



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### VIA ELECTRONIC MAIL

March 4, 2019

Anne Marie Zsamba  
Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

**RE: TS-DISH-155-190208** – Dish Wireless request for an order to approve tower sharing at an existing telecommunications facility located at 467 South Quaker Lane, West Hartford, Connecticut.

Dear Ms. Zsamba:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 1, 2019 submitted in response to the Council's February 27, 2019 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/IN/emr

## Robidoux, Evan

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**From:** Zsamba, Anne Marie <AnneMarie.Zsamba@crowncastle.com>  
**Sent:** Friday, March 01, 2019 3:48 PM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council; Killion, David  
**Subject:** RE: Council Incomplete Letter for TS-DISH-155-190208 (South Quaker Lane, West Hartford)  
**Attachments:** 829013 Crown Response to CSC Incomplete Letter 3.1.19.pdf

Good afternoon,

Attached please find Crown Castle's response to the Council's incomplete letter with regard to Council site TS-DISH-155-190208.

Thank you,  
Anne Marie

**ANNE MARIE ZSAMBA**  
Real Estate Specialist  
T: (201) 236-9224 | M: (518) 350-3639

**CROWN CASTLE**  
3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065  
[CrownCastle.com](http://CrownCastle.com)

**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Wednesday, February 27, 2019 2:26 PM  
**To:** Zsamba, Anne Marie <AnneMarie.Zsamba@crowncastle.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** RE: Council Incomplete Letter for TS-DISH-155-190208 (South Quaker Lane, West Hartford)

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good afternoon,

Please disregard the previous email, this an incomplete letter and not a decision letter. Apologies for the error!

Sincerely,  
Evan Robidoux

**From:** Robidoux, Evan  
**Sent:** Wednesday, February 27, 2019 2:21 PM  
**To:** 'Zsamba, Anne Marie' <[AnneMarie.Zsamba@crowncastle.com](mailto:AnneMarie.Zsamba@crowncastle.com)>  
**Cc:** CSC-DL Siting Council <[Siting.Council@ct.gov](mailto:Siting.Council@ct.gov)>  
**Subject:** Council Decision Letter for TS-DISH-155-190208 (South Quaker Lane, West Hartford)

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

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Crown Castle  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065

March 1, 2019

Melanie A. Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

**RE: Request of Dish Wireless for an Order to Approve the Shared Use of an Existing Tower at 467 South Quaker Lane, West Hartford, CT 06110  
Crown Site BU: 829013  
Latitude: 41° 44' 55.59" / Longitude: -72° 43' 52.86"**

Dear Ms. Bachman:

I am in receipt of your correspondence dated February 26, 2019 wherein you provided notice that the Dish Wireless Tower Share Application was incomplete due to discrepancies between the construction drawings and structural analysis provided. The Council recommended that we provide an updated structural analysis to remedy this discrepancy, though enclosed please find updated construction drawings which now correctly reflect a total of five remote radio units. The drawings enclosed are now in line with the structural analysis dated December 6, 2018 as both reflect a total of five remote radio units.

Please advise as to The Council's position on the attachments provided, as we believe same completes our filing.

I appreciate your time and attention to this matter. Should you have any questions, please feel free to contact me at 201-236-9224.

Sincerely,

Anne Marie Zsamba, Esq.  
Real Estate Specialist  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
(201) 236-9224  
AnneMarie.Zsamba@crowncastle.com



# DISH WIRELESS FIRST TIME INSTALL CONSTRUCTION DRAWINGS



DISH WIRELESS SITE ID:  
**CT0100003A**

TOWER OWNER SITE ID:  
**829013**

SITE ADDRESS:  
**467 SOUTH QUAKER LANE (CHURCH OF ST. MARK)  
WEST HARTFORD, CT 06110  
(HARTFORD COUNTY)**

## SITE SUMMARY

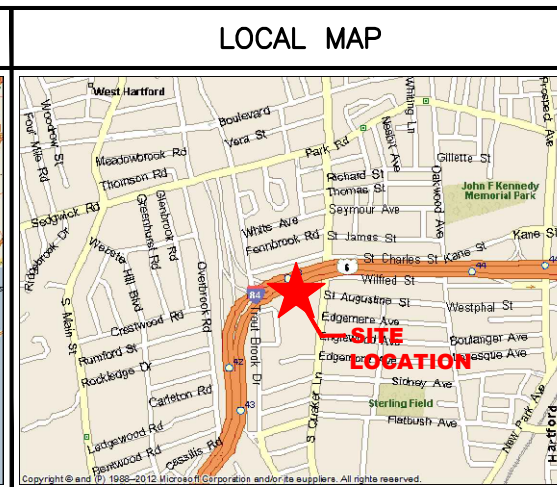
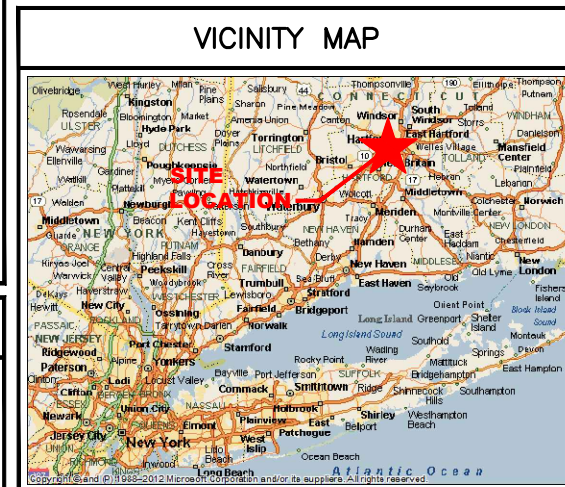
<b>PROJECT SCOPE:</b>	PROJECT CONSISTS OF INSTALLING PROPOSED DISH WIRELESS TELECOMMUNICATION EQUIPMENT, CABLING, AND ANTENNAS AT AN EXISTING TELECOMMUNICATION SITE
<b>SITE TYPE:</b>	CO-LOCATION
<b>TYPE OF OCCUPANCY:</b>	TELECOMMUNICATIONS
<b>TOWER TYPE:</b>	MONOPOLE
<b>TOWER HEIGHT:</b>	120.0'
<b>RAD CENTER:</b>	90.0'
<b>TOWER LATITUDE:</b>	41° 44' 55.59" N (41.748775°)
<b>TOWER LONGITUDE:</b>	-72° 43' 52.86" W (-72.731350°)
<b>ZONING JURISDICTION:</b>	CITY OF WEST HARTFORD
<b>COUNTY:</b>	HARTFORD COUNTY
<b>PARCEL NUMBER:</b>	5096 1 471 0002
<b>ZONING DISTRICT:</b>	R-6
<b>POWER COMPANY:</b>	EVERSOURCE ENERGY 888-544-4826
<b>TELEPHONE COMPANY:</b>	AT&T 866-620-6000

## PROJECT DIRECTORY

<b>TOWER OWNER:</b>	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 724-416-2000
<b>APPLICANT:</b>	DISH WIRELESS 9601 S MERIDIAN BLVD ENGLEWOOD, CO 80112 PHONE: (866) 624-6874
<b>SITE DESIGNER:</b>	PM&A 1000 HOLCOMB WOODS PKWY, SUITE 210 ROSWELL, GA 30076 CONTACT: MENDY BENSON PHONE: 678-280-2325

## GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION, THEREFORE HANDICAP ACCESS IS NOT REQUIRED. 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.



## CODE COMPLIANCE

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

- 2012 INTERNATIONAL BUILDING CODE
- 2012 INTERNATIONAL RESIDENTIAL CODE
- 2012 INTERNATIONAL ENERGY CONSERVATION CODE
- 2012 INTERNATIONAL PLUMBING CODE
- 2012 INTERNATIONAL MECHANICAL CODE
- 2017 NATIONAL ELECTRIC CODE
- 2012 INTERNATIONAL FIRE CODE
- ANSI/TIA/EIA-222-G
- FAA COMPLIANCE
- FCC COMPLIANCE

DISH WIRELESS PROJECT MANAGER APPROVAL:  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

CONSTRUCTION MANAGER APPROVAL:  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

LEASING/SITE ACQUISITION:  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

RF ENGINEER:  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

LANDLORD/TOWER OWNER APPROVAL:  
SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

## SHEET INDEX

SHEET NO.	DESCRIPTION	REV	DATE
T-1	TITLE SHEET	1	02/27/19
GN-1	GENERAL NOTES	1	02/27/19
GN-2	GENERAL NOTES	0	01/14/19
EN-1	ELECTRICAL NOTES	0	01/14/19
EN-2	ELECTRICAL NOTES	0	01/14/19
C-1	COMPOUND PLAN	0	01/14/19
C-2	EQUIPMENT PLAN	0	01/14/19
C-3	TOWER ELEVATION AND ANTENNA LAYOUT	1	02/27/19
C-3.1	ANTENNA MOUNT (SUPPLEMENTAL)	0	01/14/19
1 OF 2	ANTENNA SCHEDULE & DIAGRAM (SUPPLEMENTAL)	1	02/27/19
2 OF 2	CABLE COLOR CODE (SUPPLEMENTAL)	0	01/14/19
C-4	EQUIPMENT DETAILS	1	02/27/19
C-5	EQUIPMENT DETAILS (SUPPLEMENTAL)	0	01/14/19
C-6	CIVIL DETAILS	0	01/14/19
C-7	CIVIL DETAILS	0	01/14/19
C-8	PLATFORM DETAILS (SUPPLEMENTAL)	0	01/14/19
C-8.1	PLATFORM CANOPY DETAILS (SUPPLEMENTAL)	0	01/14/19
E-1	UTILITY PLAN	0	01/14/19
E-2	ELECTRICAL DETAILS	0	01/14/19
G-1	GROUNDING NOTES AND DETAILS	0	01/14/19
G-2	GROUNDING NOTES AND DETAILS	1	02/27/19
G-3	GROUNDING NOTES AND DETAILS	0	01/14/19
RF-1	RF DATA SHEET (SUPPLEMENTAL)	0	01/14/19
RF-2	PLUMBING DIAGRAM (SUPPLEMENTAL)	1	02/27/19

PLANS PREPARED FOR:

PROJECT MANAGER:

PLANS PREPARED BY:

P. MARSHALL & ASSOCIATES

DRAWN BY: \_\_\_\_\_ JDJ  
CHECKED BY: \_\_\_\_\_ MSB  
APPROVED: \_\_\_\_\_

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. REPRODUCTION OR CAUSING TO BE REPRODUCED THE WHOLE OR ANY PART OF THESE DRAWINGS WITHOUT THE PERMISSION OF PM&A. IS PROHIBITED.

PM&A PROJECT NUMBER:  
CCD18-021

DISH WIRELESS SITE ID:  
CT0100003A

TOWER OWNER SITE ID:  
829013

SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
TITLE SHEET

SHEET NUMBER:  
T-1.0

**GENERAL NOTES:**

1. EVERY EFFORT HAS BEEN MADE IN THE CONSTRUCTION DOCUMENTS TO PROVIDE A COMPLETE SCOPE OF WORK. MINOR DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL NOT EXCUSE CONTRACTORS FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
2. ALL REFERENCES TO OWNER HEREIN SHALL BE CONSTRUED TO MEAN THE CARRIER OR ITS DESIGNATED REPRESENTATIVE.
3. BIDDING REQUIREMENTS
  - a. PRIOR TO THE SUBMISSION OF BIDS, VISIT THE JOB SITE TO BECOME FAMILIAR WITH ALL CONDITIONS AFFECTING THE PROPOSED PROJECT. VISIT THE SITE WITH THE CONSTRUCTION DOCUMENTS TO VERIFY FIELD DIMENSIONS AND CONDITIONS TO CONFIRM THAT THE PROJECT WILL BE ACCOMPLISHED AS SHOWN.
  - b. PROVIDE NOTIFICATION TO OWNER IN WRITING OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO SUBMISSION OF PRICE PROPOSAL. IN THE EVENT OF DISCREPANCIES, PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED OTHERWISE.
  - c. WHEN TOWER IS OWNED BY A THIRD PARTY, CONTACT TOWER OWNER REPRESENTATIVE FOR PARTICIPATION IN BID WALK.
  - d. WHERE ANCHORING TO A CONCRETE ROOF SLAB, CONFIRM (PRIOR TO SUBMITTING BID) THE PRESENCE OF POST TENSION TENDONS. INCLUDE PROVISIONS FOR X-RAY PROCEDURES TO LOCATE THE TENDONS PRIOR TO CONSTRUCTION.
4. DRAWINGS ARE NOT TO BE SCALED. WRITTEN DIMENSIONS TAKE PRECEDENCE. CONSTRUCTION DOCUMENTS ARE INTENDED FOR DIAGRAMMATIC PURPOSES ONLY, UNO.
5. FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. BRING ANY DISCREPANCIES IMMEDIATELY TO THE ATTENTION OF THE OWNER AND RESOLVE BEFORE PROCEEDING WITH THE WORK.
6. FURNISH ALL MATERIALS, EQUIPMENT, LABOR, AND ANY REQUIREMENTS NECESSARY TO COMPLETE PROJECT AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS AND CONSTRUCTION SOW.
7. SUPERVISE AND DIRECT THE PROJECT DESCRIBED IN THE CONSTRUCTION DOCUMENTS. PROVIDE ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
8. ALL WORK PERFORMED ON THE PROJECT AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES APPLICABLE TO THE WORK.
9. CONSTRUCTION COORDINATION REQUIREMENTS
  - a. NOTIFY OWNER OF ANY DISCREPANCIES PRIOR TO START OF WORK.
  - b. OBTAIN ALL PERMITS. SCHEDULE AND COORDINATE ALL INSPECTIONS.
  - c. PROVIDE, AT THE PROJECT SITE, A FULL, CURRENT SET OF CONSTRUCTION DOCUMENTS FOR USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
  - d. RECEIVE WRITTEN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DOCUMENTS.
  - e. PERFORM WORK DURING OWNER'S PREFERRED HOURS TO AVOID DISTURBING NORMAL BUSINESS.
  - f. PROVIDE FALL PROTECTION IN ACCORDANCE WITH FEDERAL, STATE, LOCAL, AND OWNER REQUIREMENTS.
  - g. IF FAA LIGHTING AND MARKING IS PRESENT ON SITE AND IS POWERED BY ELECTRICAL SERVICE THAT IS TO BE INTERRUPTED, MAINTAIN THE NECESSARY LIGHTS DURING CONSTRUCTION AND NOTIFY THE PROPER AUTHORITIES IN THE EVENT OF A DISRUPTION.
  - h. PROVIDE A PORTABLE FIRE EXTINGUISHER WITH A RATING OF NOT LESS THAN 2-A OR 2-A10BC WITHIN 75 FEET TRAVEL DISTANCE TO ALL PORTIONS OF PROJECT AREA DURING CONSTRUCTION.
  - i. STRUCTURAL COMPONENTS OF ADJACENT FACILITIES SHALL NOT BE ALTERED BY THIS CONSTRUCTION PROJECT, UNO. ENSURE THAT EXCAVATION DOES NOT AFFECT ADJACENT STRUCTURES.
  - j. SEAL ALL PENETRATIONS THROUGH FIRE-RATED AREAS WITH U.L. LISTED OR FIRE MARSHALL-APPROVED MATERIALS, IF APPLICABLE.
  - k. BURIED UTILITIES MAY EXIST IN THE AREA AND UTILITY INFORMATION SHOWN MAY NOT BE COMPLETE. CONTACT THE UTILITY LOCATE SERVICE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION.
  - l. COORDINATE ALL POWER INSTALLATION WITH POWER COMPANY AS REQUIRED. REPORT POWER INSTALLATION COORDINATION SOLUTION(S) TO OWNER.
  - m. PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
  - n. KEEP GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OR PREMISES. SITE SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
  - o. MAINTAIN THE INTEGRITY OF THE BUILDING ENVELOPE AND CONSTRUCT BARRIERS IN THE AREA OF WORK TO PREVENT DAMAGE FROM WEATHER AS WELL AS FROM CONSTRUCTION DUST AND DEBRIS.
10. INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO MANUFACTURER'S SPECIFICATIONS, UNO, OR WHERE LOCAL CODES OR ORDINANCES DIRECT OTHERWISE.
11. PROPOSED CELLULAR EQUIPMENT AND FIXTURES WILL BE FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR, UNLESS NOTED OTHERWISE.

12. ANY SUBSTITUTIONS OF MATERIALS AND/OR EQUIPMENT, MUST BE APPROVED BY OWNER.
13. DOCUMENT ALL CHANGES MADE IN THE FIELD BY MARKING UP THE APPROVED CONSTRUCTION DRAWINGS AND SUBMITTING THE REDLINED SET TO OWNER UPON COMPLETION. DOCUMENT ALL WORK PERFORMED WITH PHOTOGRAPHS TO BE SUBMITTED WITH REDLINED CONSTRUCTION DRAWINGS.
14. PROVIDE SUPPORTS FOR CABLES TO THE ELEVATION OF ALL INITIAL AND FUTURE ANTENNAS IN ACCORDANCE WITH ALL MANUFACTURER'S REQUIREMENTS.
15. CONFIRM THAT THE REQUIREMENTS OF THE STRUCTURAL ANALYSIS, MOUNT ANALYSIS AND ANY ASSOCIATED MODIFICATIONS HAVE BEEN FOLLOWED AND COMPLETED AS REQUIRED TO SUPPORT THE EQUIPMENT ASSOCIATED WITH THIS PROJECT.
16. KNOW AND OBSERVE MANUFACTURER'S MINIMUM BEND RADIUS SPECIFICATIONS BEFORE HANDLING HYBRID CABLES, RF CABLES, AND FIBER OPTIC LINES.
17. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS STIPULATED IN THE CONSTRUCTION SCOPE OF WORK CONTRACT, REGARDLESS OF INCLUSION OR OMISSION FROM THE CONSTRUCTION DRAWING(S).
18. ADHERENCE TO CONSTRUCTION DOCUMENTS AND CONSTRUCTION SOW ARE TO BE FOLLOWED.

**ABBREVIATIONS**

A/C	AIR CONDITIONING	MGR	MANAGER
AFF	ABOVE FINISHED FLOOR	MIMO	MULTIPLE IN MULTIPLE OUT
AGL	ABOVE GROUND LEVEL,	mMIMO	MASSIVE MULTIPLE IN MULTIPLE OUT
	ABOVE GRADE LEVEL	MIN	MINIMUM
AWS	ADVANCED WIRELESS SERVICE	MISC	MISCELLANEOUS
BBU	BATTERY BACKUP UNIT	NA	NOT APPLICABLE
BLDG	BUILDING	NIC	NOT IN CONTRACT
BLK	BLOCKING	NO	NUMBER
CLG	CEILING	NTS	NOT TO SCALE
CLR	CLEAR	OC	ON CENTER
CONC	CONCRETE	OD	OUTSIDE DIAMETER
CONT	CONTINUOUS	PCS	PERSONAL COMMUNICATION SERVICE
D	DEPTH	PDU	POWER DISTRIBUTION UNIT
DBL	DOUBLE	PROJ	PROJECT
DEG	DEGREE	PROP	PROPERTY
Ø, DIA	DIAMETER	PT	PRESSURE TREATED
DIAG	DIAGONAL	PVC	POLYVINYL CHLORIDE
DN	DOWN	REQ	REQUIRED
DET	DETAIL	RF	RADIO FREQUENCY
DWG	DRAWING	RM	ROOM
E	EXISTING	RO	ROUGH OPENING
EA	EACH	RRH	REMOTE RADIO HEAD
ELEV, EL	ELEVATION	SHT	SHEET
ELEC	ELECTRICAL	SIM	SIMILAR
EQ	EQUAL	SPEC	SPECIFICATION
EQUIP	EQUIPMENT	SF	SQUARE FOOT
EXT	EXTERIOR	SS	STAINLESS STEEL
FIF	FIBER INTERFACE FRAME,	STL	STEEL
	FACILITY INTERFACE FRAME	SUSP	SUSPENDED
FIN	FINISH	TMA	TOWER MOUNTED AMPLIFIER
FLUOR	FLUORESCENT	TND	TINNED
FLR	FLOOR	TYP	TYPICAL
FT	FOOT, FEET	UMTS	UNIVERSAL MOBILE
GA	GAUGE		TELECOMMUNICATION SERVICE
GALV	GALVANIZED	UNO	UNLESS NOTED OTHERWISE
GC	GENERAL CONTRACTOR	VERT	VERTICAL
GRND	GROUND	W/	WITH
GSM	GLOBAL SYSTEM MOBILE	W/O	WITHOUT
GYP	GYP SUM BOARD	WCS	WIRELESS COMMUNICATION
HORZ	HORIZONTAL		SERVICE
HR	HOUR	WP	WATER PROOF
HT	HEIGHT		
ID	INSIDE DIAMETER		
IN	INCH, INCHES		
INSUL	INSULATION		
INT	INTERIOR		
L	LENGTH		
LBS	POUNDS		
LTE	LONG TERM EVOLUTION		
MAX	MAXIMUM		
MECH	MECHANICAL		
MTL	METAL		
MFR	MANUFACTURER		

**SCOPE OF WORK**

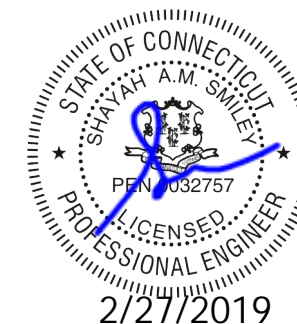
SCOPE/STATE OF WORK SUMMARY SHOULD INCLUDE THE FOLLOWING:  
 ALL PURPOSED EQUIPMENT INDICATED IN DRAWINGS IS FOR AN UNMANNED TRANSMISSION FACILITY FOR TELECOMMUNICATIONS WIRELESS SERVICE. THIS IS NOT AN ALL-INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVE EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR) (ERICSSON BUILD)
- INSTALL (3) NEW RET'S (NOKIA BUILD ONLY)
- INSTALL (3) PROPOSED ANTENNA MOUNTS & ASSOCIATED JUMPERS (1 PER SECTOR)
- INSTALL (8) PROPOSED RRU'S AND ASSOCIATED JUMPERS
- INSTALL (1) PROPOSED HYBRID CABLE. UP TO (3) HYBRID CABLES (ROOFTOP)
- INSTALL (1) PROPOSED CABLE LADDER FOR HYBRID SUPPORT (IF APPLICABLE)
- INSTALL (1) PROPOSED METAL PLATFORM w/ CANOPY (IF APPLICABLE) FOR GROUND EQUIPMENT OR CONCRETE PAD (PER DESIGN)
- INSTALL (1) PROPOSED ICE BRIDGE OR 4" RMC ON 4" CONCRETE SLEEPERS (PER DESIGN)
- INSTALL (1) PROPOSED BATTERY BACKUP SYSTEM IN CABINET
- INSTALL (1) PROPOSED PPC CABINET MOUNTED TO NEW H-FRAME
- INSTALL (1) PROPOSED SURGE SUPPRESSION DEVICE
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED RBS CHASSIS IN PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED BASEBAND UNIT IN PROPOSED RBS CHASSIS
- INSTALL (1) PROPOSED POWER CONDUIT FROM PLATFORM TO MEET-ME-POINT DESIGNATED BY POWER COMPANY
- INSTALL (1) PROPOSED METER BASE FOR POWER METER ON NEW H-FRAME
- INSTALL (1) PROPOSED TELCO CONDUIT FROM PLATFORM TO MEET-ME-POINT DESIGNATED BY TELCO PROVIDER
- INSTALL (1) PROPOSED NEMA4 TELCO-FIBER BOX MOUNTED TO NEW H-FRAME
- INSTALL (1) PROPOSED GPS ANTENNA WITH CABLE IN CONDUIT
- INSTALL (1) PROPOSED DISH WIRELESS (3'-0"Ø) DISH ANTENNA FACING SOUTH ON PROPOSED PIPE MAST
- INSTALL (1) PROPOSED PIPE MAST FOR DISH ANTENNA

THE SIZE, HEIGHT AND DIRECTIO NOF ALL ANTENNAS SHALL BE ADJUSTED TO MEET SYSTEM REQUIREMENT DEPICTED BY THE LATEST APPROVED RFDS.

