

July 13, 2020

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

DRW NX  
Tower Share Application  
101 Talmadge Road, Hamden, CT 06518 (also known as 199 Talmadge Road)  
Latitude- 41.423547  
Longitude- -72.950347

Dear Ms. Bachman,

This letter and the attachments are submitted on behalf of DRW NX (“DRW”). DRW plans to install microwave dishes and related equipment at the tower site located at 101 Talmadge Road in Hamden, Connecticut. This tower facility was not originally approved by the Connecticut Siting Council. DRW was unable to obtain documentation from the Town of Hamden regarding an original approval. However, applicants have been approved for exempt modifications on the tower previously by the Connecticut Siting Council, and DRW would like to seek tower-sharing approval.

DRW will install two (2) microwave dishes, four (4) SAF radios, and related equipment at the 650’ level of the existing 900’ guyed tower. DRW will also install an equipment cabinet and related ground equipment on a proposed equipment platform within the existing ground facility. Included are plans by GPD Engineering and Architecture, dated July 9, 2020, depicting the proposed site and attached as **Exhibit A**. Also included is a structural analysis prepared by Stainless, dated July 8, 2020, confirming that the existing tower is structurally capable of supporting the proposed equipment. This is attached and detailed in **Exhibit B**. Additionally, an analysis of the proposed mounts is attached and incorporated as **Exhibit C**.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50aa, of DRW’s 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 Curt Leng, Mayor of the Town of Hamden, Daniel Kops, Town Planner for the Town of Hamden, the property owner, LIN Television Corp., and the tower owner, Nexstar Broadcasting, Inc. Please see the attached letter from Nexstar Broadcasting, Inc. authorizing the proposed shared use of this facility attached as **Exhibit D**.

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 modification will not result in an increase in the height of the existing structure. The top of the guyed tower is 900’; DRW’s proposed equipment will be located at a center line height of 650’.
2. The proposed modifications will not result in the increase of the site boundary, as depicted on the attached site plan.
3. The proposed modifications will not increase 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.

4. The operation of the proposed equipment 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 RF exposure assessment, the site operations will have no measurable effect on RF exposure levels near this facility, as evidenced by **Exhibit E**.

Connecticut General Statutes 16-50aa 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, DRW respectfully submits that the shared use of this facility satisfies these criteria.

- A. Technical Feasibility. The existing guyed tower has been deemed structurally capable of supporting DRW's proposed loading. The structural analysis is included as **Exhibit B**.
- B. Legal Feasibility. As referenced above, C.G.S. 16-50aa has been authorized to issue orders approving the shared use of an existing tower such as this guyed tower in Hamden. Under the authority granted to the Council, an order of the Council approving the requested shared use would permit DRW to obtain a building permit for the proposed installation. Further, a Letter of Authorization is included as **Exhibit D**, authorizing DRW to file this application for shared use.
- C. Environmental Feasibility. The proposed shared use of this facility would have minimal environmental impact. The installation of DRW equipment at the 650' level of the existing 900' tower would have an insignificant visual impact on the area around the tower. DRW's ground equipment would be installed on an equipment platform within the existing facility compound. DRW's shared use would therefore not cause any significant alteration in the physical or environmental characteristics of the existing site. Additionally, as evidenced by **Exhibit E**, the proposed equipment would not increase radio frequency emissions to a level at or above the Federal Communications Commission safety standard.
- D. Economic Feasibility. DRW 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 DRW with this tower sharing application.
- E. Public Safety Concerns. As discussed above, the guyed tower is structurally capable of supporting DRW's proposed loading. DRW is not aware of any public safety concerns relative to the proposed sharing of the existing tower.

Sincerely,

Danielle Petti (o/b/o DRW NX)  
201-926-7619  
Dpetti111@gmail.com

CC:  
Curt Leng- Mayor, Town of Hamden  
Daniel Kops- Town Planner, Town of Hamden  
Nextstar Broadcasting, Inc.- Tower Owner  
LIN Television Corp.- Property Owner

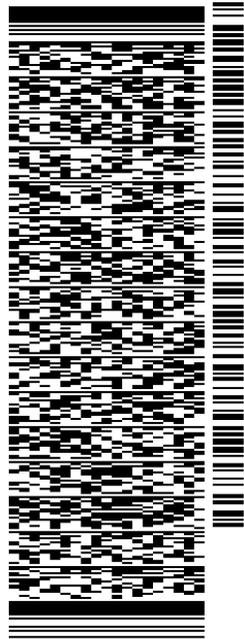
ORIGIN ID: CBZA (201) 926-7619  
 DANIELLE PETTI  
 23 DORIAN RD  
 BOONTON TWP, NJ 07005  
 UNITED STATES US

SHIP DATE: 14JUL20  
 ACTWGT: 2.00 LB  
 CAD: 112900160/NET4220

BILL SENDER

TO DANIEL KOPS  
 TOWN OF HAMDEN  
 2750 DIXWELL AVENUE

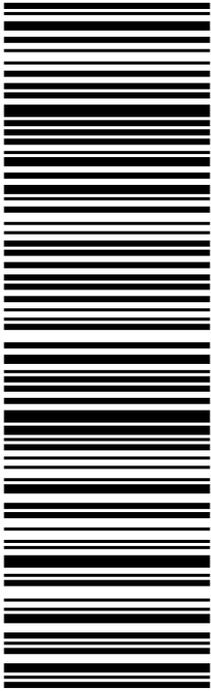
HAMDEN CT 06518  
 (203) 287-7100 REF: NEXSTR HAMDEN CT  
 INV: DEPT:  
 PO:



56BJ3/C6A6/FE4A

TRK# 7709 4641 8575  
 0201  
 WED - 15 JUL 3:00P  
 STANDARD OVERNIGHT

EB HVNA  
 06518  
 CT-US BDL



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ORIGIN ID:GBZA (201) 926-7619  
 DANIELLE PETTI  
 23 DORIAN RD  
 BOONTON TWP, NJ 07005  
 UNITED STATES US

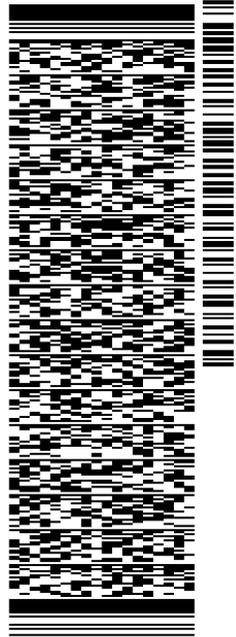
SHIP DATE: 15JUL20  
 ACTWGT: 2.00 LB  
 CAD: 112900160IN/ET4220

BILL SENDER

TO **RICH GRAZIANO**  
**W/INH**  
**8 ELM STREET**

**RICHMOND VA 23219**

(703) 343-1219 REF: NEXTAR-HAMDEN CT  
 INV:  
 PO: DEPT:



56BJ3/C6A6/FE4A

TRK# 7709 4635 8738  
 0201  
 THU - 16 JUL 3:00P  
 STANDARD OVERNIGHT

**XH GVEA**  
 23219  
 VA-US RIC

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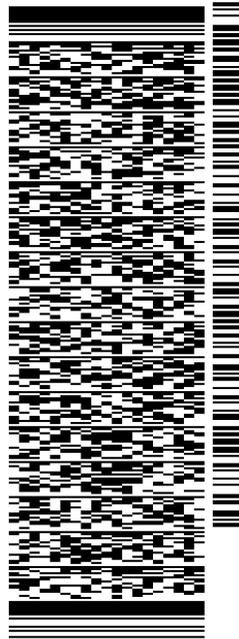
ORIGIN ID: CBZA (201) 926-7619  
 DANIELLE PETTI  
 23 DORIAN RD  
 BOONTON TWP, NJ 07005  
 UNITED STATES US

SHIP DATE: 15JUL20  
 ACTWGT: 2.00 LB  
 CAD: 112900160/NET4220

BILL SENDER

TO **CURT LENG**  
**TOWN OF HAMDEN**  
**2750 DIXWELL AVENUE**

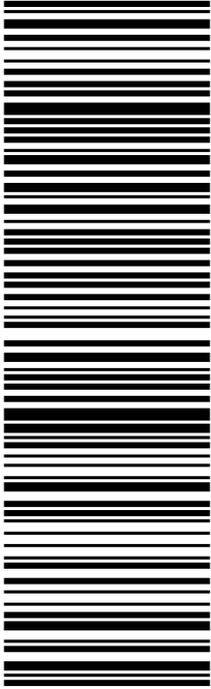
**HAMDEN CT 06518**  
 (203) 287-7100  
 INV: REF: NEXSTAR HAMDEN CT  
 PO: DEPT:



