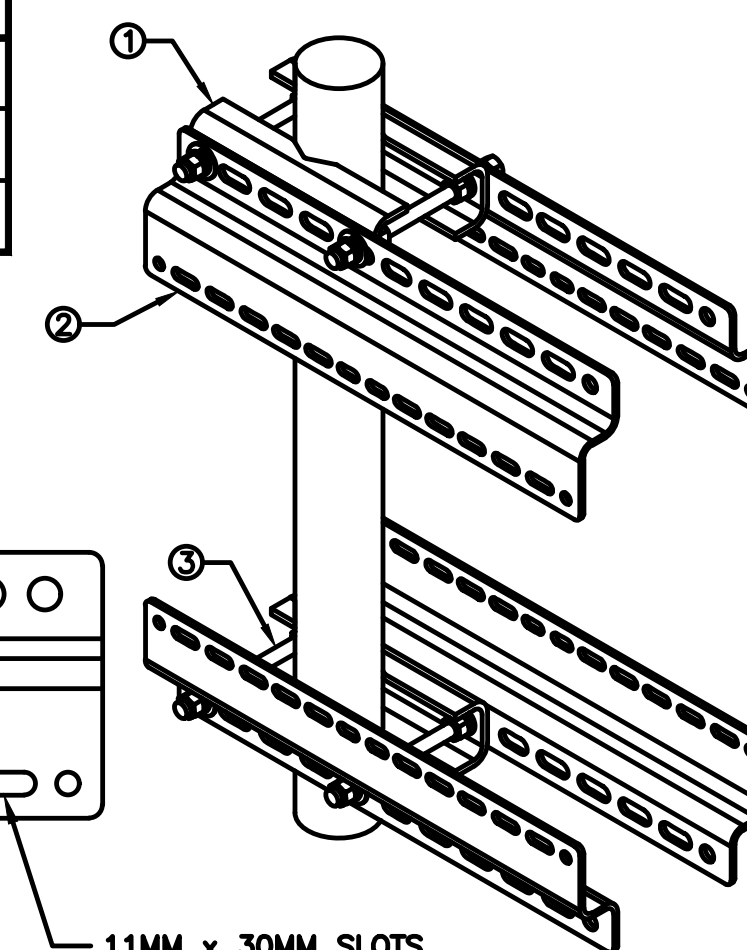
SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



11MM x 24MM SLOTS

11MM x 30MM SLOTS
40MM ON CENTER



NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH DETAIL

NO SCALE

1

RRH DETAIL

NO SCALE

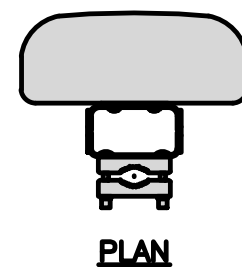
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RRH MOUNT DETAIL

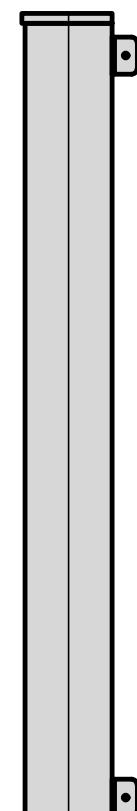
NO SCALE

3

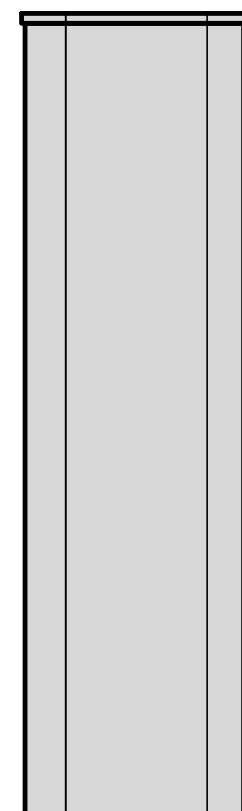
JMA MX08FR0665-21	
DIMENSIONS (HxWxD)	72"x20"x8"
ANTENNA WEIGHT	64.5 lbs
WEIGHT WITH BRACKETS	82.5 lbs



PLAN



SIDE



FRONT

ANTENNA DETAIL

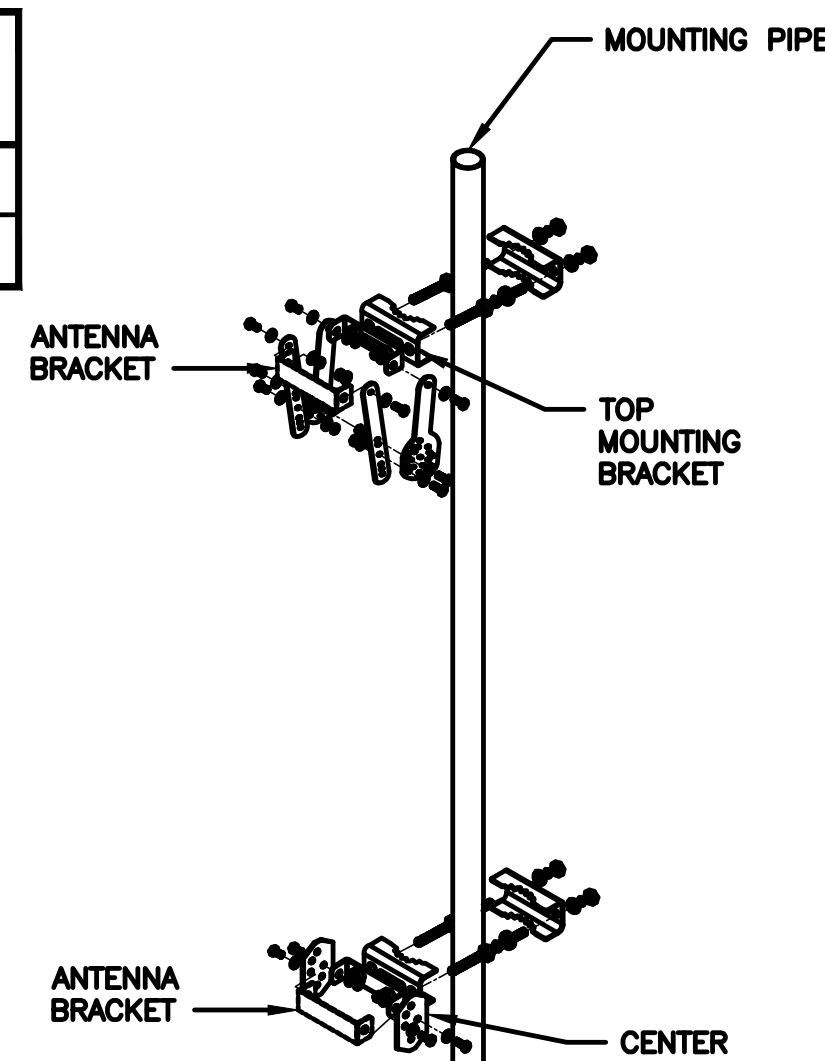
NO SCALE

4

JMA ANTENNA MOUNT BRACKET #91900318	
TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS
FOR 4-, 6-, AND 8-FOOT ANTENNAS
ANTENNA BRACKET NOT PART OF KIT

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

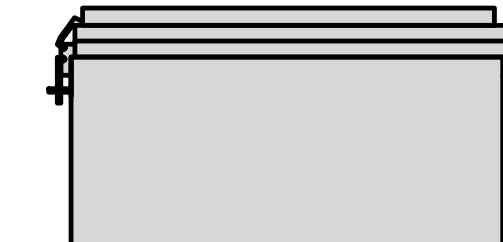


ANTENNA BRACKET DETAIL

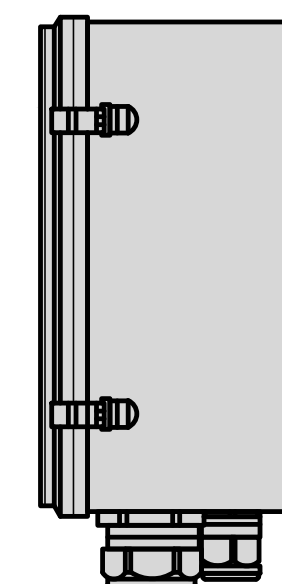
NO SCALE

5

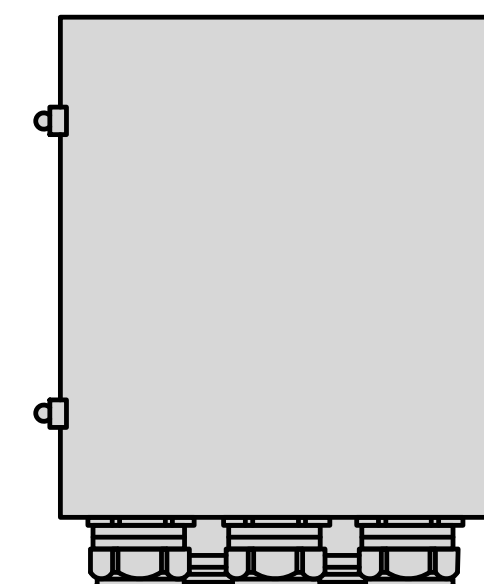
RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



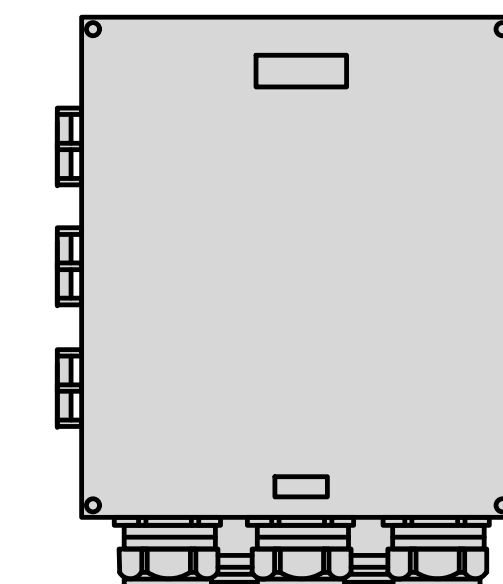
PLAN



SIDE



BACK



FRONT

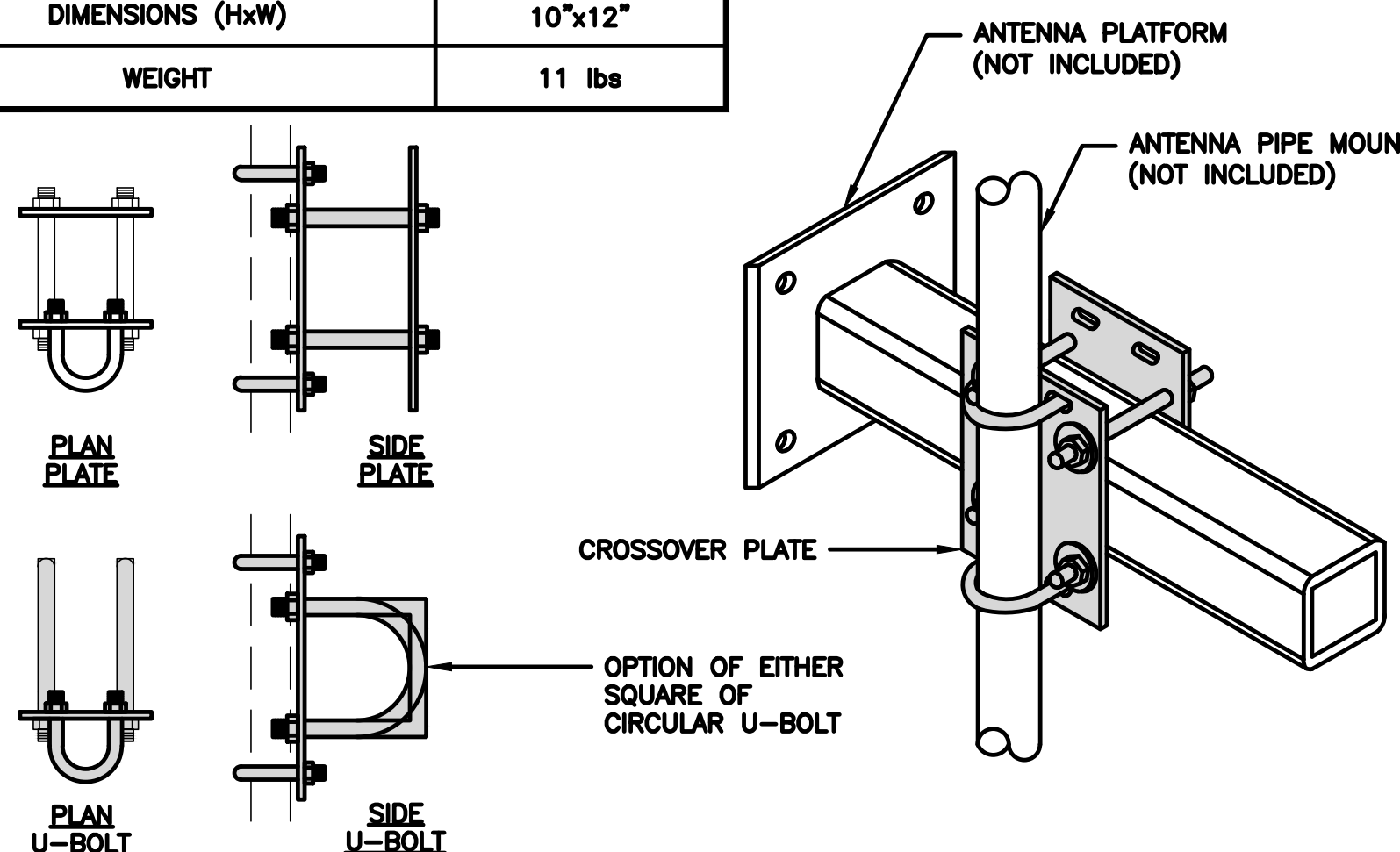
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

6

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



RRH/OVP MOUNT DETAIL

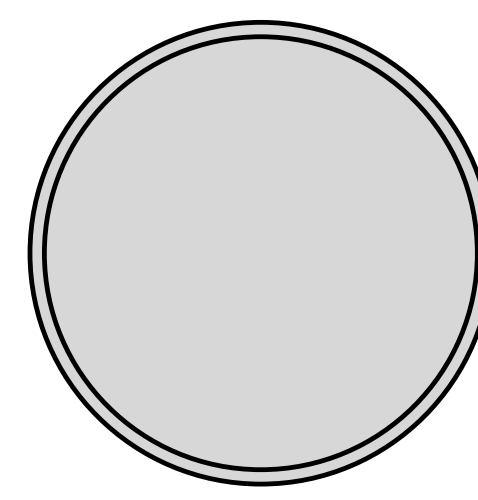
NO SCALE

7

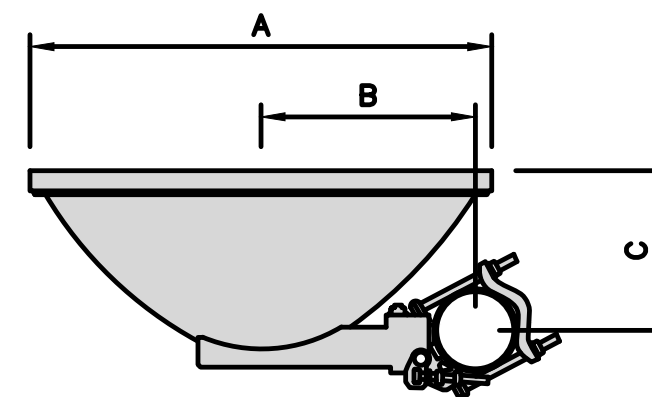
VHLP2-18/C MICROWAVE DISH				
SIZE	A	B	C	D
	25.9"	12.2"	8.9"	1.8"

"D" IS WIDTH OF MOUNTING CLAMP

TOTAL WEIGHT: 17.6 LBS



FRONT



TOP

MICROWAVE DETAIL

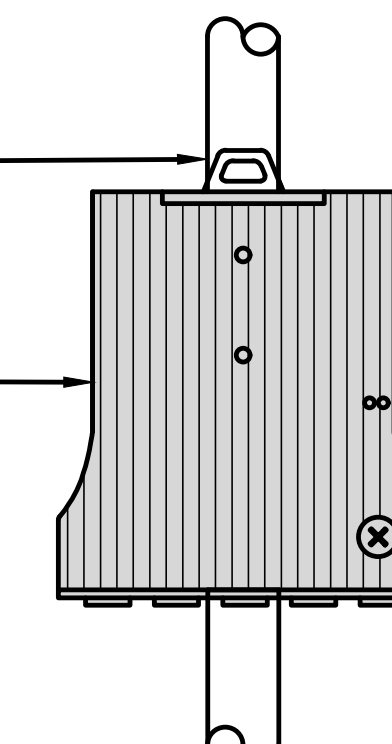
NO SCALE

8

CERAGON IP-50C	
DIMENSIONS (HxWxD)	12.7"x8.93"x3.38"
WEIGHT	13.2 lbs

PROPOSED DISH Wireless L.L.C.
MICROWAVE PIPE MOUNT

PROPOSED DISH Wireless L.L.C.
(1) ODU (BELOW MW)



FRONT

IP-50 UNIVERSAL RADIO DETAIL

NO SCALE

9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



CONSULTANT:



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JK SM HV

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A&E PROJECT NUMBER

BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER

A-7

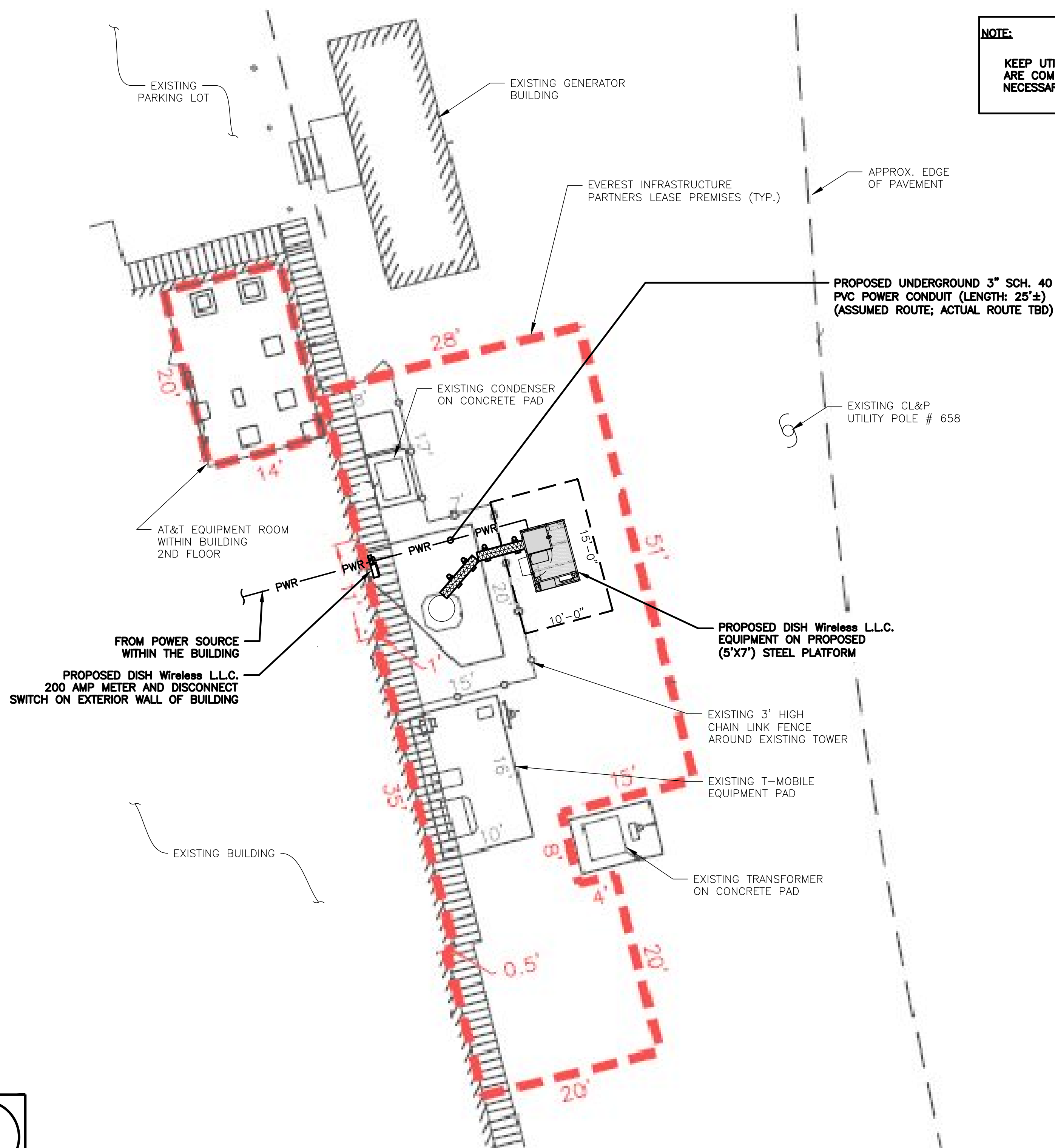
NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. DUE TO UTILITY EASEMENT RIGHTS SPECIFIED IN THE GROUND LEASE, CUSTOMER MAY INSTALL EQUIPMENT WITHIN SPECIFIED UTILITY EASEMENT AREA. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 REPRESENT PLANNED ROUTING BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO A SURVEY, EXHIBITS, METES AND BOUNDS OF THE UTILITY EASEMENT, FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS MATERIALLY INCONSISTENT WITH "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 AND SAID VARIANCE IS NOT NOTED ON CDs, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.

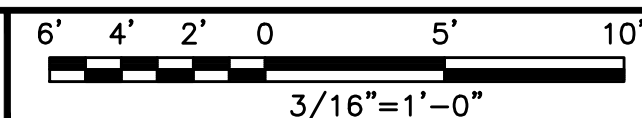
NOTE:
KEEP UTILITY ALIGNMENTS UNTIL POWER DESIGN ARE COMPLETED, THEN VERIFY AND MODIFY AS NECESSARY.

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG



UTILITY ROUTE PLAN



1

ELECTRICAL NOTES

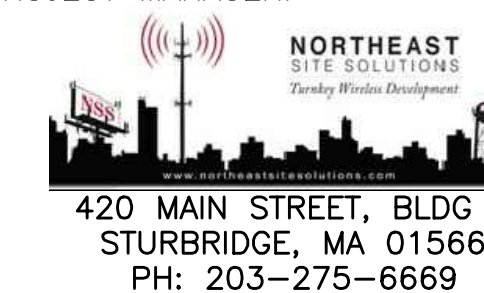
NO SCALE

2



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:



462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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JK SM HV

RFDS REV #: A

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A&E PROJECT NUMBER

BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION

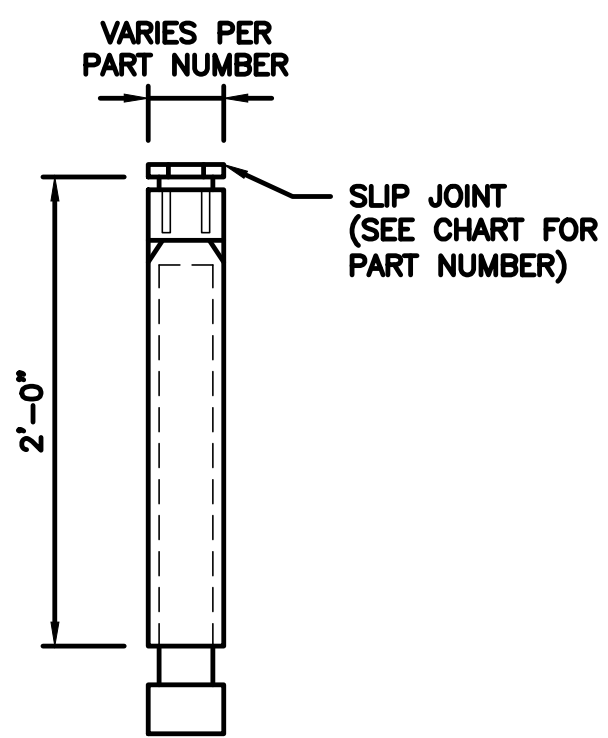
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
ELECTRICAL/FIBER ROUTE
PLAN AND NOTES

SHEET NUMBER

E-1

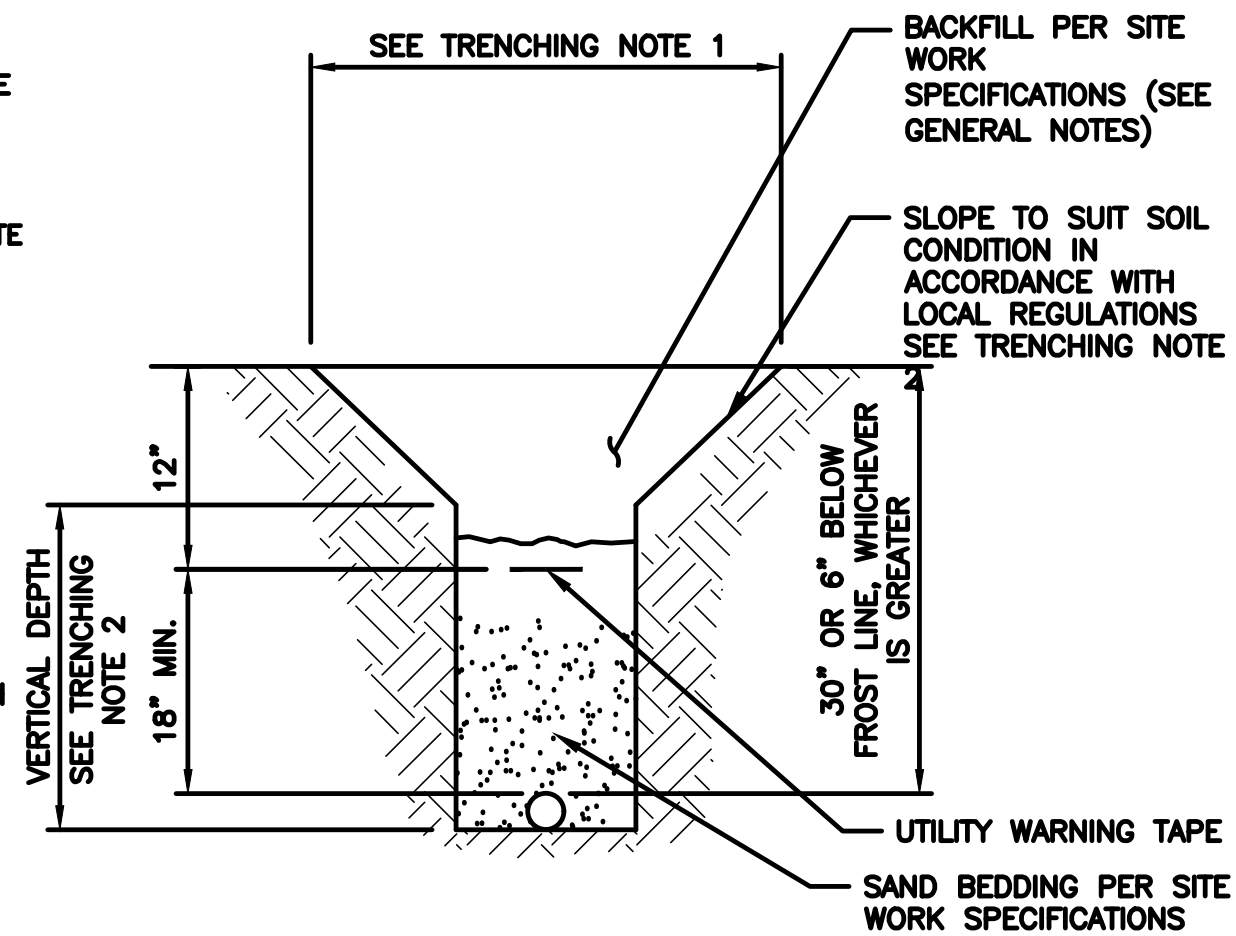
CARLON EXPANSION FITTINGS				
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"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



NOTE: CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

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.