**PROJECT NOTES**

1. THE FOLLOWING INFORMATION HAS BEEN PROVIDED BY DISH WIRELESS FOR THIS PROJECT AND HAS NOT BEEN FIELD VERIFIED AS PART OF THIS PROJECT.
  - a. EXISTING TOWER, MOUNT AND EQUIPMENT ELEVATIONS
  - b. DESIGN PACKAGE BASED ON THE APPLICATION #: 468466
2. A STRUCTURAL ANALYSIS TO DETERMINE THE TOWER CAPACITY TO SUPPORT THE PROPOSED EQUIPMENT WAS PERFORMED FOR DISH WIRELESS OUTSIDE THE SCOPE OF THIS PROJECT.
  - a. STRUCTURAL ANALYSIS BY: CROWN CASTLE
  - b. DATED: 12/06/2018
  - c. RESULTS SUFFICIENT CAPACITY
3. CONFIRM THAT THE REQUIREMENTS OF THE STRUCTURAL ANALYSIS AND ANY ASSOCIATED MODIFICATIONS HAVE BEEN FOLLOWED AND COMPLETED AS REQUIRED TO SUPPORT THE EQUIPMENT ASSOCIATED WITH THIS PROJECT.



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

GENERAL NOTES

SHEET NUMBER:

GN-1



**SITE NOTES:**

- WHEN SITE WORK IS INCLUDED IN SCOPE:
  - CLEAR AND GRUB SITE OF ALL VEGETATION, PAVING, GRAVEL BASE AND OTHER DEBRIS NOT TO REMAIN. SUBGRADES ARE TO BE SET PRIOR TO LANDSCAPE INSTALLATION.
  - PROVIDE ELEVATION OF SUBGRADE WITHIN 0.10 FOOT OF ELEVATIONS SHOWN ON PLAN MINUS DEPTH OF TOPSOIL, FILL, AND MULCH.
  - ROUGH GRADE ALL AREAS WITHIN 1 FOOT OF ELEVATIONS INDICATED BEFORE PLANTING. PROVIDE POSITIVE DRAINAGE AWAY FROM EQUIPMENT SLABS, BUILDINGS AND THROUGH ALL PLANTER AREAS TO AVOID LOW SPOTS AND STANDING WATER.
  - BLEND NEW GRADES NATURALLY INTO EXISTING GRADES.
  - MAINTAIN POSITIVE DRAINAGE ON THE SITE AT ALL TIMES.
  - IF REQUIRED, MAINTAIN CONTINUOUS EROSION CONTROL ON THE DOWNSTREAM SIDE OF THE SITE.
  - IN LANDSCAPE AREAS, FINISH GRADES ARE TO FOLLOW THE GRADES AND EDGE DETAILS INDICATED AND BE MOUNDED 6 INCHES IN THE CENTER OF THE BED ABOVE THE EDGE OF THE LANDSCAPE AREA.
  - DO NOT PLACE FILL OR EMBANKMENT MATERIAL ON FROZEN GROUND. DO NOT PLACE FROZEN MATERIALS, SNOW OR ICE IN ANY FILL OR EMBANKMENT.
  - NOTIFY OWNER IF MODIFICATIONS TO THE PROPOSED GRADING SEEM NECESSARY AND OBTAIN APPROVAL PRIOR TO START OF WORK.
- FOOTINGS SHALL BEAR ON FIRM, NATURAL, UNDISTURBED SOIL, OR ON ENGINEERED FILL (COMPACTED TO 95% ASTM D1557). ENSURE THAT EXCAVATIONS ARE FREE OF ORGANIC MATERIAL, DEBRIS, OR OTHER FOREIGN MATERIAL. NOTIFY OWNER IF ANY UNUSUAL CONDITIONS ARE ENCOUNTERED.
- FILL AND SLAB BASE MATERIAL SHALL BE 3/4" MINUS CRUSHED ROCK PLACED IN 8" (MAXIMUM) LOOSE LIFTS AND COMPACTED TO 98% ASTM D1557.

**CONCRETE NOTES:**

- CONCRETE AND REINFORCING SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

CONCRETE CONSTRUCTION	ACI 318, f'c=4 KSI, UNO
CEMENT	ASTM C150, PORTLAND CEMENT TYPE II, UNO
REINFORCING STEEL	ASTM A615 (INCLUDING SUPPLEMENT S1), GRADE 60, fy=60 KSI, UNO
WELDED WIRE FABRIC	ASTM A185
SPIRAL REINFORCEMENT	ASTM A615, GRADE 60, fy=60 KSI
ANCHOR BOLTS	ASTM A307
GRADE 60 REBAR WELDING	ASTM A706

NOTES: ANY BARS SO NOTED ON THE DRAWINGS SHALL BE GRADE 60, fy=60 KSI. REINFORCING COMPLYING WITH ASTM A615(S1) MAY BE WELDED ONLY IF MATERIAL PROPERTY REPORTS INDICATING CONFORMANCE WITH WELDING PROCEDURES SPECIFIED IN A.W.S. D14 ARE SUBMITTED.

- CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

FOOTINGS AND OTHER UNFORMED SURFACES, EARTH FACE	3"
FORMED SURFACES EXPOSED TO EARTH OR WEATHER (≥ #6 BARS)	2"
FORMED SURFACES EXPOSED TO EARTH OR WEATHER (≤ #5 BARS)	1 1/2"
SLABS AND WALLS (INTERIOR FACE)	3/4"

- AIR ENTRAIN ALL CONCRETE WITH SURFACES EXPOSED TO WEATHER WITH AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260, C494, C618, C989 AND C1017. AIR ENTRAIN CONCRETE EXPOSED TO FREEZING AND THAWING WHILE MOIST IN ACCORDANCE WITH ACI 318, SECTION 4.4.1.
- DETAIL REINFORCING STEEL (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315 AND 318. LAP ALL CONTINUOUS REINFORCEMENT AT LEAST 30 BAR DIAMETERS OR A MINIMUM OF 2'-0". PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS. LAP CORNER BARS AT LEAST 30 BAR DIAMETERS OR A MINIMUM OF 2'-0". LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.
- PERFORM WELDING OF GRADE 60 REINFORCING BARS (IF REQUIRED) USING LOW HYDROGEN ELECTRODES. PERFORM WELDING OF GRADE 40 REINFORCING BARS (IF REQUIRED) USING E70 XX ELECTRODES. DO NOT WELD WITHIN 4" OF COLD BENDS IN REINFORCING STEEL.
- DO NOT FIELD BEND REINFORCING PARTIALLY EMBEDDED IN CONCRETE UNLESS SPECIFICALLY SO DETAILED OR APPROVED BY THE ENGINEER.
- SUPPORT BARS ON CHAIRS OR DOBIE BRICKS.
- FURNISH NON-SHRINK GROUT BY AN APPROVED MANUFACTURER. MIX AND PLACE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED RECOMMENDATIONS. GROUT STRENGTH SHALL BE AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED (4 KSI, MINIMUM).
- ALL EXPANSION ANCHORS TO BE HILTI BRAND, UNO. TEST ADHESIVE ANCHORS TO CONFIRM CAPACITY UNLESS WAIVED BY ENGINEER AND LOCAL JURISDICTION.

**STRUCTURAL STEEL NOTES:**

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 

WIDE FLANGE SHAPES	ASTM A992, GRADE 50
SHAPES, PLATES, ANGLES, & RODS	ASTM A36, Fy 36 KSI
SPECIAL SHAPES AND PLATES	ASTM A572, Fy 50 KSI
PIPE COLUMNS	ASTM A53, GR B, Fy 35 KSI
STRUCTURAL TUBING	ASTM A500, GR B, Fy 46KSI
ANCHOR BOLTS	ASTM A307
CONNECTION BOLTS	ASTM A325 TWIST-OFF
- BASE STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION (INCLUDING FIELD WELDING, HIGH STRENGTH FIELD BOLTING, EXPANSION BOLTS, AND THREADED EXPANSION ANCHORS) ON THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" LATEST EDITION.
- HOT DIP GALVANIZE AFTER FABRICATION PER A123/A123M-00 ALL STEEL EXPOSED TO WEATHER AND WHERE NOTED.
- CONFORM TO ALL AISC AND AWS STANDARDS FOR WELDING. PERFORM WELDING BY ANSI/AWS D1.1 CERTIFIED WELDERS USING E70 XX ELECTRODES. USE ONLY PRE-QUALIFIED WELDS AS DEFINED BY AWS.
- PROVIDE COLD-FORMED STEEL FRAMING MEMBERS OF THE SHAPE, SIZE, AND GAUGE SHOWN ON THE PLANS. PROVIDE MINIMUM SECTION PROPERTIES INDICATED. ALL COLD-FORMED STEEL FRAMING SHALL CONFORM TO THE AISI "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS."
- FOR BOLTED CONNECTIONS, USE 3/4" DIA., BEARING-TYPE, A325 BOLTS WITH A MINIMUM OF TWO BOLTS, UNO.
- FOR NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING, USE 5/8" DIA. A307 BOLTS, UNO.
- PREPARE AND PAINT IN ACCORDANCE WITH THE PAINT MANUFACTURERS WRITTEN INSTRUCTIONS, UNO.
- TOUCH UP ALL FIELD DRILLING, WELDING AND CUT SURFACES WITH 2 COATS OF GALVAICON (ZINC RICH PAINT) OR APPROVED EQUAL.
- THE STRUCTURAL INTEGRITY OF THE EQUIPMENT PLATFORM HAS NOT BEEN REVIEWED BY FDH INFRASTRUCTURE SERVICES, LLC.

**SPECIAL INSPECTIONS:**

- WHEN REQUIRED, PROVIDE SPECIAL INSPECTIONS PERFORMED BY AN INDEPENDENT INSPECTOR, APPROVED BY OWNER'S REPRESENTATIVE AND THE LOCAL JURISDICTION.
- THE SPECIAL INSPECTOR SHALL PROVIDE A COPY OF THE REPORT TO THE OWNER'S REPRESENTATIVE, STRUCTURAL ENGINEER, CONTRACTOR, AND BUILDING OFFICIAL.

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

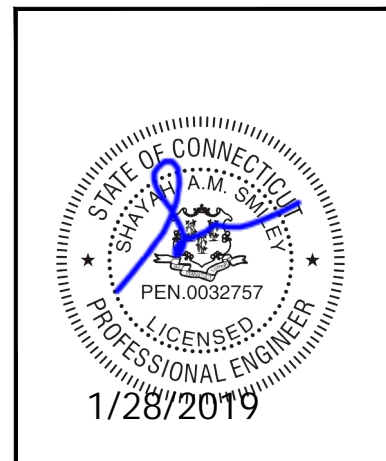
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

GENERAL NOTES

SHEET NUMBER:

GN-2



**ELECTRICAL NOTES:**

**GENERAL**

**GENERAL CONDITIONS:**

- A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARD TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE ISSUED TO CONSTRUCTION MANAGER IN WRITING FOR CLARIFICATION PRIOR TO SUBMITTAL OF BID AND CONTRACT AWARD.
- B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION OF WORK UNDER THIS SECTION.
- C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. DRAWINGS SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

**LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES:**

- A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

**REFERENCES:**

- A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE. THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.
  1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
  2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
  3. ICEA (INSULATED CABLE ENGINEERS ASSOCIATION)
  4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
  5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
  6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
  7. UL (UNDERWRITERS LABORATORIES. INC.)
  8. DISH WIRELESS GROUNDING AND BONDING STANDARDS, LATEST EDITION, AND COMPLY WITH DISH WIRELESS GROUNDING CHECKLIST, LATEST VERSION
  9. R56 MOTOROLA STANDARDS

**SCOPE OF WORK:**

- A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.
- B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING OF TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.
- D. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT, THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

**PRODUCTS**

**GENERAL:**

- A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.
- B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.
- C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING EQUAL TO OR GREATER THAN THE SHORT CIRCUIT CURRENT AVAILABLE, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT.

**MATERIALS AND EQUIPMENT:**

- A. CONDUIT:
  1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
  2. LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
  3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE.
  4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC UNLESS SCHEDULE 80 PVC IS SPECIFIED. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

**B. CONDUCTORS AND CABLE:**

1. CONDUCTORS AND CABLE SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

**C. DISCONNECT SWITCHES:**

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE-D OR ENGINEER APPROVED EQUAL.

**D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:**

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMICALLY WELDED PIGTAIL, PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2-(\*)CS OR K2L-(\*)CS (\*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON-TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHING" HOLES, XIT MODEL #XB-22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS ID NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

**E. SYSTEM GROUNDING**

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER. ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 5/8"x10'-0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE DISH WIRELESS SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED TO ALL METALLIC JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT.

**F. OTHER MATERIALS:**

1. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
2. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

**G. PANELS AND LOAD CENTERS:**

1. ALL PANEL LABELS SHALL BE TYPEWRITTEN.

**EXECUTION:**

**GENERAL:**

- A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

**LABOR AND WORKMANSHIP:**

- A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.
- B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.
- C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

**PLANS PREPARED FOR:**



**PROJECT MANAGER:**



**PLANS PREPARED BY:**



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED: \_\_\_\_\_

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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**PM&A PROJECT NUMBER:**

CCD18-021

**DISH WIRELESS SITE ID:**

CT0100003A

**TOWER OWNER SITE ID:**

829013

**SITE ADDRESS:**

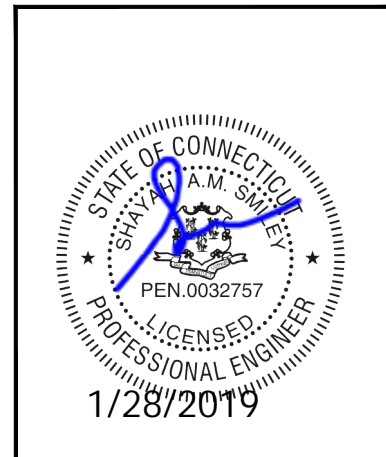
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

**SHEET DESCRIPTION:**

ELECTRICAL NOTES

**SHEET NUMBER:**

EN-1





**ELECTRICAL NOTES (CONTINUED)**

**COORDINATION:**

- A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

**INSTALLATION:**

**A. CONDUIT:**

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS, OR WHERE RMC OTHERWISE NOTED.
3. INSTALL SCHEDULE 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS (REFER TO 2017 NEC, TABLE 300.5).
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE 90 DEGREE BENDS MAX. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
9. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
10. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
11. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
12. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
13. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS AND/OR SLEEVES. PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THE PURPOSE.

**B. CONDUCTORS AND CABLE:**

1. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDUITS APPROVED FOR THIS PURPOSE.
2. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
3. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES AND EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

**C. DISCONNECT SWITCHES:**

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

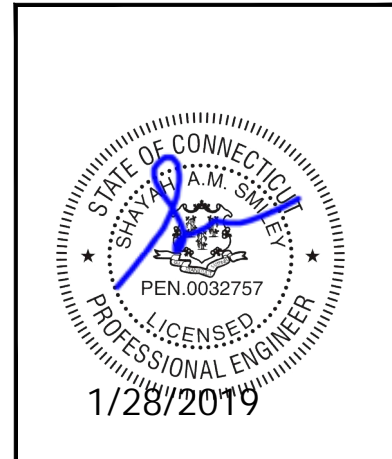
**D. GROUNDING:**

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, DISH WIRELESS GROUNDING AND BONDING STANDARDS, LATEST EDITION, AND COMPLY WITH DISH WIRELESS GROUNDING CHECKLIST, LATEST VERSION, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.

3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWER, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 AWG 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). SEE STANDARD 6.3.2.2.
5. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
6. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
8. APPLY CORROSION-RESISTANT FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
9. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
10. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
11. DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 30" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
12. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
13. THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
14. DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 30" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
15. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

**ACCEPTANCE TESTING:**

- A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.
- B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.
- C. TEST PROCEDURES:
  1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
  2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
  3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS, SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
  4. PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED: \_\_\_\_\_

SUBMITTALS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER: CCD18-021

DISH WIRELESS SITE ID: CT0100003A

TOWER OWNER SITE ID: 829013

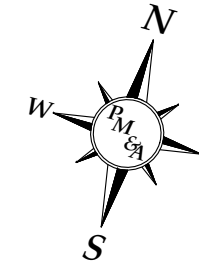
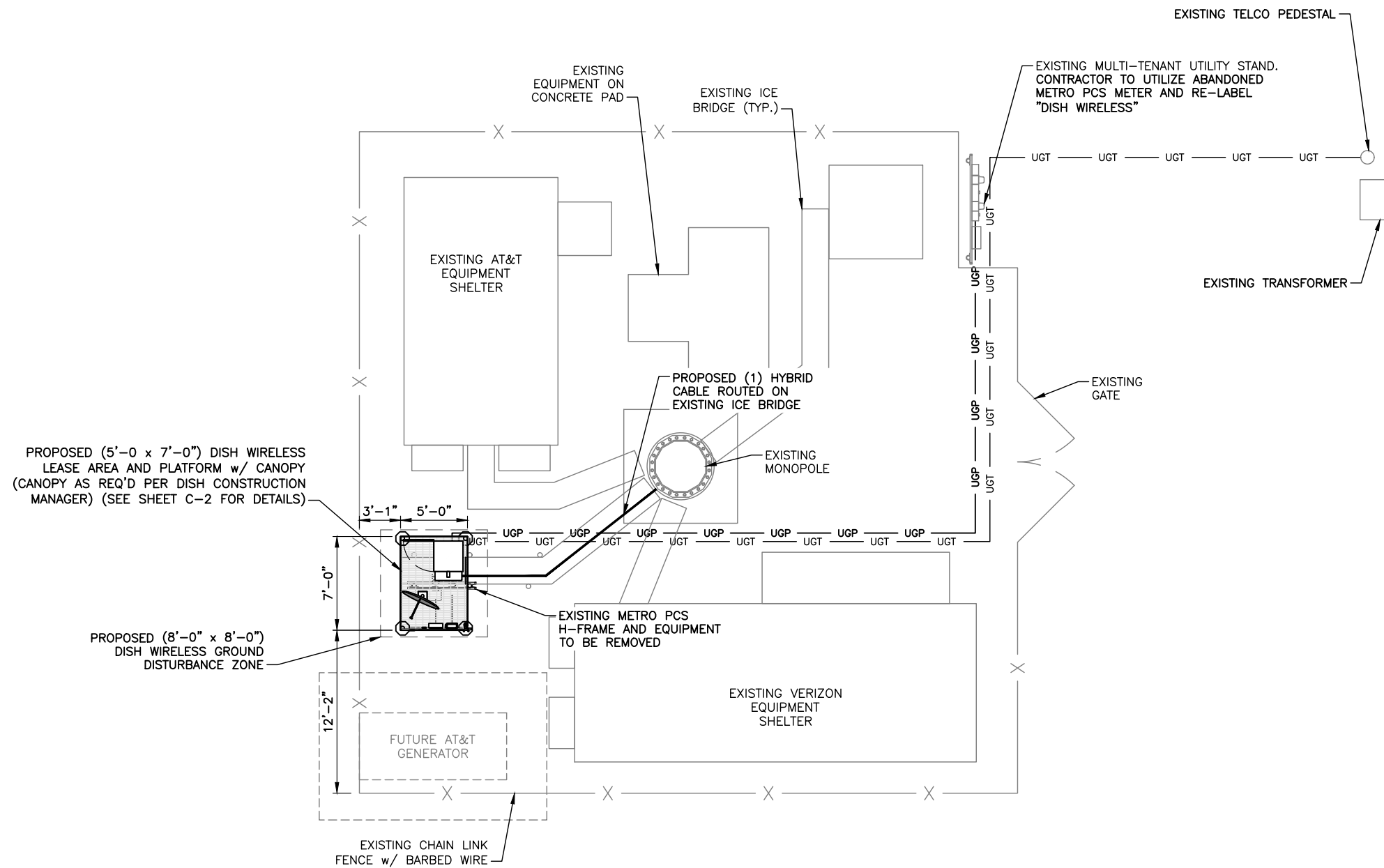
SITE ADDRESS: 467 SOUTH QUAKER LANE WEST HARTFORD, CT 06110

SHEET DESCRIPTION: ELECTRICAL NOTES

SHEET NUMBER: EN-2

PROPOSED SATELLITE DISH  
LOCATION TO BE VERIFIED IN THE  
FIELD AT TIME OF CONSTRUCTION

HYBRID CABLE LENGTHS:  
EQUIPMENT PLATFORM TO TOWER = ±20'-0"  
TOWER TO RAD CENTER = ±90'-0"



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

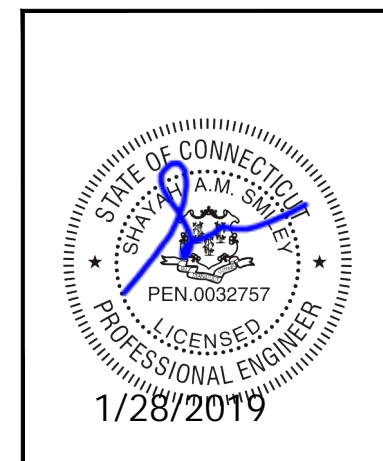
COMPOUND PLAN

SHEET NUMBER:

C-1

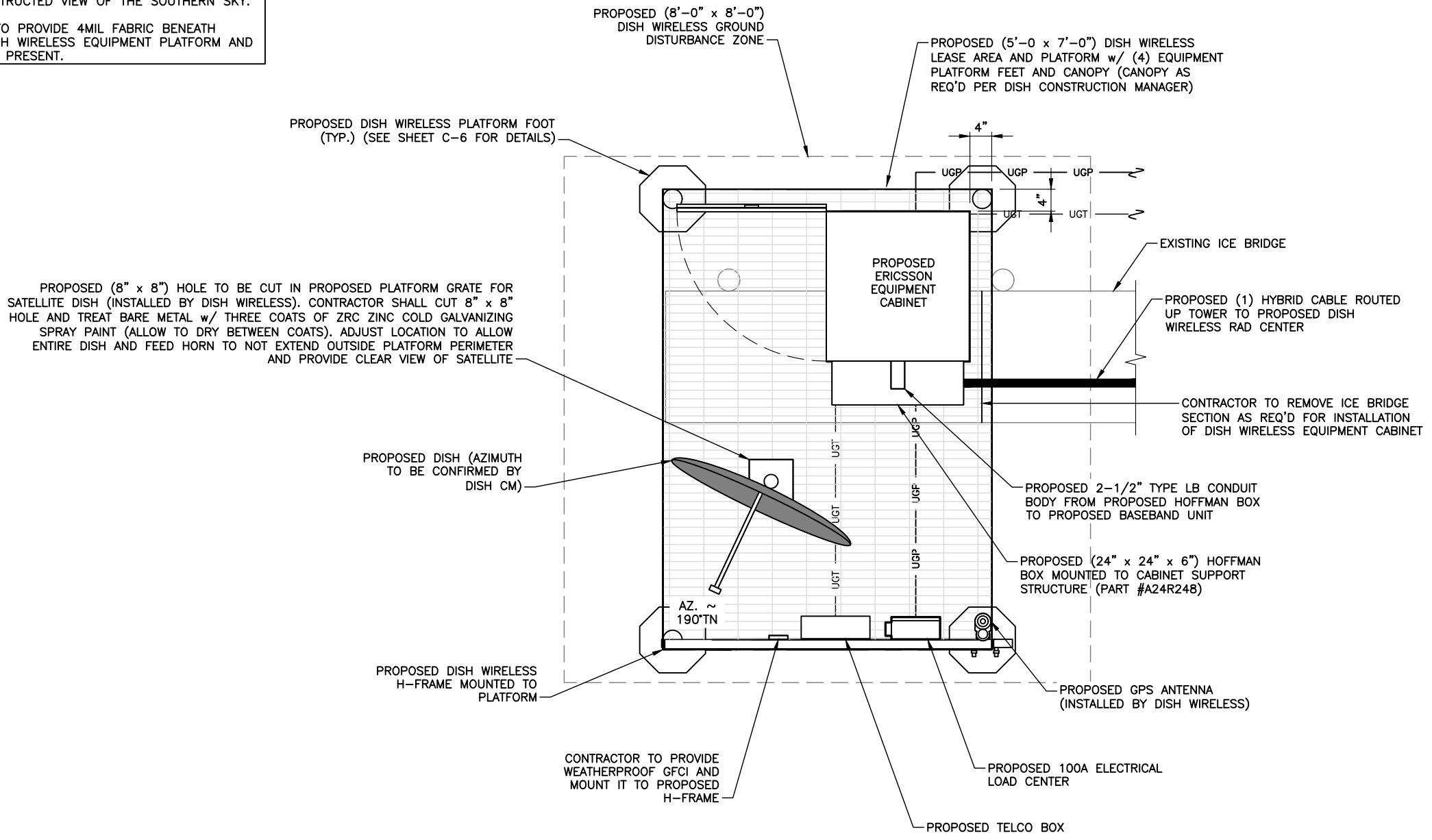
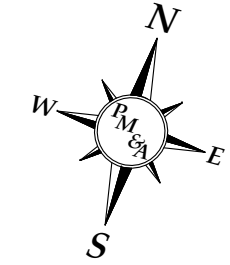


COMPOUND PLAN  
SCALE: 1" = 10'



**SAFETY NOTE:**  
 WHEN APPLICABLE, CONTRACTOR SHALL COVER PROPOSED (8"x8") HOLE IN PLATFORM GRATE TO PREVENT TRIPPING HAZARD. SEE OSHA STANDARDS, SECTION 29 CFR 1926.501(b)(4)(ii).