56BJ3/C6A6/FE4A

TRK# 7709 4639 3410  
 0201  
 THU - 16 JUL 3:00P  
 STANDARD OVERNIGHT

**EB HVNA**  
 CT-US **06518**  
**BDL**



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 DANIELLE PETTI  
 23 DORIAN RD  
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 UNITED STATES US

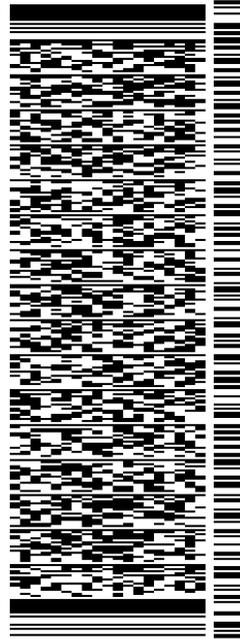
SHIP DATE: 15JUL20  
 ACTWGT: 2.00 LB  
 CAD: 112900160IN/ET4220

BILL SENDER

LIN TELEVISION CORP  
 333 EAST FRANKLIN STREET

RICHMOND VA 23219

(703) 865-8647 REF: NEXSTAR/HAMDEN CT  
 INV: DEPT:  
 PO:



56BJ3/C6A6/FE4A

TRK# 7709 4632 0344  
 0201  
 THU - 16 JUL 3:00P  
 STANDARD OVERNIGHT

XH GVEA  
 23219  
 VA-US RIC  


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# 0 TALMADGE RD

**Location** 0 TALMADGE RD

**Mblu** 3123/ 008/ / /

**Acct#**

**Owner** L I N TELEVISION CORP

**Assessment** \$373,940

**Appraisal** \$534,200

**PID** 100690

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$34,500	\$499,700	\$534,200

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$24,150	\$349,790	\$373,940

## Owner of Record

**Owner** L I N TELEVISION CORP  
**Co-Owner**  
**Address** 333 EAST FRANKLIN ST  
RICHMOND, VA 23219

**Sale Price** \$0  
**Certificate**  
**Book & Page** 1905/ 206  
**Sale Date** 11/29/1999

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
L I N TELEVISION CORP	\$0		1905/ 206	11/29/1999
L W W I BROADCASTING INC	\$605,000		1470/ 283	12/29/1994
COOK INLET COMMUNICATIONS CORP	\$0		740/ 459	01/03/1986

## Building Information

### Building 1 : Section 1

**Year Built:** 1965  
**Living Area:** 812  
**Building Percent Good:** 65

**Building Attributes**

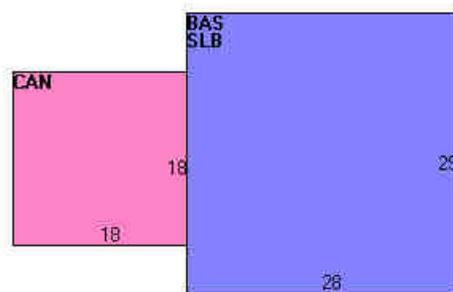
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade	C
Stories:	1
Occupancy	1
Exterior Wall 1	Pre-finish Metl
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T&G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Hot Air-no Duc
AC Type	None
Bldg Use	RAD/TV TR M96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	4330
Heat/AC	NONE
Frame Type	STEEL
Baths/Plumbing	NONE
Ceiling/Wall	NONE
Rooms/Prtns	AVERAGE
Wall Height	10
% Comn Wall	0

### Building Photo



(<http://images.vgsi.com/photos/HamdenCTPhotos//00\02\80\12.jpg>)

### Building Layout



([http://images.vgsi.com/photos/HamdenCTPhotos//Sketches/100690\\_2131](http://images.vgsi.com/photos/HamdenCTPhotos//Sketches/100690_2131))

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	812	812
CAN	Canopy	324	0
SLB	Slab	0	0
		1,136	812

### Extra Features

Extra Features	<u>Legend</u>
No Data for Extra Features	

### Land

#### Land Use

Use Code 4330

#### Land Line Valuation

Size (Acres) 35.19

**Description** RAD/TV TR M96  
**Zone** R2  
**Neighborhood** 140  
**Alt Land Appr** No  
**Category**

**Frontage** 0  
**Depth** 0  
**Assessed Value** \$349,790  
**Appraised Value** \$499,700

**Outbuildings**

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN3	FENCE-6' CHAIN			770 L.F.	\$3,500	1

**Valuation History**

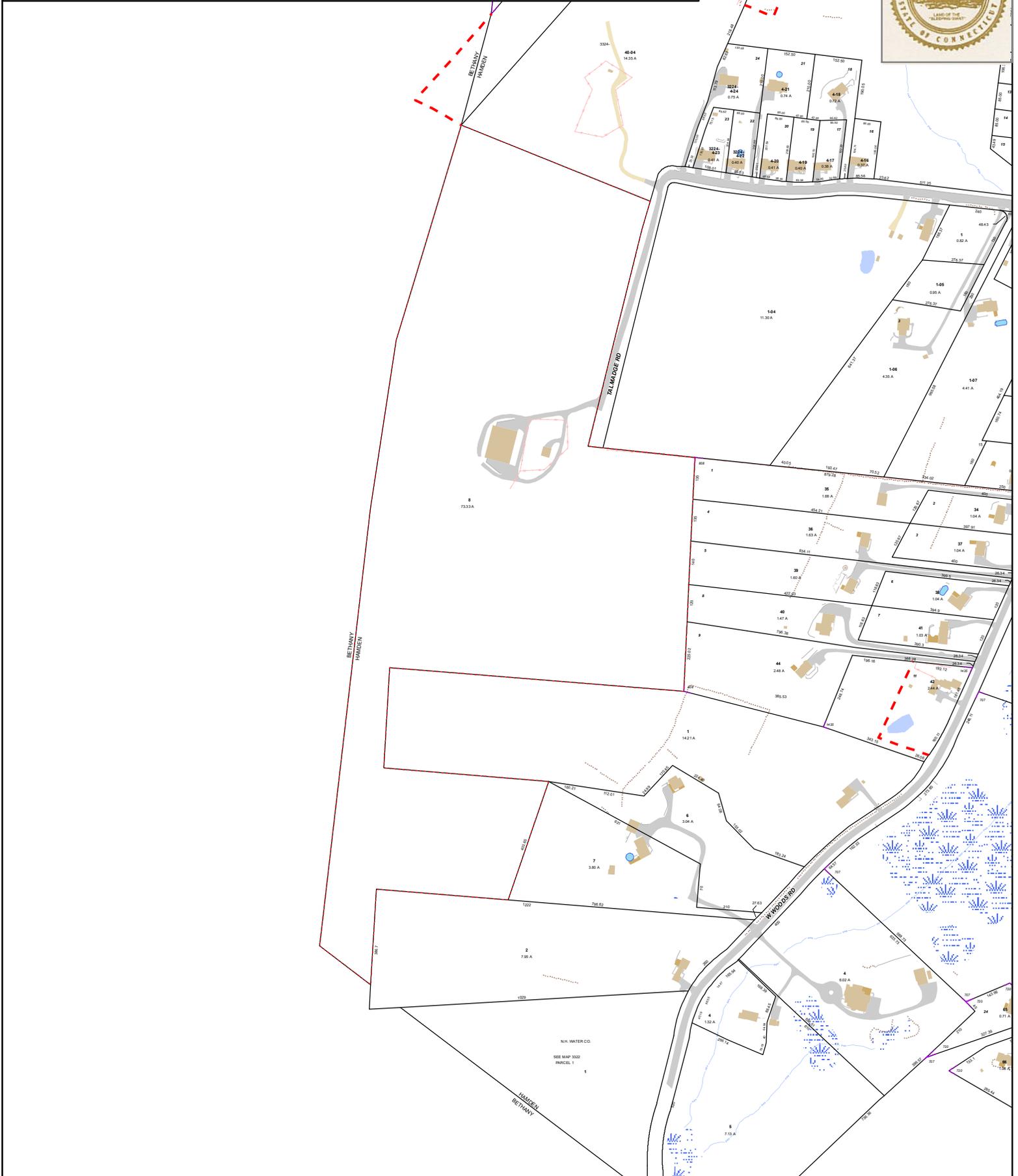
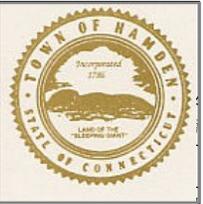
Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$34,500	\$499,700	\$534,200
2017	\$34,500	\$499,700	\$534,200
2016	\$34,500	\$499,700	\$534,200

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$24,150	\$349,790	\$373,940
2017	\$24,150	\$349,790	\$373,940
2016	\$24,150	\$349,790	\$373,940

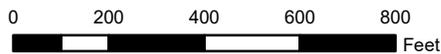
# Town of Hamden, Connecticut - Assessment Parcel Map

Parcel: 3123-008-00-0000

Address: 0 TALMADGE RD



Approximate Scale: 1 inch = 400 feet



Map Produced: April 2019

Disclaimer: This map is for informational purposes only.  
All information is subject to verification by any user.  
The Town of Hamden and its mapping contractors assume  
no legal responsibility for the information contained herein.