IMPORTANT: UNDERGROUND WARNING/MARKING TAPE SHALL BE BURIED AT A DEPTH OF 12 IN (30 CM) OR LESS BELOW GRADE. THE MINIMUM DISTANCE FROM THE TOP OF THE PIPELINE SHOULD BE 12 IN (30 CM). REQUIRED DEPTH OF PIPELINE SHALL BE 30" BELOW GRADE OR 6" BELOW FROSTLINE, WHICHEVER IS GREATER. EACH RUN OF UNDERGROUND WARNING/MARKING TAPE MUST BE OVERLAPPED BY A MINIMUM OF 20 FT (6 M) OR MUST BE JOINED.

EXPANSION JOINT DETAIL NO SCALE 1

TYPICAL UNDERGROUND TRENCH DETAIL NO SCALE 2

NOT USED NO SCALE 3

NOT USED 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



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
PH: 203-275-6669

CONSULTANT:



Architects - Engineers - Surveyors
462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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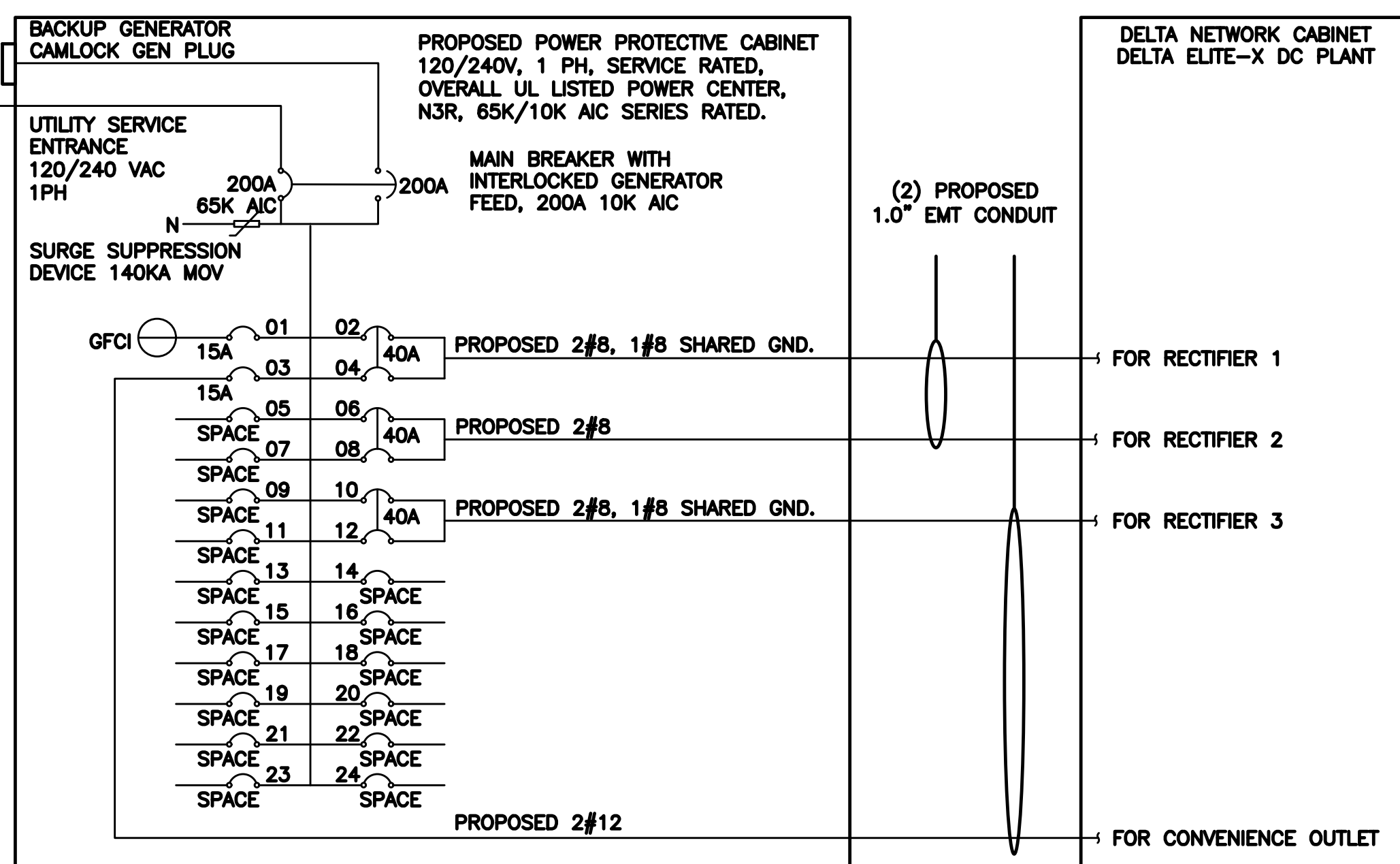
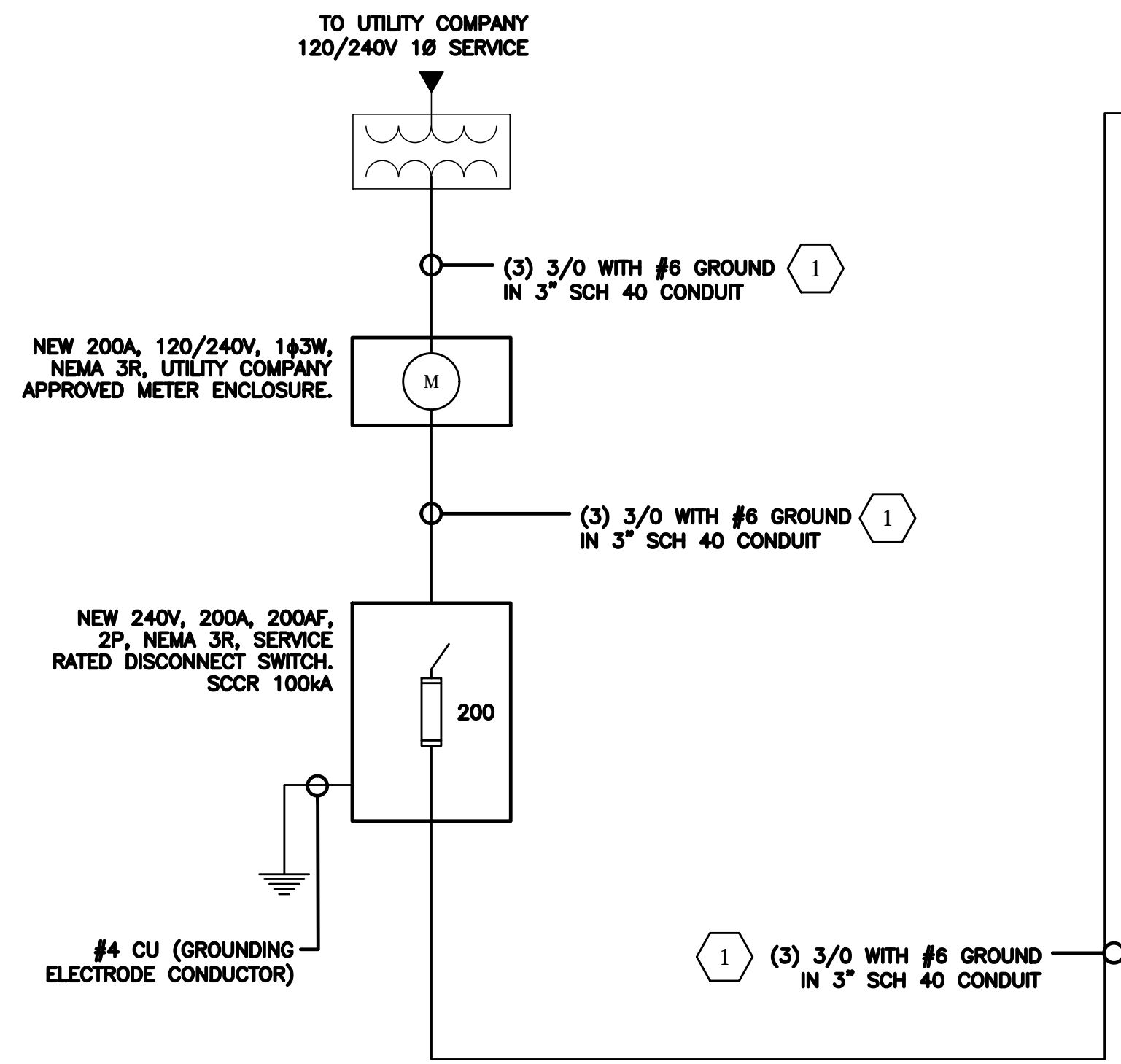
DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
ELECTRICAL
DETAILS

SHEET NUMBER

E-2



SERVICE/FEEDER CONDUCTOR LENGTH TABLE
(BASED ON INDUSTRY STANDARD 3% VOLTAGE DROP AND 5% NEC ALLOWABLE LIMIT)

DESIGN LOADS	CONDUCTOR SIZES					
	250 kcmil AL	300 kcmil AL	3/0 CU	4/0 CU	250 kcmil CU	300 kcmil CU
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (180A) (NEC ARTICLE 220 & 230 3% VOLTAGE DROP)	130'	155'	145'	180'	215'	255'
DISH Wireless L.L.C. MAXIMUM CONTINUOUS LOAD (180A) (NEC ARTICLE 220 & 230 5% VOLTAGE DROP)	220'	260'	240'	300'	360'	425'

- NOTES:
- 250 MCM/KCMIL AL + #2 AL GRD MAY BE USED AS A REPLACEMENT FOR 3/0 CU + #6 CU GRD SERVICE CONDUCTOR FROM THE DISH Wireless L.L.C. FIRST MEANS OF DISCONNECT/UTILITY COMPANY MEET-WE POINT. REFER TO VALUES ABOVE TO LIMIT VOLTAGE DROP TO 3%.
 - ALUMINUM/COPPER CONDUCTORS MUST BE RATED 75°C.
 - ALUMINUM TO COPPER BUSS CONNECTIONS MUST MEET AND CONFORM TO ANSI AND BE UL LISTED. USE ANTI CORROSION CONDUCTIVE LUBRICANT ON CONNECTIONS.
 - PPC MAIN DISCONNECT CIRCUIT BREAKERS ACCEPT #4 - 300KCMIL AL OR CU CONDUCTORS.
 - VOLTAGE DROP FOR SINGLE METER ENCLOSURE FED FROM TRANSFORMER WITH MULTIPLE CUSTOMERS IS CALCULATED FROM THE TRANSFORMER TO PPC. (SERVICE AND FEEDER CONDUCTOR LENGTH)
 - VOLTAGE DROP FOR MULTI-METER ENCLOSURE IS CALCULATED FROM THE METER TO PPC. (FEEDER CONDUCTOR LENGTH)
 - VOLTAGE DROP CALCULATIONS ARE BASED ON A POWER FACTOR OF 1, A LINE TO GROUND VOLTAGE PER CONDUCTOR OF 120V, NO CORRECTION FACTOR FOR AMBIENT TEMPERATURE OR ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A SINGLE CONDUCT OR RACEWAY. A POWER FACTOR LESS THAN 1 OR VOLTAGE LESS THAN 120 WILL RESULT IN SHORTER DISTANCES THAN SHOWN IN TABLE.

NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(3) 40A, 2P BREAKER - SQUARE D P/N:Q0240
(2) 15A, 1P BREAKER - SQUARE D P/N:Q0115

NOTES

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE. (ALL WIRE AND TERMINATION HARDWARE TO BE RATED 75°C)

#12 FOR 20A OCPD WIRE DERATING: 0.8 x 25A = 20.0A
#8 FOR 40A OCPD WIRE DERATING: 0.8 x 50A = 40.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.

1.0" CONDUIT - .3460 SQ. IN AREA
3.0" CONDUIT - 3.538 SQ. IN AREA

(2 CONDUIT): USING THWN-2, CU.
RECTIFIER CONDUCTORS
#8 - 0.0366 SQ. IN X 4 = 0.1464 SQ. IN
#8 - 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1830 SQ. IN

RECTIFIER & GFCI CONDUCTORS
#12 - 0.0050 SQ. IN X 2 = 0.0100 SQ. IN
#8 - 0.0366 SQ. IN X 2 = 0.0732 SQ. IN
#8 - 0.0366 SQ. IN X 1 = 0.0366 SQ. IN <GROUND
TOTAL = 0.1198 SQ. IN

1.0" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.
3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

(1) PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, AL.
250kcmil AL - 0.3970 SQ. IN X 3 = 1.191 SQ. IN
#4 AL - 0.0824 SQ. IN X 1 = 0.0824 SQ. IN <GROUND
TOTAL = 1.2734 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

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BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

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

SHEET NUMBER
E-3

PPC ONE-LINE DIAGRAM

NO SCALE 1

PANEL NAME		LOCATION		VOLTAGE: 240/120 1Ø				MOUNTING/ENCLOSURE: SURFACE/NEMA 3R					
DELTA		EQUIPMENT PLATFORM		MAIN C/B: 200 AMPS BUS RATING: 200 AMPS				AVAIL. FAULT CURRENT: SHORT CIRCUIT RATING: 65,000 / 10,000 SERIES RATED					
AMPS POLES	WIRE & CONDUIT	TYPE	DESCRIPTION	KVA	CKT	A	B	CKT	KVA	DESCRIPTION	TYPE	WIRE & CONDUIT	AMPS POLES
15/1	2 #12, 1 #12G	R	INTERNAL GFCI	0.18	1	1.68				RECTIFIER	EQ	SEE ONE LINE	40/2
15/1	SEE ONE LINE	R	CONVENIENCE OUTLET	0.18	3		1.68	4	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		5	1.50		6	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		7		1.50	8	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		9	1.50		10	1.50	RECTIFIER	EQ	SEE ONE LINE	40/2
			SPACE		11		1.50	12	1.50	SPACE			
			SPACE		13			14		SPACE			
			SPACE		15			16		SPACE			
			SPACE		17			18		SPACE			
			SPACE		19			20		SPACE			
			SPACE		21			22		SPACE			
			SPACE		23			24		SPACE			
PHASED LOAD				4.7			4.7			KVA			
TOTAL CONNECTED LOAD										9.4 kVA			39 A
TOTAL DEMAND LOAD										9.4 kVA			39 A

LOAD TYPE	DESCRIPTION	CONN. LOAD		DEMAND FACTOR	DESIGN LOAD	
		KVA	AMPS		KVA	AMPS
L	LIGHTING	0.0	0.0	1.25	0.0	0.0
R	RECEPTACLE	0.4	1.5	NEC	0.4	1.5
M	MOTOR	0.0	0.0	NEC	0.0	0.0
H	HEATING	0.0	0.0	1.00	0.0	0.0
AC	HVAC	0.0	0.0	1.00	0.0	0.0
EQ	EQUIPMENT	9.0	37.5	1.00	9.0	37.5
E	EXISTING	0.0	0.0	1.25	0.0	0.0

*ALL EQUIPMENT LOADS CONSIDERED CONTINUOUS LOADS

PANEL SCHEDULE

NO SCALE 2

SHORT CIRCUIT CALCULATIONS

NO SCALE 3

NOTES:

- HAZARD OF ELECTRICAL SHOCK OR BURN. TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.
- 100 OR 200 AMP, 240 VOLTS, SINGLE PHASE ALTERNATING CURRENT CIRCUIT ONLY
- GENERATOR SHORT CIRCUIT RATING: 10,000 / 20,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
- UTILITY SHORT CIRCUIT RATING: 65,000 AMPS RMS SYMMETRICAL, AMPERES AT 240 VOLTS
- SUITABLE FOR USE AS SERVICE EQUIPMENT
- SUITABLE FOR USE IN ACCORDANCE WITH ARTICLE 702 OF THE NATIONAL ELECTRIC CODE ANSI/NFPA 70
- BONDED NEUTRAL WHEN INSTALLED AS SHOWN IN WIRING DIAGRAM
- RAIN PROOF TYPE 3R
- USE CU-AL WIRE 60-75 °C
- EQUIPPED WITH SLIDE BAR MECHANICAL INTERLOCK
- INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
- EQUIPPED WITH SQUARE D BREAKERS OR ALTERNATIVE MANUFACTURER EQUIVALENT
- WHEN REPLACE LOAD CENTER BREAKERS, USE ONLY SQUARE D (QO TYPE) OF THE SAME RATING OR EQUIVALENT
- WHEN RESETTING BREAKERS TURN TO OFF POSITION, THEN TO ON POSITION
- WARNING: MAKE CONTINUITY CHECK WITH OHM METER TO VERIFY CORRECT PHASING AND GROUNDING CONNECTIONS BEFORE POWER UP
- VERIFY PIN OUT CONFIGURATION OF GENERATOR PRIOR TO USE.
- RISK OF ELECTRIC SHOCK, BOTH ENDS OF DISCONNECTING MEANS MAY BE ENERGIZED. TEST BEFORE SERVICING
- THIS SWITCH BOARD MAY CONTAIN A TAP ON THE SERVICE SIDE OF THE MAIN POWER DISCONNECT FOR REMOTE MONITORING OF UTILITY/STANDBY POWER
- THE NORMAL AC POWER MONITORING CIRCUIT MUST UTILIZE A DISCONNECTING MEANS WITH A SHORT CIRCUIT RATING GREATER THAN THE AVAILABLE INTERRUPTING CURRENT
- A RED PUSH-TO-TRIP BUTTON PROVIDES A MEANS TO MECHANICALLY TRIP THE CIRCUIT BREAKER. THIS ACTION EXERCISES THE TRIPPING PORTION OF THE MECHANISM AND ALLOWS MAINTENANCE CHECK ON THE BREAKER

SUITABLE FOR USE AS SERVICE EQUIPMENT

ELECTRICAL RATING 120/240 VOLTS SINGLE PHASE 60 Hz	
NORMAL AC POWER	GENERATOR POWER
100A	100A
200A	200A

CAUTION:

- THE OPERATING HANDLE ASSUMES A CENTER POSITION WHEN THE CIRCUIT BREAKER IS TRIPPED
- THE BREAKER CAN BE RESET BY OPERATING THE HANDLE TO THE EXTREME OFF POSITION AND THEN TO ON
- SLIDE BAR MECHANICAL INTERLOCK TRANSFERS NORMAL AC POWER TO GENERATOR POWER. THE SLIDE BAR MECHANICAL INTERLOCK PROHIBITS BOTH POWER SOURCES FROM BEING IN THE ON POSITION SIMULTANEOUSLY
- TO TRANSFER FROM ON POWER SOURCE TO THE OTHER POWER SOURCE, SWITCH ON BREAKER TO THE OFF POSITION, MOVE THE SLIDE BAR TO THE OTHER SIDE AND THE SWITCH THE OTHER BREAKER TO THE ON POSITION

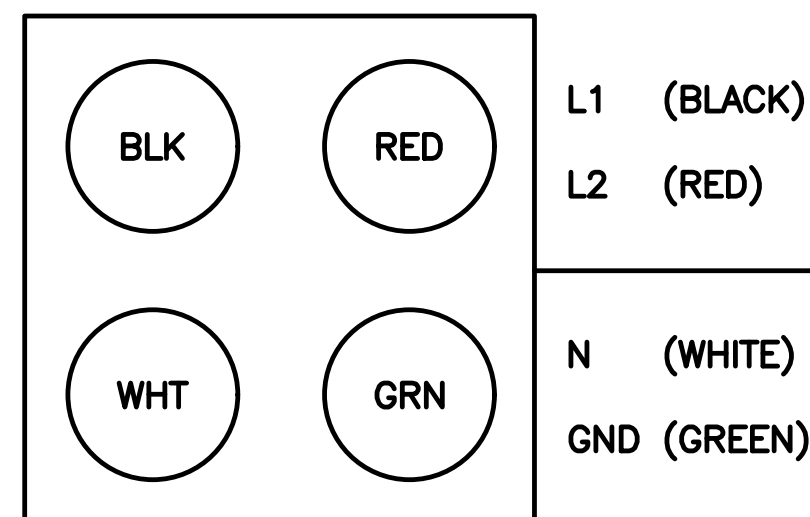
THIS SWITCHBOARD UTILITY MAIN BREAKER IS SUITABLE FOR USE ON CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 65,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A UTILITY FEED				200A GENERATOR FEED					
LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ-D	QO	1/2	15-100A	SQ-D	QGL	200A	65,000A	240V	2

THIS SWITCHBOARD GENERATOR POWER CIRCUIT IS SUITABLE FOR USE ON A CIRCUIT CAPABLE OF DELIVERING NOT MORE THAN 10,000 RMS SYMMETRICAL AMPS, 240 VOLTS MAXIMUM.