- NOTES:**
1. WHEN APPLICABLE, LTE BACKHAUL ANTENNA LOCATION TO BE VERIFIED IN THE FIELD AT TIME OF CONSTRUCTION.
  2. WHEN APPLICABLE, DISH WIRELESS SUPPORT PIPE SHALL BE POSITIONED AS TO AFFORD FUTURE DISH A CLEAR, UNOBSTRUCTED VIEW OF THE SOUTHERN SKY.
  3. CONTRACTOR TO PROVIDE 4MIL FABRIC BENEATH PROPOSED DISH WIRELESS EQUIPMENT PLATFORM AND LEGS IF NONE PRESENT.



PROPOSED (8" x 8") HOLE TO BE CUT IN PROPOSED PLATFORM GRATE FOR SATELLITE DISH (INSTALLED BY DISH WIRELESS). CONTRACTOR SHALL CUT 8" x 8" HOLE AND TREAT BARE METAL w/ THREE COATS OF ZRC ZINC COLD GALVANIZING SPRAY PAINT (ALLOW TO DRY BETWEEN COATS). ADJUST LOCATION TO ALLOW ENTIRE DISH AND FEED HORN TO NOT EXTEND OUTSIDE PLATFORM PERIMETER AND PROVIDE CLEAR VIEW OF SATELLITE

**EQUIPMENT PLAN**  
 SCALE: 1/2" = 1'-0"

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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 CCD18-021

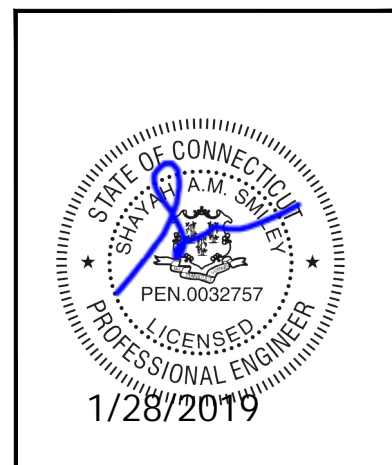
DISH WIRELESS SITE ID:  
 CT0100003A

TOWER OWNER SITE ID:  
 829013

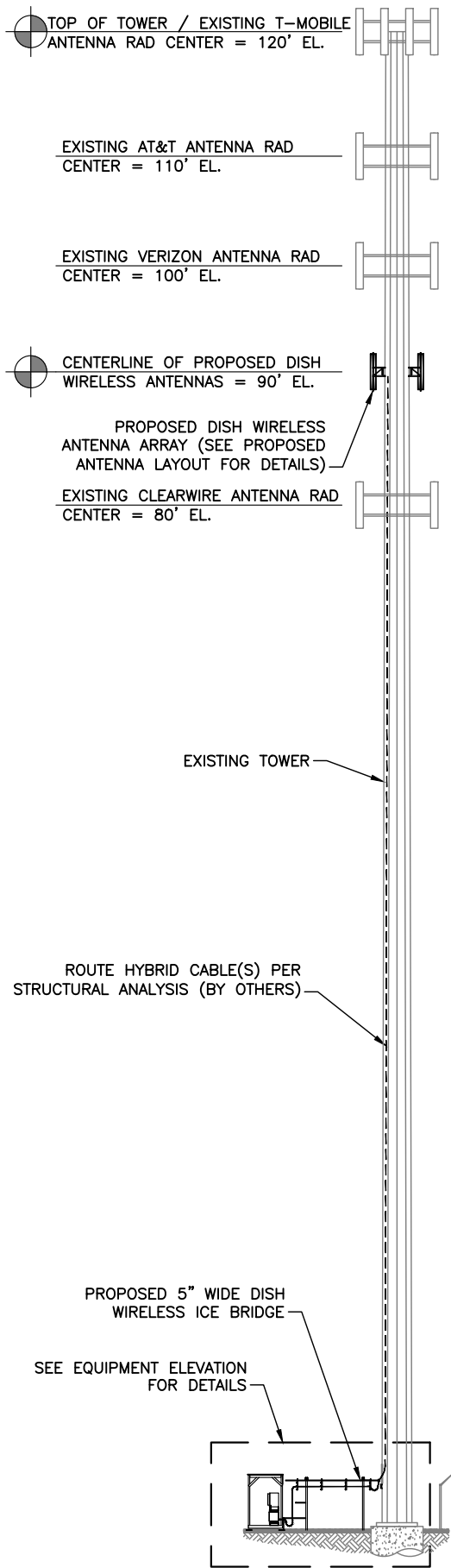
SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
 EQUIPMENT PLAN

SHEET NUMBER:  
 C-2





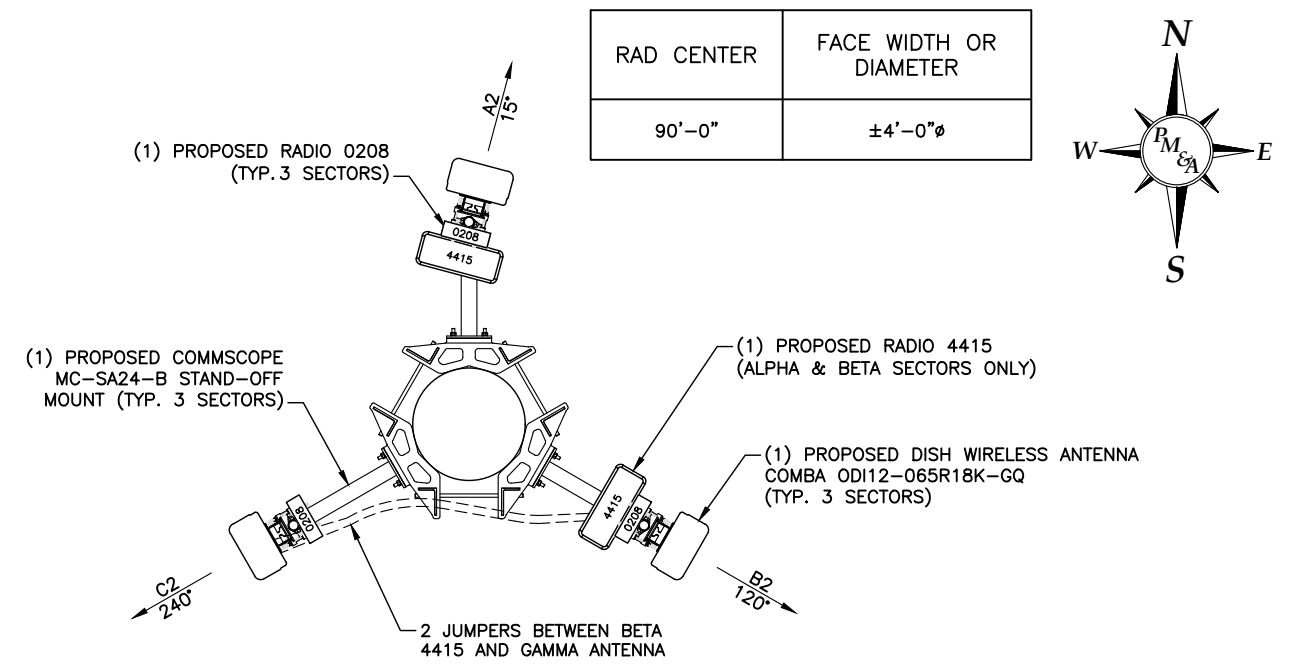


**TOWER ELEVATION**  
NOT TO SCALE

- ANTENNA LAYOUT NOTES:**
1. THIS ANTENNA ORIENTATION PLAN IS A SCHEMATIC. THE CONTRACTOR SHALL VERIFY TOWER ORIENTATION AND FIELD COORDINATE REQUIRED ADJUSTMENTS TO ACHIEVE THE DESIRED ANTENNA AZIMUTHS.
  2. ANTENNA CENTERLINE HEIGHT REFERENCED FROM GROUND AT BASE OF TOWER, ASSUMING HEIGHT OF 0'-0" AT SAID REFERENCE POINT.
  3. ALL ANTENNAS, CABLES AND MOUNTS SHALL BE INSTALLED IN ACCORDANCE WITH THE TOWER ENGINEER'S RECOMMENDATIONS IN A MANNER CONSISTENT WITH THE STRUCTURAL ANALYSIS REPORT.
  4. ALL ANTENNA BRACKETS PER ANTENNA MANUFACTURER, OR EQUAL. CONTRACTOR TO COORDINATE REQUIRED MECHANICAL DOWN TILT WITH DISH WIRELESS.
  5. ALL ANTENNA INFORMATION TO BE CONFIRMED WITH DISH WIRELESS RF DESIGN PRIOR TO INSTALLATION.
  6. VERIFY POSITIONS AND AZIMUTH OF ANTENNAS WITH DISH WIRELESS PRIOR TO INSTALLATION.
  7. SECTOR FRAMES AND ANTENNAS SHOULD HAVE IDENTIFYING TORQUE MARKS SHOWN AFTER INSTALLATION.
  8. ALL CLOSE-OUT PHOTOS ADHERE TO CLOSE-OUT DOCUMENTATION.

- EQUIPMENT TESTING:**
- CONTRACTOR SHALL COMPLETE THE FOLLOWING REQUIREMENTS:
1. ANTENNAS & RF JUMPERS:
    - ALL RF JUMPERS & ANTENNA PORTS MUST HAVE DOCUMENTED PASSING SYSTEM SWEEP TEST.
    - PIM TESTING IS REQUIRED FOR ALL INSTALLED ANTENNAS & FEEDLINES.
    - SYSTEM SWEEPS SHALL BE AT A RETURN LOSS OF  $\leq -16\text{db}$ .
    - ALL SWEEPS MUST BE PROVIDED IN A PDF AS WELL AS ANRITSU (OR EQUAL) DATA FILE FORMAT.
    - FINAL ACCEPTANCE: PERFORM ALL TECHNICAL TESTS SPECIFIED IN THE CONSTRUCTION SOW, SECTION XIV.
  2. HYBRID CABLES:
    - ALL FIBER PAIRS MUST HAVE A DOCUMENTED PASSING POWER & A FIBER INSPECTION SCOPE TEST.
    - PASSING POWER TEST SHALL BE  $\leq 3\text{db}$ .
    - REQUIRED FIBER TEST GEAR SHALL BE VIAVI JDSU FIT-SD103; P5000i FIBER SCOPE DIGITAL INSPECTION KIT; VIAVI 2303/11, OLS-35 OPTICAL LASER LIGHT SOURCE 1310/1550 NM, SM, INTERCHANGEABLE ADAPTER OR EQUAL.
    - ALL FIBER TEST RESULTS MUST BE PROVIDED IN PDF FORMAT.
    - FINAL ACCEPTANCE: PERFORM ALL TECHNICAL TESTS SPECIFIED IN THE CONSTRUCTION SOW, SECTION XIV.

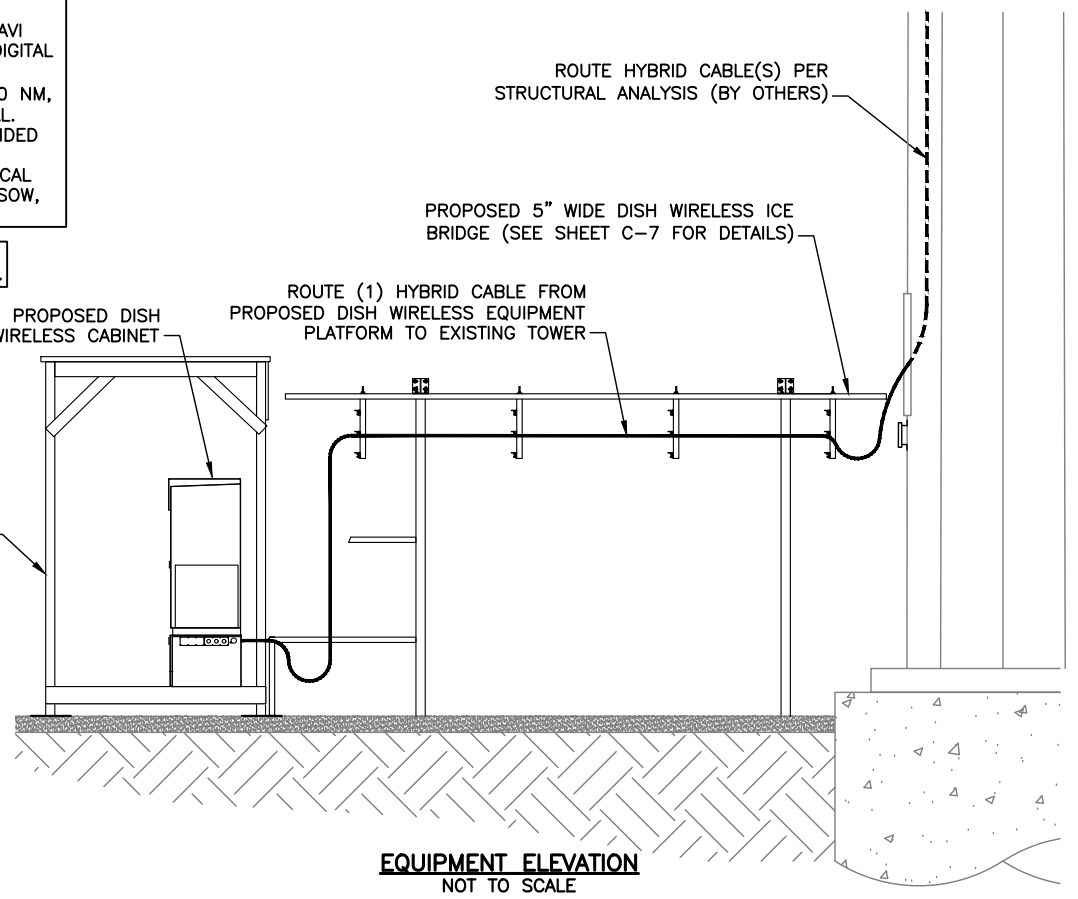
ADD MID TOWER GROUND BUS BAR WHERE APPLICABLE PER LIGHTNING ZONE REQUIREMENTS.



**PROPOSED ANTENNA LAYOUT**  
NOT TO SCALE

PROPOSED RET RUN FROM 4415 RRU TO ANTENNA (FOR ALPHA SECTOR AND DAISY CHAINED TO BETA AND GAMMA SECTORS) ALONG TOWER STRUCTURE, NOT IN OPEN AIR.

- NOTES:**
1. DISH WIRELESS TO CONFIRM WITH TOWER OWNER THE VERTICAL LEASE AREA RIGHTS AVAILABLE PRIOR TO CONSTRUCTION. EXISTING EQUIPMENT MAY OBSTRUCT DESIRED DISH WIRELESS RAD-CENTER.
  2. TOWER FACE WIDTH/DIAMETER IS AN ESTIMATE FROM STRUCTURAL ANALYSIS.



**EQUIPMENT ELEVATION**  
NOT TO SCALE

- INSTALLER NOTE:**
1. SCHEMATIC LAYOUT ONLY. REFER TO SHEETS C-1 AND C-2 FOR EXACT EQUIPMENT LAYOUT, SIZES AND LOCATIONS OF ICE BRIDGE.
  2. ALL CABLE SUPPORTS SHOULD BE BLOCKS AND GROMMETS. NO SNAP-INS ARE ALLOWED.



PLANS PREPARED FOR:

PROJECT MANAGER:

PLANS PREPARED BY:

P. MARSHALL & ASSOCIATES

DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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PM&A PROJECT NUMBER:  
CCD18-021

DISH WIRELESS SITE ID:  
CT0100003A

TOWER OWNER SITE ID:  
829013

SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
TOWER ELEVATION &  
ANTENNA LAYOUT

SHEET NUMBER:  
C-3



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

SUBMITTALS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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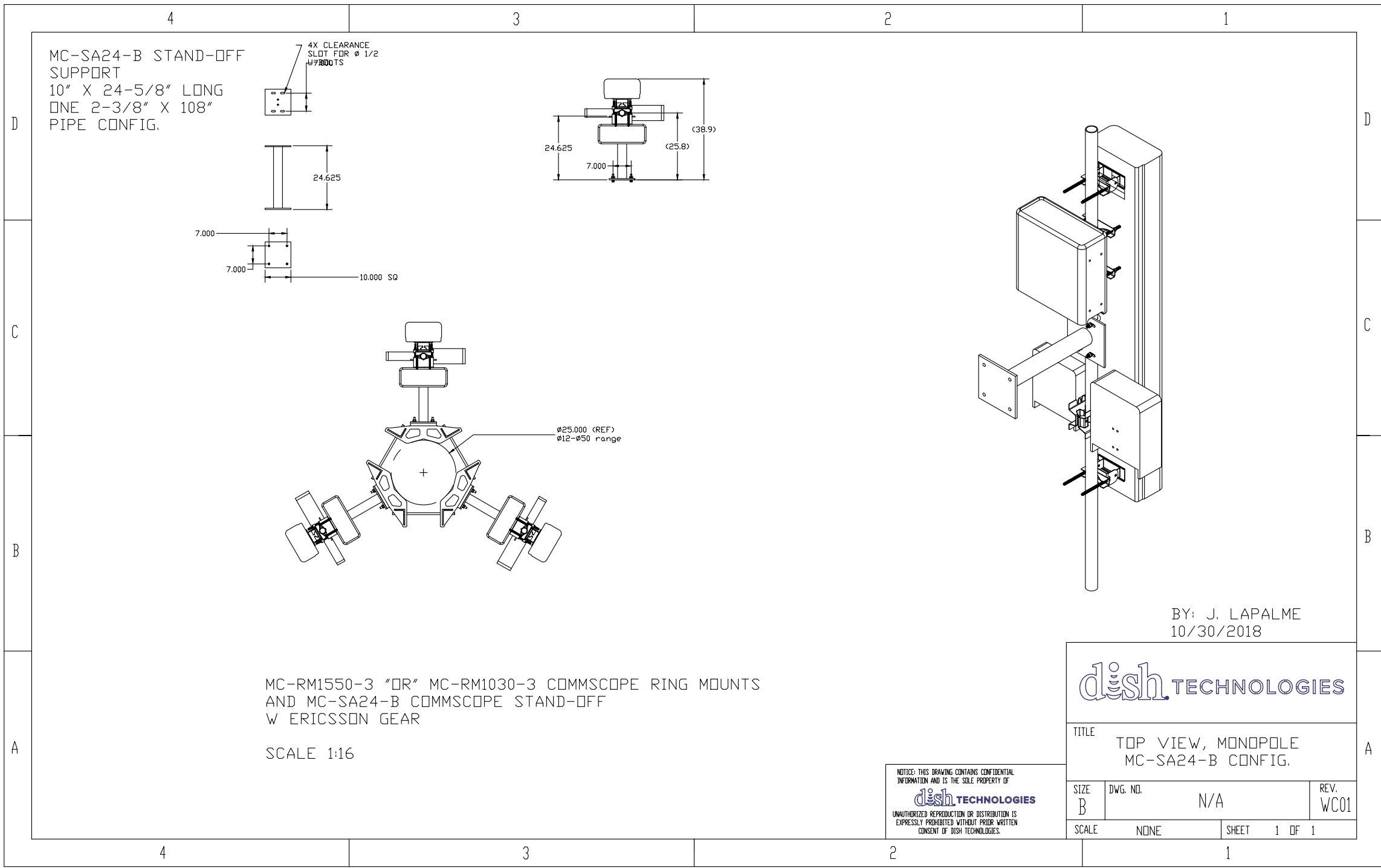
DISH WIRELESS SITE ID:  
 CT0100003A

TOWER OWNER SITE ID:  
 829013

SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
 ANTENNA MOUNT

SHEET NUMBER:  
 C3.1



BY: J. LAPALME  
 10/30/2018



TITLE  
 TOP VIEW, MONOPOLE  
 MC-SA24-B CONFIG.