Exhibit A  
Construction Drawings

**DRAWING INDEX**

SHEET NUMBER:	PAGE NAME:	REVISION NUMBER:
TP-1	TITLE PAGE	2
N-1	GENERAL NOTES	2
N-2	GENERAL NOTES	2
N-3	ELECTRICAL NOTES	2
C-1	OVERALL SITE PLAN	2
C-2	ENLARGED SITE PLAN	2
T-1	TOWER ELEVATION & ANTENNA SCHEDULE	2
T-2	DISH MOUNT DETAILS	2
T-3	DISH PLAN @ 650'-0"	2
T-4	DISH ELEVATIONS	2
T-5	COAX MOUNTING DETAILS	2
T-6	EQUIPMENT DETAILS	2
T-7	CABINET DETAILS	2
E-1	UTILITY PLAN	2
E-2	GROUNDING PLAN	2
E-3	ONE-LINE DIAGRAM & UTILITY DETAILS	2
E-4	PANEL SCHEDULE	2
E-5	GROUNDING RISER DIAGRAM	2
E-6	GROUNDING DETAILS	2

**SPECIAL NOTES**

CONTRACTOR SHALL VERIFY ALL (EX.) CONDITIONS IN FIELD. IF SIGNIFICANT DEVIATIONS OR DETERIORATION ARE ENCOUNTERED AT THE TIME OF CONSTRUCTION, A REPAIR PERMIT WILL BE OBTAINED AND CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER IMMEDIATELY.

CONTRACTOR SHALL VERIFY ALL PLANS AND (EX.) DIMENSIONS AND CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

THESE DRAWINGS ARE PLOTTED AT 22"x34" AND SCALABLE TO 11"x17". PLOT WILL BE FULL SCALE UNLESS OTHERWISE NOTED.



TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN CONNECTICUT, CONTACT CALL BEFORE YOU DIG

TOLL FREE: 1-800-922-4455 OR www.cbyd.com

CONNECTICUT STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

Know what's below. Call before you dig.



**SITE NAME:**  
**US.CT.NXTR.1043980**

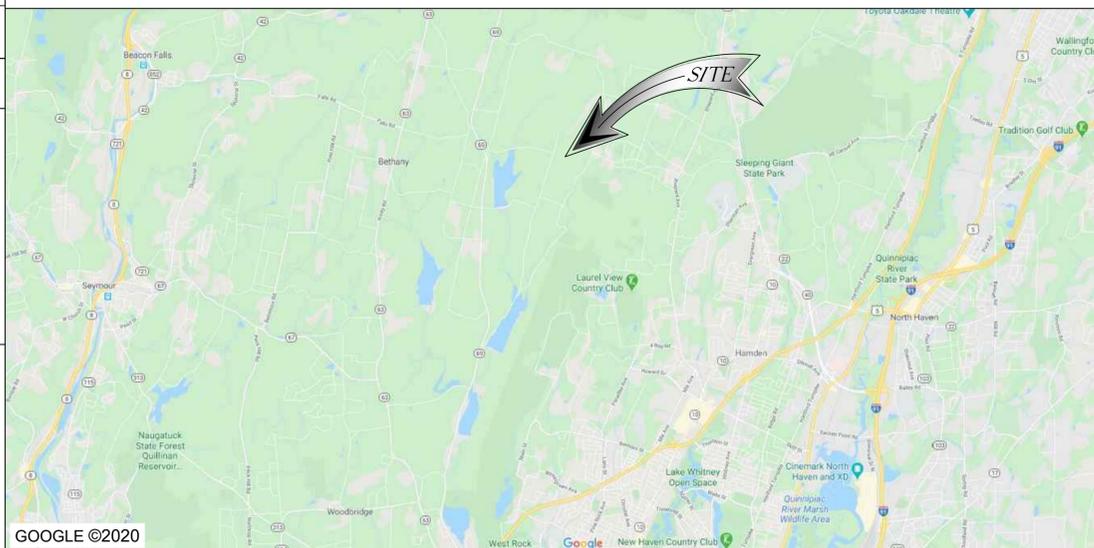
**SITE ADDRESS:**  
**101 TALMADGE ROAD  
HAMDEN, CT 06518**

**DIRECTIONS**

(FROM: BRADLEY INTERNATIONAL AIRPORT)

CONTINUE TO BRADLEY INTERNATIONAL AIRPORT CON. HEAD NORTH TOWARD BRADLEY INTERNATIONAL AIRPORT. SLIGHT LEFT ONTO BRADLEY INTERNATIONAL AIRPORT. SLIGHT LEFT. TAKE I-91 S AND CT-15 S/WILBUR CROSS PKWY TO S TURNPIKE RD IN WALLINGFORD. TAKE EXIT 64 FROM CT-15 S/WILBUR CROSS PKWY. CONTINUE ONTO BRADLEY INTERNATIONAL AIRPORT CON. CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON. USE THE RIGHT 2 LANES TO MERGE ONTO I-91 S TOWARD HARTFORD. TAKE EXIT 17 TO MERGE ONTO CT-15 S/WILBUR CROSS PKWY. TAKE EXIT 64 TO MERGE ONTO S TURNPIKE RD. CONTINUE ON S TURNPIKE RD. TAKE MT CARMEL AVE AND W WOODS RD TO TALMADGE RD IN HAMDEN. USE THE LEFT 2 LANES TO MERGE ONTO S TURNPIKE RD (SIGNS FOR DMR REGION 5 CTR). CONTINUE STRAIGHT ONTO HARTFORD TURNPIKE. SLIGHT RIGHT ONTO MT CARMEL AVE. CONTINUE STRAIGHT ONTO W WOODS RD. SLIGHT RIGHT TO STAY ON W WOODS RD. TURN LEFT ONTO SHEPARD AVE. TURN RIGHT ONTO W WOODS RD. TURN LEFT TO STAY ON W WOODS RD. TURN RIGHT ONTO GAYLORD MOUNTAIN RD. TURN LEFT ONTO TALMADGE RD. CONTINUE TO THE END OF TALLMADGE RD TO REACH THE DESTINATION.

**LOCAL MAP**



**PROJECT SUMMARY**

**SCOPE OF WORK:** DRW NX PROPOSES TO: GROUND SCOPE: INSTALL (1) 4' x 8' ELEVATED PLATFORM W/ EQUIPMENT CABINET, AND NEW 100A ELECTRICAL SERVICE. TOWER SCOPE: INSTALL (2) 3'-0" MW DISHES W/ ICE SHIELDS, (4) SAF RADIO, ASSOCIATED CABLING AND ASSOCIATED MOUNTING EQUIPMENT.

**SITE NAME:** US.CT.NXTR.1043980  
**SITE ADDRESS:** 101 TALMADGE ROAD HAMDEN, CT 06518 NEW HAVEN COUNTY

**PROPERTY OWNER:** LIN TELEVISION CORP 333 EAST FRANKLIN ST RICHMOND VA 23219

**TOWER OWNER:** WTNH - NEWS 8 8 ELM STREET RICHMOND VA 23219 PHONE: 203.903.2732

**COUNTY:** NEW HAVEN  
**JURISDICTION:** TOWN OF HAMDEN  
**PARCEL NUMBER:** 3123-008-00-0000  
**LATITUDE (NAD 83):** 41° 25' 24.77"N (41.423547°) (PER M1R2 VENTURES 6/08/2020)  
**LONGITUDE (NAD 83):** 72° 57' 1.25"W (-72.950347°) (PER CROWN CASTLE 6/08/2020)  
**GROUND ELEVATION:** 637' AMSL (PER GOOGLE EARTH)  
**APPLICANT:** DRW NX

**BUILDING CODES:** STRUCTURAL 2018 CONNECTICUT BUILDING CODE, W/ AMENDMENTS FROM 2015 IBC  
MECHANICAL 2018 CONNECTICUT BUILDING CODE, W/ AMENDMENTS FROM 2015 IMC  
ELECTRICAL 2017 NEC, AS ADOPTED BY THE STATE OF CONNECTICUT  
FIRE LIFE SAFETY 2018 CONNECTICUT BUILDING CODE, W/ AMENDMENTS FROM 2015 IFC