200A UTILITY FEED				200A GENERATOR FEED					
LOAD SIZE CIRCUIT BREAKERS				LINE SIDE MAIN CIRCUIT BREAKER					
MFR.	TYPE	POLES	AMP RATING	MFR.	TYPE	AMP RATING	SYMMET. AMP RMS	VOLTS AC	PHASES
SQ-D	QO	1/2	15-100A	SQ-D	QGL	200A	65,000A	240V	2

MAXIMUM CONTINUOUS LOADS NOT TO EXCEED 80% OF THE OVER-CURRENT PROTECTIVE DEVICE (CIRCUIT BREAKER AND FUSES) RATINGS EMPLOYED IN OTHER THAN MOTOR CIRCUITS, EXCEPT FOR THOSE CIRCUITS EMPLOYING CIRCUIT BREAKERS MARKED AS SUITABLE FOR CONTINUOUS OPERATION AT 100% OF THEIR RATINGS. CONDUCTORS ARE NOT TO ENTER OR LEAVE THE ENCLOSURE DIRECTLY OPPOSITE THE WIRING TERMINAL

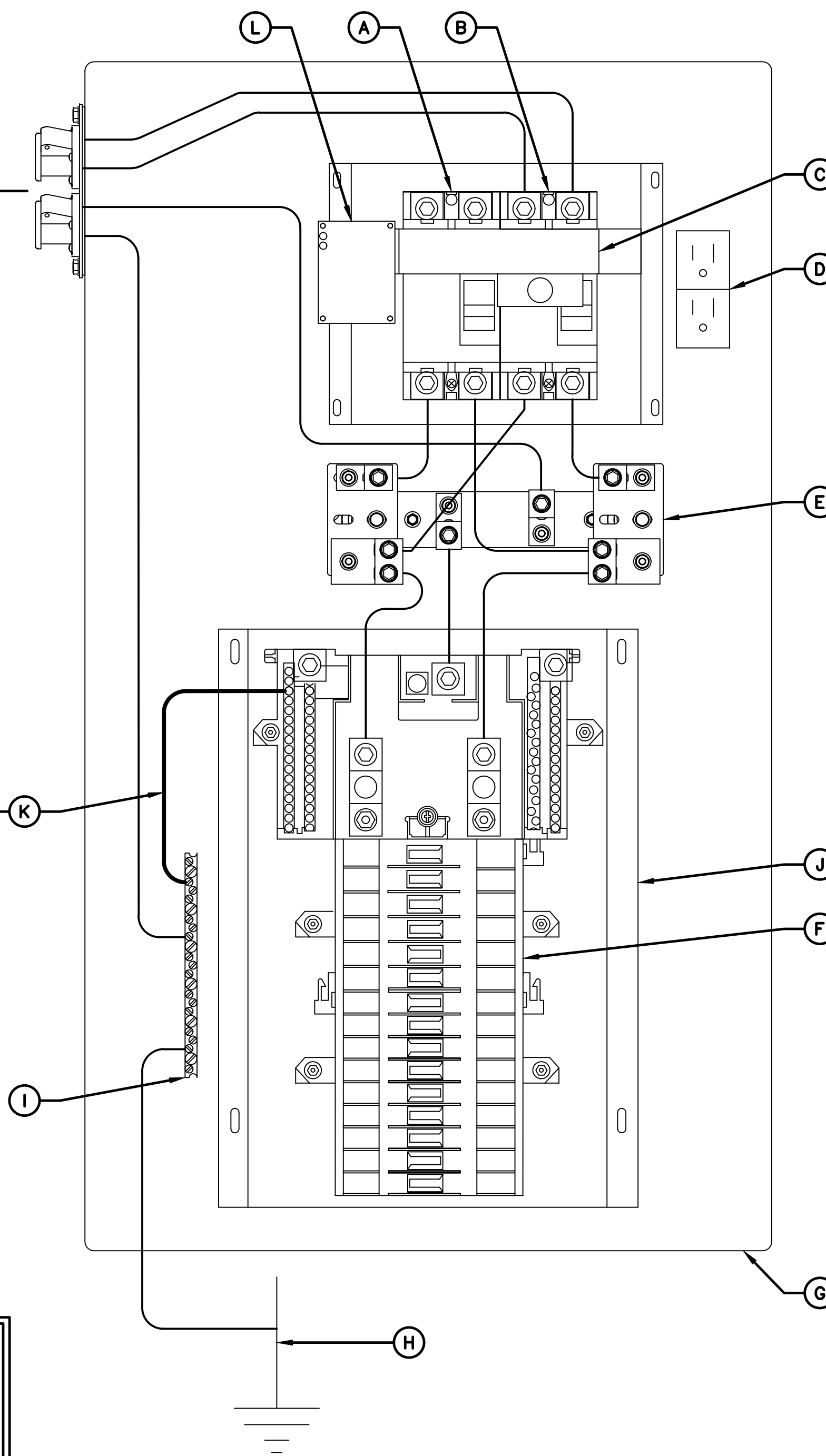


CAM-LOCK GENERATOR RECEPTACLE
(AS VIEWED FROM OUTSIDE OF ENCLOSURE)
USE LINE UP PIN AS REFERENCE

REFER TO RECEPTACLE FOR MODEL NUMBER

DANGER:
HAZARD OF ELECTRICAL SHOCK OR BURN.
TURN OFF POWER SUPPLYING THIS EQUIPMENT BEFORE WORKING INSIDE.

RAYCAP CUSTOMER SERVICE
(800) 890-2569



NEUTRAL-TO-GROUND NOTES:

- WHEN THE PPC IS USED AS THE SERVICE ENTRANCE DEVICE, THE NEUTRAL TO GROUND BOND NEEDS TO BE ESTABLISHED IN THE PPC.
- WHEN THE SERVICE ENTRY DEVICE IS A MULTI-METER CENTER OR A PRE-PPC DISCONNECT IS USED AND HAS "NEUTRAL TO GROUND" ACCOMMODATIONS, THE NEUTRAL TO GROUND WIRE IN THE PPC IS NOT REQUIRED.
- THE GREEN #6 WIRE IS PROVIDED WITH THE PPC CABINET AS A SEPARATE UNINSTALLED PART TO BE INSTALLED BY CONTRACTOR IF NEEDED.

NEUTRAL-TO-GROUND BONDING JUMPER

INSTALLATION INSTRUCTIONS:

- IF REQUIRED, THE N-G BONDING KIT SHOULD BE INSTALLED BY QUALIFIED PERSONNEL
- ENSURE THE MAIN BREAKERS ARE OFF
- USE THE GREEN #6 WIRE PROVIDED WITH THE PPC
- INSTALL THE JUMPER AS SHOWN IN THE WIRING DIAGRAM
- TIGHTEN TERMINALS TO TORQUE VALUE SHOWN IN TORQUE TABLE
- PLACE THE PROVIDED "SERVICE" LABEL IN THE SPACE BELOW THE WORDS "AC POWER" LOCATED ABOVE THE MAIN CIRCUIT BREAKER IN THE UPPER PORTION OF THE DEAD FRONT

LEGEND:

- A. UTILITY DISCONNECT (SERVICE RATED)
- B. GENERATOR DISCONNECT
- C. MAIN DISCONNECT CIRCUIT BREAKERS W/ MECHANICAL INTERLOCK
- D. GFCI RECEPTACLE 15A
- E. SPD STRIKESORB KELVIN CONNECTION (TYP OF 2)
- F. BREAKER PANEL - 24 POSITION (CONTRACTOR TO ADD APPROPRIATE BREAKER PER ONE-LINE DIAGRAM PANEL SCHEDULE)
- G. POWER PROTECTION CABINET (PPC) (FULLY ASSEMBLED FROM MANUFACTURER)
- H. CONTRACTOR TO ATTACH TO UNDERGROUND GROUNDING HALO OR INSTALL GROUND ROD WHEN REQUIRED BY CODE
- I. GROUND BAR
- J. SQUARE D Q SERIES LOAD CENTER
- K. NEUTRAL-TO-GROUND (N-G) BONDING JUMPER (CONTRACTOR INSTALLED IF REQUIRED)
- L. OPTIONAL SPD STATUS INDICATORS



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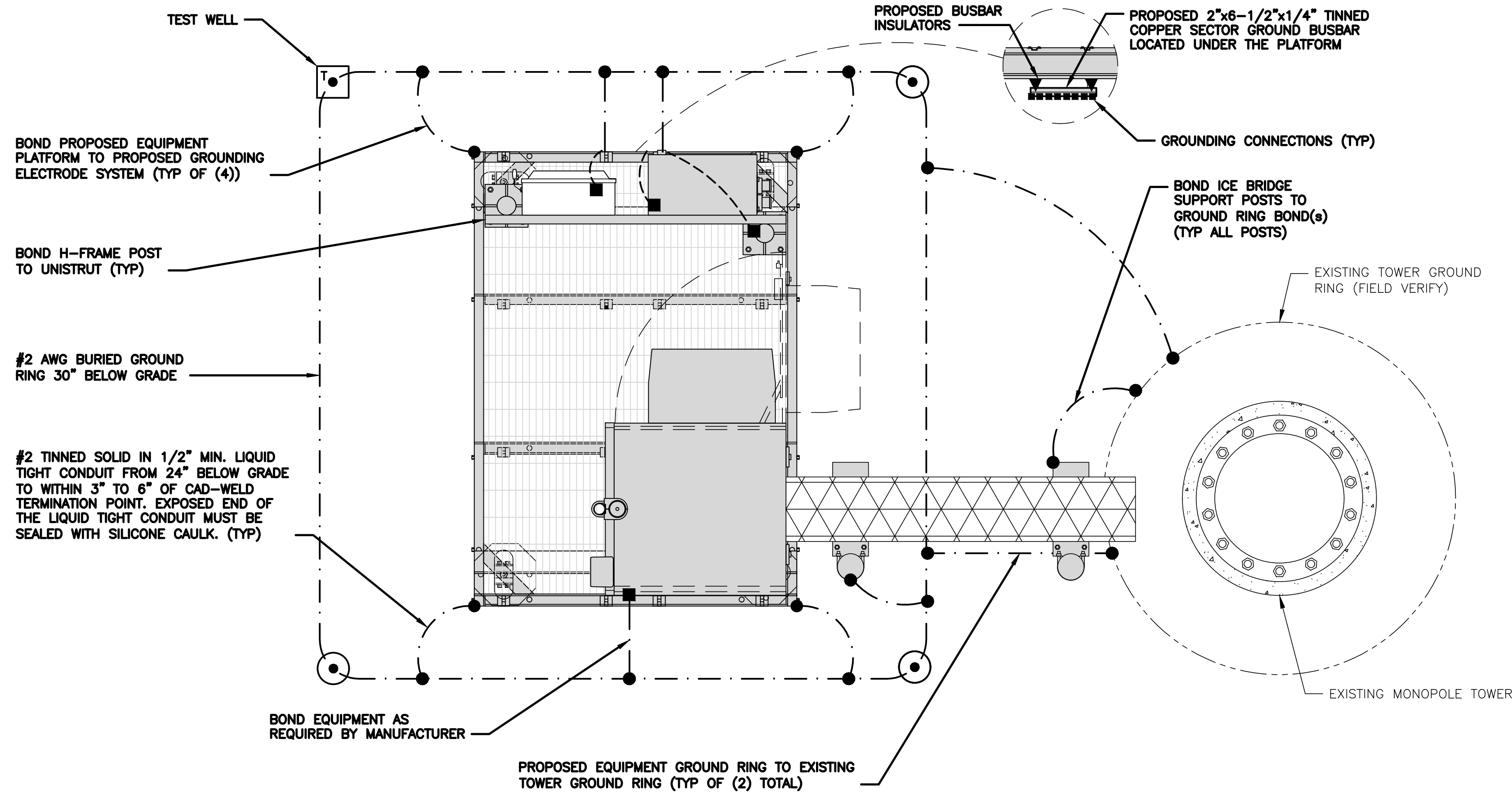
DISH Wireless L.L.C.
PROJECT INFORMATION

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75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
PPC NEUTRAL-TO-GROUND SCHEMATIC

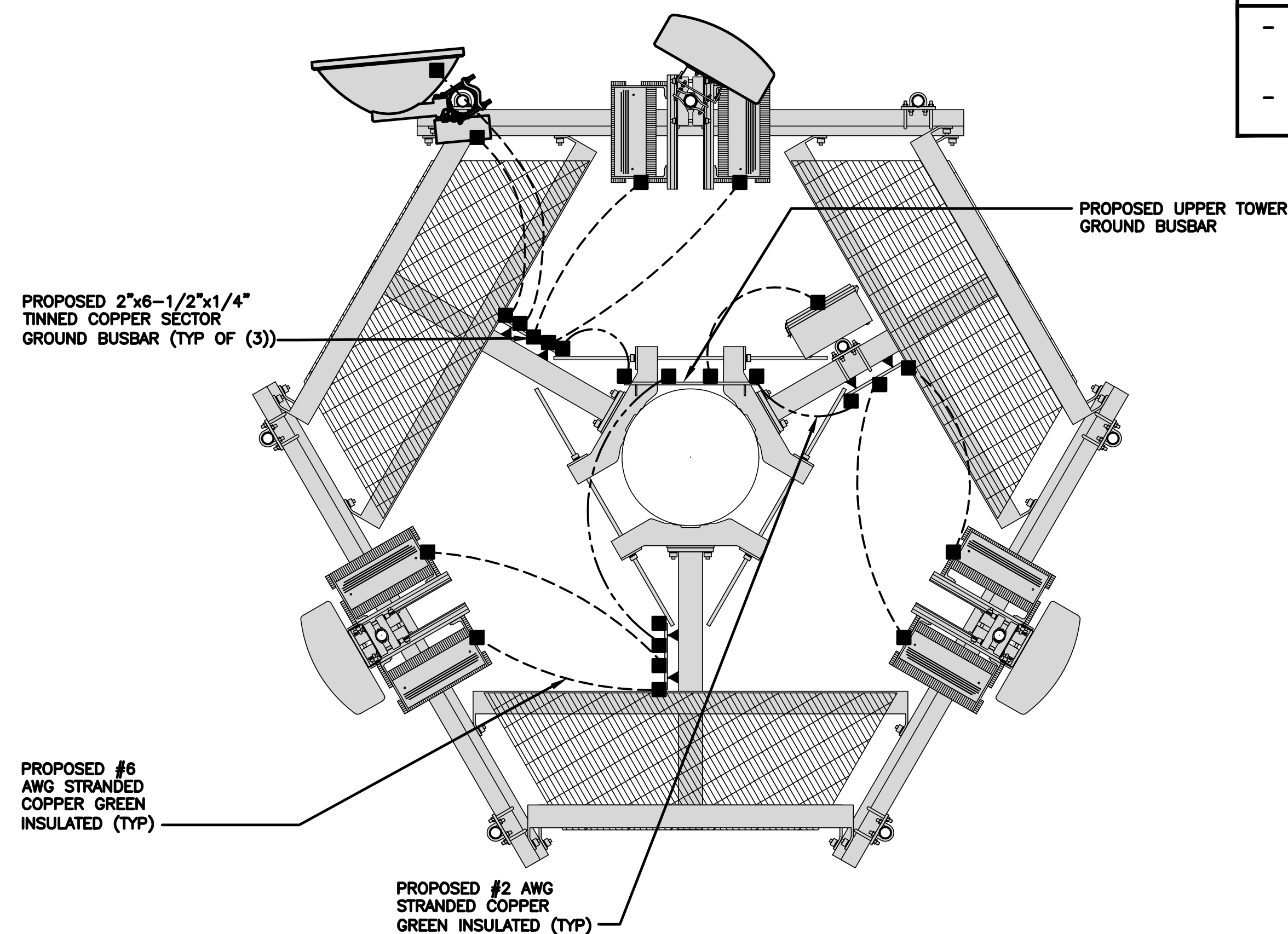
SHEET NUMBER

E-4



TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- ▬ GROUND BUS BAR
- GROUND ROD
- TEST GROUND ROD WITH INSPECTION SLEEVE
- #6 AWG STRANDED & INSULATED
- - - - - #2 AWG SOLID COPPER TINNED
- #2 AWG STRANDED & INSULATED
- ▲ BUSS BAR INSULATOR

GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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 PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



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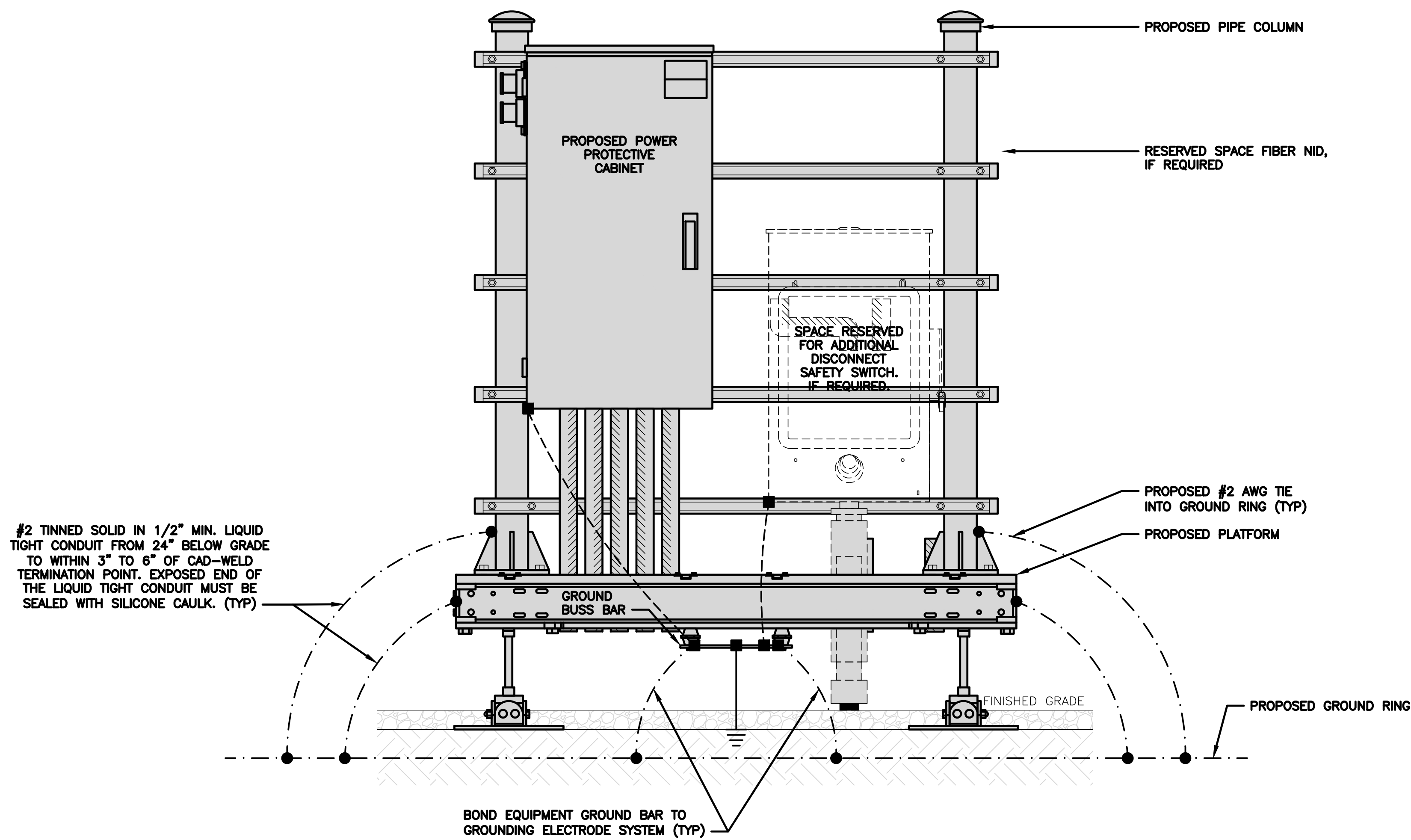
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SHEET TITLE
GROUNDING PLANS
AND NOTES

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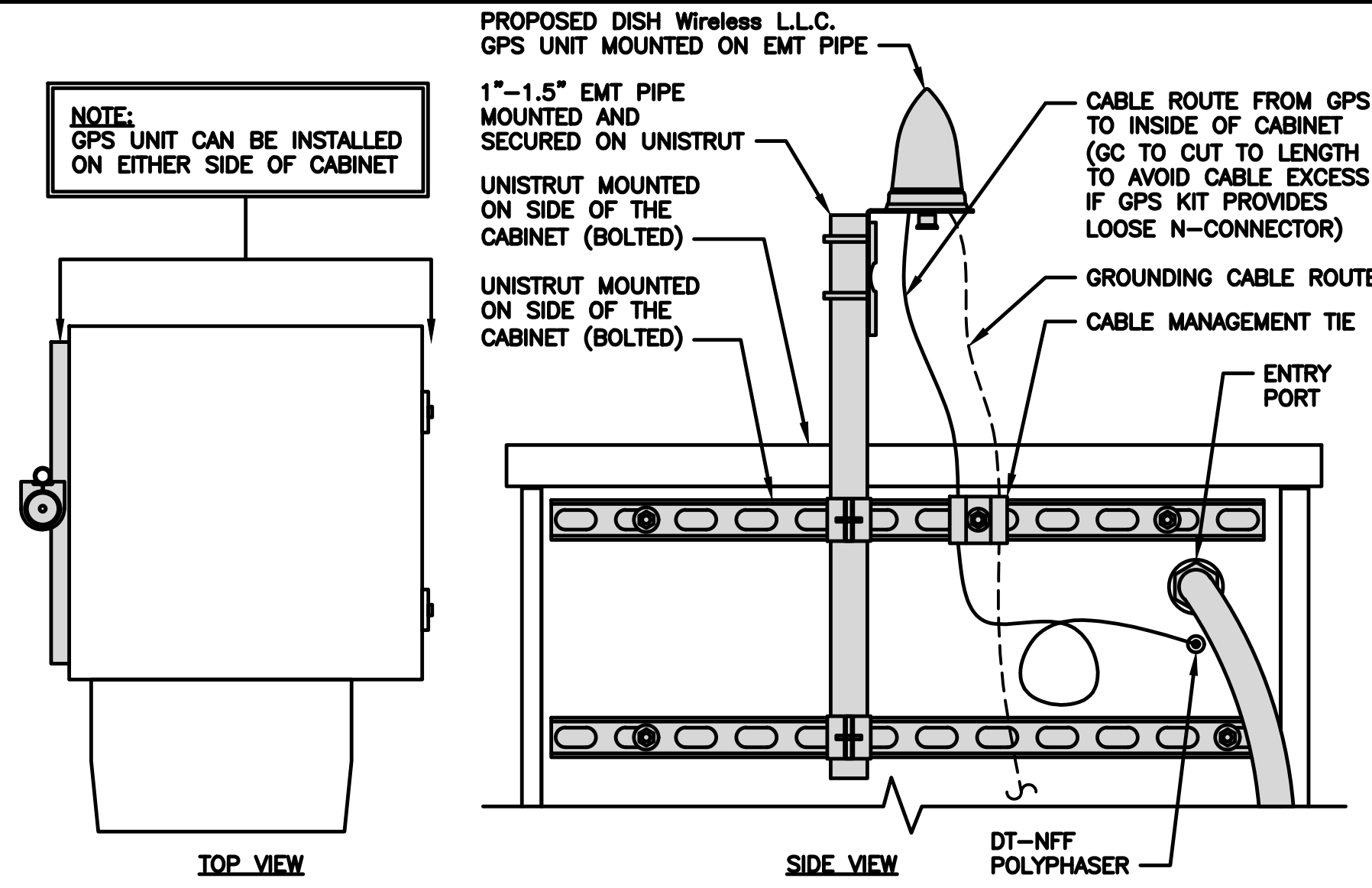
G-1