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SIZE B	DWG. NO. N/A	REV. WC01
SCALE NONE	SHEET 1 OF 1	

**SUPPLEMENTAL INFORMATION**



PROJECT MANAGER:



PLANS PREPARED BY:



P. MARSHALL & ASSOCIATES

DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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 CCD18-021

DISH WIRELESS SITE ID:  
 CT0100003A

TOWER OWNER SITE ID:  
 829013

SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

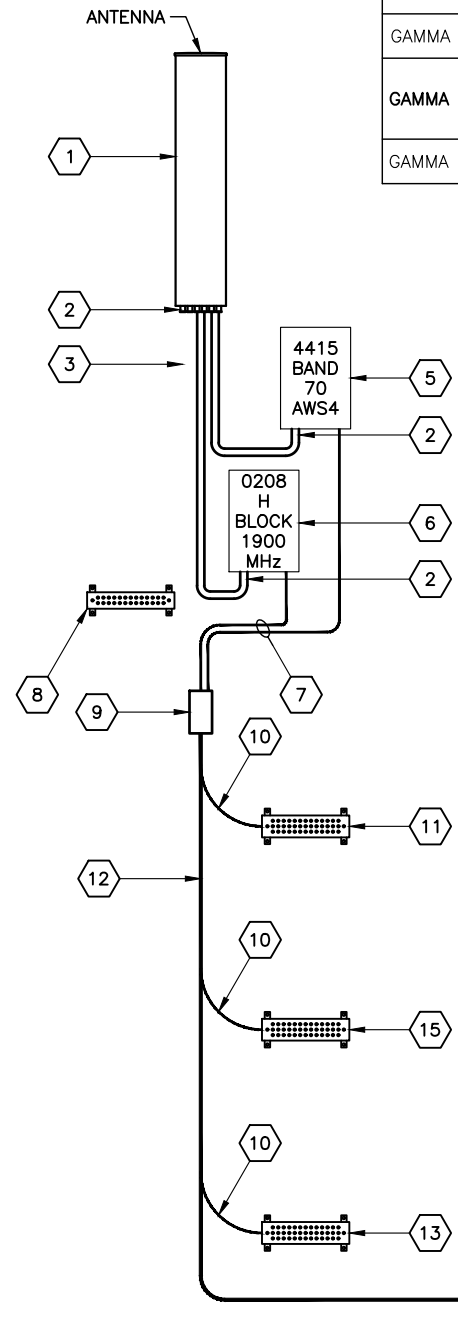
SHEET DESCRIPTION:  
 ANTENNA SCHEDULE  
 AND DIAGRAM

SHEET NUMBER:  
 1 OF 2

**ANTENNA SCHEDULE**

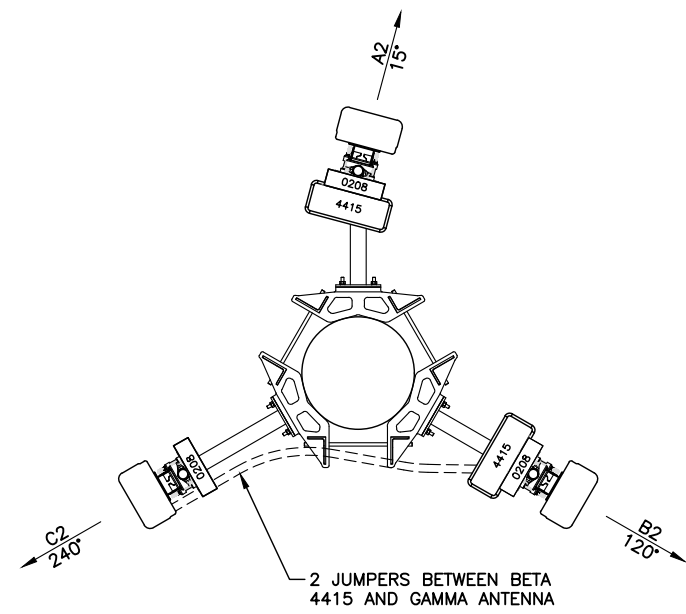
SECTOR	ANTENNA MANUFACTURER/MODEL NUMBER	PRIMARY FEEDER (COAX/HYBRID CABLES)	AZIMUTH	RAD CENTER	MECH D-TILT	ELECT D-TILT	RRU MANUFACTURER/MODEL NUMBER	RRU TECHNOLOGY	RRU LOCATION	PRIMARY FEEDER SIZE	JUMPER SIZE	JUMPER QTY	JUMPER LENGTH
ALPHA 1	N/A	N/A	N/A	N/A	N/A	N/A	ERICSSON 0208	H-BLOCK	SECTOR	N/A	1/2"	2	10'-0"
ALPHA 2	COMBA ODI2-065R18K-GQ	(1) 7/8"Ø HYBRID CABLE	15°	90'	0°	2100MHz - 2' 700MHz - 4'	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ALPHA 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BETA 1	N/A	N/A	N/A	N/A	N/A	N/A	ERICSSON 4415	BAND 70	SECTOR	N/A	1/2"	2	10'-0"
BETA 2	COMBA ODI2-065R18K-GQ	SHARED w/ ALPHA	120°	90'	0°	2100MHz - 2' 700MHz - 4'	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BETA3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GAMMA 1	N/A	N/A	N/A	N/A	N/A	N/A	ERICSSON 4415 (SHARED)	BAND 70	SECTOR	N/A	1/2"	2	10'-0"
GAMMA 2	COMBA ODI2-065R18K-GQ	SHARED w/ ALPHA	240°	90'	0°	2100MHz - 1' 700MHz - 4'	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GAMMA 3	N/A	BETA 4415 - GAMMA ANTENNA JUMPERS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
							ERICSSON 0208	H-BLOCK	SECTOR	N/A	1/2"	2	10'-0"
							N/A	N/A	N/A	N/A	N/A	N/A	N/A
							RRU 4415 SHARED FROM BETA	BAND 70	SECTOR	N/A	1/2"	2	30'-0"

**TYPICAL SECTOR**



**KEYED NOTES:**

- 1 ANTENNA - COMBA ODI-065R18K-GQ (DISH PROVIDED)
- 2 CLAMSHELL WEATHERPROOFING (CONTRACTOR PROVIDED)
- 3 PROPOSED (6 EA.) 1/2" COAX JUMPERS (LENGTH VARIES) FROM RRU'S TO ANTENNA (DISH PROVIDED)
- 4 NOT USED
- 5 RRU - 4415 BAND 70 AWS4 (DISH PROVIDED)
- 6 RRU - 0208 H BLOCK 1900 MHz (DISH PROVIDED)
- 7 DC/FIBER JUMPER CABLES (RRU TO ANTENNA)
- 8 SECTOR GROUND BUS BAR -12" x 2" x 1/4" (DISH PROVIDED)
- 9 FIBER/POWER BREAKOUT CYLINDER
- 10 GROUND KIT ON HYBRID CABLE
- 11 UPPER TOWER GROUND BUS BAR -12" x 4" x 1/4" (DISH PROVIDED)
- 12 HYBRID CABLE
- 13 LOWER TOWER GROUND BUS BAR -12" x 4" x 1/4" (DISH PROVIDED)
- 14 EQUIPMENT GROUND BUS BAR -12" x 4" x 1/4" (DISH PROVIDED)
- 15 ADD ADDITIONAL BUS BARS AND GROUND KITS ON TOWER IN 50, 100, OR 200 FOOT INCREMENTS BASED ON TOWER HEIGHT AND LIGHTNING ZONE REQUIREMENTS



WEIGHT (EXCLUDING MOUNTING HARDWARE)

19.84 lbs (9kg) 0208 H BLOCK 1900 MHz

46.0 lbs (21kg) 4415 BAND 70 AWS4

**SUPPLEMENTAL INFORMATION**

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

CABLE COLOR CODE

SHEET NUMBER:

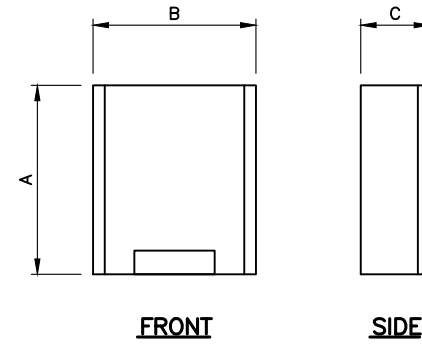
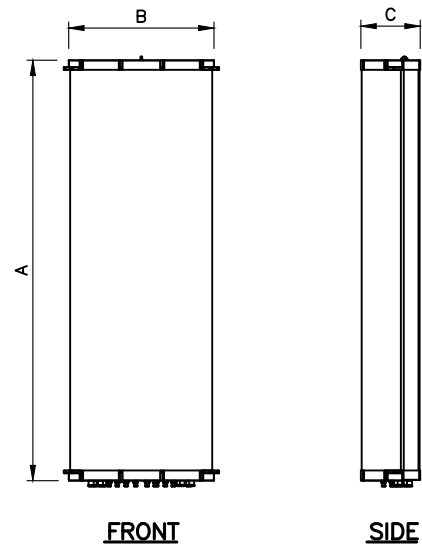
2 OF 2

Alpha Sector			
Port	Technology		Cable Color
	700 MHz	600 MHz	
(+) Port (TX)			
Antenna/RRH -1	White	White	Red
Antenna/RRH -2	White	White	Red
Antenna/RRH -3	White	White	Red
(-) Port (RX)			
Antenna/RRH -1	White	White	Red
Antenna/RRH -2	White	White	Red
Antenna/RRH -3	White	White	Red
Beta Sector			
(+) Port (TX)			
Antenna/RRH -1	White	White	Blue
Antenna/RRH -2	White	White	Blue
Antenna/RRH -3	White	White	Blue
(-) Port (RX)			
Antenna/RRH -1	White	White	Blue
Antenna/RRH -2	White	White	Blue
Antenna/RRH -3	White	White	Blue
Gamma Sector			
(+) Port (TX)			
Antenna/RRH -1	White	White	Green
Antenna/RRH -2	White	White	Green
Antenna/RRH -3	White	White	Green
(-) Port (RX)			
Antenna/RRH -1	White	White	Green
Antenna/RRH -2	White	White	Green
Antenna/RRH -3	White	White	Green

NOTE:  
 CONTRACTOR TO REFER TO, AND VALIDATE, THE LATEST RFDS PRIOR TO CONSTRUCTION.

CABLE COLOR CODE

SUPPLEMENTAL INFORMATION

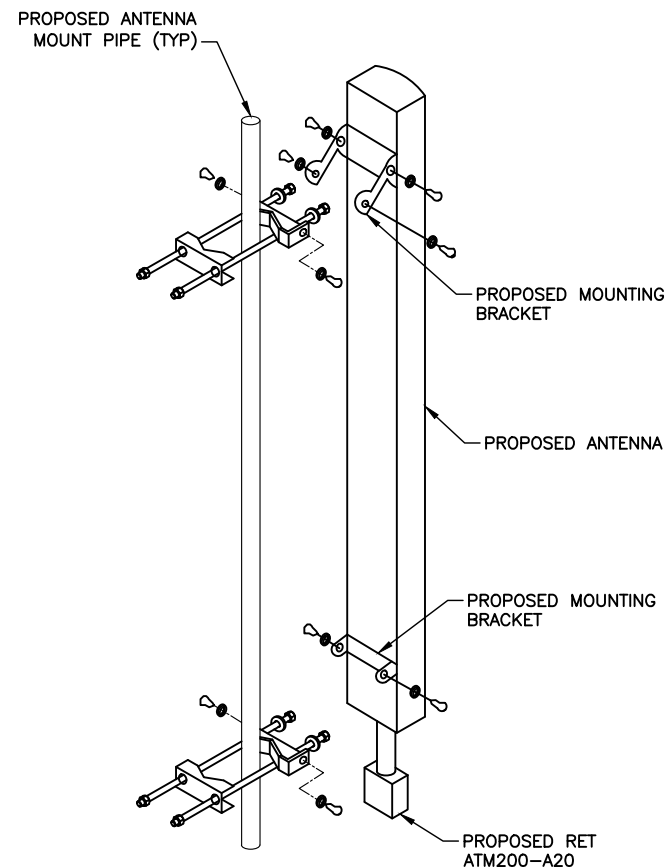
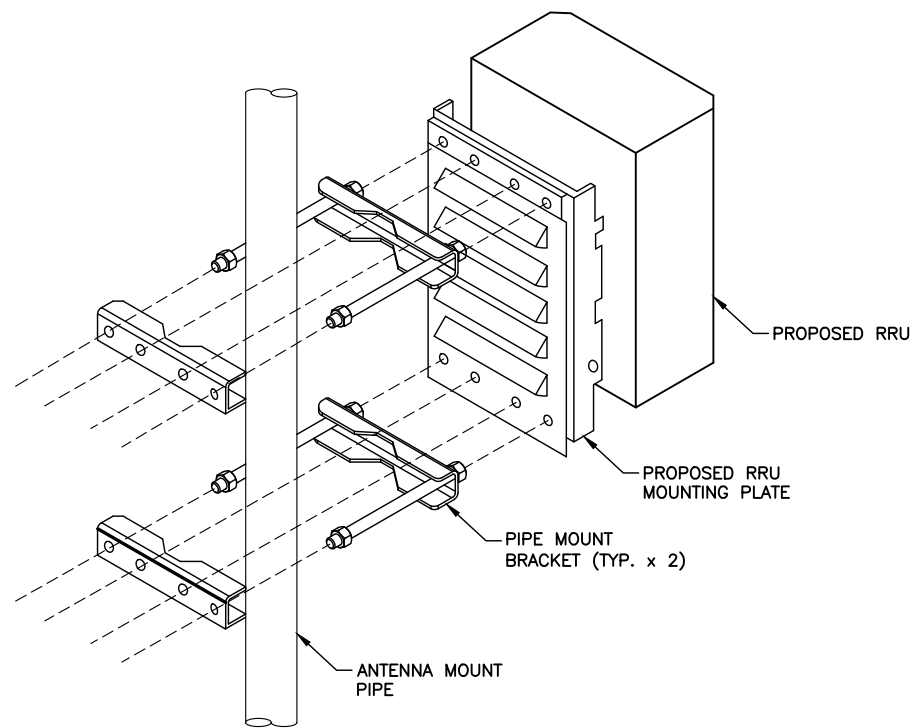


ANTENNA SPECIFICATIONS				
MODEL	LENGTH (A)	WIDTH (B)	DEPTH (C)	WEIGHT (lb)
COMBA - ODI-065R18K-GQ	53.5"	9.8"	2.4"	25.1
PANORAMA - WMMG-7-27	6.10"	6.10"	2.95"	2.43

RADIO SPECIFICATIONS				
MODEL	LENGTH (A)	WIDTH (B)	DEPTH (C)	WEIGHT (lb)
ERICSSON - RADIO 4415	16.54"	13.64"	4.84"	44.09
ERICSSON - RADIO 0208	13.82"	11.73"	3.31"	18.52

**ANTENNA SPECIFICATIONS**  
NOT TO SCALE

**RADIO SPECIFICATIONS**  
NOT TO SCALE

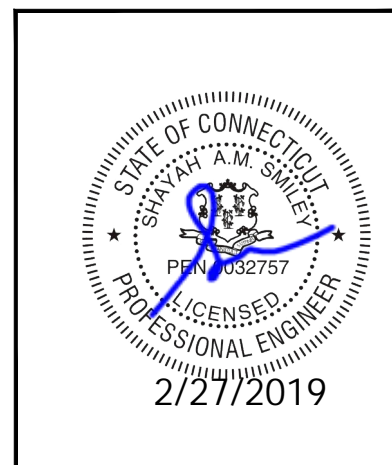


**NOTES:**

- ERICSSON VIA DISH WIRELESS SUPPLIES RRU, RRU PIPE-MOUNTING BRACKET. SUBCONTRACTOR SHALL INSTALL ALL MOUNTING HARDWARE INCLUDING RRU PIPE-MOUNTING BRACKET.
- NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED

**REMOTE RADIO UNIT (RRU) PIPE MOUNT**  
NOT TO SCALE

**ANTENNA MOUNTING**  
NOT TO SCALE



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

SUBMITTALS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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PM&A PROJECT NUMBER:  
CCD18-021

DISH WIRELESS SITE ID:  
CT0100003A

TOWER OWNER SITE ID:  
829013

SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
EQUIPMENT DETAILS

SHEET NUMBER:  
C-4

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED: \_\_\_\_\_

SUBMITTALS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER: CCD18-021

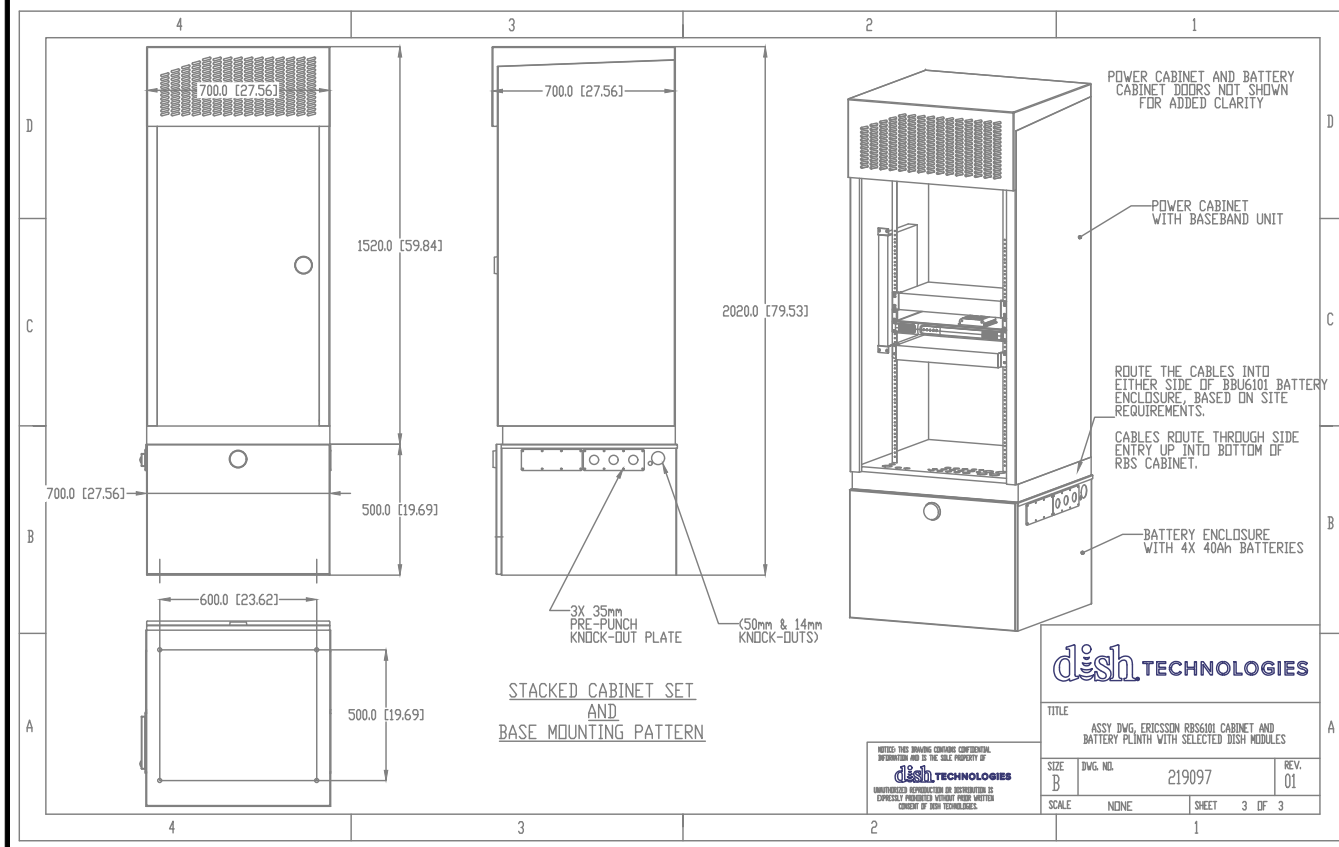
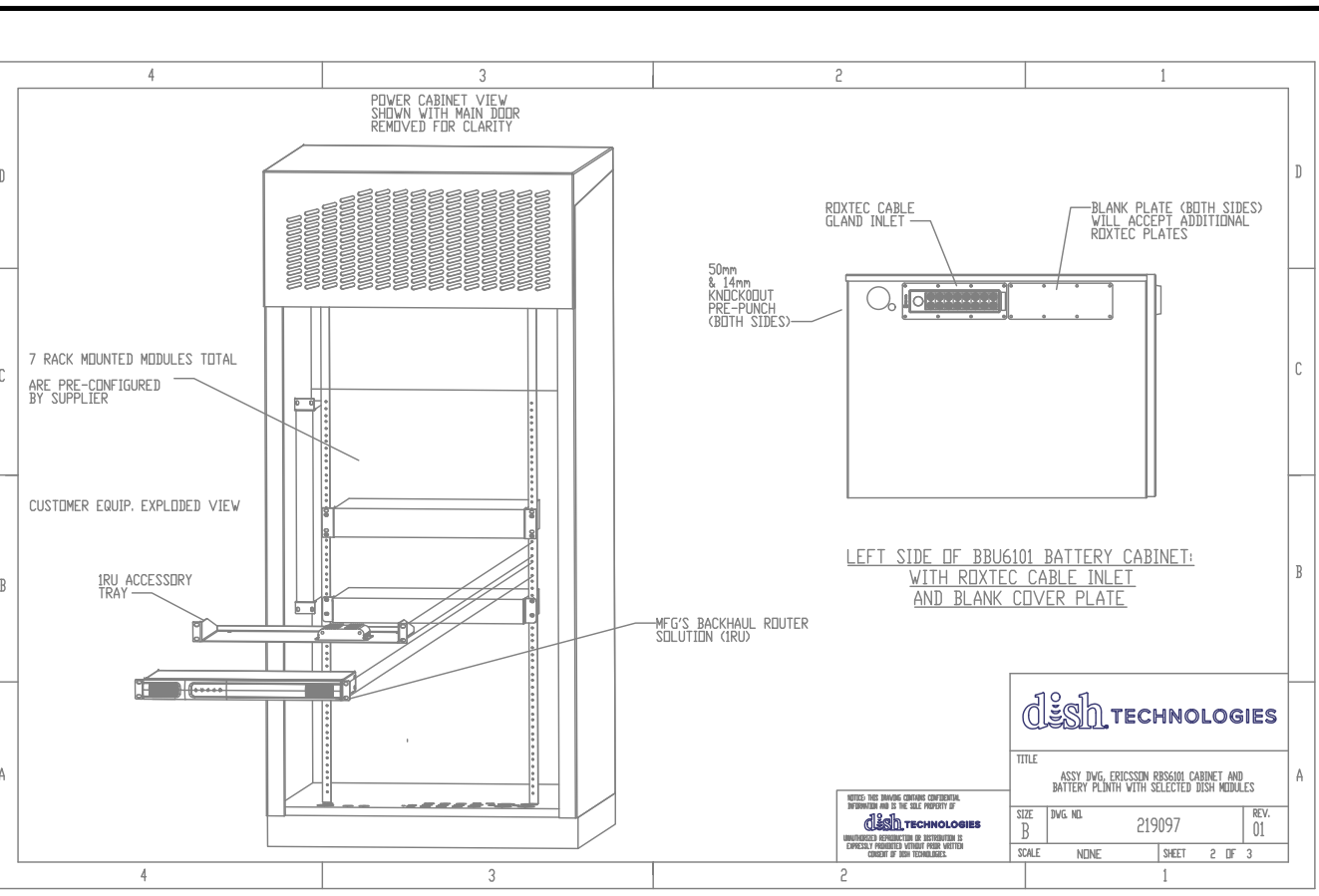
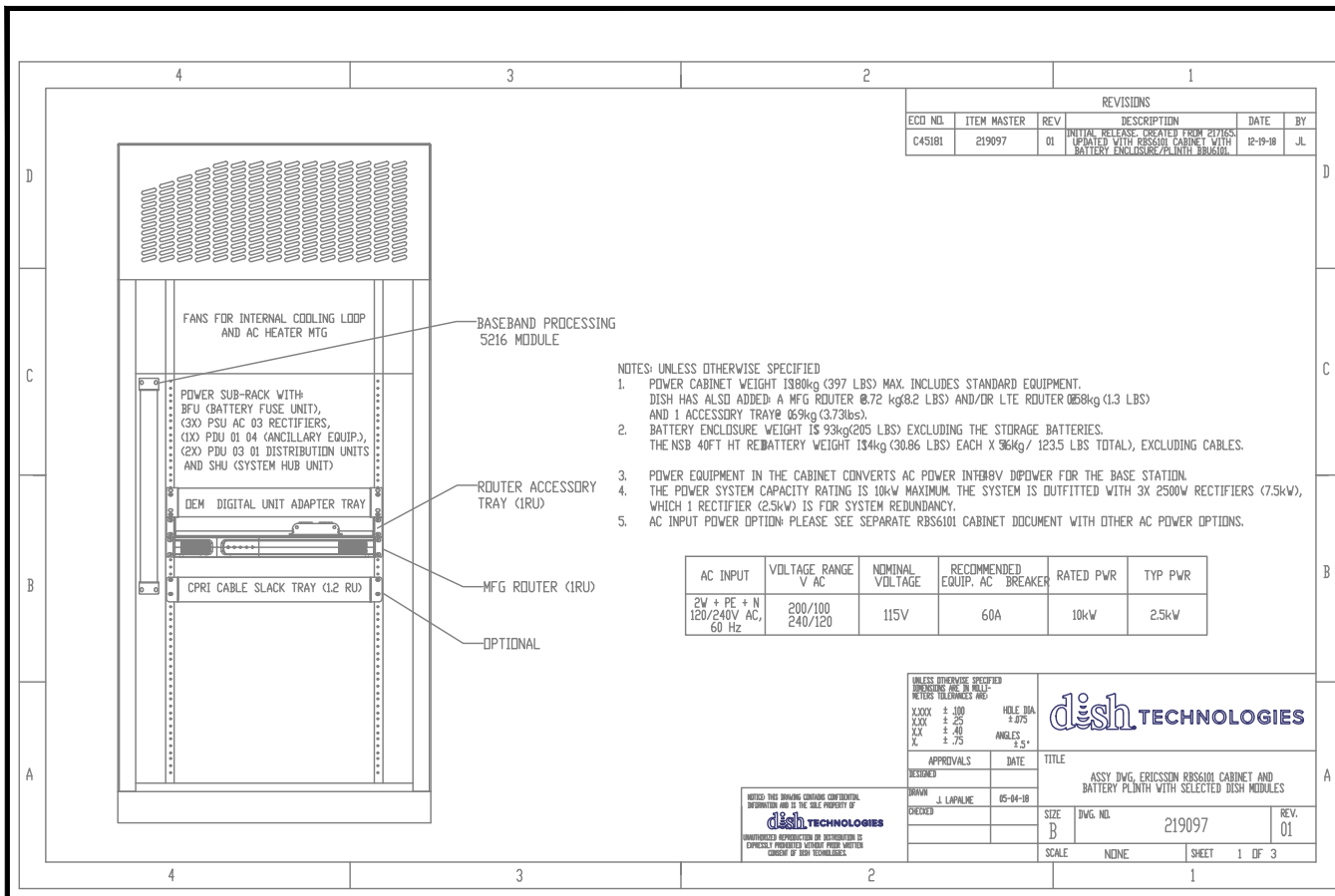
DISH WIRELESS SITE ID: CT0100003A

TOWER OWNER SITE ID: 829013

SITE ADDRESS: 467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION: EQUIPMENT DETAILS

SHEET NUMBER: C-5



**Hoffman** P/N: A24R248 Contractor: Type 3R

**Screw-Cover, Type 3R**

**Features**

- Drip shield top and seam-free sides, front and back
- Slip-on removable cover fastened with plated steel screws along bottom edge
- Handles on larger sizes (see table)
- Embossed mounting holes on back of enclosure
- Knockouts in bottom of 16 and 14 gauge enclosures
- Provision for padlocking
- No gasketing

**Specifications**

- 16, 14 or 12 gauge galvanized steel

**Finish**

ANSI 61 gray polyester powder paint finish inside and out over pretreated surfaces.