**CONSULTING TEAM**

**ENGINEER:** GPD ENGINEERING AND ARCHITECTURE PROFESSIONAL CORPORATION 520 SOUTH MAIN STREET, SUITE 2531 AKRON, OHIO 44311 CONTACT: JUSTIN BUTTERFIELD PHONE #: 330-572-2205 EMAIL: jbutterfield@gpdgroup.com

**STRUCTURAL ENGINEER:** STAINLESS LLC 1140 WELSH ROAD, SUITE 250 NORTH WALES, PA 19454



**GPD Engineering and Architecture Professional Corporation**

520 South Main Street Akron, OH 44311 330.572.2100 Fax 330.572.2102

SEAL:



PROJECT LOCATION:

**US.CT.NXTR.1043980  
101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY**

**SCHEDULE OF REVISIONS**

NO.	DESCRIPTION OF CHANGE	DESIGNED BY:	DRAWN BY:	ISSUE DATE
2	UPDATED PER COMMENTS	ZDT	JWB	07/09/2020
1	UPDATED PER COMMENTS	ZDT	JWB	06/23/2020
0	FOR PERMITTING	ZDT	JWB	06/11/2020
A	90% REVIEW	ZDT	JWB	06/11/2020

SCALE: AS SHOWN | DESIGNED BY: ZDT | DRAWN BY: ZDT | PROJECT NAME: US.CT.NXTR.1043980

PROJECT NAME:  
**US.CT.NXTR.1043980**

DRAWING TITLE:  
**TITLE PAGE**

DRAWING NUMBER:  
**TP-1**

**GENERAL NOTES**

1. THE CONTRACTOR'S SCOPE OF WORK SHALL INCLUDE ALL ITEMS DEFINED IN THE CONTRACT DOCUMENTS. THE CONTRACT DOCUMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: THE CONTRACT, SPECIFICATIONS AND CONSTRUCTION DRAWINGS.
2. ALL EQUIPMENT SUPPLIED BY THE OWNER SHALL BE PICKED UP BY THE CONTRACTOR AT THE APPROPRIATE WAREHOUSE.
3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK.
4. THE CONTRACTOR SHALL PROVIDE ON-SITE SUPERVISION AT ALL TIMES WHILE THE WORK IS BEING PERFORMED AND SHALL DIRECT ALL WORK, USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, PROCEDURES AND SEQUENCES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE TO REVIEW THE SCOPE OF WORK AND EXISTING JOB SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL SERVICE AND OVERALL COORDINATION. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING HIS BID. ANY DISCREPANCIES, CONFLICTS OR OMISSIONS, ETC., SHALL BE REPORTED TO DRW NX CONSTRUCTION SUPERVISOR BEFORE PROCEEDING WITH THE WORK.
6. THE CONTRACTOR SHALL PROTECT ALL AREAS FROM DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION. ANY DAMAGE TO NEW AND EXISTING CONSTRUCTION, STRUCTURE, LANDSCAPING OR EQUIPMENT SHALL BE IMMEDIATELY REPAIRED OR REPLACED TO THE SATISFACTION OF THE TENANT, BUILDING OWNER OR OWNER'S REPRESENTATIVE AT THE EXPENSE OF THE CONTRACTOR.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN HEREON OR NOT, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSES FOR REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED IN CONJUNCTION WITH THE EXECUTION OF WORK.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE SITE WHILE THE JOB IS IN PROGRESS AND UNTIL THE JOB IS COMPLETED.
9. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER AND TOILET FACILITIES AS REQUIRED BY THE CITY OR GOVERNING AGENCY.
10. THE CONTRACTOR AND ALL SUBORDINATE CONTRACTORS SHALL COMPLY WITH ALL LOCAL AND STATE REGULATIONS.
11. THE CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS, LICENSES AND INSPECTIONS NECESSARY FOR PERFORMANCE OF THE WORK AND INCLUDE THOSE IN THE COST OF THE WORK TO DRW NX.
12. FIGURED DIMENSIONS HAVE PRECEDENCE OVER DRAWING SCALE, AND DETAIL DRAWINGS HAVE PRECEDENCE OVER SMALL DRAWINGS. CHECK ACCURACY OF ALL DIMENSIONS IN THE FIELD. UNLESS SPECIFICALLY NOTED, DO NOT FABRICATE ANY MATERIALS OFF SITE, NOR DO ANY CONSTRUCTION UNTIL THE ACCURACY OF DRAWING DIMENSIONS HAVE BEEN VERIFIED AGAINST ACTUAL FIELD DIMENSIONS.
13. THE CONTRACTOR SHALL NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR OF ANY CONFLICTS OR DISCREPANCIES IN THE CONTRACT DOCUMENTS OR FIELD CONDITIONS PRIOR TO EXECUTING THE WORK IN QUESTION.
14. THE CONTRACTOR SHALL NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR IF DETAILS ARE CONSIDERED UNSOUND, UNSAFE, NOT WATERPROOF, OR NOT WITHIN CUSTOMARY TRADE PRACTICE. IF WORK IS PERFORMED, IT WILL BE ASSUMED THAT THERE IS NO OBJECTION TO THE DETAIL. DETAILS ARE INTENDED TO SHOW THE END RESULT OF THE DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB CONDITIONS, AND SHALL BE INCLUDED AS PART OF THE WORK.
15. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IF THEY DIFFER FROM THOSE SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.
16. ALL SYMBOLS AND ABBREVIATIONS USED ON THE DRAWINGS ARE CONSIDERED CONSTRUCTION STANDARDS. IF THE CONTRACTOR HAS QUESTIONS REGARDING THEIR EXACT MEANING, THE DRW NX CONSTRUCTION SUPERVISOR SHALL BE NOTIFIED FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
17. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BLOCKING, BACKING, FRAMING, HANGERS OR OTHER SUPPORT FOR ALL OTHER ITEMS REQUIRING THE SAME.
18. APPROVED PLANS SHALL BE KEPT IN A PLAN BOX AND SHALL NOT BE USED BY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT SAME INFORMATION. AT ALL TIMES THESE ARE TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.
19. DESIGN DRAWINGS ARE DIAGRAMMATIC ONLY AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION CONDITIONS WILL PERMIT. ANY ERROR, OMISSION, OR DESIGN DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE DRW NX CONSTRUCTION SUPERVISOR FOR CLARIFICATION OR CORRECTION BEFORE CONSTRUCTION.
20. AS-BUILTS REQUIREMENTS: DO NOT USE RECORD DOCUMENTS FOR CONSTRUCTION PURPOSES. PROTECT RECORD DOCUMENTS FROM DETERIORATION AND LOSS IN A SECURE, FIRE-RESISTANT LOCATION. PROVIDE ACCESS TO RECORD DOCUMENTS FOR THE DRW NX CONSTRUCTION SUPERVISOR'S REFERENCE DURING NORMAL WORKING HOURS. MAINTAIN A CLEAN, UNDAMAGED SET OF BLUE OR BLACK LINE PRINTS OF CONTRACT DRAWINGS AND SHOP DRAWINGS. MARK THE SET TO SHOW THE ACTUAL INSTALLATION WHERE THE INSTALLATION VARIES SUBSTANTIALLY FROM THE WORK AS ORIGINALLY SHOWN. MARK WHICH DRAWINGS IS MOST CAPABLE OF SHOWING CONDITIONS FULLY AND ACCURATELY. WHERE SHOP DRAWINGS ARE USED, RECORD A CROSS-REFERENCE AT THE CORRESPONDING LOCATION ON THE CONTRACT DRAWINGS. GIVE PARTICULAR ATTENTION TO CONCEALED ELEMENTS THAT WOULD BE DIFFICULT TO MEASURE AND RECORD AT A LATER DATE. MARK RECORD SETS WITH RED ERASABLE PENCIL. USE OTHER COLORS TO DISTINGUISH BETWEEN VARIATIONS IN SEPARATE CATEGORIES OF THE WORK. MARK NEW INFORMATION THAT IS IMPORTANT TO THE OWNER BUT WAS NOT SHOWN ON THE CONTRACT DRAWINGS, DETAILS OR SHOP DRAWINGS. NOTE RELATED CHANGE ORDER NUMBERS WHERE APPLICABLE. NOTE RELATED RECORD DRAWING INFORMATION AND PRODUCT DATA. UPON COMPLETION OF THE WORK, SUBMIT ONE (1) COMPLETE SET OF RECORD DOCUMENTS TO THE DRW NX CONSTRUCTION SUPERVISOR FOR THE OWNER'S RECORDS.