NOTES
EQUIPMENT CABINET OMITTED FOR CLARITY



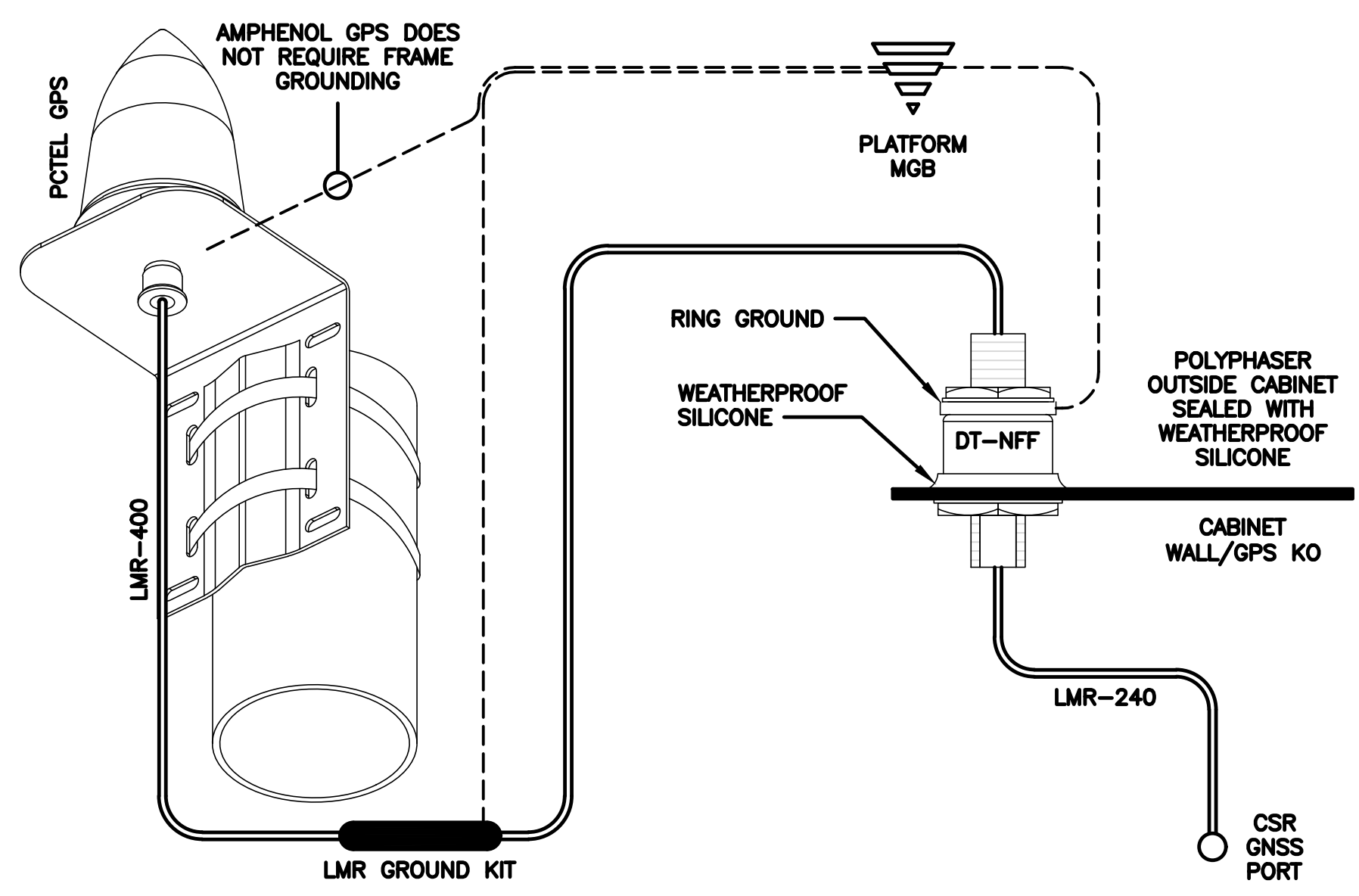
H-FRAME GROUNDING DETAIL

NO SCALE 1



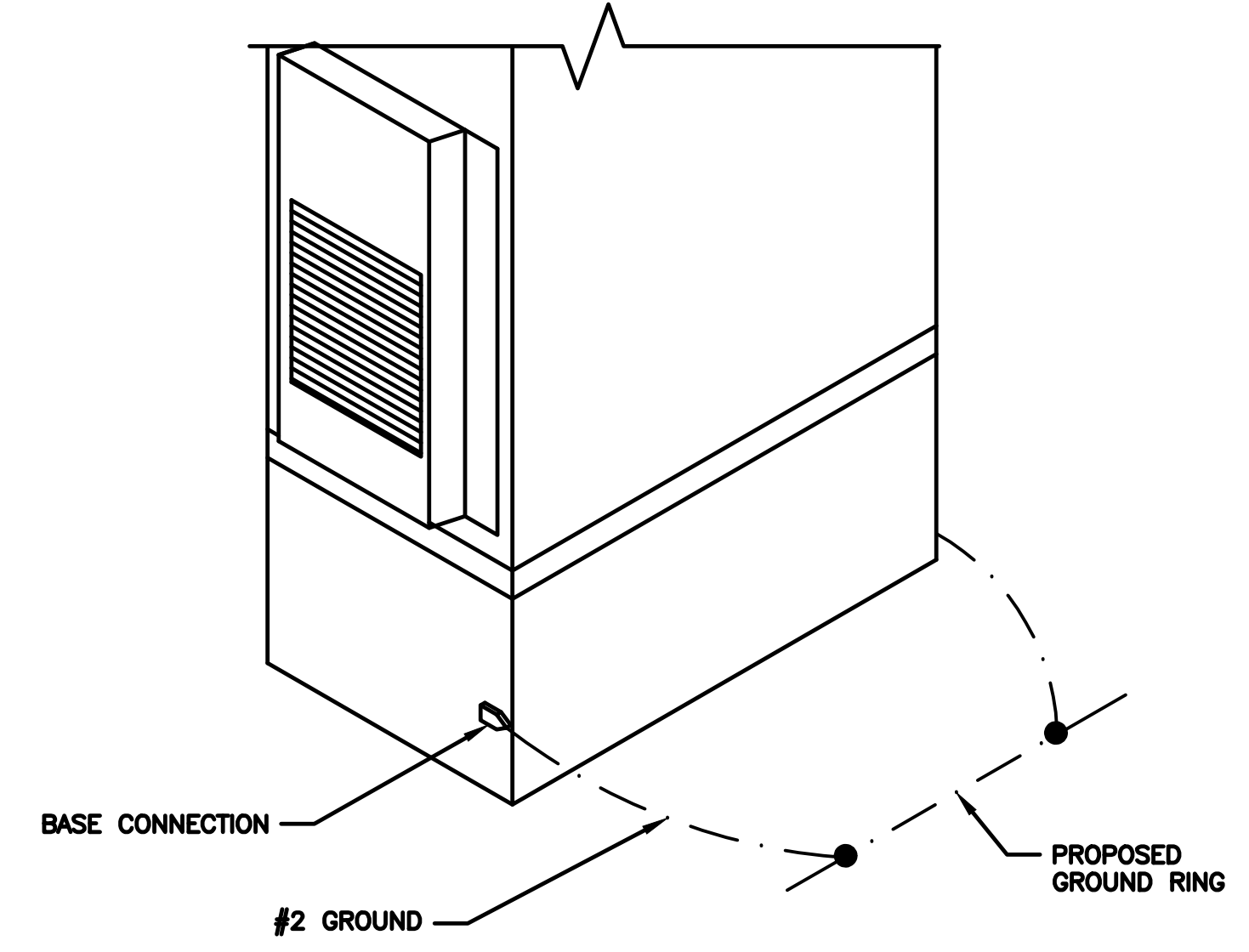
TYPICAL PCTEL GPS UNIT GROUNDING

NO SCALE 2



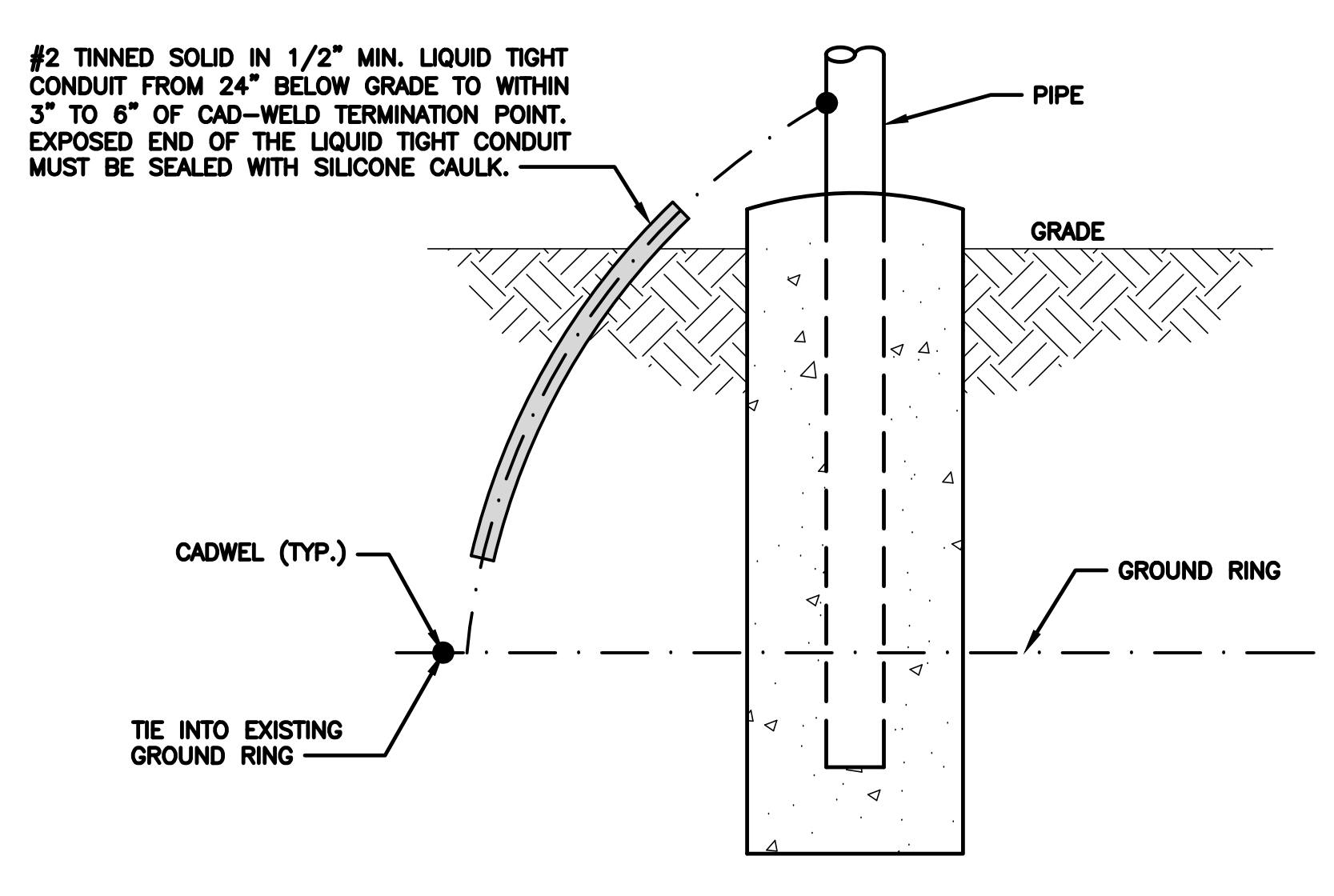
TYPICAL PCTEL GPS UNIT GROUNDING DIAGRAM

NO SCALE 3



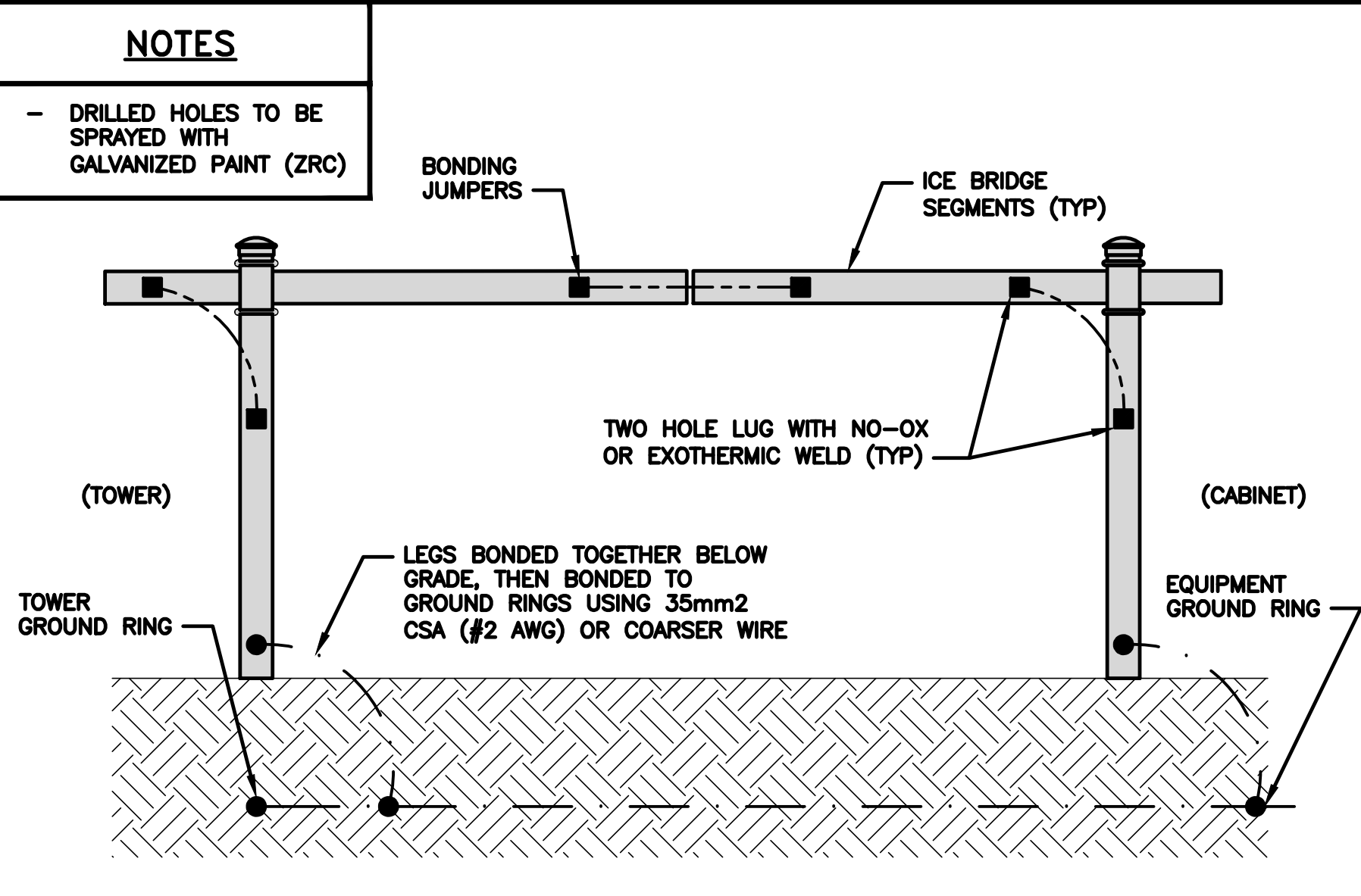
OUTDOOR CABINET GROUNDING

NO SCALE 4



TRANSITIONING GROUND DETAIL

NO SCALE 5



ICE BRIDGE GROUNDING DETAIL

NO SCALE 6



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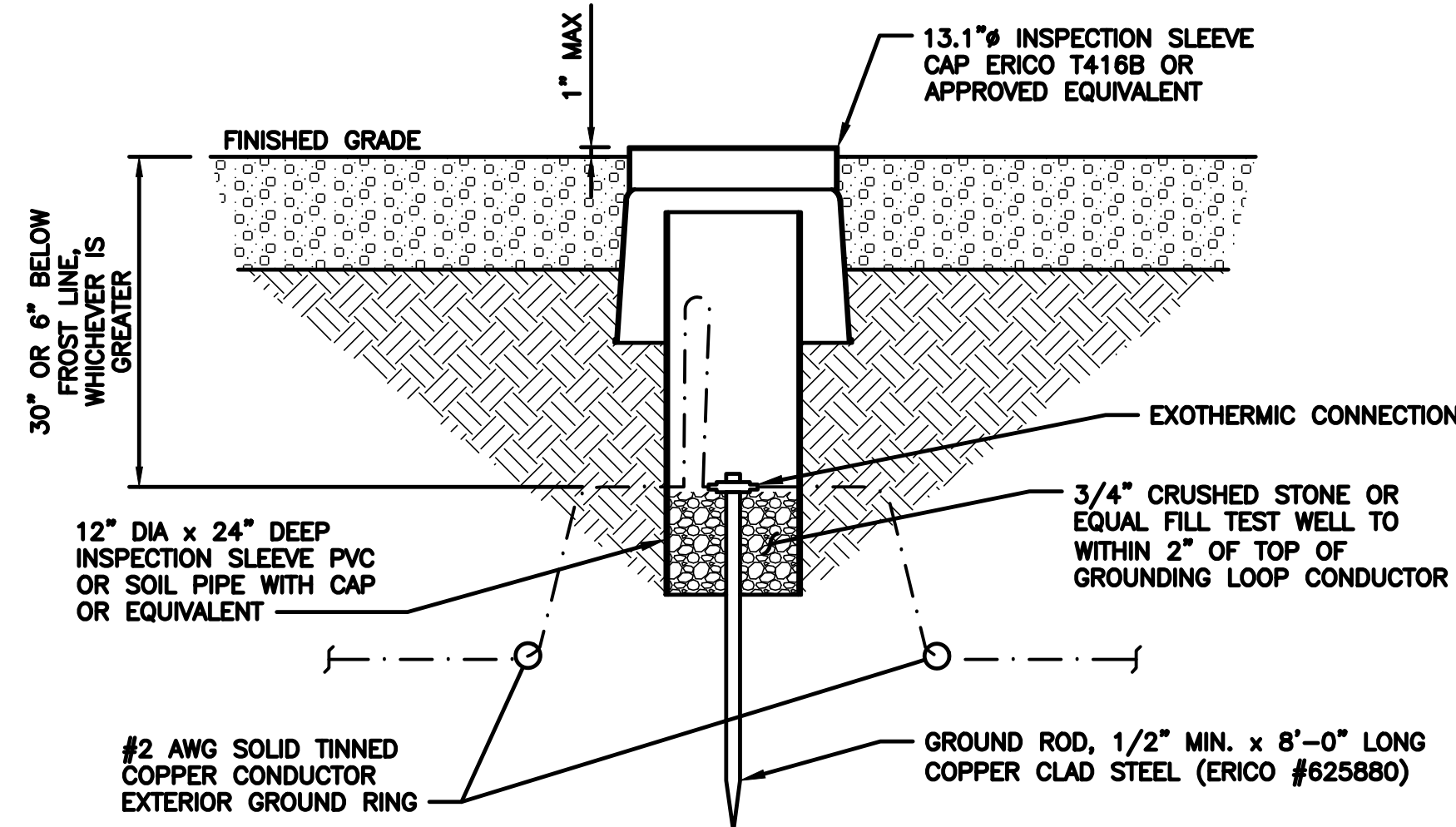
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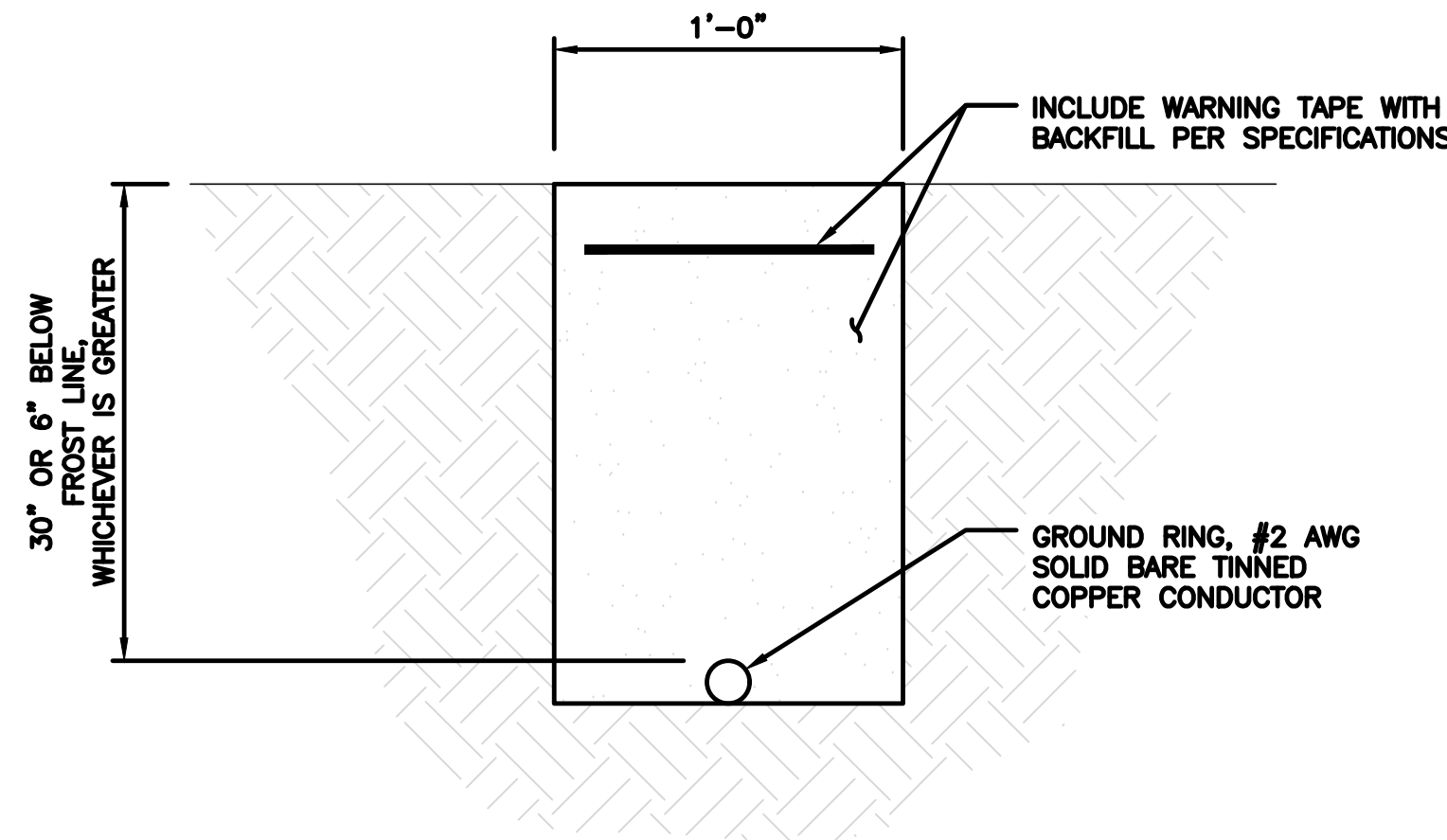
A&E PROJECT NUMBER
BOBDL00106A
DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-2



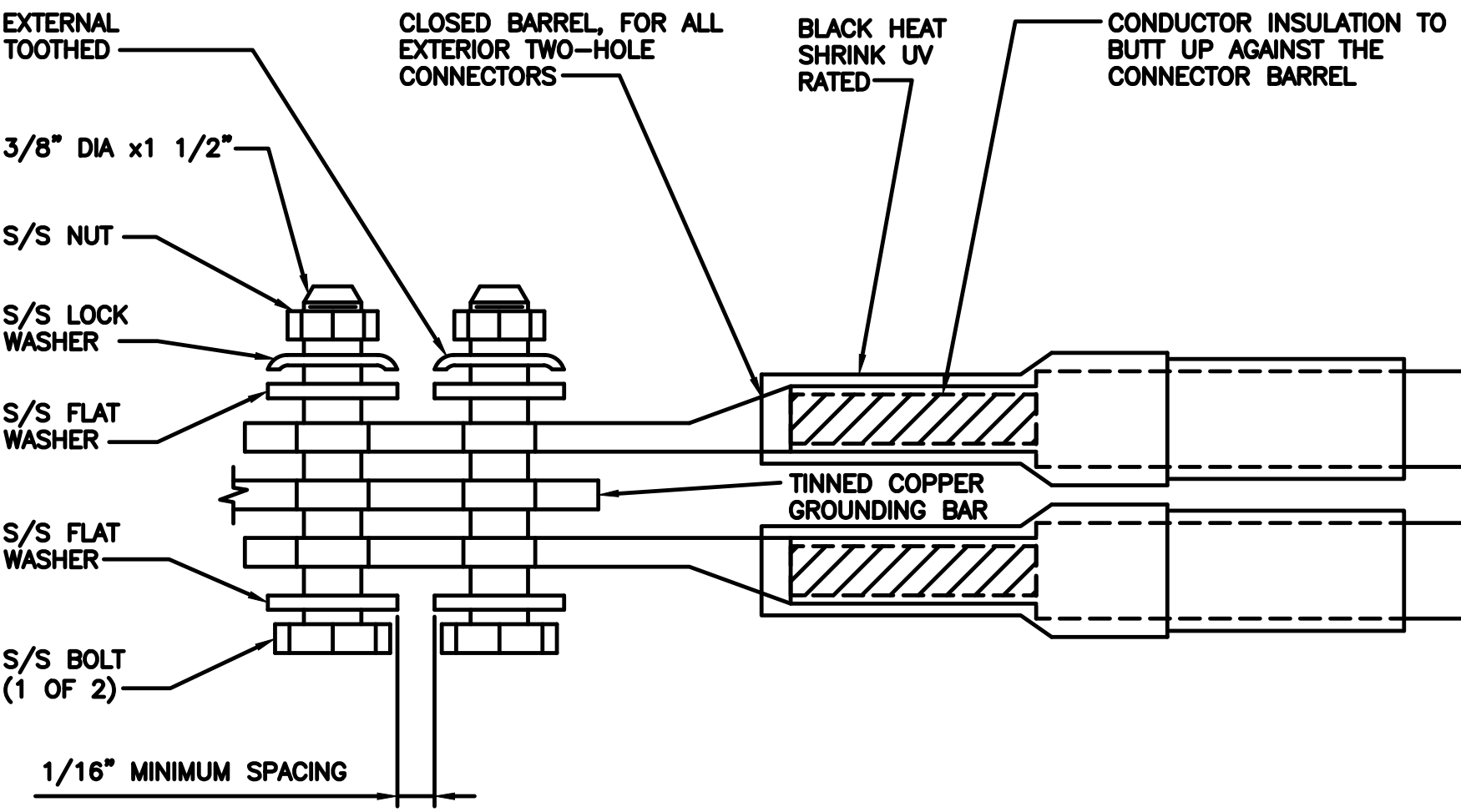
TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE NO SCALE 1



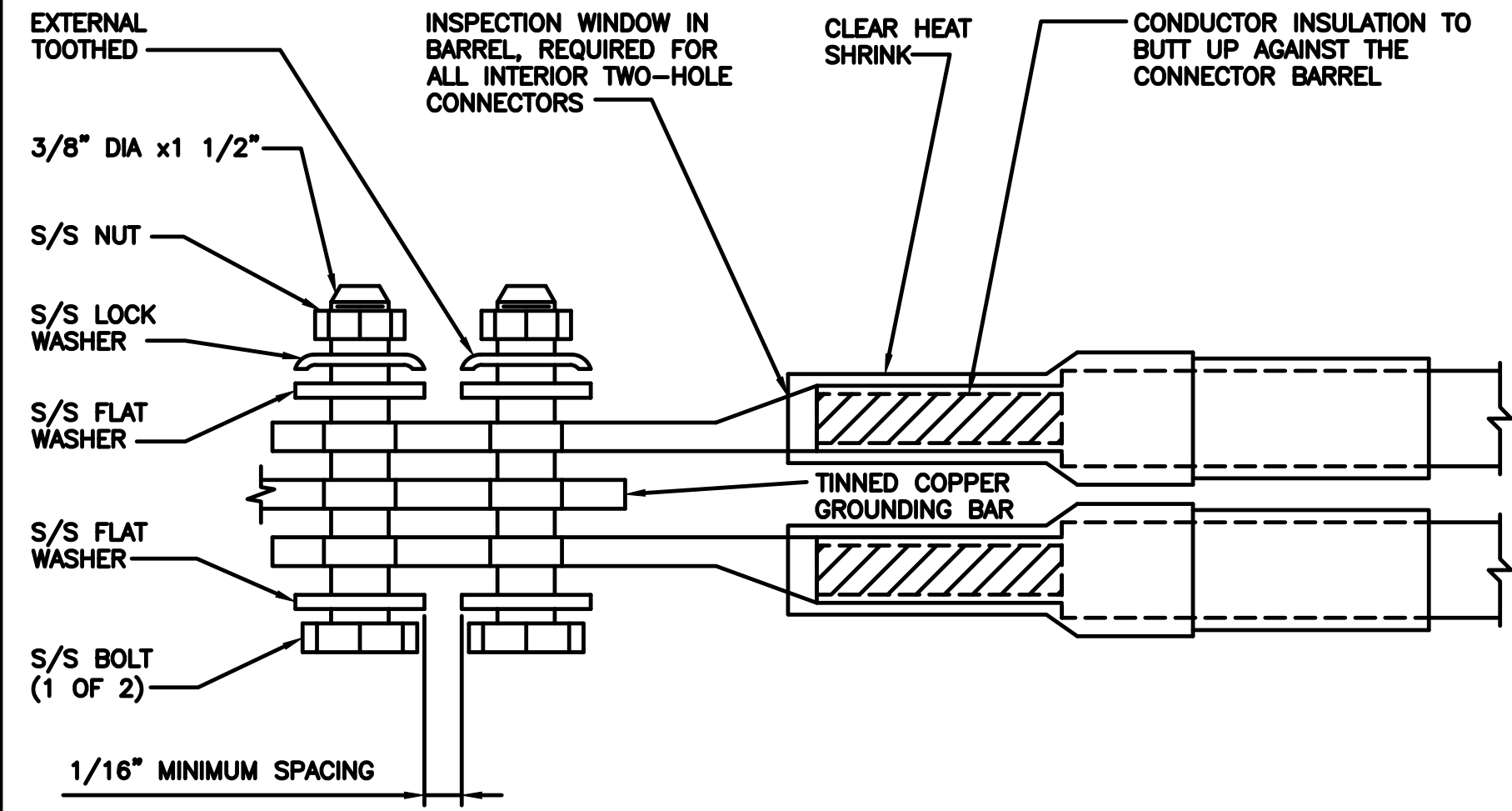
TYPICAL GROUND RING TRENCH NO SCALE 2

- 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.
- 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.
- FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
- DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
- NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
- ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
- ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