**Accessories**

See also Accessories: Industrial Corrosion Inhibitors, Electric Heater, Grounding Device, Mounting Bracket Kit, Touch-Up Paint, Bulletin: A9053

**Industry Standards**

UL 50, 50E Listed; Type 3R; File No. E27525  
 cUL Listed per CSA C22.2 No 94; Type 3R; File No. E27525

**Application**

Use this enclosure with or without knockouts in outdoor applications as a wiring or junction box.

Catalog Number	A x B x C (in./mm)	Body Style	D (in./mm)	Mounting H (in./mm)	Mounting J (in./mm)	Knockout Pattern
A24R248	24.00 x 24.00 x 8.00 610 x 610 x 203	C	12.19 310	13.00 330	1.12 28	A-B-C-E-F-G-H-I

Body Style C

DOOR HANDLE

PADLOCK STAPLE

HOFFMAN BOX DETAILS  
NOT TO SCALE

SUPPLEMENTAL INFORMATION



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



P. MARSHALL & ASSOCIATES

DRAWN BY: JDJ

CHECKED BY: MSB

APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

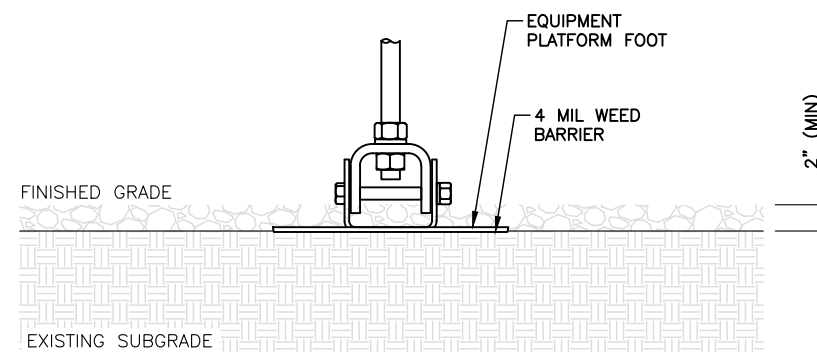
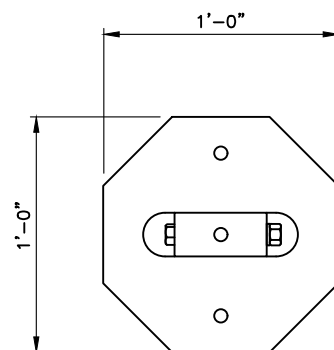
CIVIL DETAILS

SHEET NUMBER:

C-6

CABINET	DIMENSIONS	WEIGHT FULLY LOADED
CABINET	79.53"Hx27.56"Wx27.56"D	738.7 lbs
DISH	3'-0"φ	28.0 lbs

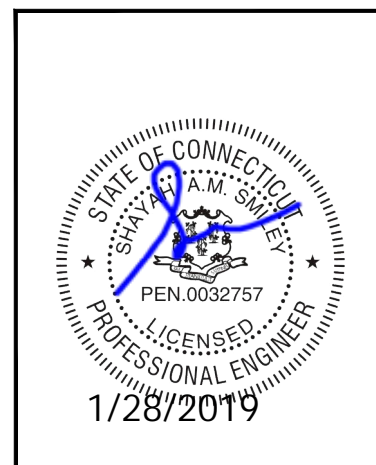
**EQUIPMENT LOADING**  
NOT TO SCALE

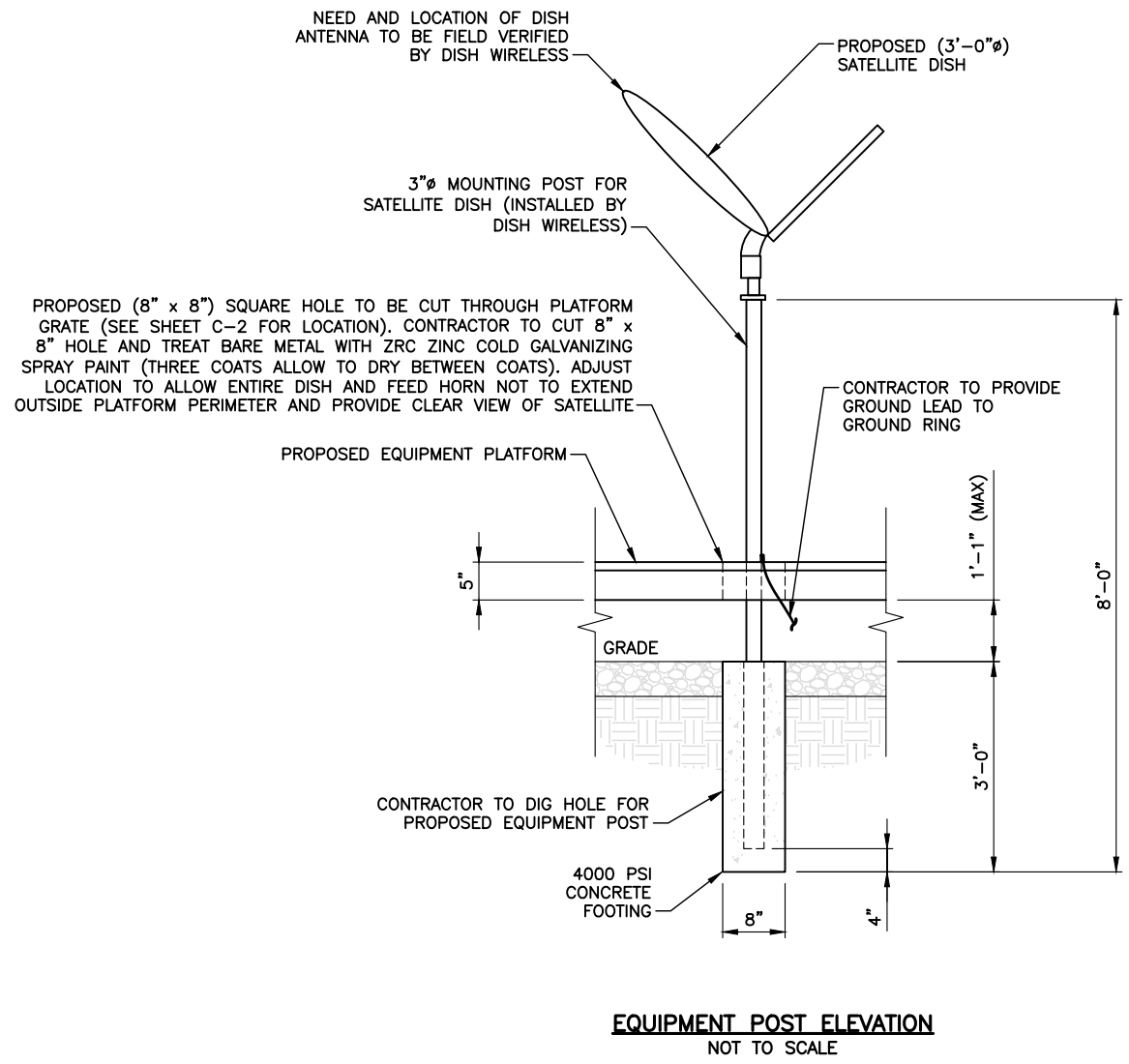


**NOTE:**

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 CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. TO BE INSTALLED AS ONE SHEET 8'-0" x 8'-0" UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)

**EQUIPMENT PLATFORM FOOT DETAIL**  
NOT TO SCALE





PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
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ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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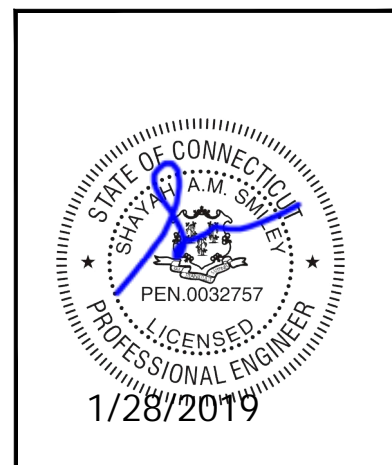
DISH WIRELESS SITE ID:  
 CT0100003A

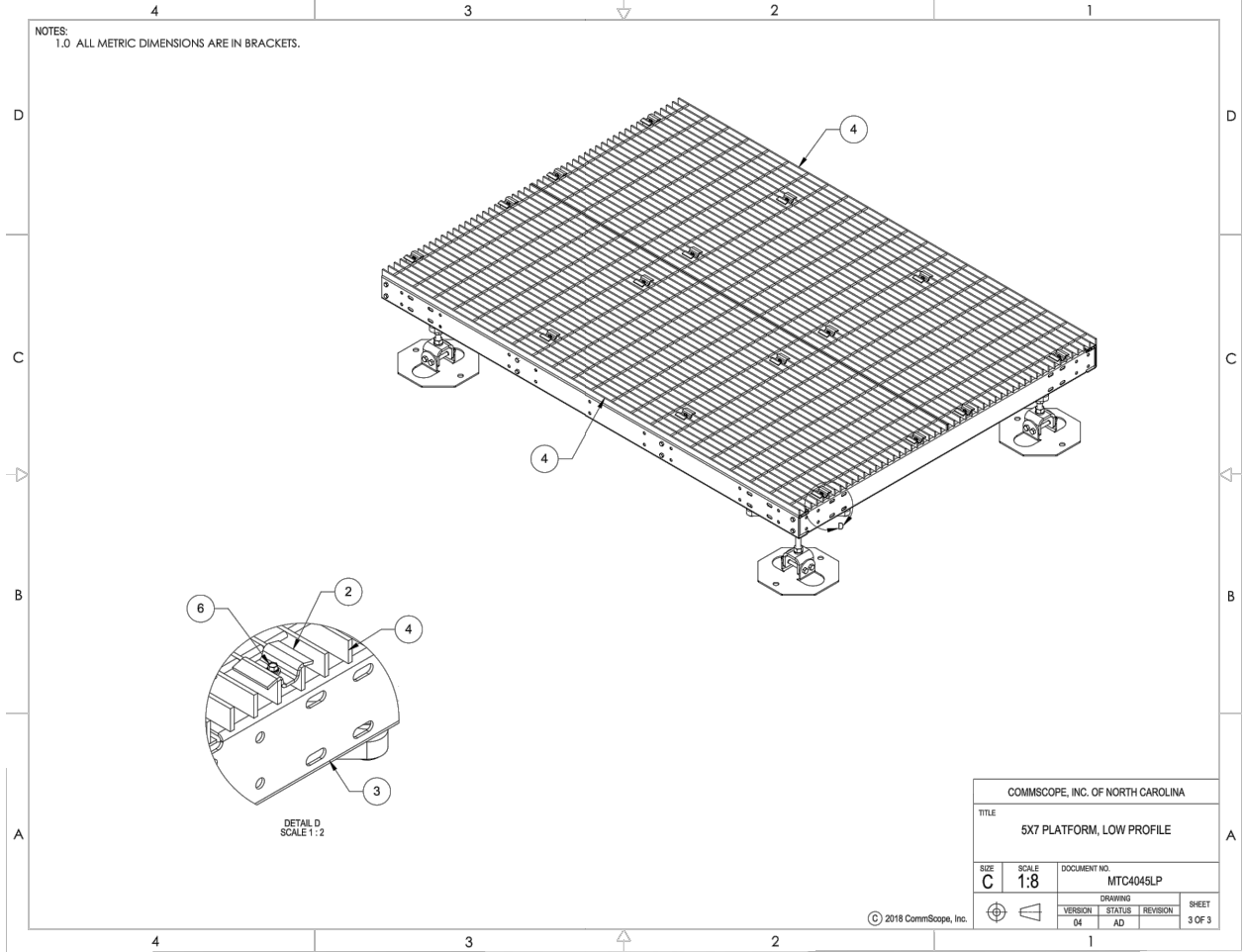
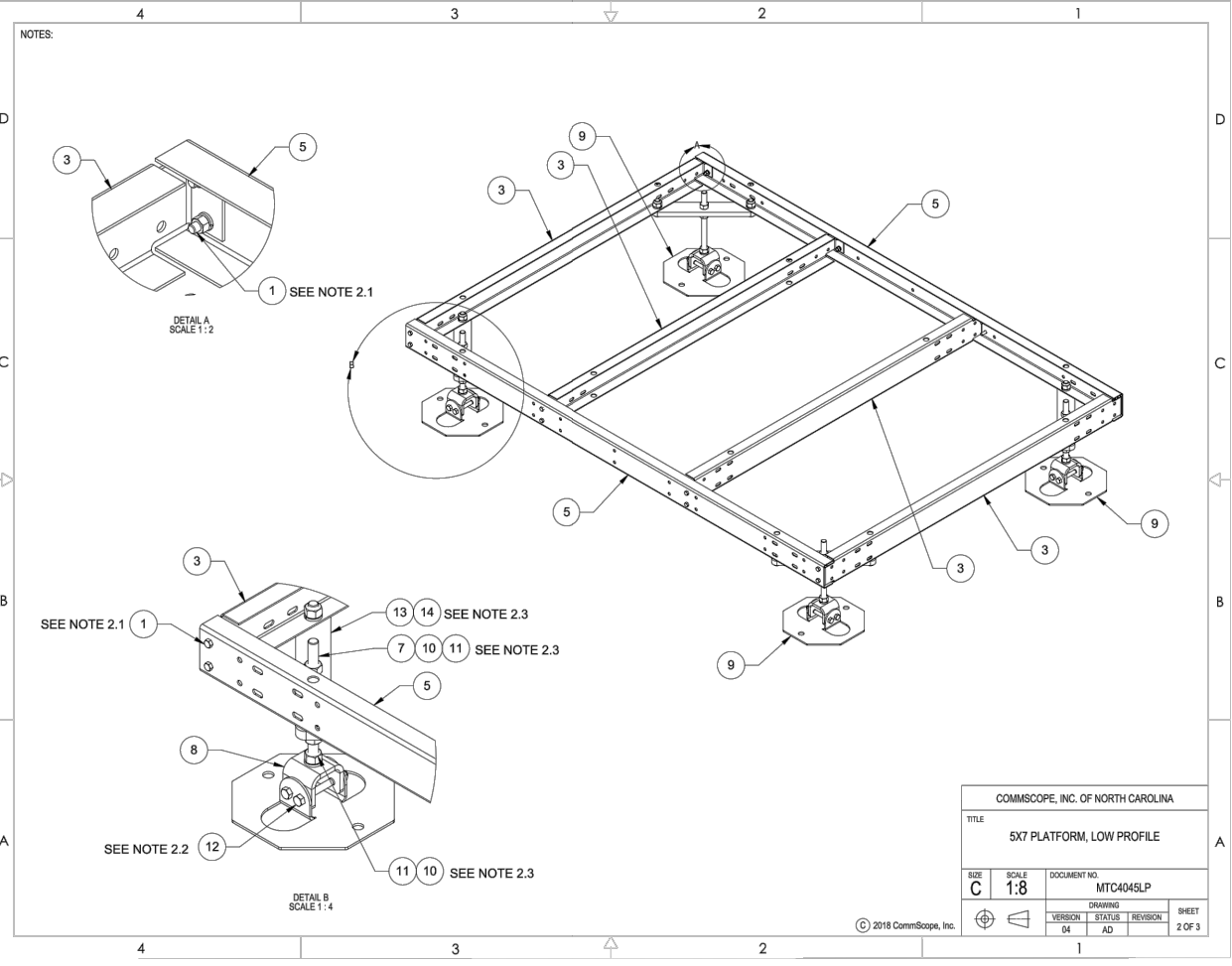
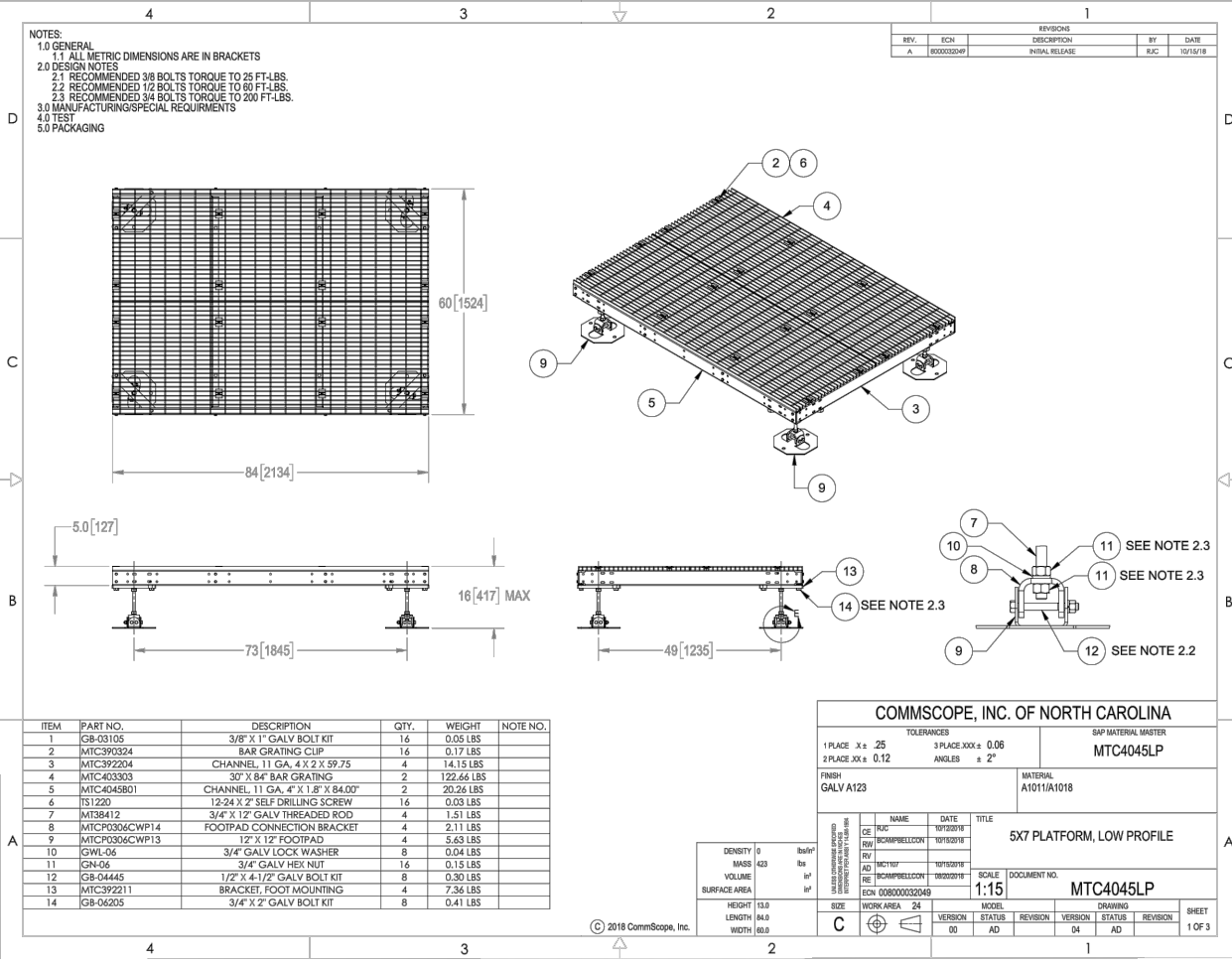
TOWER OWNER SITE ID:  
 829013

SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
 CIVIL DETAILS

SHEET NUMBER:  
 C-7





**SUPPLEMENTAL INFORMATION**

PLANS PREPARED FOR:

PROJECT MANAGER:

PLANS PREPARED BY:

P. MARSHALL & ASSOCIATES

DRAWN BY: JDJ

CHECKED BY: MSB

APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:  
 CCD18-021

DISH WIRELESS SITE ID:  
 CT0100003A

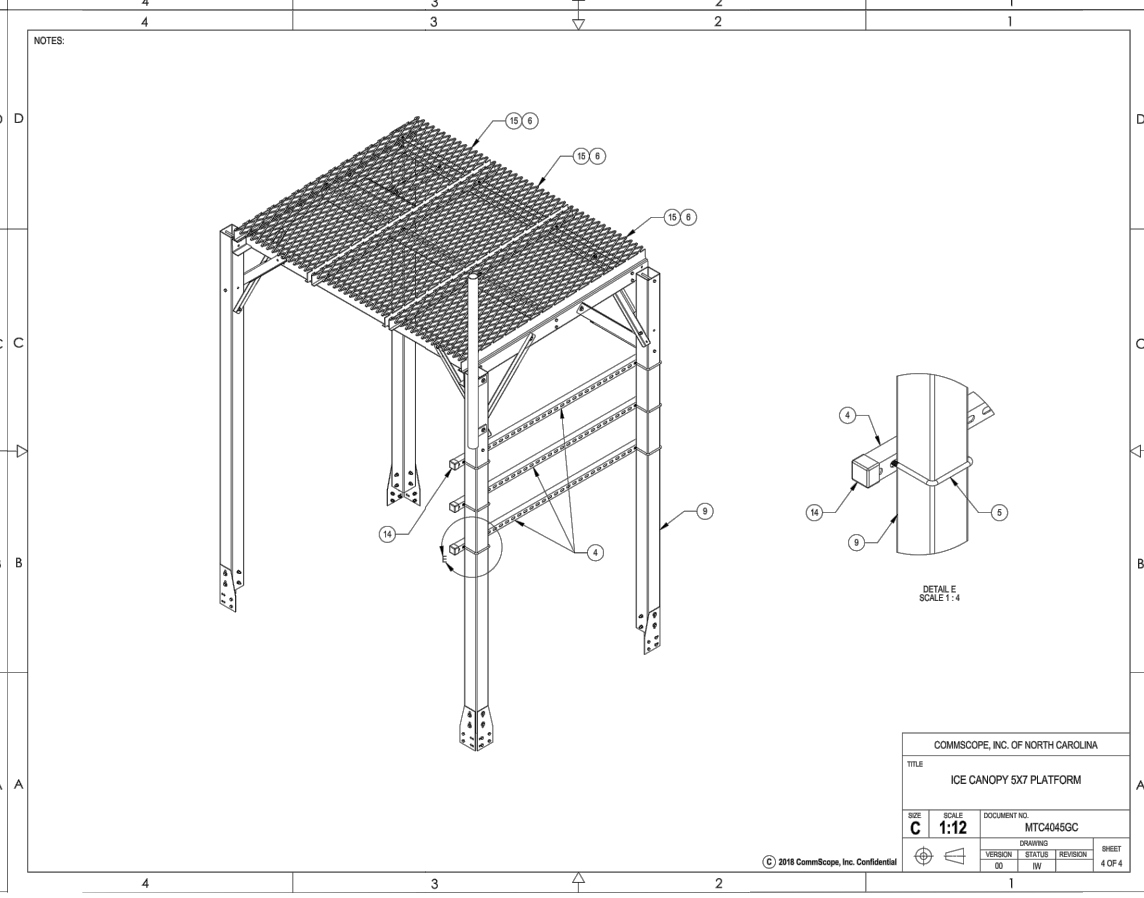
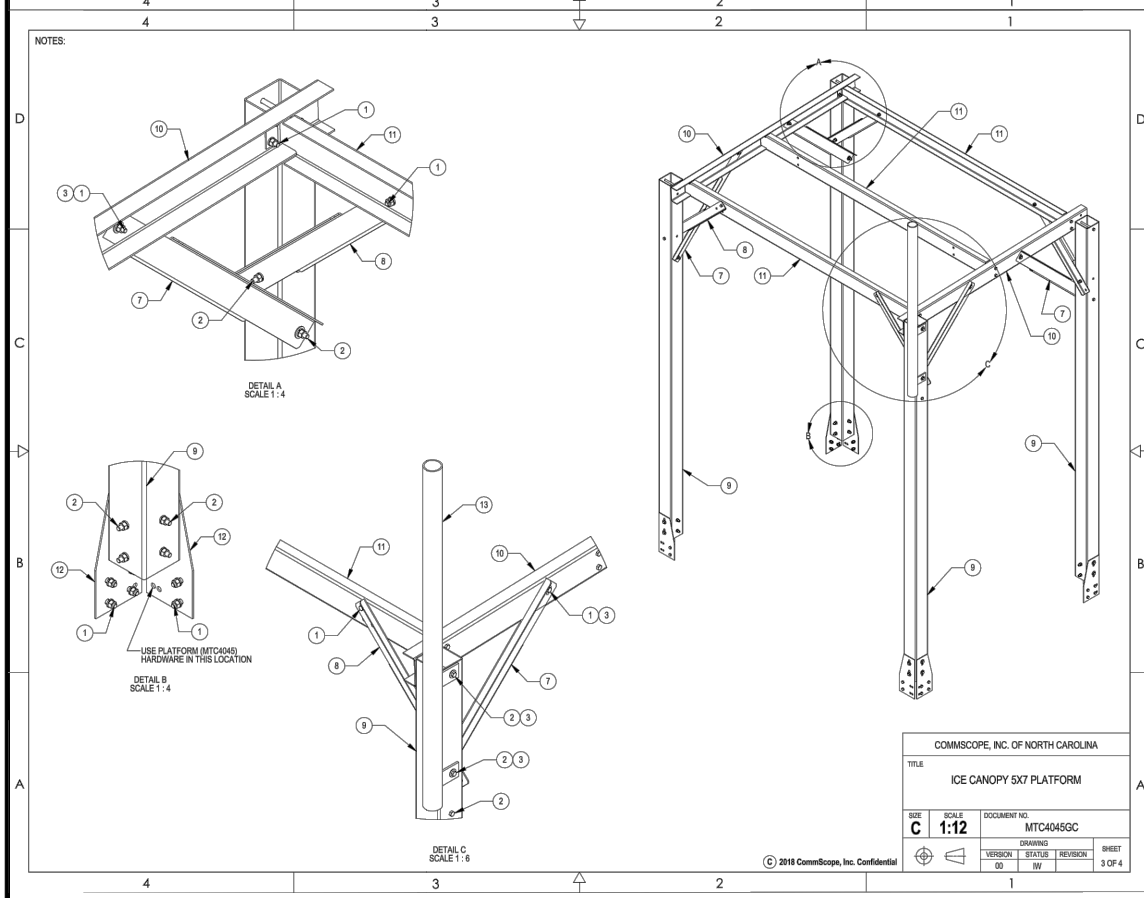
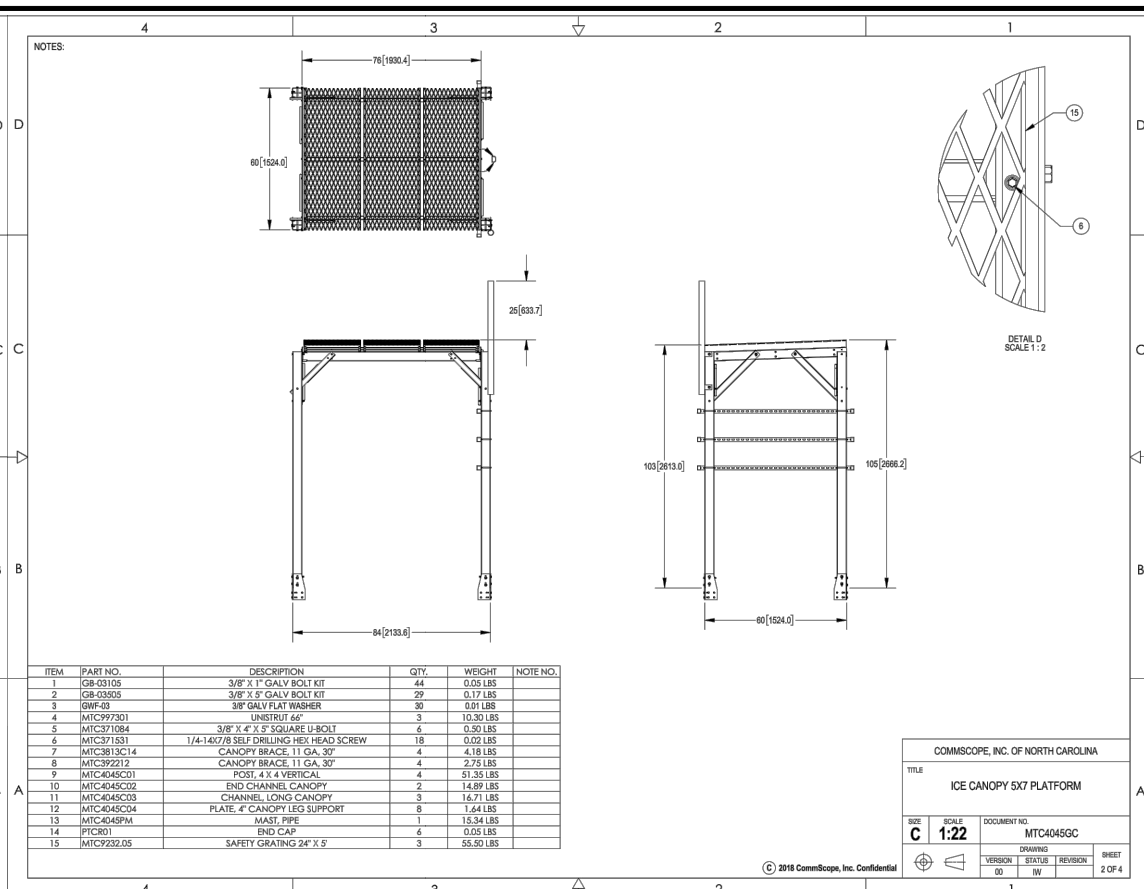
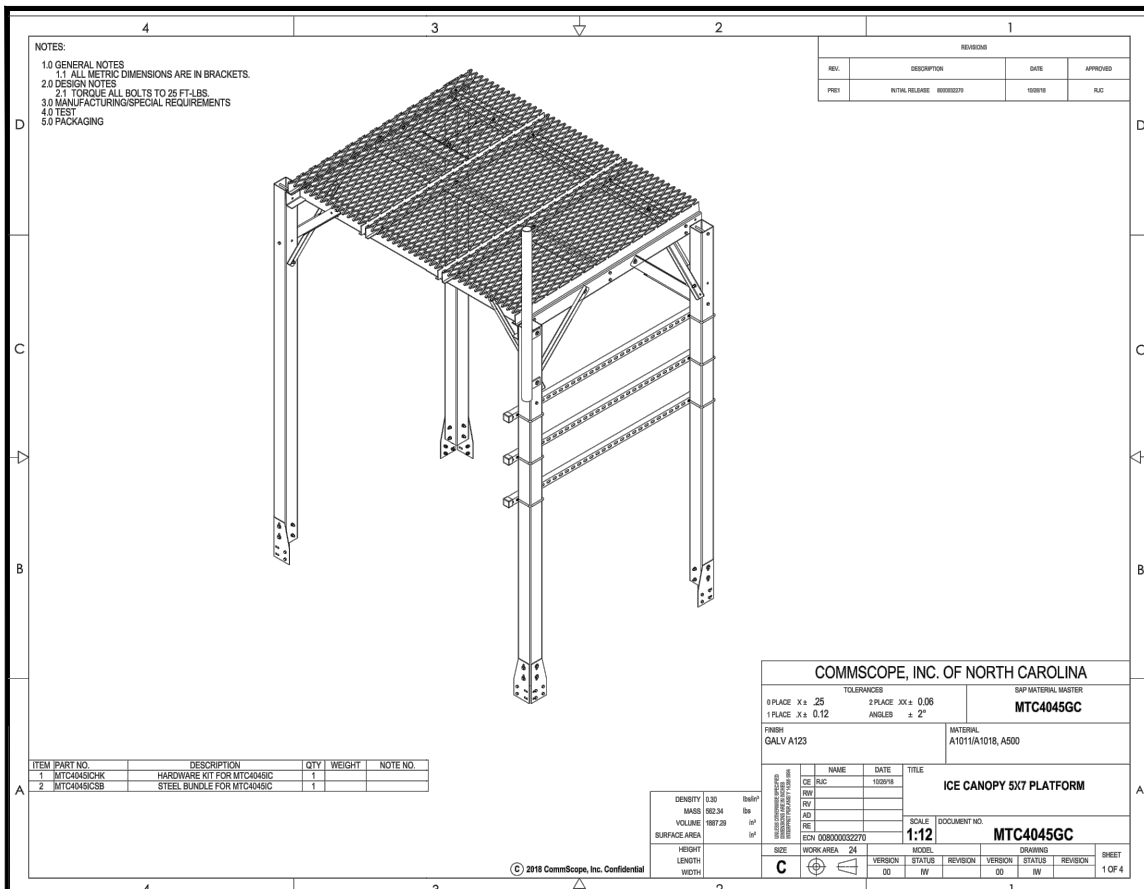
TOWER OWNER SITE ID:  
 829013

SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
 PLATFORM DETAILS

SHEET NUMBER:  
 C-8





**SUPPLEMENTAL INFORMATION**

PLANS PREPARED FOR:

**dish WIRELESS**

PROJECT MANAGER:

**CROWN CASTLE**

PLANS PREPARED BY:

**PM&A**  
 P. MARSHALL & ASSOCIATES

DRAWN BY: JDJ

CHECKED BY: MSB

APPROVED: \_\_\_\_\_

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER: CCD18-021

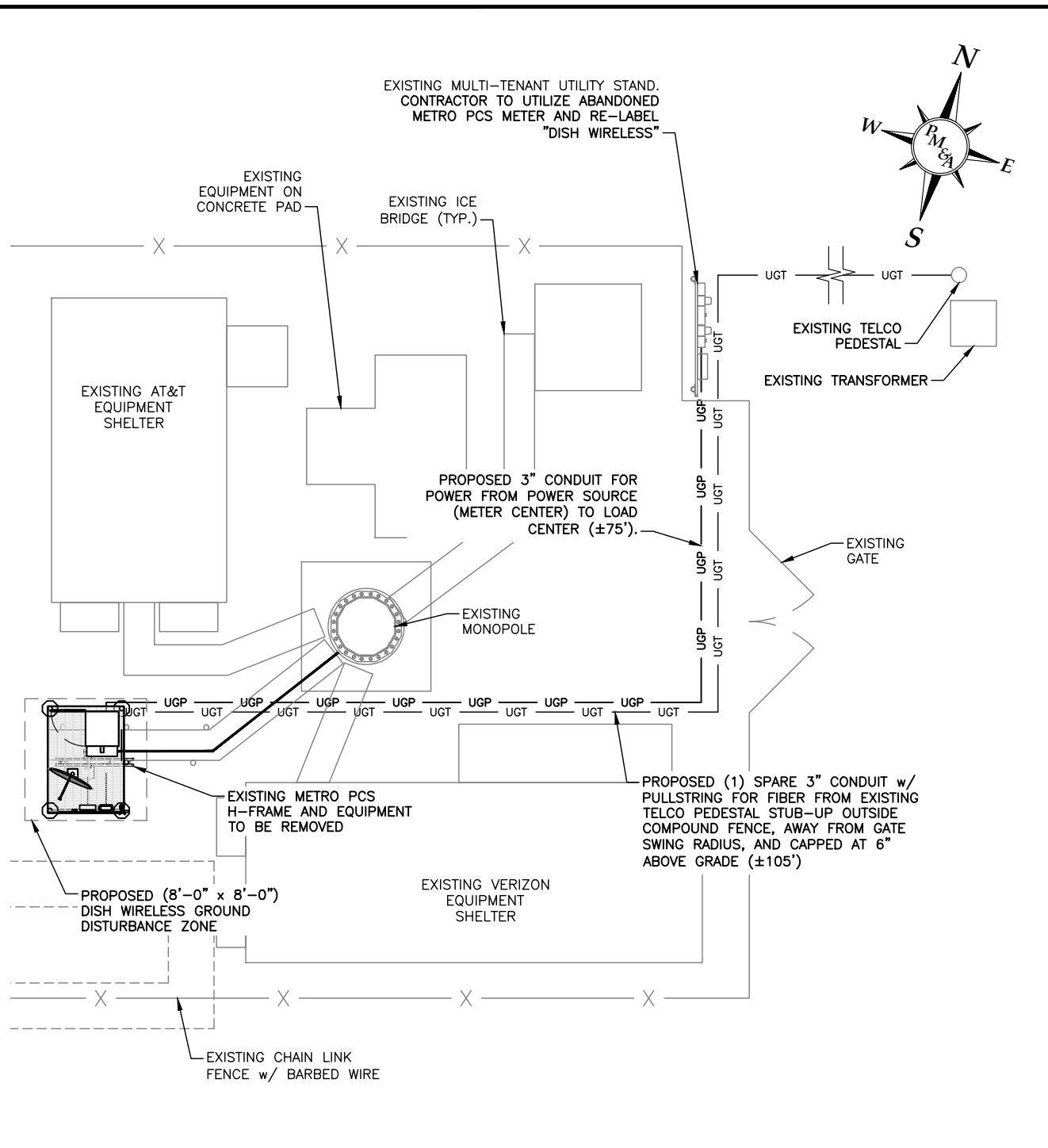
DISH WIRELESS SITE ID: CT0100003A

TOWER OWNER SITE ID: 829013

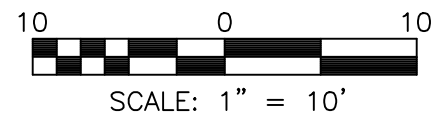
SITE ADDRESS: 467 SOUTH QUAKER LANE WEST HARTFORD, CT 06110

SHEET DESCRIPTION: PLATFORM CANOPY DETAILS

SHEET NUMBER: C-8.1

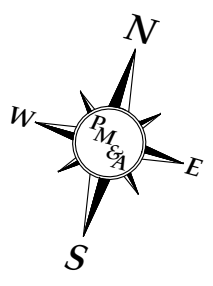


**COMPOUND UTILITY PLAN**  
SCALE: 1" = 10'

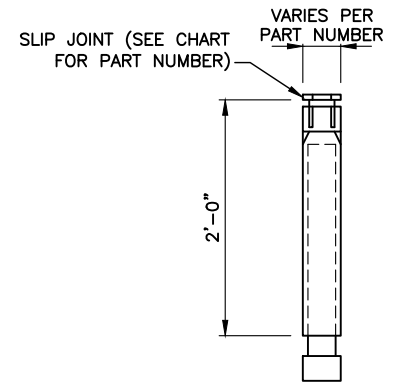


- NOTES:**
- CONTRACTOR SHALL ARRANGE CONDUITS, WIRING, EQUIPMENT AND OTHER WORK AS SHOWN ON THIS PLAN AND SHEET E-2, PROVIDING REQUIRED CLEARANCES AND ACCESS PER NEC. WHERE FIELD ADJUSTMENTS ARE NECESSARY, COORDINATE WITH SITE CM AND DISH WIRELESS.
  - PULL BOX(ES) ARE REQUIRED WHEN THE EQUIVALENT OF THREE 90 DEGREE BENDS MAX, INCLUDING THE BENDS LOCATED AT AN OUTLET OR FITTING, ARE USED BETWEEN PULL POINTS; 150 FEET OF CONDUIT LENGTH IS EQUIVALENT TO AN ADDITIONAL 90 DEGREES.

- UTILITY NOTES:**
- CONTRACTOR TO COORDINATE SERVICE ROUTING & CONNECTION WITH LOCAL TELEPHONE AND POWER COMPANIES.
  - CONTRACTOR SHALL FOLLOW LOCAL UTILITY COMPANY STANDARDS WHEN CONNECTING TO UTILITIES, PROVIDING REQUIRED CLEARANCES AND ACCESS PER NEC. LOCAL AND STATE BUILDING CODES SHALL GOVERN IN CASES WHERE UTILITY CO. STANDARDS DIFFER.
  - CONTRACTOR TO PROVIDE SPARE 3" TELCO CONDUIT W/ PULLSTRING FOR POTENTIAL FUTURE FIBER APPLICATIONS.

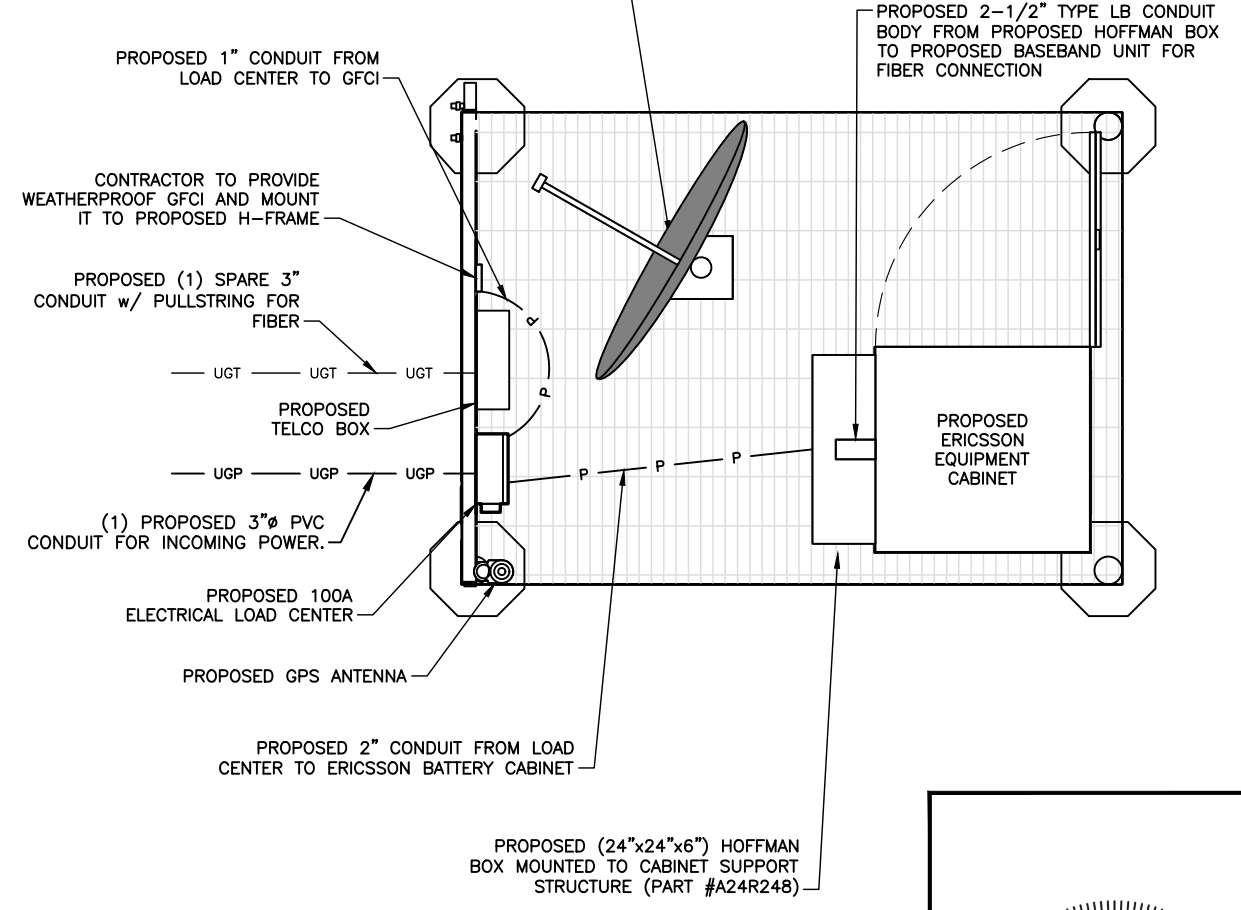


**NOTE:**  
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.



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"

PROPOSED (8" x 8") HOLE TO BE CUT IN PROPOSED PLATFORM GRATE FOR SATELLITE DISH (INSTALLED BY DISH WIRELESS). CONTRACTOR SHALL CUT 8" x 8" HOLE AND TREAT BARE METAL w/ THREE COATS OF ZRC ZINC COLD GALVANIZING SPRAY PAINT (ALLOW TO DRY BETWEEN COATS). ADJUST LOCATION TO ALLOW ENTIRE DISH AND FEED HORN TO NOT EXTEND OUTSIDE PLATFORM PERIMETER AND PROVIDE CLEAR VIEW OF SATELLITE

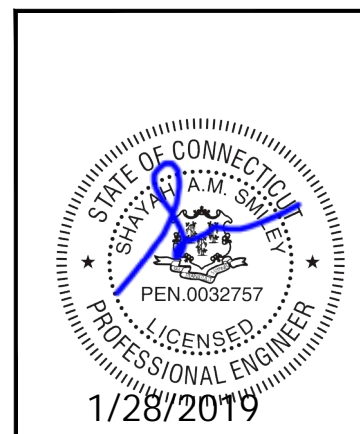


**EQUIPMENT PLATFORM UTILITY PLAN**  
NOT TO SCALE

**NOTES:**

- ELECTRICAL ROUTING IS A SCHEMATIC. THE CONTRACTOR SHALL VERIFY EQUIPMENT LOCATION AND ELECTRICAL ROUTING PRIOR TO INSTALLATION.