**PART I: GENERAL**

- 1.1 SCOPE: CLEARING, GRUBBING, STRIPPING, EROSION CONTROL, SURVEY, LAYOUT, SUB GRADE PREPARATION, FINISH GRADING AND SECURITY FENCE, AS REQUIRED BY CONSTRUCTION DRAWINGS AND DETAIL DRAWINGS.
- 1.2 REFERENCES
  - A. DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR THE STATE IN WHICH THE PROJECT IS LOCATED.
  - B. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
  - C. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
  - D. AASHTO (AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS)
- 1.3 INSPECTION AND TESTING
  - A. FIELD TESTING OF EARTHWORK, AGGREGATE BASE COURSE, COMPACTION, AND CONCRETE TESTING SHALL BE PERFORMED BY THE CONTRACTOR'S INDEPENDENT TESTING LAB.
  - B. ALL WORK SHALL BE INSPECTED AND RELEASED BY THE DRW NX CONSTRUCTION SUPERVISOR WHO SHALL CARRY OUT THE GENERAL INSPECTION OF THE WORK WITH SPECIFIC CONCERN TO PROPER PERFORMANCE OF THE WORK AS SPECIFIED AND/OR CALLED FOR ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REQUEST TIMELY INSPECTIONS PRIOR TO PROCEEDING WITH FURTHER WORK THAT WOULD MAKE PARTS OF THE WORK INACCESSIBLE OR DIFFICULT TO INSPECT.
- 1.4 SITE MAINTENANCE AND PROTECTION
  - A. PROVIDE ALL NECESSARY JOB SITE MAINTENANCE FROM COMMENCEMENT OF THE WORK UNTIL COMPLETION OF THE CONTRACT.
  - B. CONTACT THE ONE-CALL UTILITY LOCATION SERVICE PRIOR TO ANY EXCAVATING ACTIVITIES TO HAVE LOCATIONS OF UNDERGROUND UTILITIES VERIFIED.
  - C. AVOID DAMAGE TO THE SITE INCLUDING EXISTING FACILITIES, STRUCTURES, TREES AND SHRUBS DESIGNATED TO REMAIN. TAKE PROTECTIVE MEASURES TO PREVENT EXISTING FACILITIES THAT ARE NOT DESIGNATED FOR REMOVAL FROM BEING DAMAGED BY THE WORK.
  - D. KEEP SITE FREE OF ALL PONDING WATER.
  - E. PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH THE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS FOR THE STATE IN WHICH THE PROJECT IS LOCATED.
  - F. PROVIDE AND MAINTAIN ALL TEMPORARY FENCING, BARRICADES, WARNING SIGNALS AND SIMILAR DEVICES NECESSARY TO PROTECT LIFE AND PROPERTY DURING THE ENTIRE PERIOD OF CONSTRUCTION. REMOVE ALL SUCH DEVICES UPON COMPLETION OF THE WORK.

**PART II: PRODUCTS**

- 2.1 SUITABLE BACK FILL: EXCAVATED INORGANIC MATERIAL, COHESIVE AND NON-COHESIVE MATERIALS, INCLUDING GRAVEL, SAND, INORGANIC LEAN CLAY, GRAVEL SILT, GRAVEL CLAY, SAND CLAY, SAND SILT OR SILT CLAY MATERIAL FREE FROM FROZEN LUMPS, REFUSE, STONES OR ROCKS LARGER THAN 3-INCHES IN ANY DIMENSION OR OTHER MATERIAL THAT MAY MAKE THE INORGANIC MATERIAL UNSUITABLE FOR BACKFILL OR FILL MATERIAL AS DETERMINED BY THE DRW NX CONSTRUCTION SUPERVISOR AND GEOTECHNICAL ENGINEER.
- 2.2 POROUS AND NON POROUS EMBANKMENT AND BACK FILL:
  - A. CONNECTICUT: PER CONNECTICUT DEPARTMENT OF TRANSPORTATION SECTION 2.13-19
- 2.3 SELECT STRUCTURAL FILL: GRANULAR FILL MATERIAL FOR USE AROUND AND UNDER STRUCTURES WHERE STRUCTURAL FILL MATERIALS ARE REQUIRED:
  - A. CONNECTICUT: PER CONNECTICUT DEPARTMENT OF TRANSPORTATION SECTION 2.13-19
- 2.4 GRANULAR BEDDING AND TRENCH BACK FILL: WELL-GRADED SAND (SW OR SW-SM) AND THE FOLLOWING:
  - A. CONNECTICUT: PER CONNECTICUT DEPARTMENT OF TRANSPORTATION SECTION 2.13-19
- 2.5 CRUSHED STONE SURFACE COURSE FOR ACCESS ROAD:
  - A. CONNECTICUT: PER CONNECTICUT DEPARTMENT OF TRANSPORTATION SECTION 2.13-19L
- 2.6 CRUSHED STONE SUBBASE FOR ACCESS ROAD:
  - A. AASHTO #57 CRUSHED LIMESTONE OR APPROVED EQUAL
- 2.7 CRUSHED STONE GRANULAR BASE FOR COMPOUND:
  - A. AASHTO #57 CRUSHED LIMESTONE OR APPROVED EQUAL
- 2.8 UNSUITABLE MATERIALS: TOP SOIL, HIGH AND MODERATELY PLASTIC SILTS AND CLAY, MATERIAL CONTAINING REFUSE, FROZEN LUMPS, DEMOLISHED BITUMINOUS MATERIAL, VEGETATIVE MATTER, WOOD, STONES IN EXCESS OF 3-INCHES IN ANY DIMENSION AND DEBRIS AS DETERMINED BY THE CONSTRUCTION SUPERVISOR AND DRW NX GEOTECHNICAL ENGINEER. TYPICALLY, THESE WILL BE SOILS CLASSIFIED AS PT, MH, CH, OH, ML OR OL.
- 2.9 GEOTEXTILE FABRIC: MIRAFI 500X OR APPROVED EQUIVALENT
- 2.10 PLASTIC MARKING TAPE: SHALL BE ACID AND ALKALI RESISTANT POLYETHYLENE FILM, SPECIFICALLY MANUFACTURED FOR MARKING AND LOCATING UNDERGROUND UTILITIES, 6-INCHES WIDE WITH A MINIMUM THICKNESS OF 0.004-INCH. TAPE SHALL HAVE MINIMUM STRENGTH OF 1500 PSI IN BOTH DIRECTIONS AND MANUFACTURED WITH INTEGRAL WIRES, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN BURIED UP TO 3 FEET DEEP. THE METALLIC CORE OF THE TAPE SHALL BE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. TAPE COLOR SHALL BE RED FOR ELECTRIC UTILITIES AND ORANGE FOR TELECOMMUNICATION UTILITIES.
- 2.11 SECURITY FENCE
  - A. PROVIDE AND INSTALL THE GALVANIZED FENCE WITH ASSOCIATED POSTS, RAILS, BRACES, FABRIC, TERMINAL POST, GATES, DROP BAR AND BARBED WIRE. USE APPLICABLE PROVISIONS OF ASTM FOR MATERIALS.
  - B. FABRIC SHALL BE HEAVY GALVANIZED CHAIN LINK FENCE, CONFORMING TO ASTM A392 2-INCH MESH 9 GAUGE WIRE (0.148 INCHES IN DIAMETER) WITH THE TOP AND BOTTOM SELVAGES TWISTED AND BARBED.
  - C. POSTS
    1. LINE POST FOR FABRIC UP TO 8 FEET HIGH SHALL BE 2 3/8 INCH O.D.
    2. END CORNER, PULL POST AND GATE POST SHALL BE 2 7/8 INCH O.D. ALL POSTS SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE IN ACCORDANCE WITH ASTM A120, A570 AND A525. FOR FENCE OVER 8 FEET HIGH, SIZE POST ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
  - D. TOP RAILS SHALL CONFORM TO 1 1/4 INCH (1.660" O.D.), SCHEDULE 40 GALVANIZED STEEL PIPE IN ACCORDANCE WITH ASTM A120.
  - E. TENSION WIRE SHALL BE 7 GAUGE U.S. STEEL WIRE GALVANIZED IN ACCORDANCE WITH ASTM A116, COATING CLASS III.
  - F. BRACE BANDS, TENSION BANDS AND TENSION BARS SHALL BE FABRICATED OF 1/8 INCH BY 7/8 INCH GALVANIZED STEEL WITH GALVANIZED STEEL CARRIAGE BOLTS AND NUTS IN ACCORDANCE WITH ASTM A123. TENSION BARS SHALL BE 1/4 INCH BY 3/4 INCH GALVANIZED STEEL BAR IN ACCORDANCE WITH ASTM A153.
  - G. FABRIC TIES SHALL BE CLASS I GALVANIZED STEEL WIRE NO LESS THAN 9 GAUGE.
  - H. POST TOPS SHALL BE PRESSED STEEL OR MALLEABLE IRON AND SHALL BE GALVANIZED PER ASTM A153.
  - I. BARBED WIRE SHALL CONSIST OF DOUBLE STRANDED 12 1/2 GAUGE WIRE ASTM A121, CLASS 3 WITH 4-POINT BARBS SPACED 5 INCHES APART. THE TOP 1 FOOT OF THE FENCE SHALL CONSIST OF 3 STRANDS OF BARBED WIRE ATTACHED TO 45 DEGREE ANGLE, HEAVY-PRESSED ARMS CAPABLE OF WITHSTANDING WITHOUT FAILURE 250 POUNDS DOWNWARD PULL AT THE OUTERMOST END OF THE ARM.
  - J. GATE MATERIALS, SUCH AS FABRIC, BOLTS, NUTS, TENSION BARS AND BARBED WIRE SHALL BE CONSISTENT WITH FENCE MATERIALS.