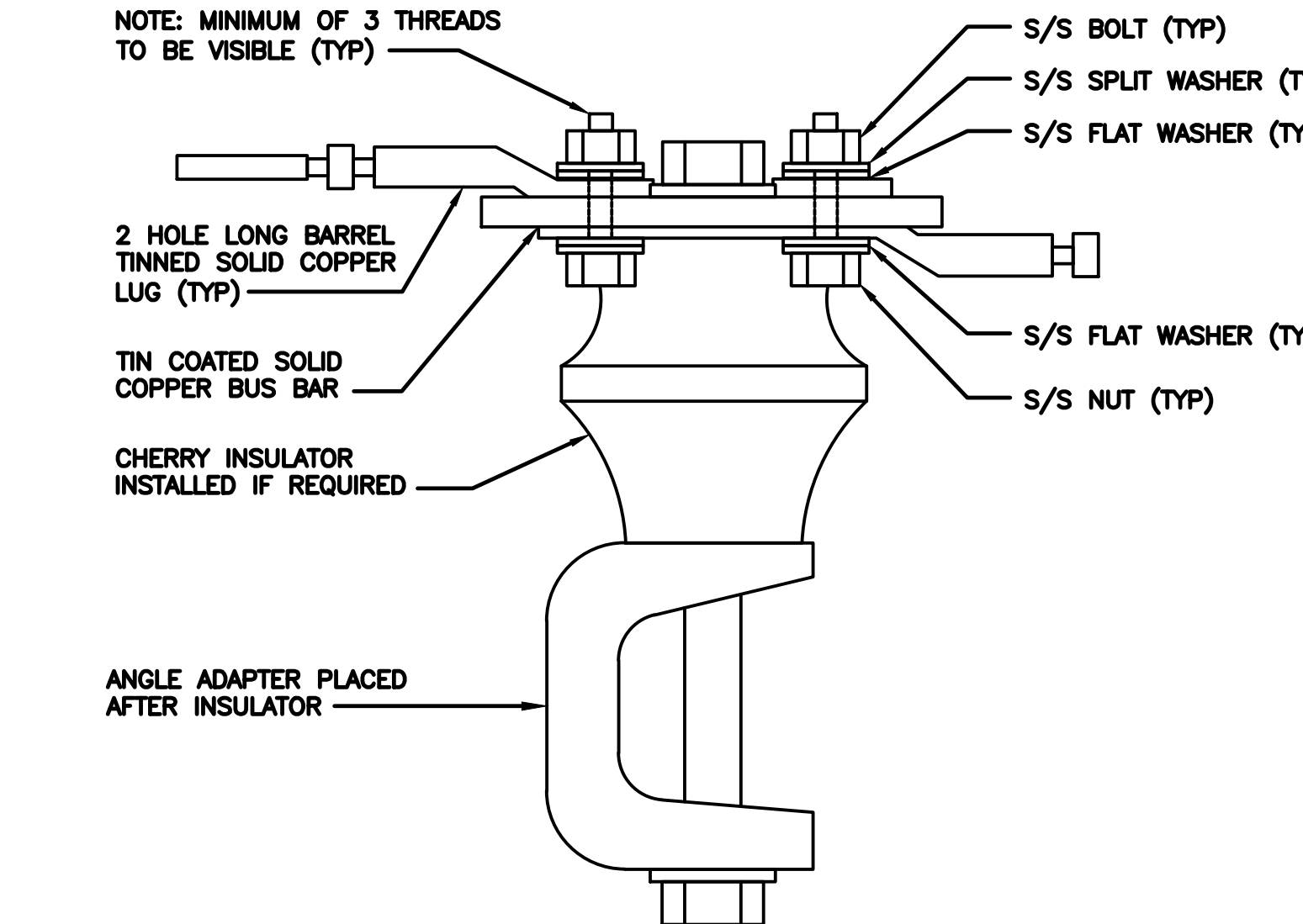
TYPICAL GROUNDING NOTES NO SCALE 3



TYPICAL EXTERIOR TWO HOLE LUG NO SCALE 4



TYPICAL INTERIOR TWO HOLE LUG NO SCALE 5



LUG DETAIL NO SCALE 6

NOT USED NO SCALE 7

NOT USED NO SCALE 8

NOT USED NO SCALE 9



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
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CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
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NEWTON, MA 02446



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DRAWN BY: JK CHECKED BY: SM APPROVED BY: HV

RFDS REV #: A

CONSTRUCTION DOCUMENTS

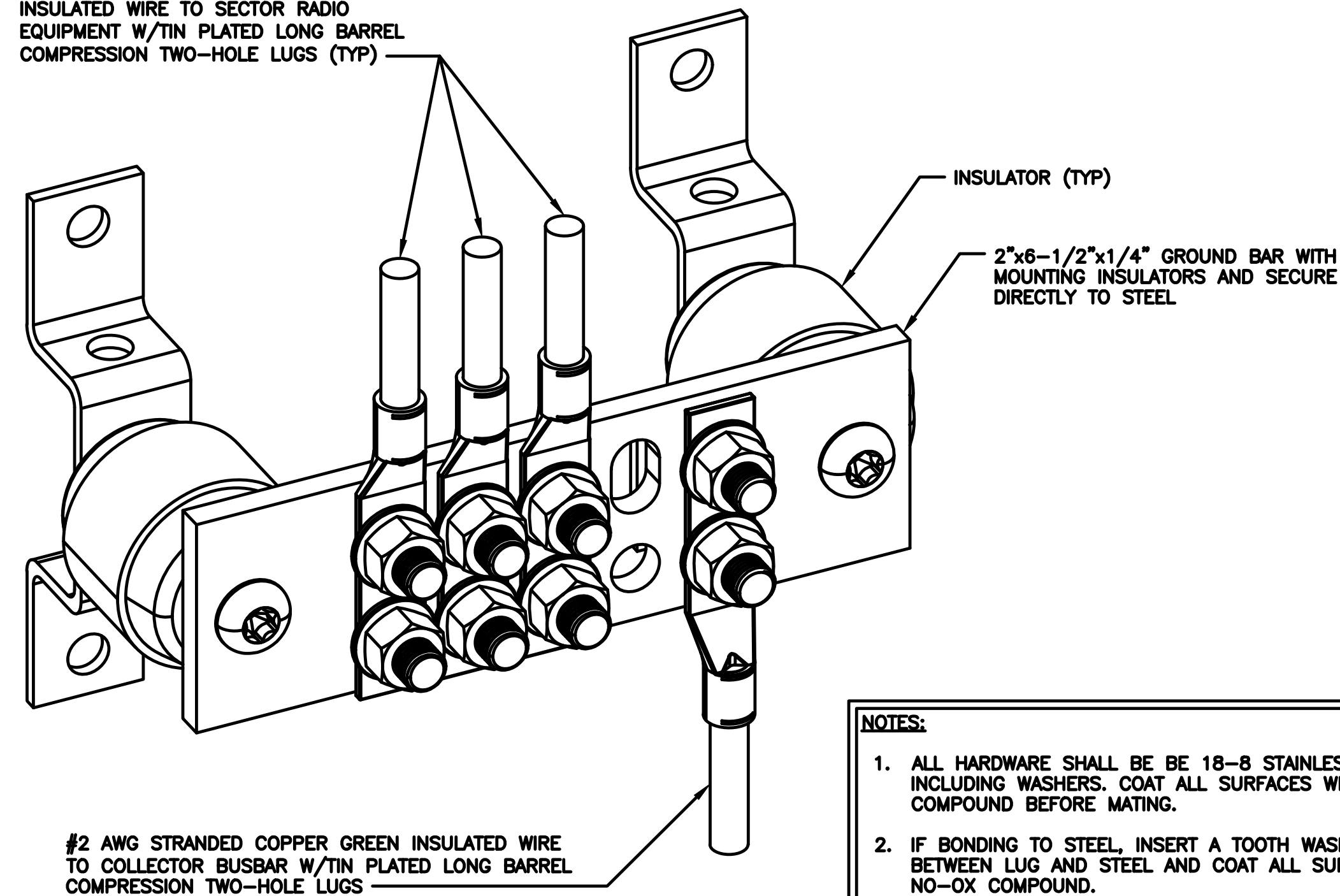
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SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-3

#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO SECTOR RADIO EQUIPMENT W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)



- NOTES:**
1. ALL HARDWARE SHALL BE BE 18-8 STAINLESS STEEL INCLUDING WASHERS. COAT ALL SURFACES WITH NO-OX COMPOUND BEFORE MATING.
 2. IF BONDING TO STEEL, INSERT A TOOTH WASHER BETWEEN LUG AND STEEL AND COAT ALL SURFACE WITH NO-OX COMPOUND.
 3. USE A THIN COAT OF NO-OX OR UL LISTED ANTIOXIDANT COMPOUND BETWEEN GROUNDING CONNECTIONS.

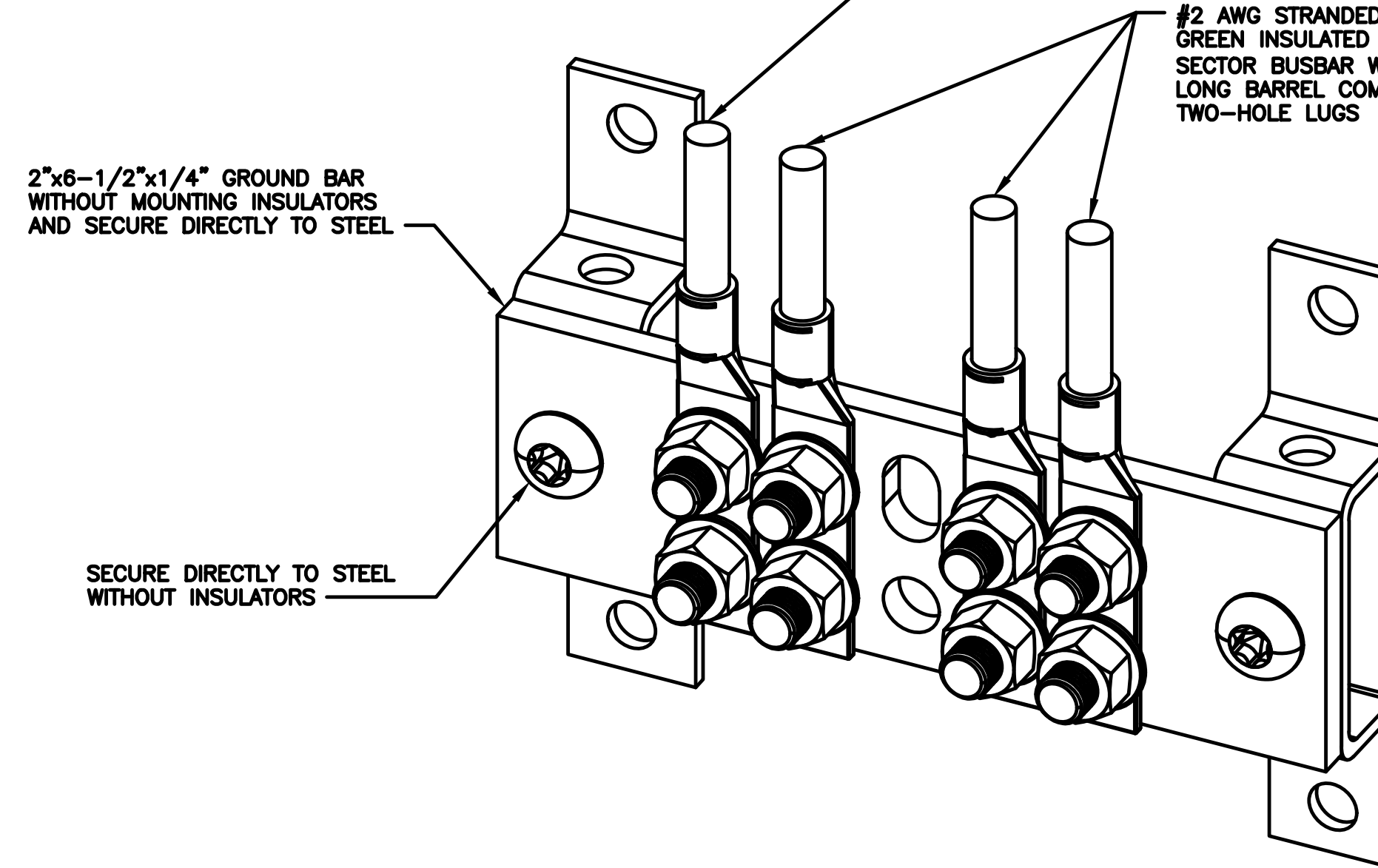
SECTOR GROUND BUSBAR DETAIL

NO SCALE 1

#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO OVP W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)

2"x6-1/2"x1/4" GROUND BAR WITHOUT MOUNTING INSULATORS AND SECURE DIRECTLY TO STEEL

SECURE DIRECTLY TO STEEL WITHOUT INSULATORS



UPPER TOWER GROUND BUSBAR DETAIL

NO SCALE 2

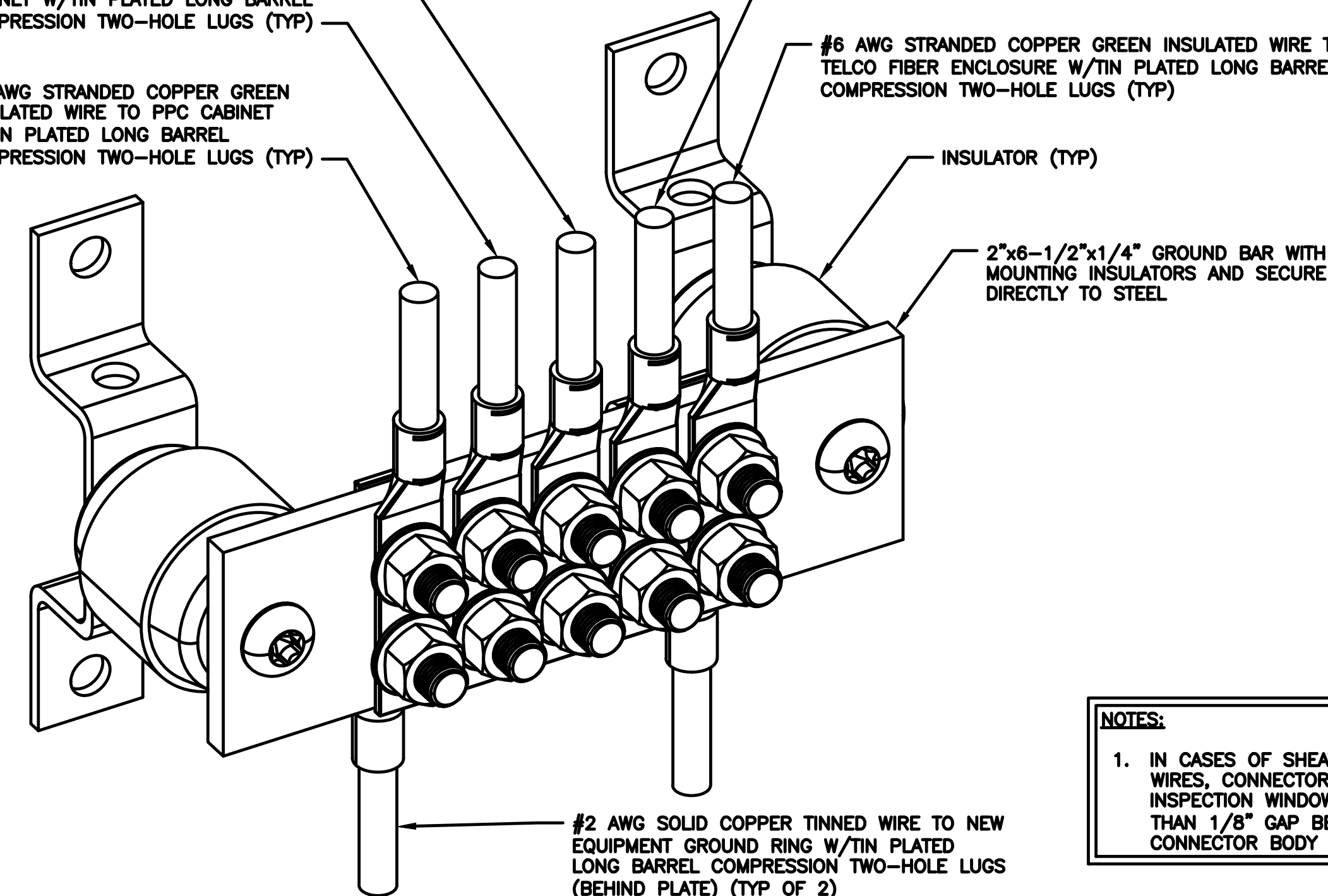
#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO POWER METER SOCKET W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)

#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO FIBER CARRIER CABINET W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)

#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO PPC CABINET W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)

#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO ELECTRICAL DISCONNECT W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)

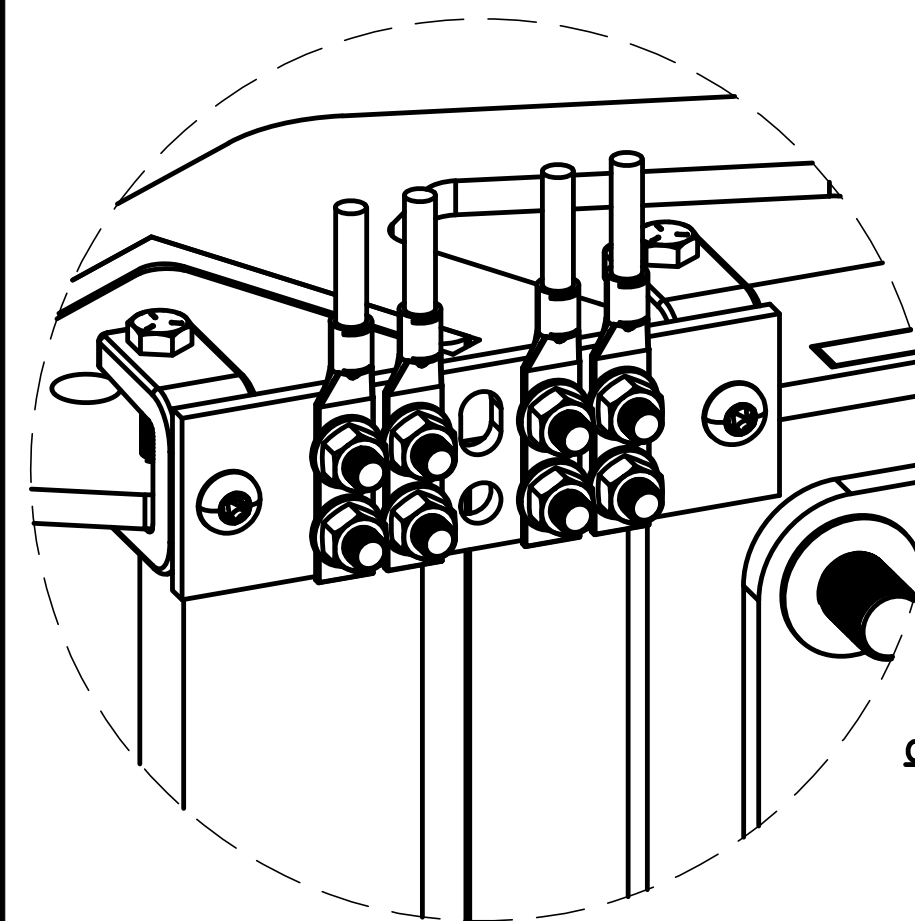
#6 AWG STRANDED COPPER GREEN INSULATED WIRE TO TELCO FIBER ENCLOSURE W/TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP)



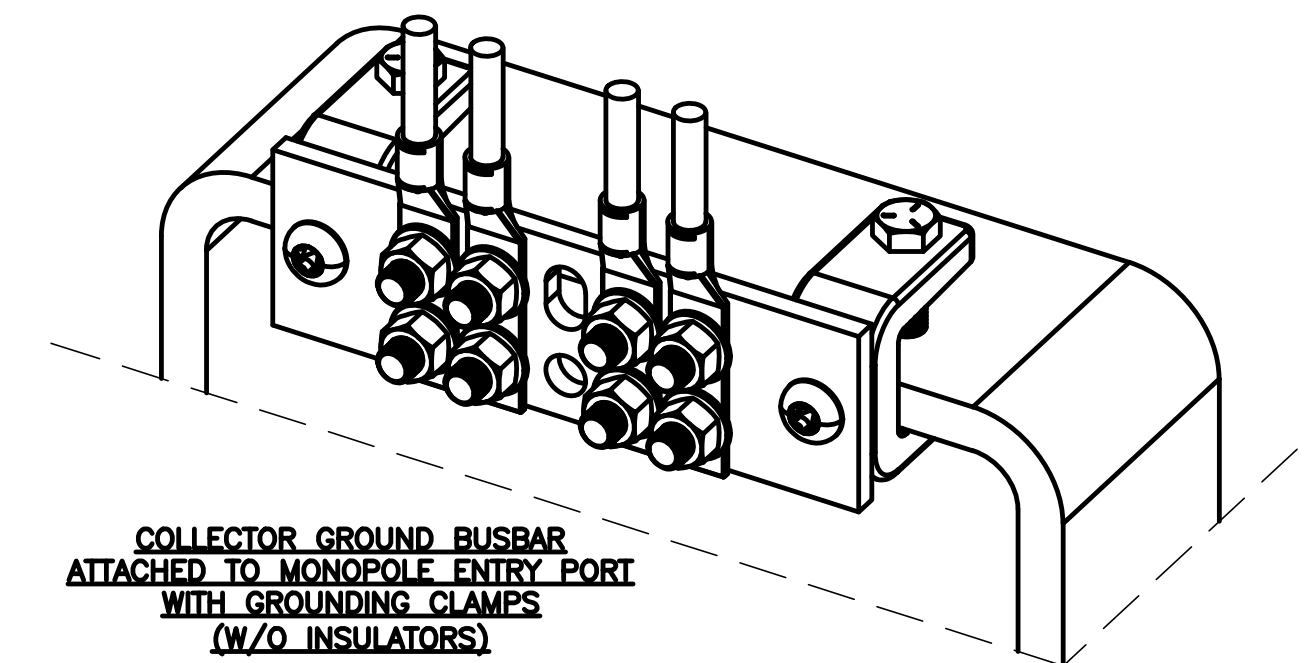
- NOTES:**
1. IN CASES OF SHEATHED STRANDED WIRES, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