**INSTALLER NOTE:**  
SCHEMATIC LAYOUT ONLY. REFER TO COMPOUND PLAN DRAWING FOR EXACT EQUIPMENT LAYOUT.



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:  
CCD18-021

DISH WIRELESS SITE ID:  
CT0100003A

TOWER OWNER SITE ID:  
829013

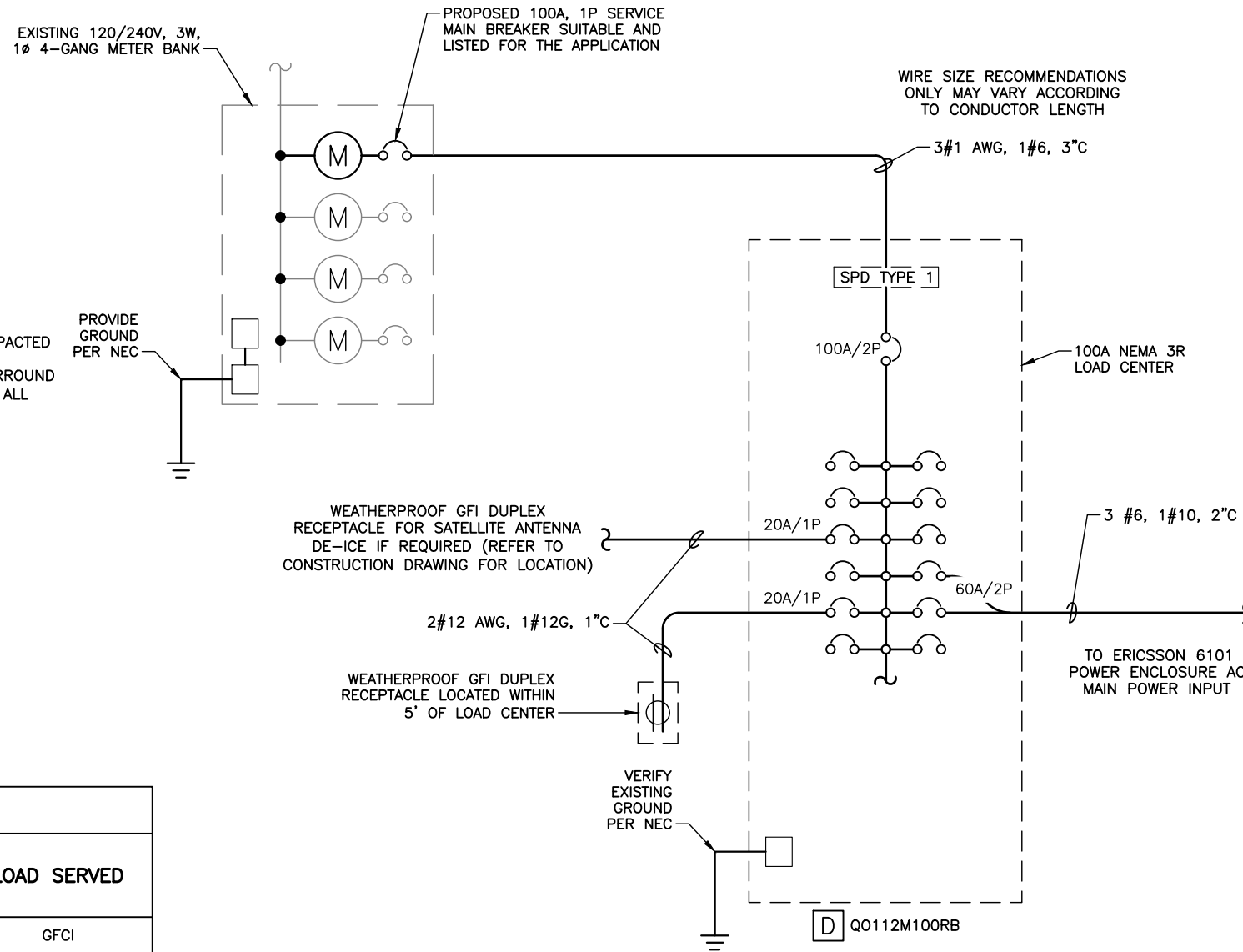
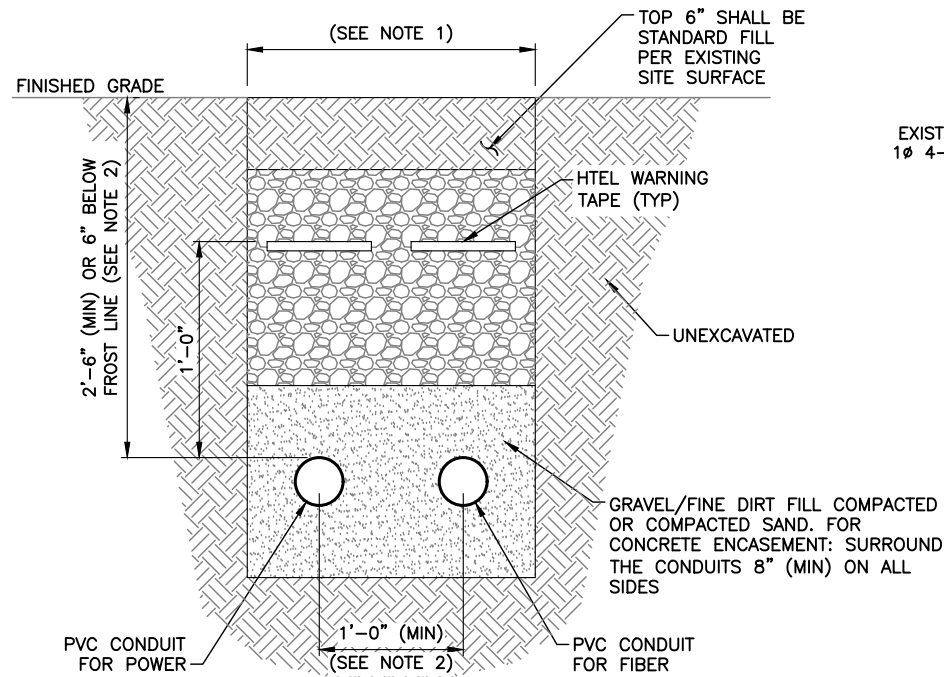
SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
UTILITY PLANS

SHEET NUMBER:  
E-1

**CONDUIT TRENCH NOTE:**

1. WIDTH OF TRENCH AS REQUIRED BY UTILITY COMPANY OR PER QUANTITY OF CONDUITS AND LOCAL CODE REQUIREMENTS
2. VERIFY DISTANCE PER LOCAL CODE, UTILITY COMPANY, AND CLIENT REQUIREMENTS



**PROPOSED 100A, 120/240V, POWER PANEL**

LOAD SERVED	VOLT AMPERES (WATTS)		TRIP	CKT#	PHASE		CKT#	TRIP	VOLT AMPERES (WATTS)		LOAD SERVED
	L1	L2			A	B			L1	L2	
RECTIFIER	2000		60	1	A	2	20	180		GFCI	
		2000		3	B	4	20		180	GFCI	
SPARE	-		-	5	A	6	-	-		SPARE	
SPARE		-	-	7	B	8	-	-		SPARE	
SPARE	-		-	9	A	10	-	-		SPARE	
SPARE		-	-	11	B	12	-	-		SPARE	
VOLT AMPS	2000	2000						180	180	VOLT AMPS	
L1 VOLT AMPERES				2180		2180	L2 VOLT AMPERES				
L1 AMPS				18.2		18.2	L2 AMPS				
				18.2			MAX AMPS				
				22.8			MAX AMPS x125%				

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

**SUBMITTALS:**

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

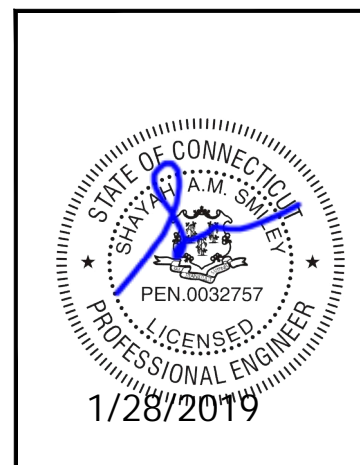
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

UTILITY PLANS

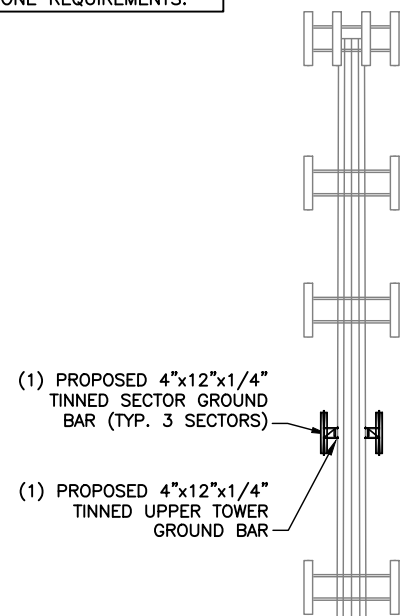
SHEET NUMBER:

E-2





NOTE: ADD MID TOWER GROUND BUS BAR WHERE APPLICABLE PER LIGHTNING ZONE REQUIREMENTS.

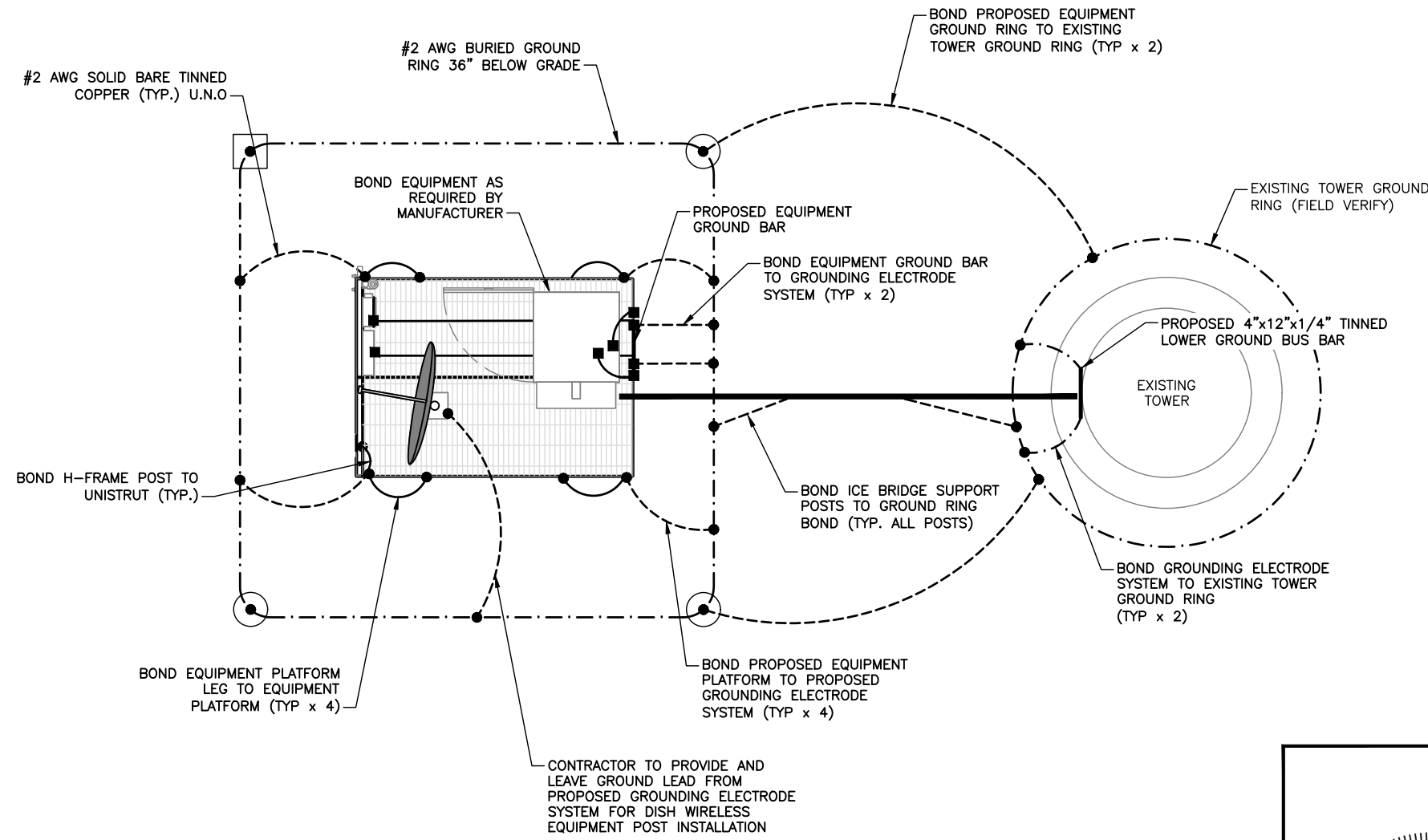


**TOWER ELEVATION GROUNDING**  
NOT TO SCALE

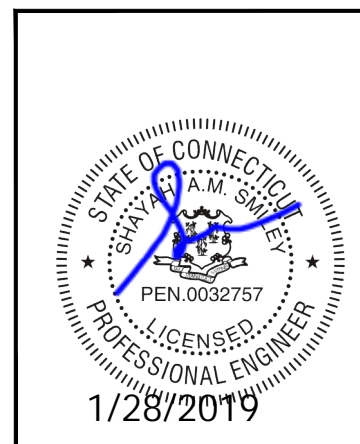
LEGEND	
—	GROUNDING CONDUCTOR — ABOVE GRADE
- - - -	GROUNDING CONDUCTOR — BELOW GRADE
— · —	GROUNDING ELECTRODE SYSTEM
•	EXOTHERMIC CONNECTION
■	MECHANICAL CONNECTION
□	GROUND INSPECTION/TEST WELL
⊙	GROUND ROD

**INSTALLER NOTE:**  
SCHEMATIC LAYOUT ONLY. REFER TO SHEETS C-1 AND C-2 FOR EXACT EQUIPMENT LAYOUT, SIZES AND LOCATIONS OF ICE BRIDGE AND ANTENNA SUPPORT STRUCTURE.

**TOWER GROUNDING NOTE:**  
ALL CONNECTIONS TO BE MECHANICAL ON TOWER. EXOTHERMIC WELDS ARE ONLY ALLOWED AT GRADE.



**TYPICAL GROUNDING PLAN SCHEMATIC**  
NOT TO SCALE



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

SUBMITTALS:				
DESCRIPTION	DATE	BY	REV	
ISSUED FOR REVIEW	12/07/18	JDJ	A	
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0	

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CCD18-021

DISH WIRELESS SITE ID:  
CT0100003A

TOWER OWNER SITE ID:  
829013

SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
GROUNDING NOTES  
AND DETAILS

SHEET NUMBER:  
G-1



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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 CT0100003A

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SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

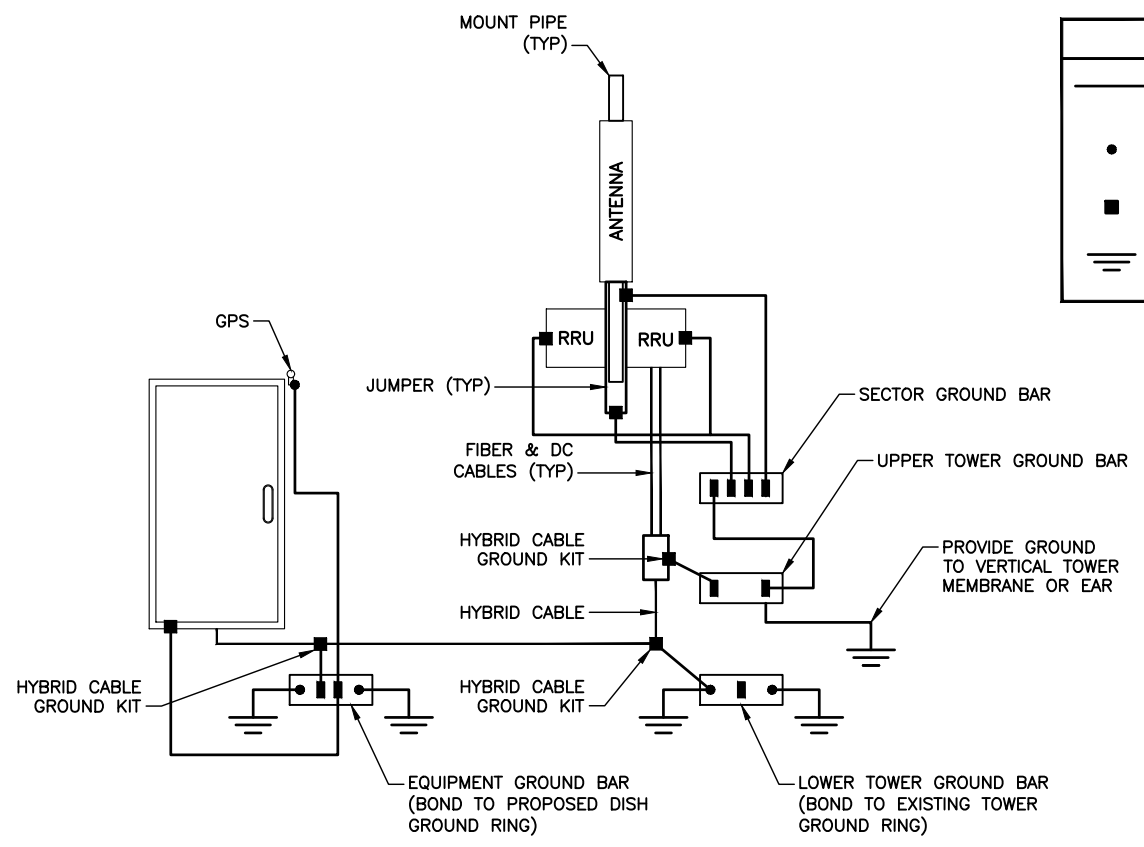
SHEET DESCRIPTION:  
 GROUNDING NOTES  
 AND DETAILS

SHEET NUMBER:  
 G-2

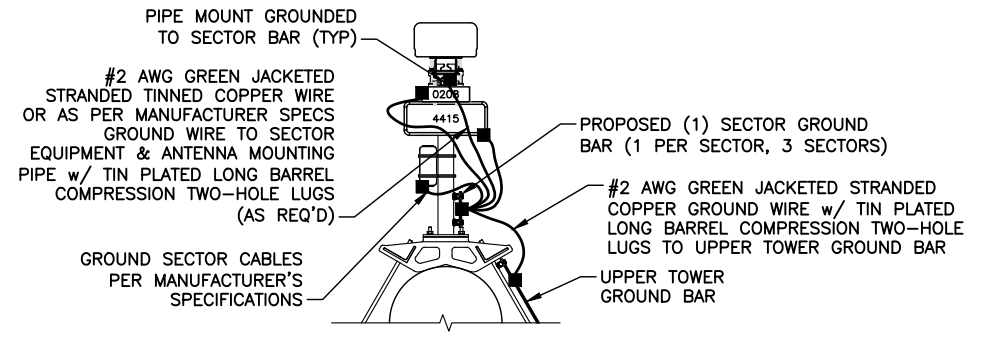
**LEGEND**

- GROUNDING CONDUCTOR — ABOVE GRADE
- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- ≡ GROUND ROD

**TOWER GROUNDING NOTE:**  
 ALL CONNECTIONS TO BE MECHANICAL ON TOWER. ALL GROUNDS TO BE MECHANICAL CONNECTION ABOVE GRADE. EXOTHERMIC WELDS ARE ONLY ALLOWED AT GRADE.



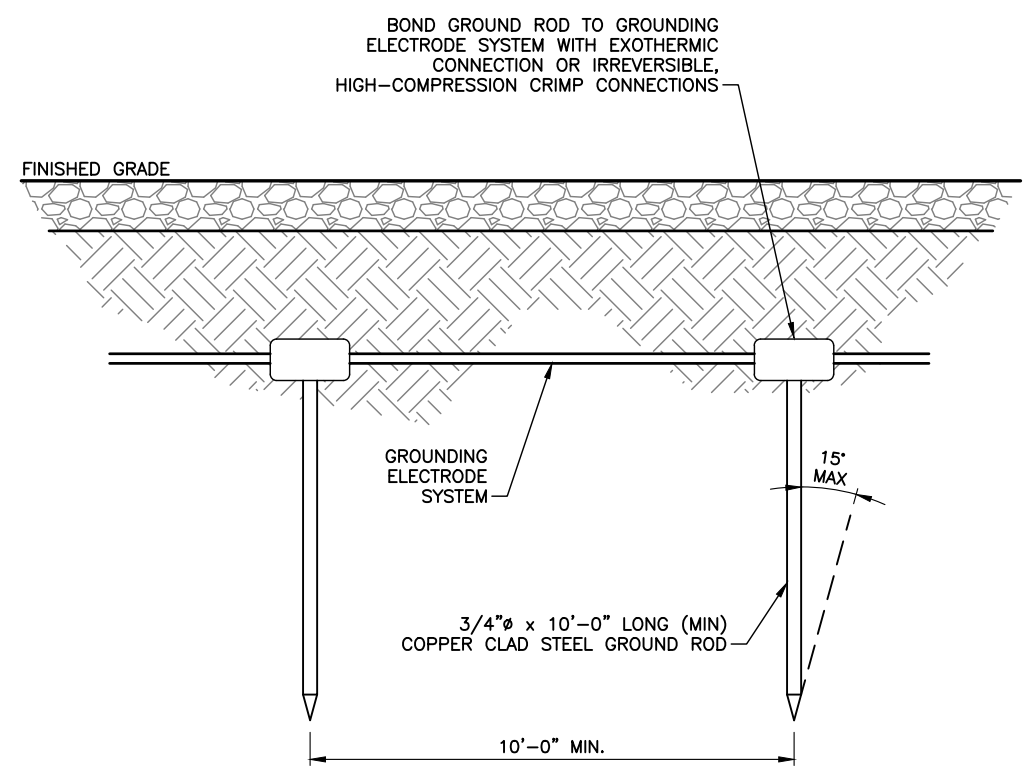
**GROUNDING RISER DIAGRAM (TYP. PER SECTOR)**  
 NOT TO SCALE



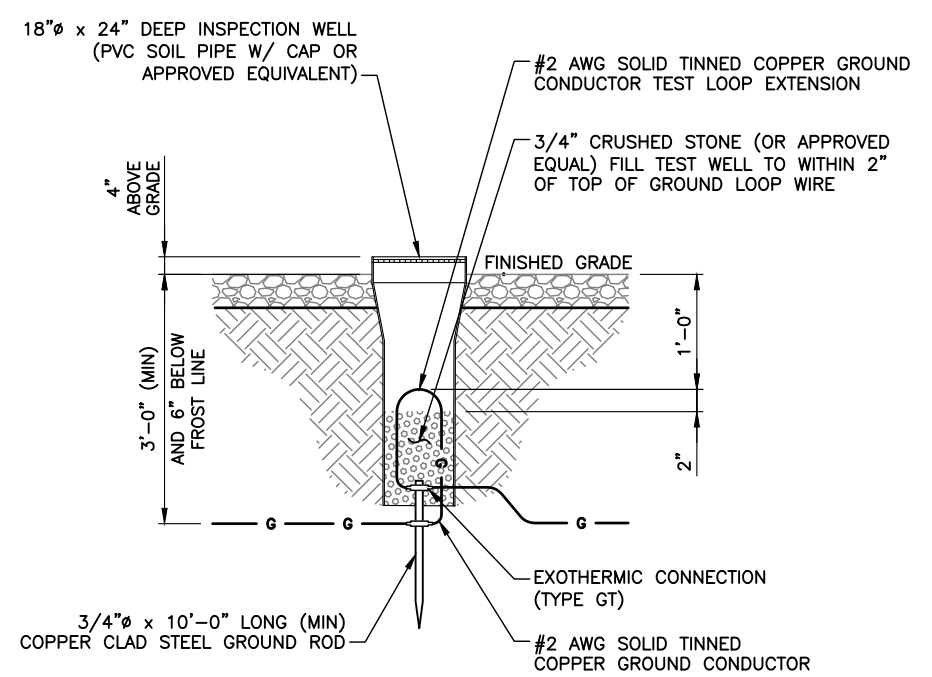
**NOTE:**  
 GROUNDING SHOWN FOR (1) SECTOR ONLY.  
 GROUNDING REQUIRED FOR ALL (3) SECTORS.