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PROJECT LOCATION:

**US.CT.NXTR.1043980**  
101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

REV.	DESCRIPTION OF CHANGE	ZDT	JWB	ISSUE DATE
2	UPDATED PER COMMENTS	ZDT	JWB	07/09/2020
1	UPDATED PER COMMENTS	ZDT	JWB	06/23/2020
0	FOR PERMITTING	ZDT	JWB	06/11/2020
A	90% REVIEW	ZDT	JWB	06/11/2020
SCALE:AS SHOWN	DESIGNED BY: ZDT	DRAWN BY: ZDT	AUTH BY: JWB	ISSUE DATE

PROJECT NAME:

**US.CT.NXTR.1043980**

DRAWING TITLE:

**GENERAL NOTES**

DRAWING NUMBER:

**N-1**

GPD#:2020796.01.US.CT.NXTR.1043980.01

PART III: EXECUTION

3.1 GENERAL

- A. BEFORE STARTING GENERAL SITE PREPARATION ACTIVITIES, INSTALL EROSION AND SEDIMENT CONTROL MEASURES. THE WORK AREA SHALL BE CONSTRUCTED AND MAINTAINED IN SUCH CONDITION THAT IN THE EVENT OF RAIN THE SITE WILL BE WELL DRAINED AT ALL TIMES.
- B. PERFORM ALL SURVEY, LAYOUT, STAKING AND MARKING TO ESTABLISH AND MAINTAIN ALL LINES, GRADES, ELEVATIONS AND BENCHMARKS NEEDED FOR EXECUTION OF THE WORK.
- C. CLEAR AND GRUB THE AREA WITHIN THE LIMITS OF THE SITE AND ONLY THE IMMEDIATE SURROUNDINGS NECESSARY TO COMPLETE THE WORK. REMOVE TREES, BRUSH, STUMPS, RUBBISH AND OTHER DEBRIS AND VEGETATION RESTING ON OR PROTRUDING THROUGH THE SURFACE OF THE SITE AREA TO BE CLEARED AND GRUBBED.
  - 1. REMOVE THE FOLLOWING MATERIALS TO A DEPTH OF NO LESS THAN 12-INCHES BELOW THE ORIGINAL GROUND SURFACE: ROOTS, STUMPS AND OTHER DEBRIS, BRUSH AND REFUSE EMBEDDED IN OR PROTRUDING THROUGH THE GROUND SURFACE. RAKE, DISK OR PLOW THE AREA TO A DEPTH OF NO LESS THAN 6-INCHES, AND REMOVE UP TO A DEPTH OF 12-INCHES ALL ROOTS AND OTHER DEBRIS THEREBY EXPOSED.
  - 2. REMOVE TOPSOIL MATERIALS COMPLETELY FROM THE SURFACE UNTIL THE SOIL NO LONGER MEETS THE DEFINITION OF TOPSOIL. AVOID MIXING TOPSOIL WITH SUBSOIL OR OTHER EXCAVATED MATERIALS. TOPSOIL SHALL BE STOCKPILED SEPARATELY FOR REUSE, AS DIRECTED BY THE CONSTRUCTION SUPERVISOR.
  - 3. EXCEPT WHERE EXCAVATION TO GREATER DEPTH IS INDICATED, FILL DEPRESSIONS RESULTING FROM CLEARING, GRUBBING AND DEMOLITION COMPLETELY WITH SUITABLE FILL.
- D. REMOVE FROM THE SITE AND DISPOSE IN AN AUTHORIZED LANDFILL ALL DEBRIS RESULTING FROM CLEARING AND GRUBBING OPERATIONS. BURNING IS NOT PERMITTED.
- E. PRIOR TO EXCAVATING, THOROUGHLY EXAMINE THE AREA TO BE EXCAVATED AND/OR TRENCHED TO VERIFY THE LOCATIONS OF FEATURES INDICATED ON THE DRAWINGS, AND ASCERTAIN THE EXISTENCE AND LOCATION OF ANY STRUCTURE, UNDERGROUND STRUCTURE, CULVERT, STREAM CROSSING OR OTHER ITEM NOT SHOWN THAT MIGHT AFFECT OR INTERFERE WITH THE NEW CONSTRUCTION. NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR OF ANY OBSTRUCTIONS THAT WILL PREVENT ACCOMPLISHMENT OF THE WORK AS INDICATED ON THE DRAWINGS.
- F. SEPARATE AND STOCKPILE ALL EXCAVATED MATERIALS SUITABLE FOR BACK FILL. ALL EXCESS EXCAVATED AND UNSUITABLE MATERIALS SHALL BE DISPOSED OF IN AN AREA DESIGNATED BY THE DRW NX CONSTRUCTION SUPERVISOR. (UNSUITABLE MATERIAL MAY BE REQUIRED TO BE REMOVED FROM THE SITE.)

3.2 BACK FILL AS SOON AS PRACTICAL AFTER COMPLETING CONSTRUCTION OF THE RELATED STRUCTURE, INCLUDING EXPIRATION OF THE SPECIFIED MINIMUM CURING PERIOD FOR CAST-IN-PLACE CONCRETE, BACKFILL THE EXCAVATION WITH APPROVED MATERIAL TO RESTORE THE REQUIRED FINISH GRADE.

- A. PRIOR TO PLACING BACKFILL AROUND STRUCTURES, ALL FORMS SHALL HAVE BEEN REMOVED AND THE EXCAVATION CLEANED OF ALL TRASH, DEBRIS AND UNSUITABLE MATERIALS.
- B. BACK FILL BY PLACING AND COMPACTING SUITABLE BACKFILL MATERIAL OR SELECT GRANULAR BACKFILL MATERIAL, WHEN REQUIRED, IN UNIFORM HORIZONTAL LAYERS OF NO GREATER THAN 8-INCH LOOSE THICKNESS. WHERE HAND-OPERATED COMPACTORS ARE USED, THE FILL MATERIALS SHALL BE PLACED IN LIFTS NOT TO EXCEED FOUR INCHES IN LOOSE DEPTH.
- C. WHENEVER THE DENSITY TESTS INDICATE THAT THE CONTRACTOR HAS NOT OBTAINED THE SPECIFIED DENSITY, THE SUCCEEDING LAYER SHALL NOT BE PLACED UNTIL THE SPECIFICATION REQUIREMENTS ARE MET UNLESS OTHERWISE AUTHORIZED BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL TAKE WHATEVER APPROPRIATE ACTION IS NECESSARY, SUCH AS DISKING AND DRYING, ADDING WATER OR INCREASING THE COMPACTIVE EFFORT.
- D. THOROUGHLY COMPACT EACH LAYER OF BACKFILL TO A MINIMUM OF 90% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST C. DO NOT PLACE BACKFILL AROUND NEW CAST-IN-PLACE CONCRETE STRUCTURES UNTIL THE CONCRETE HAS CURED FOR AT LEAST 7 DAYS OR COMPRESSIVE STRENGTH TESTS INDICATE THAT THE CONCRETE HAS ACHIEVED MORE THAN 80% OF ITS SPECIFIED 28 DAY COMPRESSIVE STRENGTH.

3.3 TRENCH EXCAVATION

- A. UTILITY TRENCHES SHALL BE EXCAVATED TO THE LINES AND GRADES SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE DRW NX CONSTRUCTION SUPERVISOR. PROVIDE SHORING, SHEETING AND BRACING AS REQUIRED TO PREVENT CAVING OR SLOUGHING OF THE TRENCH WALLS.
- B. THE TRENCH WIDTH EXTENDS A MINIMUM OF 6 INCHES BEYOND EACH OUTSIDE EDGE OF THE CONDUIT OR OUTERMOST CONDUIT, WHICHEVER IS APPLICABLE.
- C. WHEN SOFT, YIELDING OR OTHERWISE UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED AT THE REQUIRED TRENCH BOTTOM ELEVATION, OVER-EXCAVATE THE TRENCH TO A DEPTH OF NO LESS THAN 12 INCHES BELOW THE REQUIRED ELEVATION AND BACKFILL WITH GRANULAR BEDDING MATERIAL.