EQUIPMENT GROUND BUSBAR DETAIL

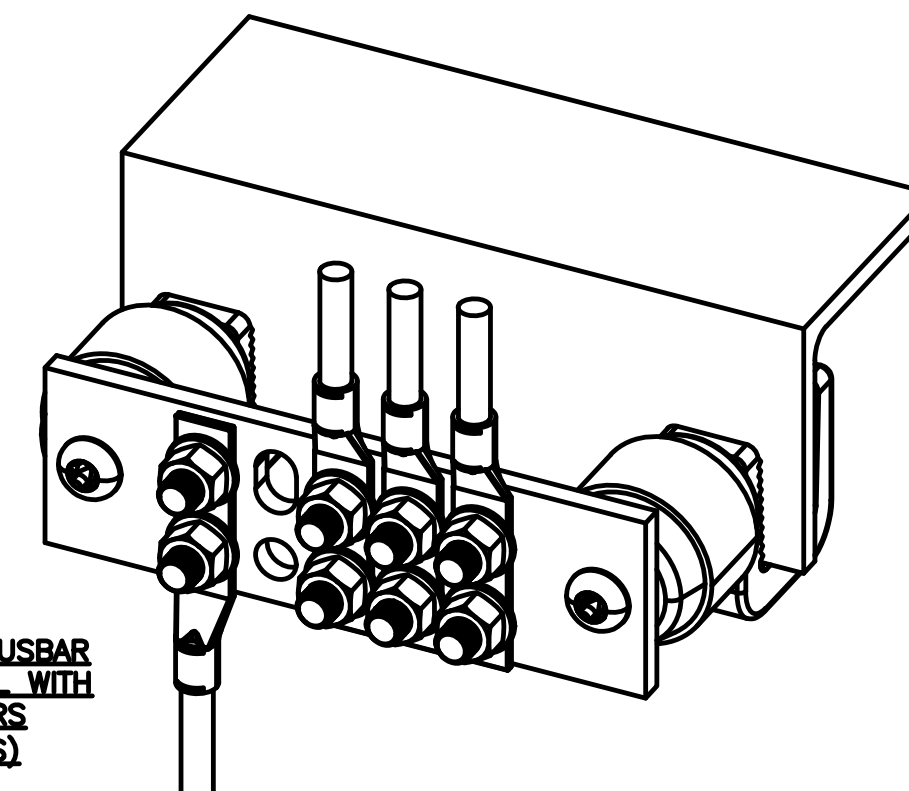
NO SCALE 3



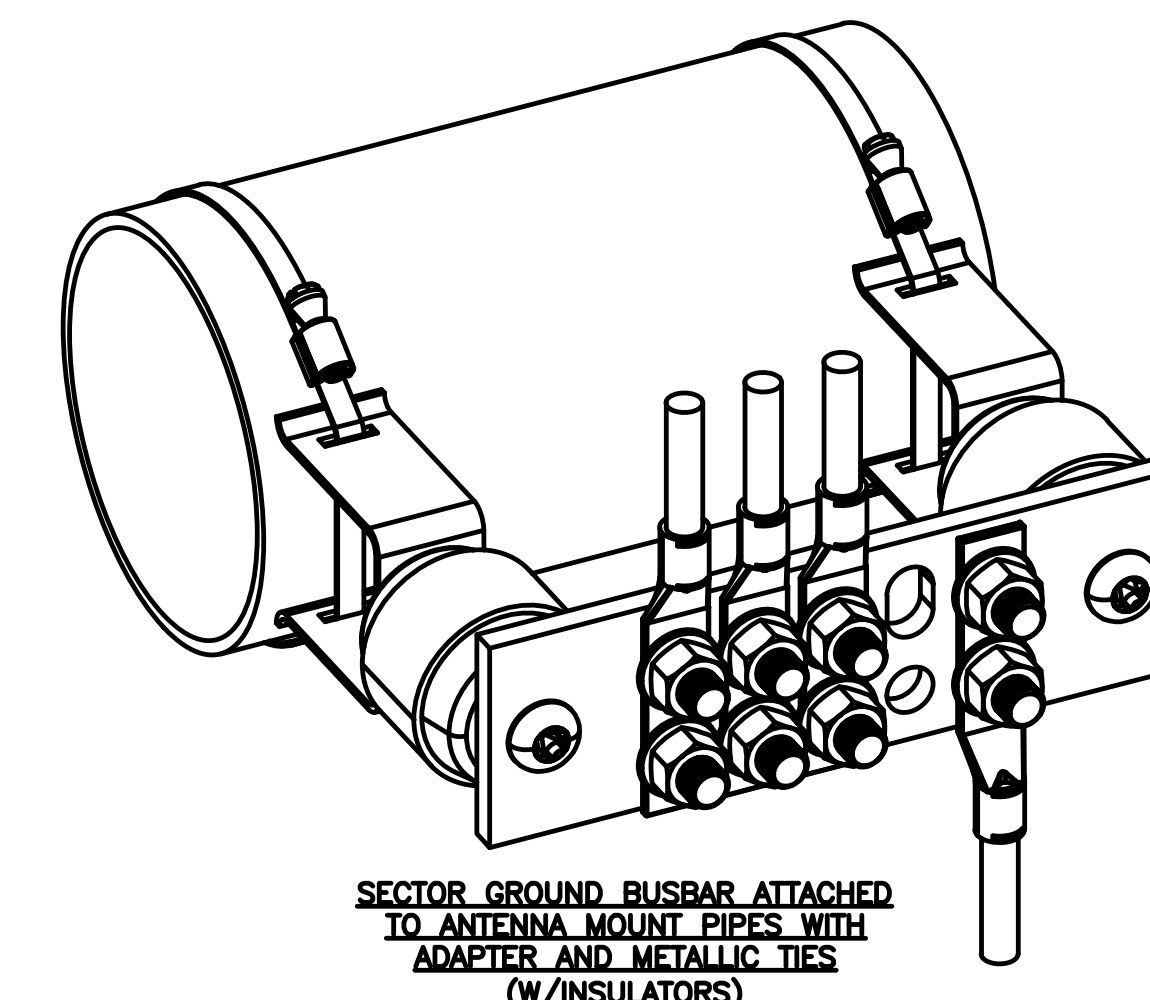
COLLECTOR GROUND BUSBAR ATTACHED TO COLLAR OR SECTOR MOUNT (W/O INSULATORS)



COLLECTOR GROUND BUSBAR ATTACHED TO MONOPOLE ENTRY PORT WITH GROUNDING CLAMPS (W/O INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO METAL WITH ANGLE ADAPTERS (W/INSULATORS)



SECTOR GROUND BUSBAR ATTACHED TO ANTENNA MOUNT PIPES WITH ADAPTER AND METALLIC TIES (W/INSULATORS)

GROUND BUSBAR ATTACHMENT OPTIONS

NO SCALE 4

dish
wireless.

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LITTLETON, CO 80120

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75 WELLS ROAD
WETHERSFIELD, CT 06109

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GROUNDING DETAILS

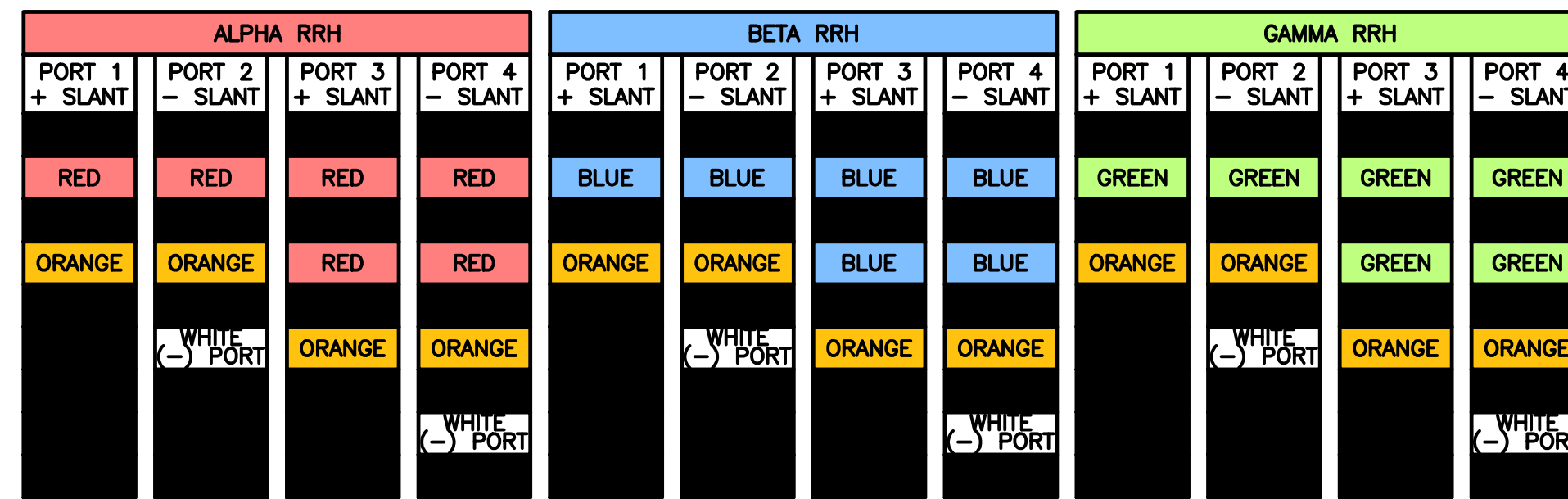
SHEET NUMBER

G-4

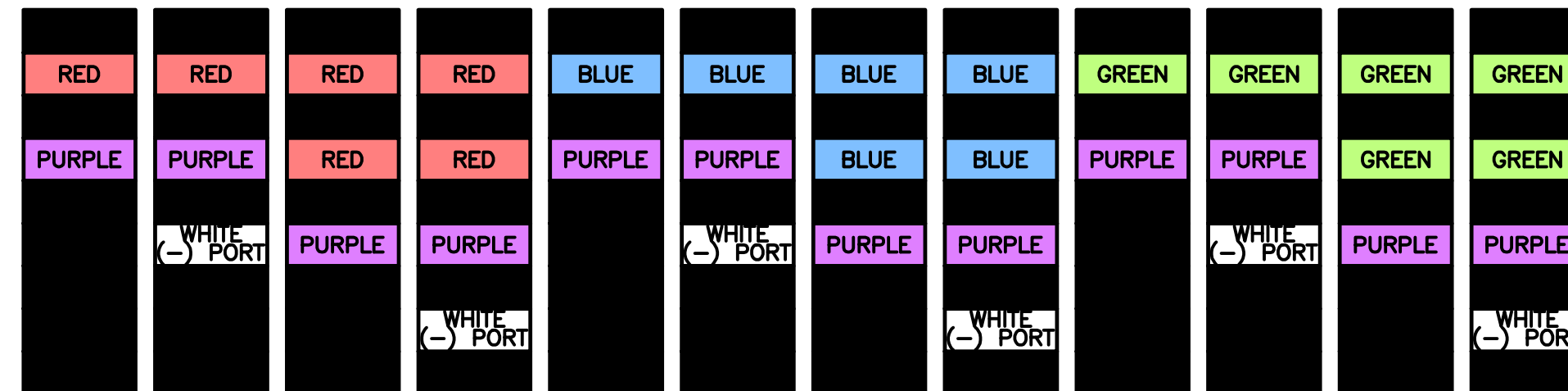
HYBRID/DISCREET CABLES

3/4" TAPE WIDTHS WITH 3/4" SPACING

LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) - OPTIONAL PER MARKET
ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BAND)



MID-BAND RRH
(AWS BANDS N66+N70)
ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)



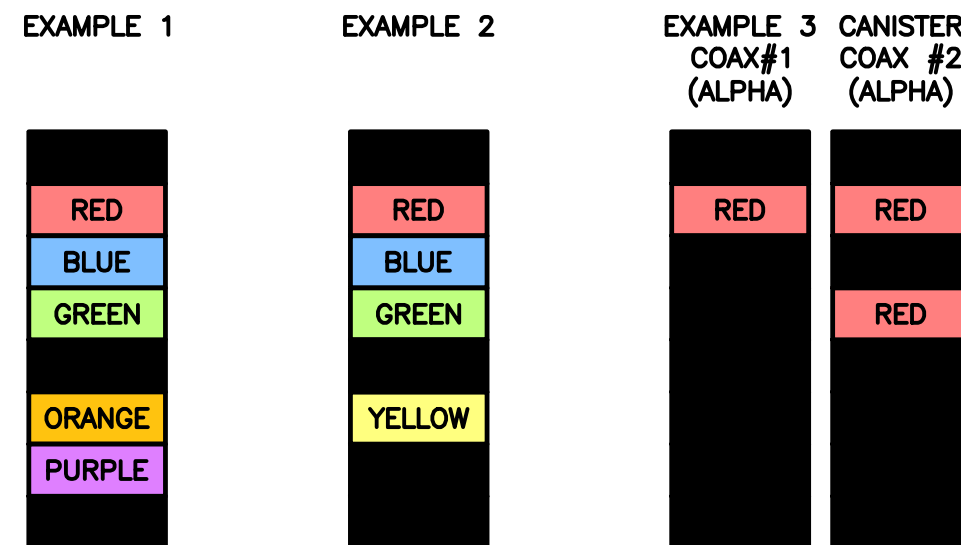
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED
ALONG WITH FREQUENCY BANDS.

EXAMPLE 1 - HYBRID, OR DISCREET, SUPPORTS
ALL SECTORS, BOTH LOW-BANDS AND
MID-BANDS.

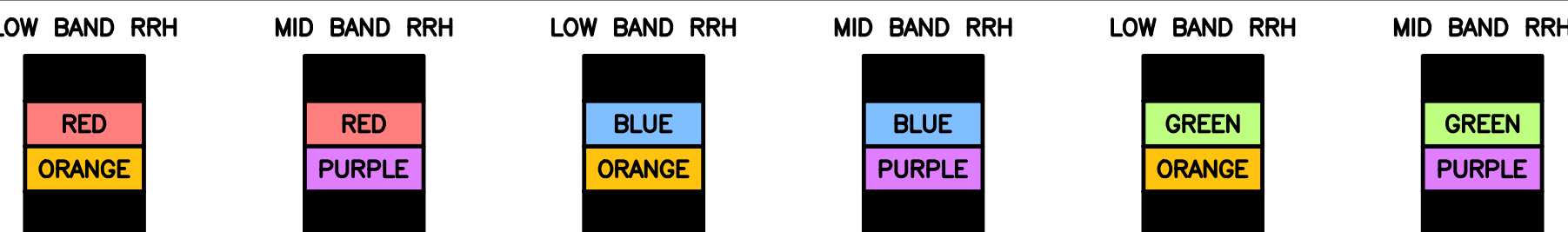
EXAMPLE 2 - HYBRID, OR DISCREET, SUPPORTS
CBRS ONLY, ALL SECTORS.

EXAMPLE 3 - MAIN COAX WITH GROUND
MOUNTED RRHS.



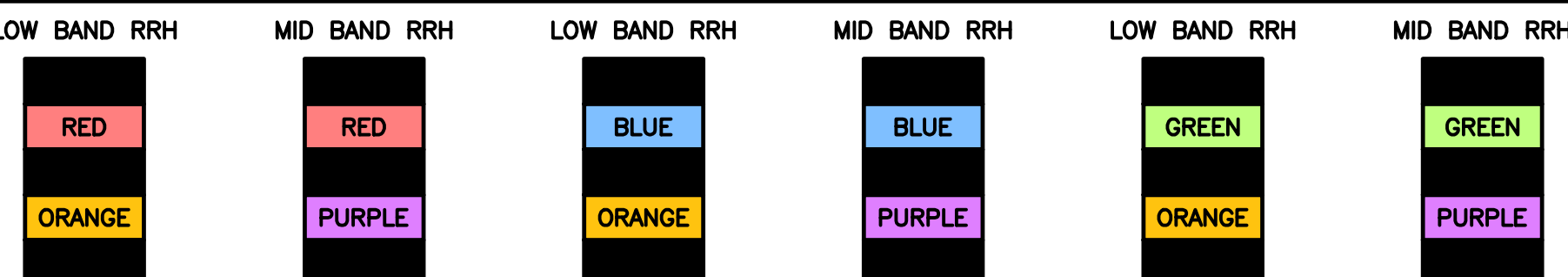
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR
STRIPE ONLY.



POWER CABLES TO RRHs

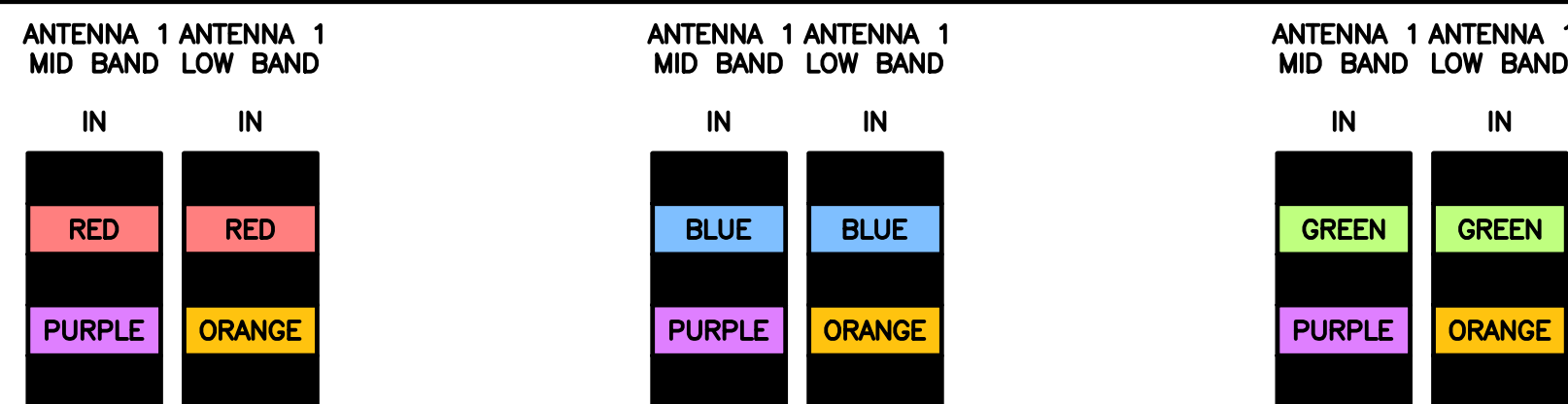
LOW-BAND RRH POWER CABLES HAVE SECTOR
STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID-BAND
RRH WHEN ONE SET OF RET PORTS EXIST ON
ANTENNA.

SEPARATE RET CABLES ARE USED WHEN
ANTENNA PORTS PROVIDE INPUTS FOR BOTH
LOW AND MID BANDS.

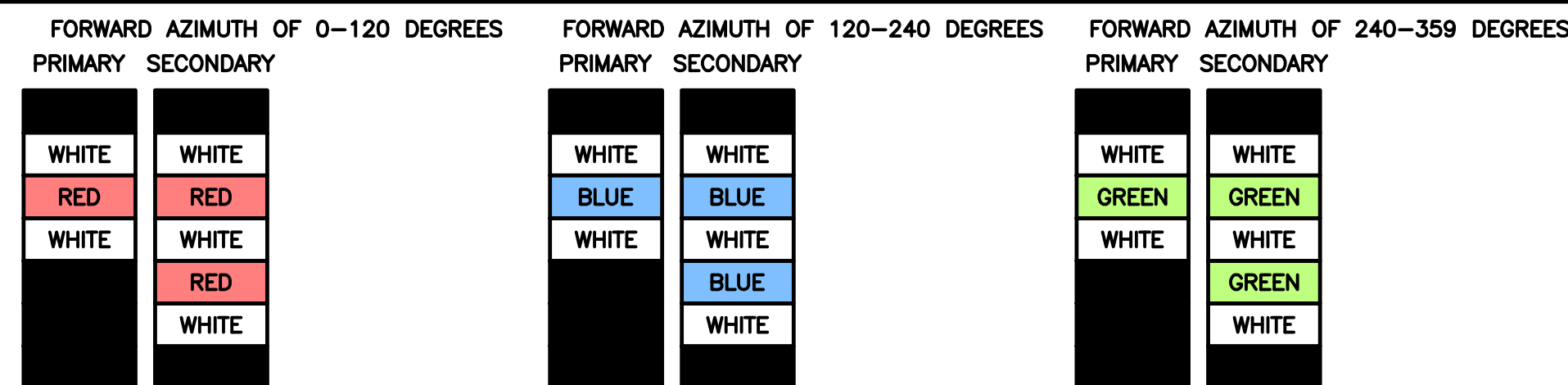


MICROWAVE RADIO LINKS

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)



AWS
(N66+N70+H-BLOCK)



CBRS TECH
(3 GHz)



NEGATIVE SLANT PORT
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



CONSULTANT:



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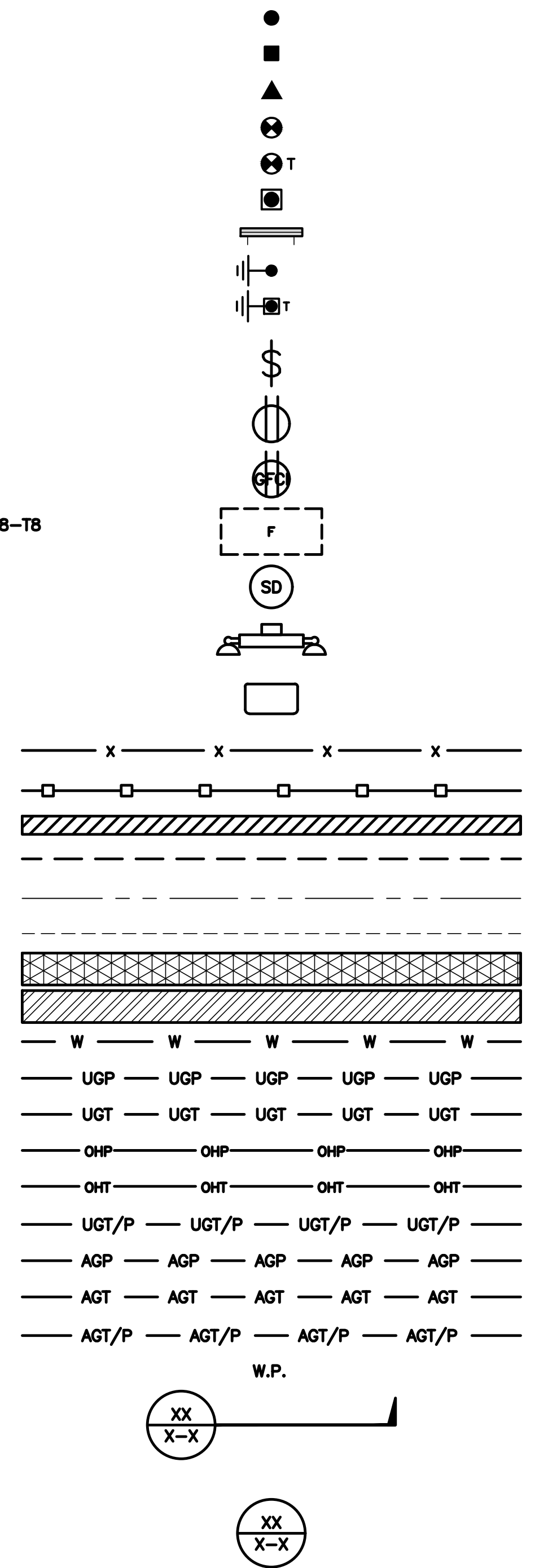
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

EXOTHERMIC CONNECTION
 MECHANICAL CONNECTION
 BUSS BAR INSULATOR
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
 EXOTHERMIC WITH INSPECTION SLEEVE
 GROUNDING BAR
 GROUND ROD
 TEST GROUND ROD WITH INSPECTION SLEEVE
 SINGLE POLE SWITCH
 DUPLEX RECEPTACLE
 DUPLEX GFCI RECEPTACLE
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8
 SMOKE DETECTION (DC)
 EMERGENCY LIGHTING (DC)
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
 LED-1-25A400/51K-SR4-120-PE-DBBTXD
 CHAIN LINK FENCE
 WOOD/WROUGHT IRON FENCE
 WALL STRUCTURE
 LEASE AREA
 PROPERTY LINE (PL)
 SETBACKS
 ICE BRIDGE
 CABLE TRAY
 WATER LINE
 UNDERGROUND POWER
 UNDERGROUND TELCO
 OVERHEAD POWER
 OVERHEAD TELCO
 UNDERGROUND TELCO/POWER
 ABOVE GROUND POWER
 ABOVE GROUND TELCO
 ABOVE GROUND TELCO/POWER
 WORKPOINT



SECTION REFERENCE
 DETAIL REFERENCE

LEGEND

AB ANCHOR BOLT
 ABV ABOVE
 AC ALTERNATING CURRENT
 ADDL ADDITIONAL
 AFF ABOVE FINISHED FLOOR
 AFG ABOVE FINISHED GRADE
 AGL ABOVE GROUND LEVEL
 AIC AMPERAGE INTERRUPTION CAPACITY
 ALUM ALUMINUM
 ALT ALTERNATE
 ANT ANTENNA
 APPROX APPROXIMATE
 ARCH ARCHITECTURAL
 ATS AUTOMATIC TRANSFER SWITCH
 AWG AMERICAN WIRE GAUGE
 BATT BATTERY
 BLDG BUILDING
 BLK BLOCK
 BLKG BLOCKING
 BM BEAM
 BTC BARE TINNED COPPER CONDUCTOR
 BOF BOTTOM OF FOOTING
 CAB CABINET
 CANT CANTILEVERED
 CHG CHARGING
 CLG CEILING
 CLR CLEAR
 COL COLUMN
 COMM COMMON
 CONC CONCRETE
 CONSTR CONSTRUCTION
 DBL DOUBLE
 DC DIRECT CURRENT
 DEPT DEPARTMENT
 DF DOUGLAS FIR
 DIA DIAMETER
 DIAG DIAGONAL
 DIM DIMENSION
 DWG DRAWING
 DWL DOWEL
 EA EACH
 EC ELECTRICAL CONDUCTOR
 EL ELEVATION
 ELEC ELECTRICAL
 EMT ELECTRICAL METALLIC TUBING
 ENG ENGINEER
 EQ EQUAL
 EXP EXPANSION
 EXT EXTERIOR
 EW EACH WAY
 FAB FABRICATION
 FF FINISH FLOOR
 FG FINISH GRADE
 FIF FACILITY INTERFACE FRAME
 FIN FINISH(ED)
 FLR FLOOR
 FDN FOUNDATION
 FOC FACE OF CONCRETE
 FOM FACE OF MASONRY
 FOS FACE OF STUD
 FOW FACE OF WALL
 FS FINISH SURFACE
 FT FOOT
 FTG FOOTING
 GA GAUGE
 GEN GENERATOR
 GFCI GROUND FAULT CIRCUIT INTERRUPTER
 GLB GLUE LAMINATED BEAM
 GLV GALVANIZED
 GPS GLOBAL POSITIONING SYSTEM
 GND GROUND
 GSM GLOBAL SYSTEM FOR MOBILE
 HDG HOT DIPPED GALVANIZED
 HDR HEADER
 HGR HANGER
 HVAC HEAT/VENTILATION/AIR CONDITIONING
 HT HEIGHT
 IGR INTERIOR GROUND RING