**GROUND BAR AT MOUNT**  
 NOT TO SCALE

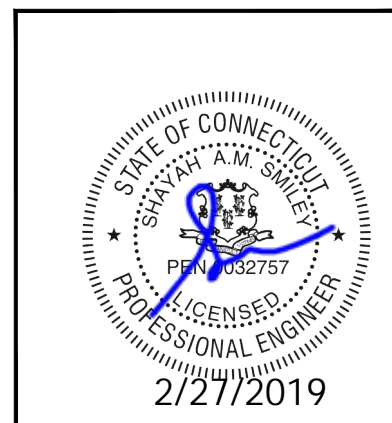
- NOTE:**
1. SEE SHEET G-3 FOR GROUND BAR DETAILS.
  2. #2 STRANDED GREEN INSULATED COPPER WIRE FROM RADIOS AND ANTENNAS TO ANTENNA BUSBAR.
  3. #2 STRANDED GREEN INSULATED COPPER WIRE FROM ANTENNA BUS BAR TO TOP TOWER BUSBAR.
  4. ADD MID GROUND BUS BAR WHERE APPLICABLE PER LIGHTNING ZONE REQUIREMENTS.



**GROUND ROD DETAIL**  
 NOT TO SCALE



**TEST WELL DETAIL**  
 NOT TO SCALE



PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
 CHECKED BY: MSB  
 APPROVED:

SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:  
 CCD18-021

DISH WIRELESS SITE ID:  
 CT0100003A

TOWER OWNER SITE ID:  
 829013

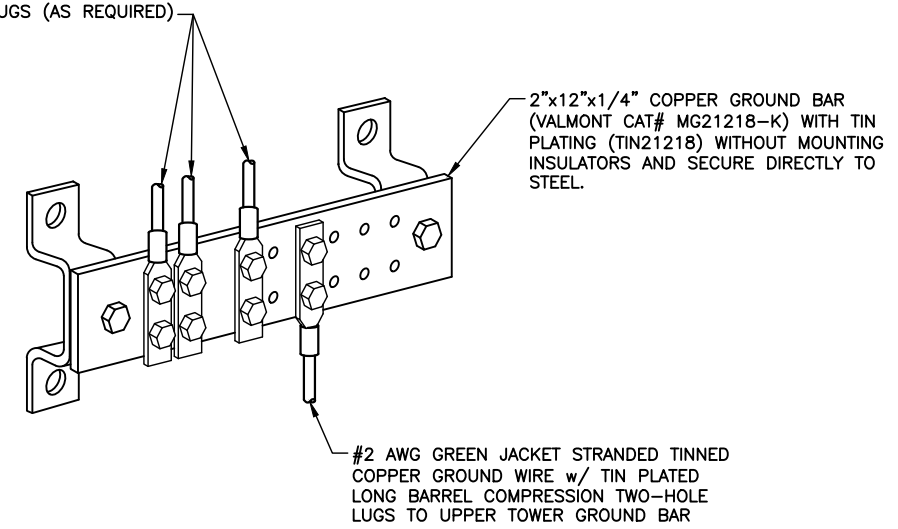
SITE ADDRESS:  
 467 SOUTH QUAKER LANE  
 WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
 GROUNDING NOTES  
 AND DETAILS

SHEET NUMBER:  
 G-3

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

#2 AWG GREEN JACKETED STRANDED COPPER WIRE OR AS PER MANUFACTURER SPECS GROUND WIRE TO SECTOR EQUIPMENT & ANTENNA MOUNTING PIPES w/ TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (AS REQUIRED)

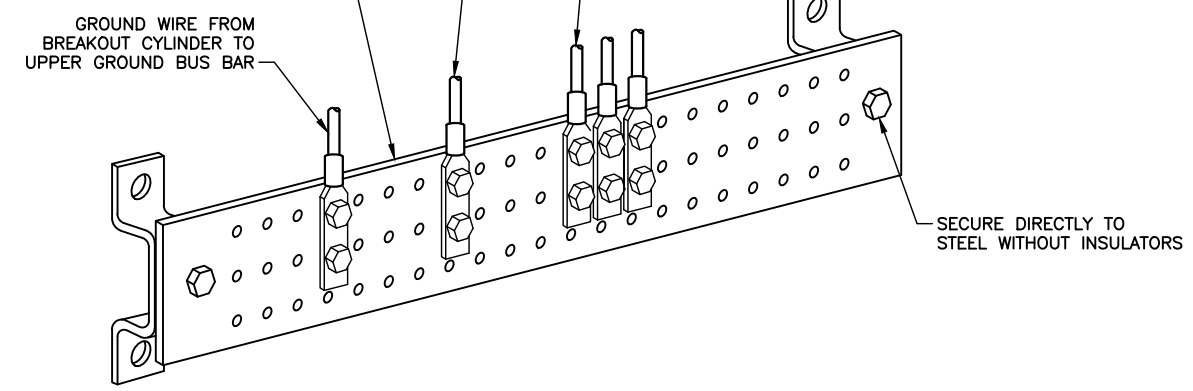


**SECTOR GROUND BAR DETAIL**  
 NOT TO SCALE

4"x12"x1/4" TINNED GROUND BAR (VALMONT CAT# HDG42483-K) WITH TIN PLATING (TIN21218) (MOUNT WITH UNISTRUT TO TOWER)

GROUND LEAD FROM HYBRID CABLE TO UPPER GROUND BUS BAR USING HYBRID CABLE GROUNDING KIT PER CABLE MANUFACTURER'S REQUIREMENTS

#2 AWG GREEN JACKETED STRANDED COPPER GROUND WIRE FROM SECTOR GROUND BUS BARS FEEDING FROM TOP (TYPICAL OF 3)



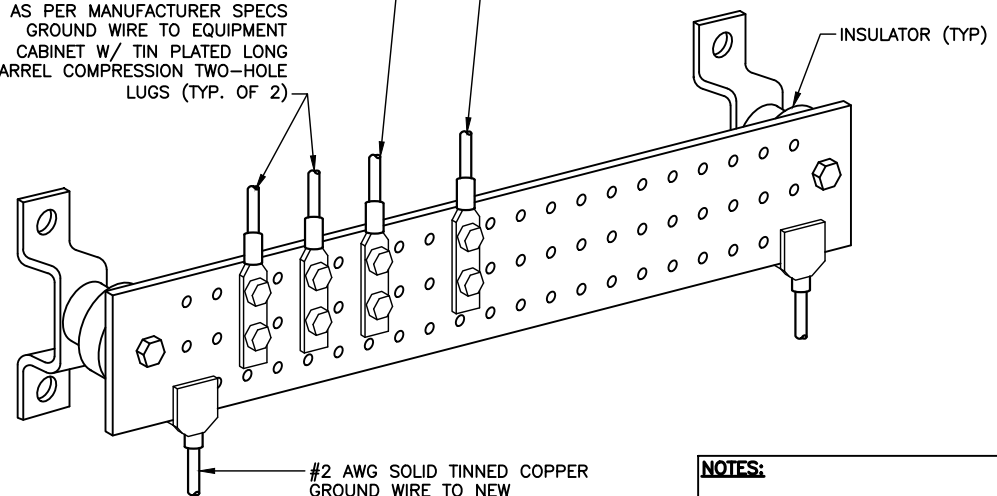
**UPPER TOWER GROUND BAR DETAIL**  
 NOT TO SCALE

GROUND LEAD FROM HYBRID CABLE GROUNDING KIT PER CABLE MANUFACTURER REQUIREMENTS

#2 AWG TINNED SOLID OR AS PER MANUFACTURER SPECS GROUND WIRE TO GPS ANTENNA w/ TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP.)

INSULATOR (TYP)

#2 AWG SOLID TINNED COPPER OR AS PER MANUFACTURER SPECS GROUND WIRE TO EQUIPMENT CABINET w/ TIN PLATED LONG BARREL COMPRESSION TWO-HOLE LUGS (TYP. OF 2)



**EQUIPMENT GROUND BAR DETAIL**  
 NOT TO SCALE

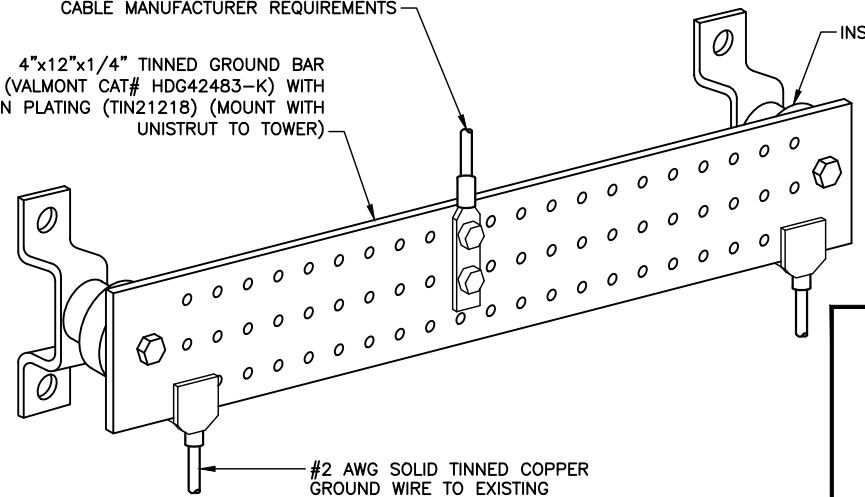
- NOTES:**
1. #2 AWG SOLID BARE TINNED COPPER CONDUCTOR FROM EACH ICE BRIDGE POST TO EXTERNAL GROUNDING SYSTEM USING EXOTHERMIC WELDS.
  2. IN CASES OF SHEATHED STRANDED CONDUCTORS, CONNECTOR SHALL HAVE INSPECTION WINDOW AND NO MORE THAN 1/8" GAP BETWEEN CONNECTOR BODY AND SHEATH.

**NOTE:**  
 GROUND FROM SATELLITE DISH TO EQUIPMENT GROUND RING WHEN APPLICABLE

GROUND LEAD FROM HYBRID CABLE TO LOWER TOWER GROUND BAR USING HYBRID CABLE GROUNDING KIT PER CABLE MANUFACTURER REQUIREMENTS

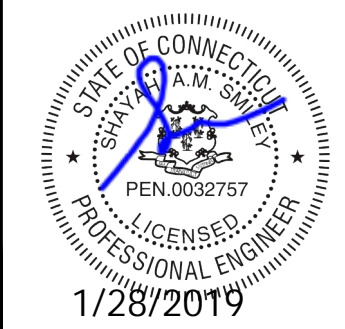
4"x12"x1/4" TINNED GROUND BAR (VALMONT CAT# HDG42483-K) WITH TIN PLATING (TIN21218) (MOUNT WITH UNISTRUT TO TOWER)

INSULATOR (TYP)



**LOWER TOWER GROUND BAR DETAIL**  
 NOT TO SCALE

**NOTE:**  
 #2 AWG SOLID TINNED COPPER GROUND CONDUCTOR FROM ICE BRIDGE POSTS TO SHELTER GROUND RING USING EXOTHERMIC WELDS.





### RF Design Data Sheet

#### Site Information

State	CT	Site ID	CT0100003A
Site Name	829013	Tower Type	MONOPOLE
Address	471 Quaker Ln S	City	West Hartford
Latitude (degrees)	41.748775	Zip	06110
Longitude (degrees)	-72.73135	Tower Owner	Crown
RFDS Revision	0.0	Issue Date	11/12/2018
RF Engineer	Chirag.Nagpal	9582894567	Chirag.Nagpal@ericsson.com

#### Design Information

Technology	NB-IoT		
Vendor	Ericsson		
Site Configuration	4415-2 No Band 29		
Site Type - Equipment - Band	AWS-4		

Sector Information (Expected Configuration)	Sector-1 (Alpha)	Sector-2 (Beta)	Sector-3 (Gamma)
LTE Sector Number	CT0100003A_1	CT0100003A_2	CT0100003A_3
Antenna Center Line (ft)	90	90	90
Antenna Model Number	ODI2-065R18K-GQ	ODI2-065R18K-GQ	ODI2-065R18K-GQ
Number of Antennas / Sector	1	1	1
Antenna Dimensions (LxWxD) (In)	53.5 x 9.8 x 2.4	53.5 x 9.8 x 2.4	53.5 x 9.8 x 2.4
Antenna Weight (lbs.)	25	25	25
Antenna Manufacturer	Comba	Comba	Comba
Horizontal Beamwidth	64	64	64
Gain (dBd)	17.8	17.8	17.8
Azimuth (deg) (Relative to True North)	15	120	240
Antenna Downtilt (Mechanical)	0	0	0
Antenna Downtilt 2100 (Electrical)	2	2	1
Antenna Downtilt 700 (Electrical)	4	4	4
Radio Model (Band 70)	Radio 4415	Radio 4415	-
Radio Quantity (Band 70)	1	1	-
Radio Model (H-Block)	Radio 0208	Radio 0208	Radio 0208
Radio Quantity (H-Block)	1	1	1
Radio Model (700 band)	-	-	-
Radio Quantity (700 band)	-	-	-
Number of Feeders / Sector	4	4	4
Feeder Diameter (Nominal) (in)	1/2	1/2	1/2
Feeder Length (m)	3	3	3
700 MHz Radio location	-	-	-
700 MHz Coax Cable Type (in)	-	-	-
TX/RX Diplexer Model			
TX/RX Diplexer Qty			
TX/RX Diplexer Dim (inch) / Wt (lbs)			

#### Description of Cabling Configuration Changes / Additions

Mandatory : Append Sketches indicating Locations of all new Antennas, Cabling, Duplexor, Diplexors (if applicable), TMA's etc....

Sector Alpha	
Sector Beta	
Sector Gamma	

General Comments	12/11/18 - NEW RFDS
------------------	---------------------

NOTE:  
CONTRACTOR TO REFER TO, AND VALIDATE, THE LATEST RFDS PRIOR TO CONSTRUCTION.

SUPPLEMENTAL INFORMATION

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

#### SUBMITTALS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0

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PM&A PROJECT NUMBER:

CCD18-021

DISH WIRELESS SITE ID:

CT0100003A

TOWER OWNER SITE ID:

829013

SITE ADDRESS:

467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:

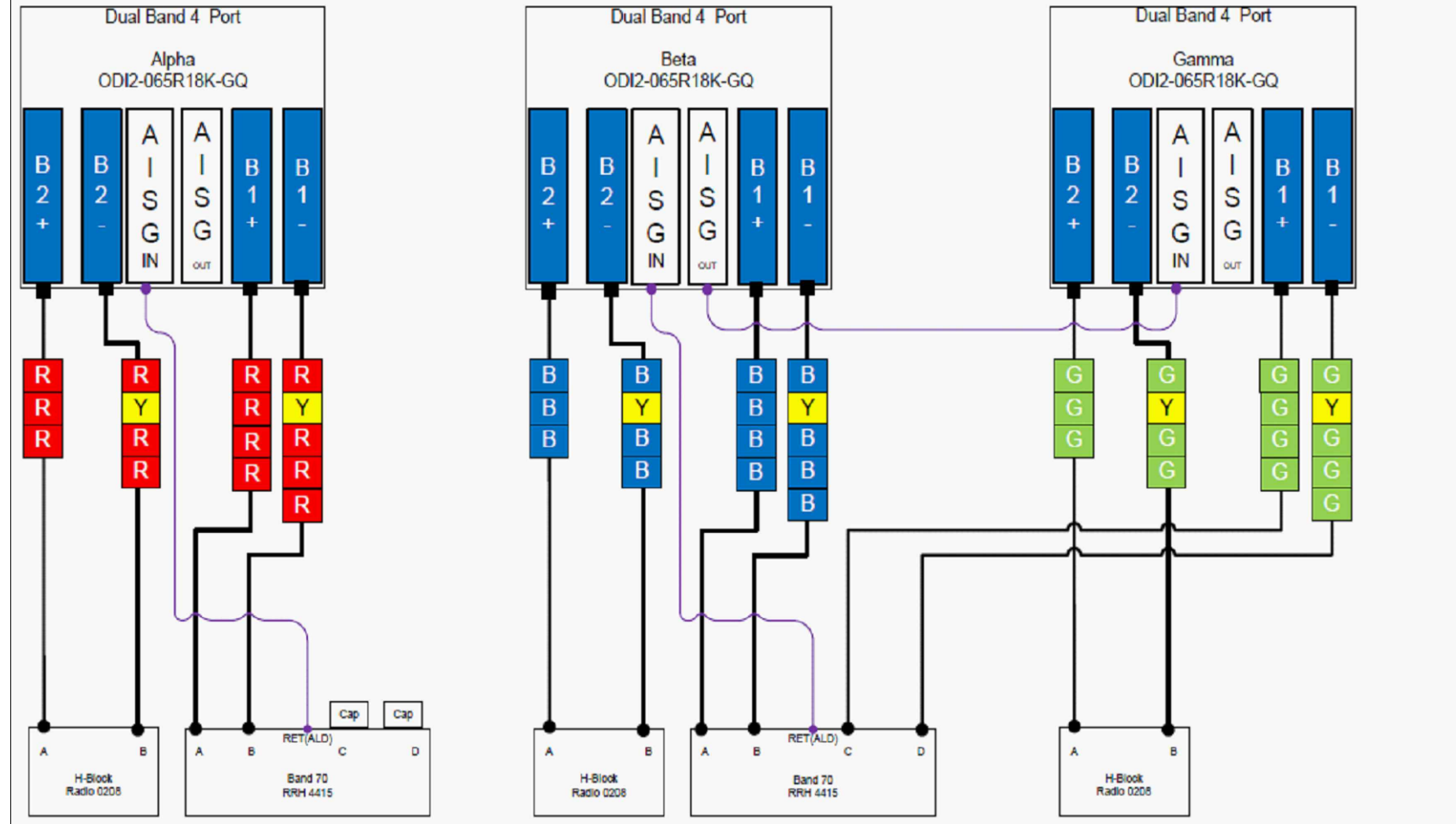
RF DATA SHEET

SHEET NUMBER:

RF-1

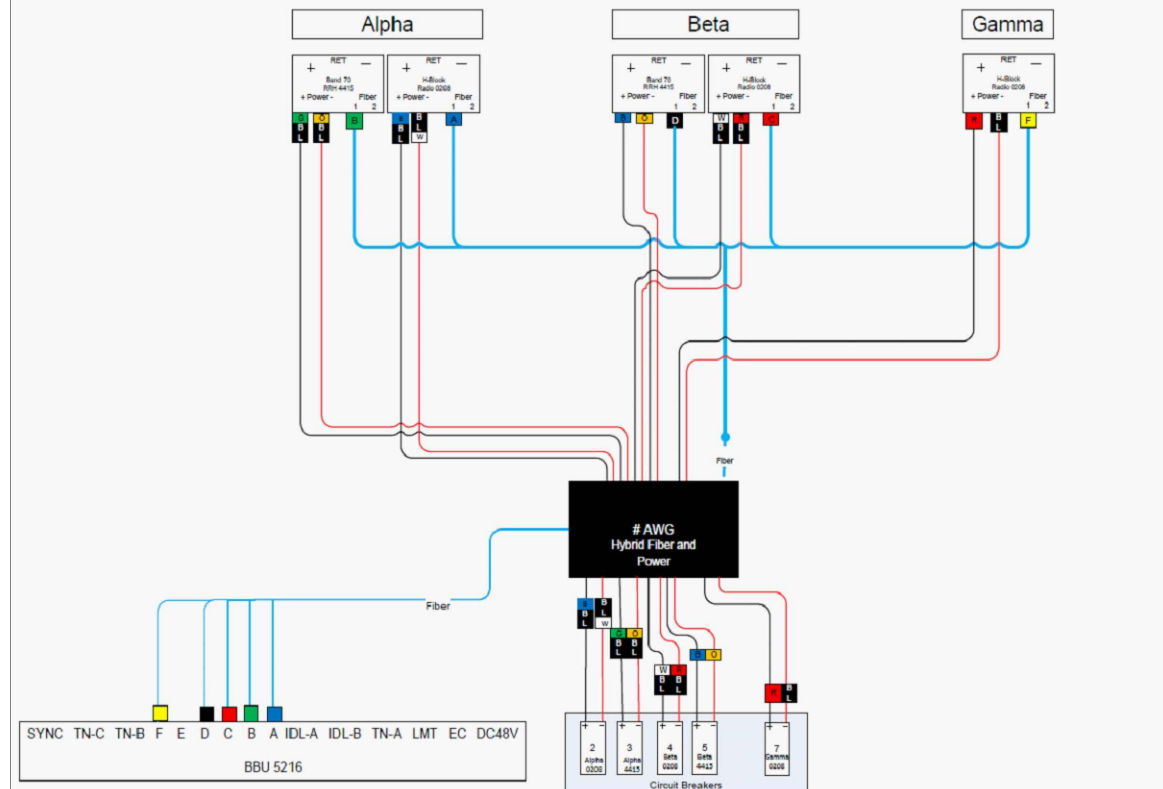


# Ericsson Antenna to RRU Diagram



Note: This Plumbing Diagram does not represent the position of the RRU or Antenna on the mount. That is stipulated in the Construction Drawings. If there is any question please address your Construction Manager before proceeding.

## Ericsson LTE BBU TO RRU Fiber and Power Diagram (Rosenberger Hybrid cable is used when length ≤ 90m)



**NOTE:**  
CONTRACTOR TO REFER TO, AND VALIDATE, THE LATEST RFDS PRIOR TO CONSTRUCTION.

**SUPPLEMENTAL INFORMATION**

PLANS PREPARED FOR:



PROJECT MANAGER:



PLANS PREPARED BY:



DRAWN BY: JDJ  
CHECKED BY: MSB  
APPROVED:

SUBMITTALS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	12/07/18	JDJ	A
ISSUED FOR CONSTRUCTION	01/14/19	JDJ	0
REVISED PER COMMENTS	02/27/19	MSB	1

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CT0100003A

TOWER OWNER SITE ID:  
829013

SITE ADDRESS:  
467 SOUTH QUAKER LANE  
WEST HARTFORD, CT 06110

SHEET DESCRIPTION:  
PLUMBING DIAGRAM

SHEET NUMBER:  
RF-2