3.4 TRENCH BACK FILL

- A. PROVIDE GRANULAR BEDDING MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS, DRAWINGS AND THE UTILITY REQUIREMENTS.
- B. NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR 24 HOURS IN ADVANCE OF BACK FILLING
- C. CONDUCT UTILITY CHECK TESTS BEFORE BACK FILLING BACK FILL AND COMPACT TRENCH BEFORE ACCEPTANCE TESTING.
- D. PLACE GRANULAR TRENCH BACKFILL UNIFORMLY ON BOTH SIDES OF THE CONDUITS IN 6-INCH UNCOMPACTED LIFTS UNTIL 12 INCHES OVER THE CONDUITS. SOLIDLY RAM AND TAMP BACKFILL INTO SPACES AROUND THE CONDUITS.
- E. PROTECT CONDUIT FROM LATERAL MOVEMENT, DAMAGE FROM IMPACT OR UNBALANCED LOADING.
- F. ABOVE THE CONDUIT EMBEDMENT ZONE, PLACE AND COMPACT SATISFACTORY BACKFILL MATERIAL IN 9-INCH MAXIMUM LOOSE THICKNESS LIFTS TO RESTORE THE REQUIRED FINISHED SURFACE GRADE.
- G. COMPACT FINAL TRENCH BACKFILL TO A DENSITY EQUAL TO OR GREATER THAN THAT OF THE EXISTING UNDISTURBED MATERIAL IMMEDIATELY ADJACENT TO THE TRENCH BUT NO LESS THAN A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D1557

3.5 AGGREGATE ACCESS ROAD AND SITE

- A. CLEAR, GRUB, STRIP AND EXCAVATE FOR THE ACCESS ROAD AND TOWER COMPOUND TO THE LINES AND GRADES INDICATED ON THE DRAWINGS. SCARIFY TO A DEPTH OF 6 INCHES AND PROOF-ROLL. ALL HOLES, RUTS, SOFT PLACES AND OTHER DEFECTS SHALL BE CORRECTED.
- B. THE ENTIRE SUB GRADE SHALL BE COMPACTED TO NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D 1557.
- C. AFTER PREPARATION OF THE SUB GRADE IS COMPLETED, THE GEOTEXTILE FABRIC SHALL BE INSTALLED TO THE LIMITS INDICATED ON THE DRAWINGS BY ROLLING THE FABRIC OUT LONGITUDINALLY ALONG THE ROADWAY OR SITE. THE FABRIC SHALL NOT BE DRAGGED ACROSS THE SUB GRADE PLACE THE ENTIRE ROLL IN A SINGLE OPERATION, ROLLING THE MATERIAL AS SMOOTHLY AS POSSIBLE.
  - 1. OVERLAPS PARALLEL TO THE ROADWAY AND SITE WILL BE PERMITTED AT THE CENTERLINE AND AT LOCATIONS BEYOND THE ROADWAY OR SITE SURFACE WIDTH (I.E., WITHIN THE SHOULDER WIDTH) ONLY. NO LONGITUDINAL OVERLAPS SHALL BE LOCATED BETWEEN THE CENTERLINE AND THE SHOULDER. PARALLEL OVERLAPS SHALL BE A MINIMUM OF 3 FEET WIDE.
  - 2. TRANSVERSE (PERPENDICULAR TO THE ROADWAY) OVERLAPS AT THE END OF A ROLL SHALL OVERLAP IN THE DIRECTION OF THE AGGREGATE PLACEMENT (PREVIOUS ROLL ON TOP) AND SHALL HAVE A MINIMUM LENGTH OF 3 FEET.
  - 3. ALL OVERLAPS SHALL BE PINNED WITH STAPLES OR NAILS BETWEEN 10 AND 12 INCHES LONG TO INSURE STABLE POSITIONING DURING PLACEMENT OF AGGREGATE. PIN LONGITUDINAL SEAMS AT 25-FOOT CENTERS AND TRANSVERSE SEAMS EVERY 5 FEET ON CENTER.
- D. THE AGGREGATE SUB BASE, BASE AND SURFACE COURSES SHALL BE CONSTRUCTED IN LAYERS NOT MORE THAN 4 INCHES (COMPACTED) THICKNESS. AGGREGATE TO BE PLACED ON GEOTEXTILE FABRIC SHALL BE END-DUMPED ON THE FABRIC FROM THE FREE END OF THE FABRIC OR OVER PREVIOUSLY PLACED AGGREGATE. AT NO TIME SHALL EQUIPMENT, EITHER DUMPING THE AGGREGATE OR GRADING THE AGGREGATE, BE PERMITTED ON THE ROADWAY OR COMPOUND WITH LESS THAN 8 INCHES OF MATERIAL COVERING THE FABRIC.
- E. THE AGGREGATE SUB BASE AND BASE SHALL BE IMMEDIATELY COMPACTED TO NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS PROVIDED BY THE MODIFIED PROCTOR TEST, ASTM D 1557.

3.6 FINISH GRADING

- A. PERFORM ALL FINISHED GRADING TO PROVIDE SMOOTH, EVEN SURFACE AND SUBSURFACE DRAINAGE OF THE ENTIRE AREA WITHIN THE LIMITS OF CONSTRUCTION. GRADING SHALL BE COMPATIBLE WITH ALL SURROUNDING TOPOGRAPHY AND STRUCTURES.
- B. UTILIZE SATISFACTORY FILL MATERIALS RESULTING FROM THE EXCAVATION WORK IN THE CONSTRUCTION OF FILLS, EMBANKMENTS AND FOR THE REPLACEMENT OF REMOVED UNSUITABLE MATERIALS.
- C. REPAIR ALL ACCESS ROADS AND SURROUNDING AREAS USED DURING THE COURSE OF THIS WORK TO THEIR ORIGINAL CONDITION.

3.7 SECURITY FENCE

- A. THE BOTTOM OF THE FENCE SHALL BE 2 INCHES BELOW THE TOP OF THE COMPOUND GRAVEL. IF THE SITE CROSSES FEATURES SUCH AS DRAINAGE DITCHES, ETC., THE FENCE SHALL SPAN THE DEPRESSION. CLOSE THE SPACE BELOW THE BOTTOM OF THE FENCE WITH EXTRA FENCE FABRIC OR BARBED WIRE AS DIRECTED BY THE DRW NX CONSTRUCTION SUPERVISOR. PRIOR TO PLACING COMPONENTS SUCH AS FABRIC, RAILS, TENSION WIRE AND GATES, ENSURE THAT THE CONCRETE POST FOUNDATION HAS REACHED AT LEAST 75% OF ITS DESIGN STRENGTH OR HAS CURED A MINIMUM OF 7 DAYS AFTER SETTING THE POST.
- B. FURNISH GATES WITH NECESSARY FITTINGS AND HARDWARE. HINGES SHALL ALLOW SWING GATES TO SWING 180 DEGREES. PLUNGER BARS SHALL HAVE TOP, BOTTOM AND MIDDLE LOCKING POINTS WITH THE MIDDLE POINT ARRANGED FOR PADLOCKING. GATES SHALL HAVE KEEPERS ON EACH LEAF THAT ENGAGE AUTOMATICALLY WHEN THE GATE IS SWUNG OPEN. REPAIR GALVANIZED COATING DAMAGED IN THE FIELD WITH METHODS AND TECHNIQUES AS RECOMMENDED BY THE MANUFACTURER.

END OF SPECIFICATION

SAFETY ENFORCEMENT

SAFETY IS OF PARAMOUNT CONCERN TO BOTH SITE WORKERS AND THE PUBLIC.