IN INCH
 INT INTERIOR
 LB(S) POUND(S)
 LF LINEAR FEET
 LTE LONG TERM EVOLUTION
 MAS MASONRY
 MAX MAXIMUM
 MB MACHINE BOLT
 MECH MECHANICAL
 MFR MANUFACTURER
 MGB MASTER GROUND BAR
 MIN MINIMUM
 MISC MISCELLANEOUS
 MTL METAL
 MTS MANUAL TRANSFER SWITCH
 MW MICROWAVE
 NEC NATIONAL ELECTRIC CODE
 NM NEWTON METERS
 NO. NUMBER
 # NUMBER
 NTS NOT TO SCALE
 OC ON-CENTER
 OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
 OPNG OPENING
 P/C PRECAST CONCRETE
 PCS PERSONAL COMMUNICATION SERVICES
 PCU PRIMARY CONTROL UNIT
 PRC PRIMARY RADIO CABINET
 PP POLARIZING PRESERVING
 PSF POUNDS PER SQUARE FOOT
 PSI POUNDS PER SQUARE INCH
 PT PRESSURE TREATED
 PWR POWER CABINET
 QTY QUANTITY
 RAD RADIUS
 RECT RECTIFIER
 REF REFERENCE
 REINF REINFORCEMENT
 REQ'D REQUIRED
 RET REMOTE ELECTRIC TILT
 RF RADIO FREQUENCY
 RMC RIGID METALLIC CONDUIT
 RRH REMOTE RADIO HEAD
 RRU REMOTE RADIO UNIT
 RWY RACEWAY
 SCH SCHEDULE
 SHT SHEET
 SIAD SMART INTEGRATED ACCESS DEVICE
 SIM SIMILAR
 SPEC SPECIFICATION
 SQ SQUARE
 SS STAINLESS STEEL
 STD STANDARD
 STL STEEL
 TEMP TEMPORARY
 THK THICKNESS
 TMA TOWER MOUNTED AMPLIFIER
 TN TOE NAIL
 TOA TOP OF ANTENNA
 TOC TOP OF CURB
 TOF TOP OF FOUNDATION
 TOP TOP OF PLATE (PARAPET)
 TOS TOP OF STEEL
 TOW TOP OF WALL
 TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION
 TYP TYPICAL
 UG UNDERGROUND
 UL UNDERWRITERS LABORATORY
 UNO UNLESS NOTED OTHERWISE
 UMTS UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
 UPS UNINTERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
 VIF VERIFIED IN FIELD
 W WIDE
 W/ WITH
 WD WOOD
 WP WEATHERPROOF
 WT WEIGHT

ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE
 LITTLETON, CO 80120

PROJECT MANAGER:

 420 MAIN STREET, BLDG 4
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 PH: 203-275-6669

CONSULTANT:

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 75 WELLS ROAD
 WETHERSFIELD, CT 06109

SHEET TITLE
 LEGEND AND ABBREVIATIONS

SHEET NUMBER
GN-1

SIGN TYPES		
TYPE	COLOR	COLOR CODE PURPOSE
INFORMATION	GREEN	"INFORMATIONAL SIGN" TO NOTIFY OTHERS OF SITE OWNERSHIP & CONTACT NUMBER AND POTENTIAL RF EXPOSURE.
NOTICE	BLUE	"NOTICE BEYOND THIS POINT" RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
CAUTION	YELLOW	"CAUTION BEYOND THIS POINT" RF FIELDS BEYOND THIS POINT MAY EXCEED THE FCC GENERAL PUBLIC EXPOSURE LIMIT. OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)
WARNING	ORANGE/RED	"WARNING BEYOND THIS POINT" RF FIELDS AT THIS SITE EXCEED FCC RULES FOR HUMAN EXPOSURE. FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN RF ENVIRONMENTS COULD RESULT IN SERIOUS INJURY. IN ACCORDANCE WITH FEDERAL COMMUNICATIONS COMMISSION RULES ON RADIO FREQUENCY EMISSIONS 47 CFR-1.1307(b)

SIGN PLACEMENT:

- RF SIGNAGE PLACEMENT SHALL FOLLOW THE RECOMMENDATIONS OF AN EXISTING EME REPORT, CREATED BY A THIRD PARTY PREVIOUSLY AUTHORIZED BY DISH Wireless L.L.C.
- INFORMATION SIGN (GREEN) SHALL BE LOCATED ON EXISTING DISH Wireless L.L.C EQUIPMENT.
A) IF THE INFORMATION SIGN IS A STICKER, IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C EQUIPMENT CABINET.
B) IF THE INFORMATION SIGN IS A METAL SIGN IT SHALL BE PLACED ON EXISTING DISH Wireless L.L.C H-FRAME WITH A SECURE ATTACH METHOD.
- IF EME REPORT IS NOT AVAILABLE AT THE TIME OF CREATION OF CONSTRUCTION DOCUMENTS; PLEASE CONTACT DISH Wireless L.L.C. CONSTRUCTION MANAGER FOR FURTHER INSTRUCTION ON HOW TO PROCEED.

NOTES:

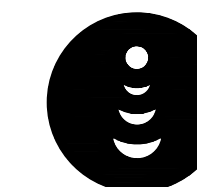
1. FOR DISH Wireless L.L.C. LOGO, SEE DISH Wireless L.L.C. DESIGN SPECIFICATIONS (PROVIDED BY DISH Wireless L.L.C.)
2. SITE ID SHALL BE APPLIED TO SIGNS USING "LASER ENGRAVING" OR ANY OTHER WEATHER RESISTANT METHOD (DISH Wireless L.L.C. APPROVAL REQUIRED)
3. TEXT FOR SIGNAGE SHALL INDICATE CORRECT SITE NAME AND NUMBER AS PER DISH Wireless L.L.C. CONSTRUCTION MANAGER RECOMMENDATIONS.
4. CABINET/SHELTER MOUNTING APPLICATION REQUIRES ANOTHER PLATE APPLIED TO THE FACE OF THE CABINET WITH WATER PROOF POLYURETHANE ADHESIVE
5. ALL SIGNS WILL BE SECURED WITH EITHER STAINLESS STEEL ZIP TIES OR STAINLESS STEEL TECH SCREWS
6. ALL SIGNS TO BE 8.5"x11" AND MADE WITH 0.04" OF ALUMINUM MATERIAL

INFORMATION

This is an access point to an area with transmitting antennas.

Obey all signs and barriers beyond this point.
Call the DISH Wireless L.L.C. NOC at 1-866-624-6874

Site ID: _____



THIS SIGN IS FOR REFERENCE PURPOSES ONLY



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462 WALNUT STREET, SUITE 1
NEWTON, MA 02446



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:
JK	SM	HV

RFDS REV #: _____ A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/24/2023	ISSUED FOR REVIEW
B	07/26/2023	MW ADDITION
C	07/26/2023	MW ELEV. CHANGE
D	07/31/2023	REVISED PER COMMENTS
E	08/06/2023	REVISED PER COMMENTS
F	08/28/2023	REVISED ANTENNA MOUNTS
1	10/19/2023	FINAL ISSUED

A&E PROJECT NUMBER

BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
RF
SIGNAGE

SHEET NUMBER

GN-2

NOTICE



Transmitting Antenna(s)

Radio frequency fields beyond this point **MAY EXCEED** the FCC Occupational exposure limit.

Obey all posted signs and site guidelines for working in radio frequency environments.

Call the DISH Wireless L.L.C. NOC at 1-866-624-6874 prior to working beyond this point.

Site ID: _____



CAUTION



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Site ID: _____



WARNING



Transmitting Antenna(s)

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Site ID: _____



RF SIGNAGE

THIS SIGN IS FOR REFERENCE PURPOSES ONLY

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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.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
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CONSULTANT:



Architects. Engineers. Surveyors
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BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
GENERAL NOTES

SHEET NUMBER

GN-3

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- 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.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- 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.
- 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.
- 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
- 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"
- 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:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C."
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



CONSULTANT:



Architects . Engineers . Surveyors
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GENERAL NOTES

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GN-4

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.



5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

PROJECT MANAGER:



CONSULTANT:



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:

JK	SM	HV
RFDS REV #:		A

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
A	07/24/2023	ISSUED FOR REVIEW
B	07/26/2023	MW ADDITION
C	07/28/2023	MW ELEV. CHANGE
D	07/31/2023	REVISED PER COMMENTS
E	08/08/2023	REVISED PER COMMENTS
F	08/28/2023	REVISED ANTENNA MOUNTS
1	10/19/2023	FINAL ISSUED

A&E PROJECT NUMBER
BOBDL00106A

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBDL00106A
75 WELLS ROAD
WETHERSFIELD, CT 06109

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-5

ATTACHMENT 6

July 7, 2023

Thomas L. Rigg
Everest Infrastructure Partners
1435 Bedford Avenue
Pittsburgh, PA 15219
(603) 498-7462



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
MRF@tepgroup.net

Subject: Structural Analysis Report

Client Designation: Site Number: 638512
Site Name: Wethersfield CO

Engineering Firm Designation: TEP Project Number: 25669.864526

Site Data: 75 Wells Road, Wethersfield, Hartford County, CT 06109
Latitude 41° 42' 20.97", Longitude -72° 39' 48.30"
101± Foot - Monopole

Dear Thomas L. Rigg,

Tower Engineering Professionals is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the stress level for the tower and foundation structure, under the following load case, to be:

LC2: Existing + Proposed + Reserved Loading with Proposed Modifications
Note: See Table 1 for the existing, proposed, and reserved loading

Sufficient Capacity

Structure Capacity	Foundation Capacity
98.6%	87.5%

The analysis has been performed in accordance with the ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas, and Small Wind Turbine Support Structures and the 2022 Connecticut State Building Code.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at Tower Engineering Professionals appreciate the opportunity of providing our continuing professional services to you and Everest Infrastructure Partners. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Travis L. Infante, P.E. / RKE

Respectfully submitted by:

Aaron T. Rucker, P.E.



07/07/2023

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1) INTRODUCTION

The tower is a 101± Foot Monopole mapped by B+T in July of 2014. The original design standard and wind speed were unavailable for review. The tower has been modified multiple times in the past to accommodate additional loading. The proposed modifications designed by Tower Engineering Professionals in July of 2023 were considered in this analysis. The foundation modifications designed by SNET in July of 1998 were determined to be ineffective and not considered structurally in this analysis. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	ANSI/TIA-222-H
Type of Analysis:	Rigorous
Risk Category:	II
Wind Speed:	120 mph (Ultimate)
Exposure Category:	B
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic Ss:	0.196
Seismic S1:	0.055
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Existing	102.5	103.0	3	CCI Antennas HPA-65R-BUU-H6	10.5' Platform w/ Handrail w/ Kickers Site Pro 1 RRUDSM	12	1-5/8	Internal	AT&T
			3	Quintel Technologies QS66512-2					
			3	Powerwave Technologies 7770.00					
			3	Ericsson RRUS-11 B12					
			6	Powerwave Technologies LGP21401					
			6	Powerwave TPX-070821					
			3	Ericsson RRUS 32 B30					
			3	Ericsson RRUS 32 B2					
			3	Ericsson RRUS 32 B66A					
			2	Raycap DC6-48-60-18-8F					

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
To Be Removed	95.0	95.0	3	Ericsson Air 21 KRC118023 B4A/B2P	-	-	-	-	T-Mob
Existing	95.0	95.0	3	Ericsson Air 32	Site Pro 1 RMV12 w/ Site Pro 1 HRK12-U	5	1-5/8	Internal	T-Mob
			3	RFS Celwave APXVAARR24_43-U- NA20					
			3	Ericsson Radio 4449 B71					
Existing	95.0	95.0	3	Ericsson Air 6419		6	7/8	Internal	T-Mob
			3	Ericsson 4460 B25 B66					
Proposed	85.0	85.0	3	JMA Wireless MX08FR0665-21	SitePro SNP8HR- 396	1	1.411” Hybrid 1.18mm Power 6.9mm Ethernet	Internal	Dish
			3	Fujitsu TA08025-B605					
			3	Fujitsu TA08025-B604					
			1	Raycap RDIDC-9181-PF-48					
			1	Commscope VHLP2-18/D					
			1	Ceragon Fibeair IP-50C					
Existing	46.5	46.5	1	GPS GPS_A	2' Side Arm Mount	1	3/8	External	AT&T
Existing	37.0	37.0	1	GPS GPS_A	2' Side Arm Mount	1	3/8	External	AT&T

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Source
Foundation Mapping Report	WEI, dated, December 1, 2008, WEI Project No.: 2008-679	Everest Infrastructure Partners
Supplemental Geotechnical Report	Tower Engineering Professionals, dated July 2023	25669
Tower Mapping Report	B+T, dated, July 17, 2014, BTE Job Number: 21366	Everest Infrastructure Partners
Previous Structural Analysis	Paul J. Ford, dated, September 23, 2020, PJF Project: A13320-0006.002.7805	Everest Infrastructure Partners
Previous Modification Design	SNET, dated, July 20, 1998 Job Number: 98-140	Everest Infrastructure Partners
Previous Modification Design	GPD, dated, June 11, 2009 Job Number: 2009264.50	Everest Infrastructure Partners
Previous Modification Design	Tower Engineering Professionals, dated, July 7, 2023 Job Number: 25669.855826 - Rev. 1	Everest Infrastructure Partners
Correspondence	Correspondence in reference to the existing, proposed, and reserved loading.	Everest Infrastructure Partners

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 3 - Section Capacity (Summary).

3.2) Analysis Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
- 3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
- 7) The following material grades were assumed:
 - a) Tower shaft: A572-65
- 8) The foundation modifications designed by SNET in July of 1998 were determined to be ineffective and not considered structurally in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	ϕP_{allow} (K)	% Capacity	Pass / Fail	
L1	101.00-88.00	Pole	TP16.36×14.64×0.1875	1	Note 1	Note 1	44.3	Pass	
L2	90.00-46.25	Pole	TP21.88×15.72×0.2500	2	Note 1	Note 1	91.3	Pass	
L3	48.92-0.00	Pole	TP28.00×21.00×0.3125	3	Note 1	Note 1	72.4	Pass	
M1	35.50-0.00	Mod (Ex)	(Aero) MP304	1	Note 1	Note 1	98.6	Pass	
M2b	45.50-30.00	Mod (Ex)	(Aero) MP304	2	Note 1	Note 1	94.1	Pass	
M3	62.00-47.00	Mod (Ex)	(Aero) MP303	3	Note 1	Note 1	63.6	Pass	
M4	4.75-0.00	Mod (Pr)	(TS) 1.25×4.50 (65ksi)	4	Note 1	Note 1	93.9	Pass	
M5	20.50-0.50	Mod (Pr)	TEP-SFP-050125	5	Note 1	Note 1	97.3	Pass	
M6b	25.50-0.50	Mod (Pr)	TEP-SFP-050125	6	Note 1	Note 1	97.3	Pass	
M7	40.58-15.58	Mod (Pr)	TEP-SFP-050125	7	Note 1	Note 1	91.6	Pass	
M8	40.58-20.58	Mod (Pr)	TEP-SFP-050125	8	Note 1	Note 1	84.4	Pass	
M9b	70.66-40.66	Mod (Pr)	TEP-SFP-050125	9	Note 1	Note 1	88.9	Pass	
							Summary		
							Pole (L2)	91.3	Pass
							Mod (M1)	98.6	Pass
							RATING =	98.6	Pass

Table 4 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation - Micropiles	-	87.5	Pass

Structure Rating (max from all components) =	98.6%
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Notes:

- 1) See additional documentation in "Appendix B - Additional Calculations" for calculations supporting the % capacity listed.

Table 5 - Dish Twist/Sway Results for 60 mph Service Wind Speed

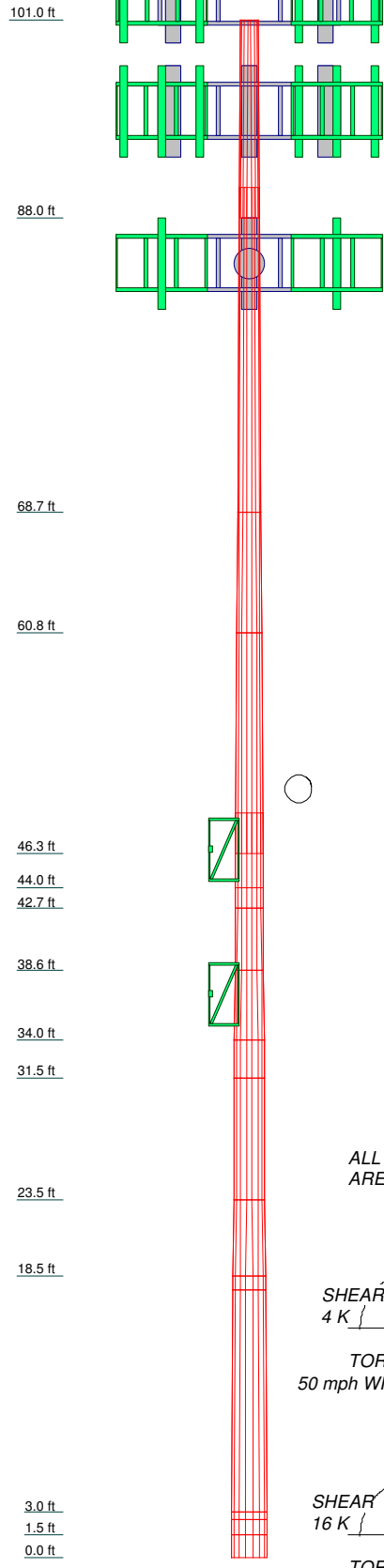
Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
85.0	Commscope VHLP2-18/D	14.567	1.7182	0.0011

4.1) Recommendations

- 1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No further modifications are required once the proposed modifications are installed.

APPENDIX A
TNX TOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Length (ft)	13.00	21.34	7.91	14.50	4.92	1.34	4.08	4.58	2.50	8.00	5.00	0.92	14.58	1.50	0.050	1.50
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.2500	0.6402	0.7759	0.6350	0.8990	0.6227	0.8979	0.6359	0.6359	0.7492	0.5530	0.5530	0.5530	0.5530	0.5530
Socket Length (ft)	2.00	2.00	2.00	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67
Top Dia (in)	14.6400	15.7200	18.7247	19.8384	20.0000	20.0000	21.8957	22.4796	23.1348	23.4926	23.4926	25.3528	25.4845	27.2824	27.2824	27.2824
Bot Dia (in)	16.3600	18.7247	19.8384	21.8800	21.7704	21.7704	22.4796	23.1349	23.4926	24.6374	24.6374	25.4845	27.5707	28.0000	28.0000	28.0000
Grade	MPRF-Fy=65ksi, Density=100%															
Weight (K)	0.4	1.0	0.4	0.8	0.3	0.1	0.3	0.3	0.2	0.6	0.4	0.1	1.3	0.0	0.0	0.0

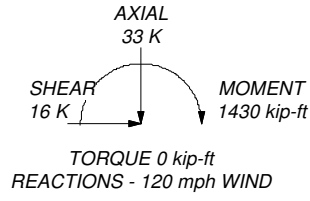
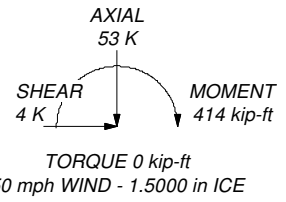


GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=65ksi Density=100%	65 ksi	80 ksi	MPRF-Fy=65ksi Density=50%	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED



 Tower Engineering Professional	Tower Engineering Professionals, Inc.		Job: Wethersfield CO (638512)		
	326 Tryon Road		Project: TEP No. 25669.864526		
	Raleigh, NC 27603-5263		Client: Everest	Drawn by: TLI	App'd:
	Phone: (919) 661-6351		Code: TIA-222-H	Date: 07/03/23	Scale: NTS
	FAX: (919) 661-6350		Path:	Dwg No. E-1	

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tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603-5263 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Wethersfield CO (638512)	Page 1 of 27
	Project TEP No. 25669.864526	Date 04:53:27 07/03/23
	Client Everest	Designed by TLI

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Tower base elevation above sea level: 71.00 ft.

Basic wind speed of 120 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.

Maximum demand-capacity ratio is: 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/r For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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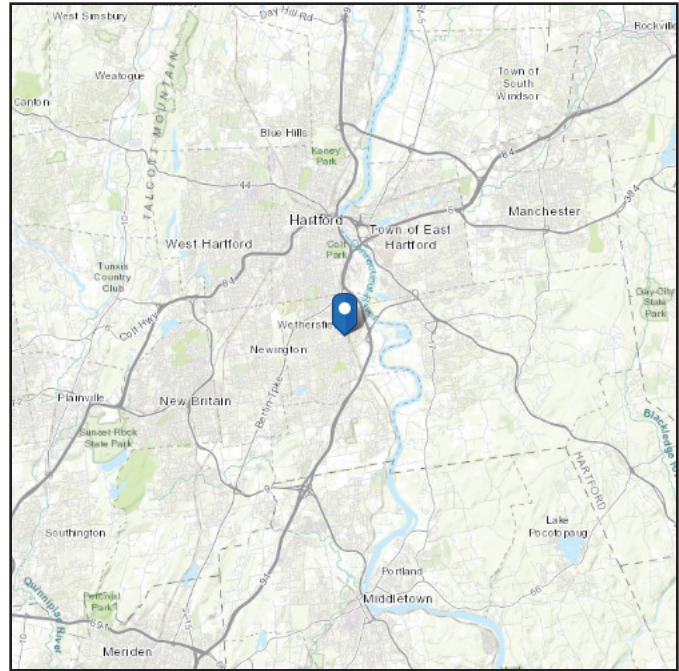
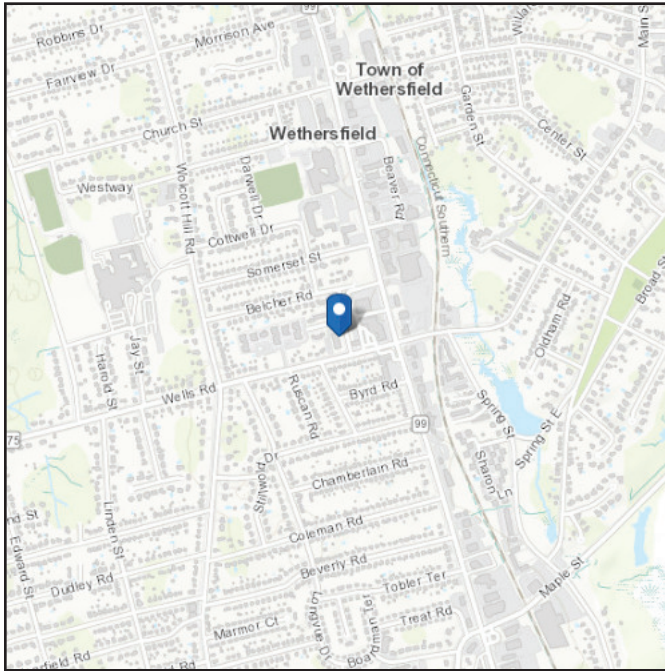
APPENDIX B
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 41.705825
Longitude: -72.663417
Elevation: 70.82003221702836 ft (NAVD 88)



Wind

Results:

Wind Speed	118 Vmph	120 Vmph required per jurisdiction
10-year MRI	75 Vmph	
25-year MRI	84 Vmph	
50-year MRI	90 Vmph	
100-year MRI	97 Vmph	

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue May 16 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Ice

Results:

Ice Thickness: 1.50 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue May 16 2023

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

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Capacity: **87.5%** **PASS**

Wethersfield CO (638512)

TEP #: 25669.864526

Analysis: TLI 7/7/2023

Check: RKE 7/7/2023

Micropile Foundation Check

Code Revision

H

Bar Selection

Bar Type:	WF All Thread Bar	
Bar Size:	R71-14	
Drill Bit Type:	Hardened Clay Bit	
Nominal Diameter:	1.75	in
Effective Area:	2.6	in ²
Yield Stress, Fy:	120	ksi
Ultimate Stress, Fu:	150	ksi
Axial Rigidity:	75400	k
Design Strength:	249.60	k
Drill Bit Diameter:	178.0	mm
Drill Bit Diameter:	7.0	in

Steel to Grout Bond Length

Ult Bond Strength:	235.0	psi
Bar Circumference:	5.498	in
Required Length:	257.59	in
Actual Length:	257.59	in
Effective Stiffness:	203	k/in

Grout to Soil Bond Length

a_{bond} :	81.7	psi
ϕ Factor:	0.75	
Shaft Circum.:	22.02	in
Required Length:	15.43	ft

Tower and Base Plate Information

Pole Dia. At Base:	28.00	in
t Pole:	0.3125	in
Fy Pole:	65	ksi
Fu Pole:	80	ksi
No. of Pole Sides:	18	
t Base Plate:	2.25	in
Fy Base Plate:	50	ksi
Fu Base Plate:	65	ksi

Reactions from TNX

Axial:	33.0	k
Moment:	1430.0	k-ft

Anchor Specifications

Quantity:	4	Asymmetrical
Bolt Circle:	7.0	ft
Ybar:	39.7	in
I (unit area):	3240.7	in ⁴
Tower Eccentricity:	0.0	in

Design Results

Max Axial Load:	218.5	kips
All. Axial Load:	249.6	kips
Pile Stress Capacity:	87.5%	PASS

Req. Bond Length

Steel to Grout:	21.47	ft
Grout to Soil:	15.43	ft
Bond Length:	22.00	ft
Ignored Soil Depth:	9.50	ft

Buckling Check

Unbraced Length, L:	0.25	in
r:	0.4208	in
KL/r:	0.59	
Fe:	N/A	ksi
Fcr:	N/A	ksi
ϕP_n :	N/A	kips
Buckling Stress Ratio:	0.0%	N/A

ATTACHMENT 7

**MOUNT STRUCTURAL ANALYSIS REPORT – REV 1
MONOPOLE TOWER**

FORESITE LLC

•Architects •Engineers •Surveyors
Complete A&E services for wireless telecommunications industry

Prepared for:

dish
WIRELESS 5701 South Santa Fe Drive
Littleton, CO 80120



Site ID: BOBDL00106A
Address:
75 Wells Road,
Wethersfield, CT 06109

Date: 08/03/2023
Submitted by:
Foresite LLC.
462 Walnut Street, Suite 1
Newton, MA 02460
Phone: 617-5273031



Date: 8/3/2023

To: Dish Wireless LLC
5701 South Santa Fe Drive
Littleton, CO 80120

Subject: Mount Structural Analysis Report – Rev.1

Dish Wireless LLC Designation: Site ID: BOBDL00106A

EFI Designation: Project Number: 049.04221 - 2375006

**Site Data: 75 Wells Road, Wethersfield, CT 06109
Latitude 41.70583333°, Longitude -72.66341667°**

EFI Global, Inc. is pleased to submit this “**Mount Structural Analysis Report**” to determine the structural capacity of the antenna mounts utilized by Dish Wireless LLC at the above referenced site.

The purpose of the analysis is to determine acceptability of the mount stress level for the changes proposed by Dish Wireless LLC under the following load case we have determined the mounts to have:

Proposed Equipment **Adequate Capacity (49.6%)**
Note: See Analysis Criteria for loading configuration

The analysis has been performed in accordance with TIA-222-H Standard and the 2022 Connecticut State Building Code (2021 IBC).

We at *EFI Global, Inc.* appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or any other projects, please give us a call.

Sincerely,
EFI Global, Inc.
License No: PEC0001245

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057



1) ANALYSIS CRITERIA

The analysis was performed for the proposed appurtenances as specified in the loading information referenced below, and per the following loading criteria of Table 1.

Table 1 – Loading and Analysis Criteria

Rad Center	85'
Structure Type	Monopole
Exposure Category	B
Ultimate Wind Speed	120 mph
Ultimate Ice Loading	1.50" with 50 mph Wind
Risk Category	II
Topographic Factor	Kzt = 1.0

Table 1.1 – Proposed and Final Appurtenance Configuration

Qty	Model
3	JMA MX08FRO665-21 – Antennas
1	Commscope VHLP2-18D – Dish
3	Fujitsu TA08025-B605 – RRUs*
3	Fujitsu TA08025-B604 – RRUs*
1	Raycap RDIDC-9181-PF-48 – Junction Box
1	Ceragon IP-50C (MW Radio) – ODU**
1	Valmont/Site Pro 1 8' Snub Nose Platform with Handrail (P/N: SNP8HR-396)

*To be mounted behind antennas.

**To be mounted below the dish.

Table 1.2 – Assumed Material Properties

Member Type	ASTM Material Designation	Fy (ksi)	Fu (ksi)
Pipes	A53 Gr. B	35	60
Angles/Channels	A36	36	58
Rectangular HSS	A500 Gr. B - 46	46	58
Round HSS	A500 Gr. B - 42	42	58
Others (UNO)	A572 Gr. 50	50	65

2) ANALYSIS PROCEDURE

The analysis is based on the following information:

Table 2 – Documents

Document	Provided By	Date
Preliminary Construction Drawings	Foresite LLC.	07/31/2023
Lease Exhibit	Foresite LLC.	07/07/2023
RFDS	Dish Wireless	02/28/2022

2.1) Analysis Method

Risa-3D, a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in the Appendix.

2.2) Analysis Conditions and Assumptions

- 1) The mount was built and installed in accordance with the manufacturer’s specifications.
- 2) The mount has been maintained and will be maintained in accordance with the manufacturer’s specifications. All structural members and connections of the mount are in good condition and can achieve theoretical strength.
- 3) The configuration of antennas is as specified in “1) Analysis Criteria”.
- 4) The analysis was performed for the subject mount only. It does not include an evaluation of the other mounts or the tower, which should be analyzed by others.
- 5) The evaluation does not include any antenna rigging loads. The equipment should not be rigged using the subject antenna mount as the support.
- 6) The analysis includes a minimum 250 lbf maintenance point load at the worst-case location on the mount, as well as a minimum 250 lbf maintenance point load at each antenna location in conjunction with a 30 mph wind load.
- 7) Any steel grating represented in this model is for loading purposes only and it is not considered to provide any structural restraint or support.
- 8) Member sizes per available mount specifications and assumed based on our experience with similar structures. Please refer to calculation output in the appendix of this report for sizes and lengths assumed.
- 9) 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.

EFI Global, Inc. (EFI), must be notified immediately if any of these assumptions are discovered to be incorrect. The results of this analysis may be affected if any of the assumptions are not valid or have been made in error.

3) ANALYSIS RESULTS AND CONCLUSION

The analysis results are shown on the table below.

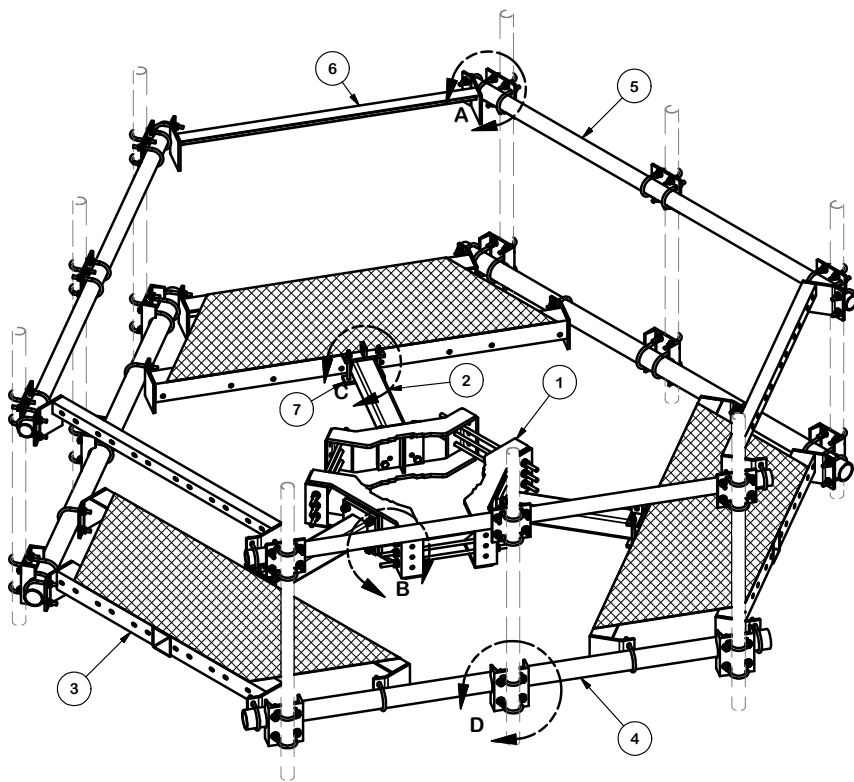
Table 3.1 – Mount Component Stresses vs. Capacity

Component	% Capacity	Pass / Fail
Platform Base Face Pipes	<20.0	Pass
Platform Base Tubes	49.6	Pass
Platform Base Angles	37.1	Pass
Support Rail	<20.0	Pass
Mount Pipes	32.5	Pass

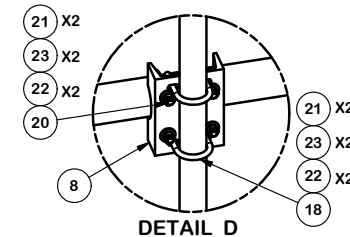
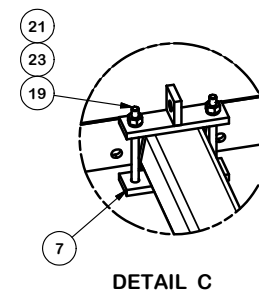
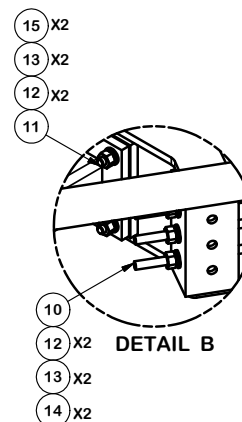
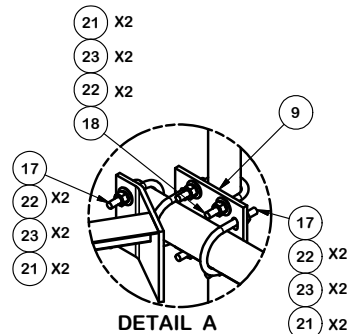
Platform Mount: The proposed platform mount has **adequate** capacity for the proposed changes by Dish Wireless LLC. For the code specified load combinations and as a maximum, the mount members are stressed to **49.6%** of their structural capacity.

EFI Global, Inc. has assumed that Valmont/Site Pro 1 8' Snub Nose Platform with Handrail (P/N: SNP8HR-396, Specs attached) will be installed at this site prior to the equipment installation proposed in this analysis. The analysis also assumes the following:

- The antenna RAD Center is at the base of the platform @ 85' AGL.
- The Support Rail is installed 36" above the base of the platform.
- (3) 96" long 2.0 STD mount pipes are equally spaced along the face at each sector.
- It is assumed that the diameter of the monopole is within the range of 12" to 45" at mount attachment location.



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-SNP-ST8	PLATFORM STANDOFF ARM WELDMENT, 43-3/4" LONG		60.39	181.16
3	3	X-SNPC	CORNER GRATING WELDMENT		194.33	582.99
4	3	P396	3" SCH. 40 PIPE (3.5" O.D. x 0.216" WALL) A500	96.000 in	60.75	182.25
5	3	P3096	2-7/8" OD X 96" SCH 40 GALVANIZED PIPE	96	49.24	147.72
6	3	X-SNP-HRA	CORNER BRACKET FOR SNPX PLATFORMS		25.95	77.86
7	3	X-SNPP1G	CLAMP PLATE	7.250 in	2.03	6.10
8	9	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	77.50
9	9	SCX2	CROSSOVER PLATE	7.000 in	4.80	43.17
10	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
10	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
11	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
12	30	A58FW	5/8" HDG A325 FLATWASHER		0.03	1.02
13	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
14	18	A58NUT	5/8" HDG A325 HEX NUT		0.13	2.34
15	12	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	1.56
16	12	X-UB1358	1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.)		0.26	3.08
17	24	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.26	6.17
18	36	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	9.25
19	6	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	7-1/2	0.41	2.46
20	18	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	4.63
21	186	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	13.32
22	180	G12FW	1/2" HDG USS FLATWASHER	0.095	0.03	6.13
23	186	G12LW	1/2" HDG LOCKWASHER	.125	0.01	2.59
24	9	A	2" SCH. 40 PIPE (2.375" O.D. x 0.154" WALL) A500	B	C	D



2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO.	PART NO. "A"	LENGTH "B"	UNIT WEIGHT "C"	NET WEIGHT "D"	TOTAL WEIGHT
SNP8HR-372	P272	6'-0"	23.07	207.63	1717.07
SNP8HR-384	P284	7'-0"	26.91	242.19	1751.63
SNP8HR-396	P296	8'-0"	30.76	276.84	1786.28
SNP8HR-3126	P2126	10'-6"	40.75	366.75	1876.19

TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

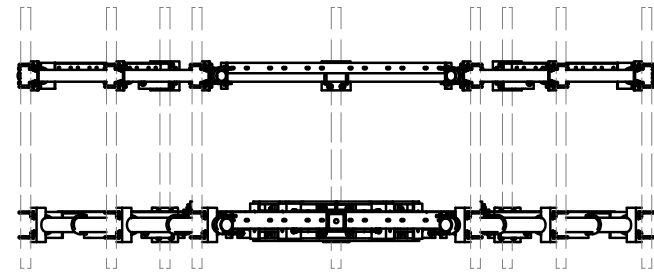
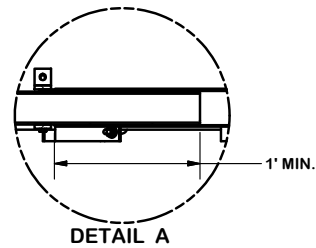
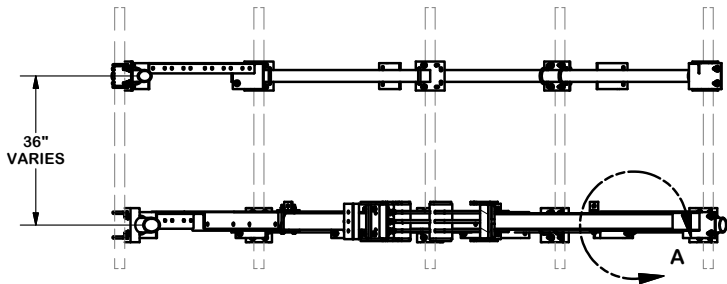
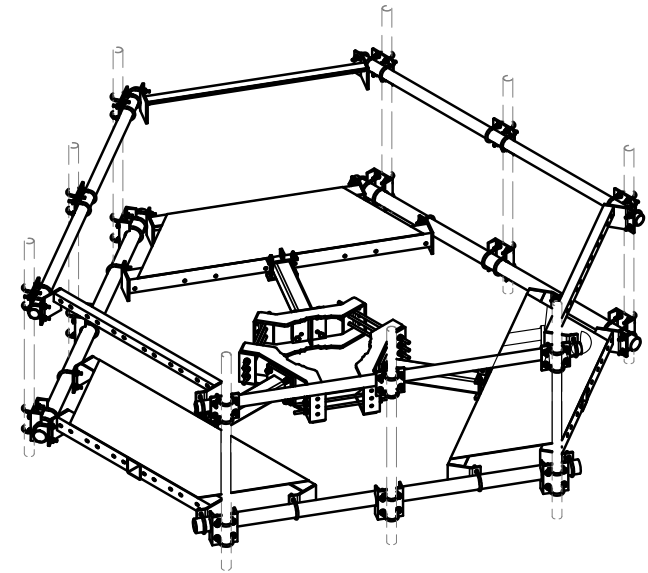
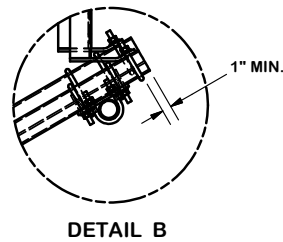
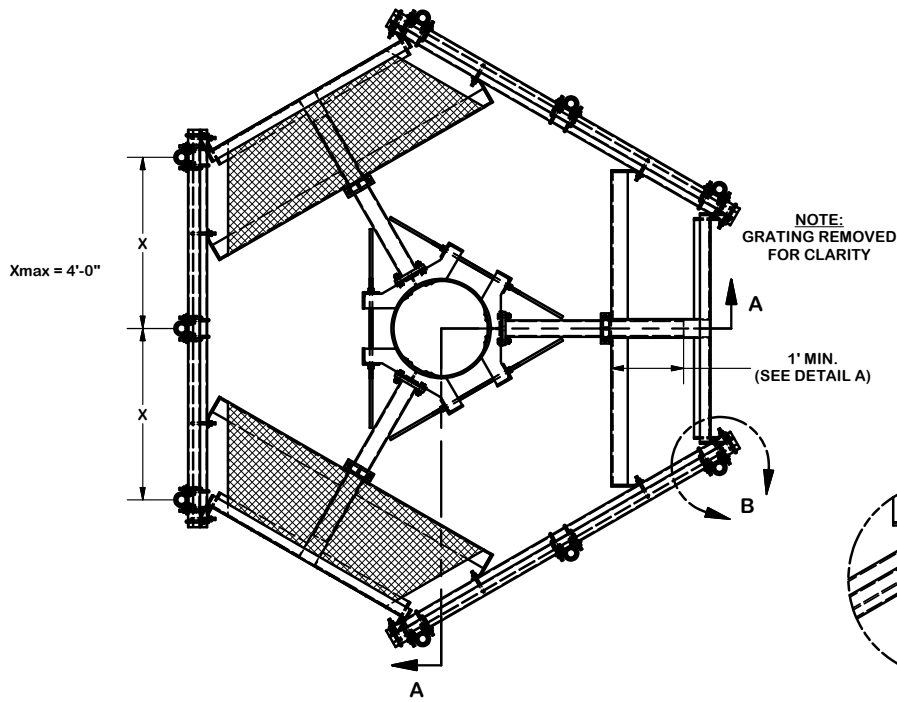
DESCRIPTION
**8' SNUB NOSE
 PLATFORM WITH
 HANDRAIL**

SITE PRO 1
 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 CEK 11/19/2014	ENG. APPROVAL
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER
	CHECKED BY BMC 11/21/2014	

PART NO.	SEE ASSEMBLY NO.	PAGE 1 OF 2
DWG. NO.	SNP8HR-3XX	



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DESCRIPTION
**8" SNUB NOSE
 PLATFORM WITH
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CPD NO.	DRAWN BY CEK 11/19/2014	ENG. APPROVAL
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER
	CHECKED BY BMC 11/21/2014	

SITE PRO 1
 A valmont COMPANY

Engineering Support Team:
 1-888-753-7446

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 Plymouth, IN
 Salem, OR
 Dallas, TX

PART NO.	SEE ASSEMBLY NO.	PAGE 2 OF 2
DWG. NO.	SNP8HR-3XX	

ATTACHMENT 8



Radio Frequency Emissions Analysis Report



Site ID: BOBDL00106A

75 Wells Road
Wethersfield, CT 06109

October 12, 2023

Fox Hill Telecom Project Number: 231003

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	17.18 %

October 12, 2023

Dish Wireless
5701 South Santa Fe Drive
Littleton, CO 80120

Emissions Analysis for Site: **BOBDL00106A**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed radio installation for Dish Wireless, LLC (Dish) facility located at **75 Wells Road, Wethersfield, CT**, for the purpose of determining whether the emissions from the Proposed Dish radio and antenna installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 600 MHz band is approximately $400 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS / AWS-4) and 18 GHz microwave bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the Dish Wireless antenna facility located at **75 Wells Road, Wethersfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4 \text{ ERP}}{R^2}$$

S = Power Density (in $\mu\text{w}/\text{cm}^2$)

ERP = Effective Radiated Power from antenna (watts)

R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each Dish sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
5G	n71 (600 MHz)	4	61.5
5G	n70 (AWS-4 / 1995-2020)	4	40
5G	n66 (AWS-4 / 2180-2200)	4	40
Microwave (Sector A)	18 GHz	1	1

Table 1: Channel Data Table

The following **Dish** antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz (n71), the 2100 MHz (AWS 4) frequency bands at 1995-2020 MHz (n70) and 2180-2200 MHz (n66) and the 18 GHz microwave frequency band. This is based on feedback from Dish regarding anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	JMA MX08FRO665-21	85
A	2	Commscope VHLP2-18/D	85
B	1	JMA MX08FRO665-21	85
C	1	JMA MX08FRO665-21	85

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

RESULTS

Per the calculations completed for the proposed **Dish** configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.44
Antenna A2	Commscope VHLP2-18/D	18 GHz	36.85	1	1	4,841.72	0.01
Sector A Composite MPE%							5.45
Antenna B1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.44
Sector B Composite MPE%							5.44
Antenna C1	JMA MX08FRO665-21	n71 (600 MHz) / n70 (AWS-4 / 1995-2020) / n66 (AWS-4 / 2180-2200)	11.45 / 16.15 / 16.65	12	566	17,426.72	5.44
Sector C Composite MPE%							5.44

Table 3: Dish Emissions Levels



The Following table (*Table 4*) shows all additional carriers on site and their emissions contribution estimates, along with the newly calculated **Dish** far field emissions contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas the highest recorded sector value be used for composite site emissions values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector A. *Table 5* below shows a summary for each **Dish** Sector as well as the composite emissions value for the site.

Site Composite MPE%	
Carrier	MPE%
Dish – Max Value (Sector A)	5.45 %
T-Mobile	5.71 %
AT&T	6.02 %
Site Total MPE %:	17.18 %

Table 4: All Carrier MPE Contributions

Dish Sector A Total:	5.45 %
Dish Sector B Total:	5.44 %
Dish Sector C Total:	5.44 %
Site Total:	17.18 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated **Dish** sector(s). For this site, the sector with the largest calculated MPE% is Sector A.

Dish _ Frequency Band / Technology Max Power Values (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Dish n71 (600 MHz) 5G	4	858.77	85	14.40	n71 (600 MHz)	400	3.60%
Dish n70 (AWS-4 / 1995-2020) 5G	4	1,648.39	85	9.20	n70 (AWS-4 / 1995-2020)	1000	0.92%
Dish n66 (AWS-4 / 2180-2200) 5G	4	1,849.52	85	9.20	n66 (AWS-4 / 2180-2200)	1000	0.92%
Dish 18 GHz Microwave	1	4,841.72	85	27.89	18 GHz	1000	0.01%
						Total:	5.45 %

Table 6: Dish Maximum Sector MPE Power Values

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the Dish facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Dish Sector	Power Density Value (%)
Sector A:	5.45 %
Sector B:	5.44 %
Sector C:	5.44 %
Dish Maximum Total (per sector):	5.45 %
Site Total:	17.18 %
Site Compliance Status:	COMPLIANT

The anticipated composite emissions value for this site, assuming all carriers present, is **17.18 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

ATTACHMENT 9

LETTER OF AUTHORIZATION


I, Michael Ashley Culbert, the owner representative for the telecommunications tower located at 75 Wells Road, Wethersfield, Hartford County, Connecticut, as evidenced by Memorandum of Lease by and between Citizens Telecommunications Company of California Inc. and EIP Communications I, LLC, recorded in the Shasta County Records as Document Number 2019-0023458.

As owner of the above-referenced telecommunications tower, I hereby authorize DISH Wireless L.L.C., through its designated agent, Northeast Site Solutions, to apply for all necessary municipal, state, federal and other permits necessary to accommodate the installation of DISH Wireless L.L.C's antennas and ancillary equipment on the subject tower and base station equipment on the ground on our leasehold property.

EIP Communications I, LLC

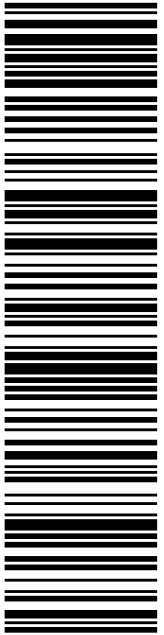
By: Michael Ashley Culbert
Michael Ashley Culbert
Vice President of Leasing & Collocation
Date: August 15, 2023

ATTACHMENT 8



MICHAEL L RELL
MAYOR OF WETHERSFIELD CT
505 SILAS DEANE HWY
WETHERSFIELD CT 06109-2216

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 STE 1
 420 MAIN ST
 STURBRIDGE MA 01566-1359


To: MICHAEL L RELL
 MAYOR OF WETHERSFIELD CT
 505 SILAS DEANE HWY
 WETHERSFIELD CT 06109-2216

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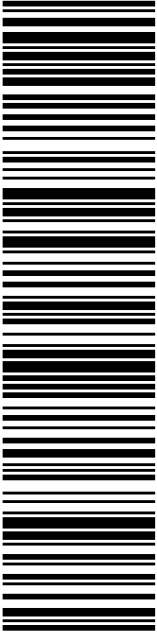


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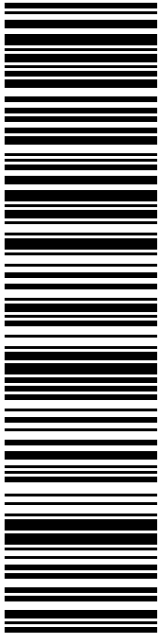


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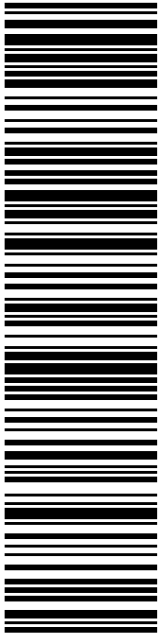
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Ship Date: 10/23/2023	
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Weight: 0 lb 13.40 oz			
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Tue 10/24/2023			
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9405 5036 9930 0618 7094 86			
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