1. CONSTRUCTION WORK PRESENTS UNIQUE THREATS TO HEALTH AND SAFETY. THE CONTRACTOR IS RESPONSIBLE TO EDUCATE THEIR WORK FORCE OF THESE DANGERS AND LIMIT THEIR EXPOSURE TO HAZARDS. THIS EDUCATION SHALL INCLUDE BUT NOT BE LIMITED TO APPLICABLE TRAINING COURSES AND CERTIFICATIONS, PROPER PERSONAL PROTECTIVE EQUIPMENT USAGE, DAILY TAILGATE MEETINGS AND ANY OTHER PREVENTATIVE MEASURES WHICH MAY BE REASONABLY EXPECTED. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, ADJACENT AREAS AND ANY PROPERTY OCCUPANTS WHO MAY BE AFFECTED BY THE WORK UNDER CONTRACT. THE CONTRACTOR SHALL REVIEW ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, AND LOCAL SAFETY GUIDELINES AND AT ALL TIMES SHALL CONFORM TO THE MOST RESTRICTIVE OF THESE STANDARDS TO ENSURE A SAFE WORKPLACE.
2. ALL SAFETY EQUIPMENT SHALL BE INSPECTED ACCORDING TO ALL OSHA AND INDUSTRY SCHEDULED INTERVALS AND ALL INSPECTIONS SHALL BE DOCUMENTED PER APPLICABLE CODES AND STANDARDS.
3. TOWER WORK PRESENTS ADDITIONAL THREATS TO HEALTH AND SAFETY. ALL TOWER WORKERS WORKING ON A TOWER MUST BE ADEQUATELY TRAINED AND MONITORED TO ENSURE THAT SAFE WORK PRACTICES ARE LEARNED AND FOLLOWED. AS REQUIRED BY OSHA, WHEN WORKING ON EXISTING COMMUNICATION TOWERS, EMPLOYEES MUST BE PROVIDED WITH APPROPRIATE FALL PROTECTION, TRAINED TO USE THIS FALL PROTECTION PROPERLY, AND THE USE OF FALL PROTECTION MUST BE CONSISTENTLY SUPERVISED AND ENFORCED BY THE CONTRACTOR.
4. ELECTRICAL WORK PRESENTS SPECIFIC THREATS TO THE HEALTH AND SAFETY OF WORKERS ON SITE. SPECIFICALLY ELECTROCUTIONS ARE THE FOURTH LEADING CAUSE OF DEATH ON CONSTRUCTION SITES. ALL ELECTRICAL WORKERS SHALL HAVE CURRENT CERTIFICATIONS WHICH SATISFY ALL TRAINING REQUIREMENTS FOR THE ELECTRICAL WORK THEY ARE PERFORMING PER OSHA STANDARDS. ALL ELECTRICAL WORKERS SHALL ADHERE TO ALL SAFETY RULES AND REGULATIONS FOR WORKER AND PUBLIC SAFETY. ALL WORK SHALL BE PERFORMED BY QUALIFIED ELECTRICIANS TRAINED FOR THE TYPE OF WORK AND THE VOLTAGES PRESENT FOR EACH TASK. THE CONTRACTOR SHALL REVIEW ALL LANDOWNER, PRIME CONTRACTOR, CARRIER, OSHA, NFPA 70, AND LOCAL SAFETY GUIDELINES AND AT ALL TIMES SHALL CONFORM TO THE MOST RESTRICTIVE OF THESE STANDARDS TO ENSURE A SAFE WORKPLACE.



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SEAL:



PROJECT LOCATION:

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101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE
2	UPDATED PER COMMENTS	ZDT	JWB	07/09/2020
1	UPDATED PER COMMENTS	ZDT	JWB	06/23/2020
0	FOR PERMITTING	ZDT	JWB	06/11/2020
A	90% REVIEW	ZDT	JWB	06/11/2020
SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT	

PROJECT NAME:

US.CT.NXTR.1043980

DRAWING TITLE:

GENERAL NOTES

DRAWING NUMBER:

N-2

GPD#:2020796.01.US.CT.NXTR.1043980.01

PROJECT SPECIFICATION 16000 (ELECTRICAL)

NOT ALL SECTIONS MAY APPLY TO THIS PROJECT, COORDINATE WITH CONSTRUCTION MANAGER.

PART I: GENERAL

1.1 SCOPE: THIS SPECIFICATION DESCRIBES THE MINIMUM REQUIREMENT FOR INSTALLATION OF ALL ELECTRICAL SYSTEMS.

1.2 REFERENCES: THE PUBLICATIONS LISTED BELOW FORM 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 NOTED OTHERWISE. EXCEPT AS MODIFIED BY THE REQUIREMENTS SPECIFIED HEREIN, OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE PUBLICATIONS.

- A. ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)
- B. NESC (NATIONAL ELECTRICAL SAFETY CODE), LATEST EDITION
- C. NEC (NATIONAL ELECTRICAL CODE), LATEST EDITION
- D. NFPA 70 (NATIONAL FIRE PROTECTION ASSOCIATION)
- E. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), INCLUDING ALL APPLICABLE AMENDMENTS
- F. U.L. (UNDERWRITERS LABORATORIES)

1.3 SYSTEM DESCRIPTION

- A. DESIGN REQUIREMENTS: THE CONTRACTOR SHALL INSTALL UNDERGROUND ELECTRICAL AND TELEPHONE CONDUITS AND CABLE AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.
- B. PERFORMANCE REQUIREMENTS: WHEN FINISHED, WORK SHALL BE IN A COMPLETE AND UNDAMAGED STATE, AS REQUIRED IN THE CONTRACT DOCUMENTS.

PART II: PRODUCTS

2.1 GENERAL

- A. ITEMS SHALL BE NEW AND SHALL BE INSTALLED ONLY IF IN FIRST-CLASS CONDITION.
- B. SUBSTITUTIONS FOR MATERIAL WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE DRW NX CONSTRUCTION SUPERVISOR.

2.2 MATERIALS: THE CONTRACTOR SHALL PROVIDE ALL MATERIAL EXCEPT AS SPECIFIED IN THE CONTRACT DOCUMENTS. ALL MATERIAL SHALL BE APPROVED AND LISTED BY OR BEAR THE U.L. LABEL, AND WILL COMPLY WITH ANSI, IEEE AND NEMA STANDARDS WHERE APPLICABLE.

- A. CONDUITS:
  - 1. ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, SIZED AS SHOWN ON THE CONSTRUCTION DRAWINGS.
  - 2. ALL EXTERIOR ABOVEGROUND CONDUIT SHALL BE PER LOCAL CODE REQUIREMENTS, MIN. SCH. 80 PVC.
  - 3. ALL INTERIOR CONDUIT SHALL BE EMT WITH COMPRESSION-TYPE FITTINGS.
  - 4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR OUTDOOR LOCATIONS WHERE FLEXIBLE CONNECTION IS REQUIRED.
- B. CABLES:
  - CONDUCTORS FOR GENERAL WIRING SHALL BE NEC STANDARD ANNEALED COPPER WIRE WITH NEC 600 VOLT INSULATION.
  - 1. #8 AND LARGER-STRANDED TYPE, THHN/THWN
  - 2. #10 AND SMALLER-SOLID TYPE THHN/THWN
  - 3. CONDUCTORS IN CONDUIT IN OR ADJACENT TO HIGH HEAT SOURCE SHALL BE TYPE XHHW
  - 4. CONDUCTORS IN CONDUITS ABOVE ROOF, ON TOP OF ROOF OR INSIDE BUILT-UP ROOFING MATERIAL SHALL BE TYPE XHHW
- C. CONVENIENCE OUTLET: UNLESS NOTED OTHERWISE, SURFACE-MOUNTED OUTLETS FOR EXTERIOR LOCATIONS SHALL BE FERALOY, CAD/ZINC ELECTROPLATED WITH THREADED HUBS OR CONDUIT ENTRANCES DRILLED AND TAPPED. ALL COVERS SHALL BE SELF-CLOSING AND GASKETED. SURFACE MOUNTED OUTLETS FOR INTERIOR LOCATIONS SHALL BE GALVANIZED, PRESSED STEEL WITH COVER PLATE, SIERRA PLASTIC STYLE, IVORY COLOR.
- D. COAXIAL CABLE SUPPORTS
  - 1. ALL WAVE GUIDE SUPPORTS SHALL BE MANUFACTURED TO MEET ALL COAX MINIMUM BENDING REQUIREMENTS WAVE GUIDES, AND B1587 FOR 6 WAVE GUIDES. SUPPORTS SHALL BE PROVIDED 3'-0" ON CENTERS.

PART III: EXECUTION

3.1 PREPARATION

- A. BEFORE LAYING OUT WORK, EXERCISE PROPER PRECAUTION TO VERIFY EACH MEASUREMENT.
- B. USE EXTREME CAUTION BEFORE EXCAVATING IN EXISTING AREAS TO LOCATE EXISTING UNDERGROUND SERVICES.

3.2 INSPECTION

- A. A VISUAL CHECK OF ELECTRICAL AND TELEPHONE CABLES, CONDUITS AND OTHER ITEMS SHALL BE MADE BY AN DRW NX CONSTRUCTION SUPERVISOR BEFORE THESE ITEMS ARE PERMANENTLY INSTALLED.
- B. THE CONTRACTOR SHALL NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR 24 HOURS PRIOR TO TRENCH BACK FILL

3.3 INSTALLATION

- A. TRENCHING, BACK FILLING, BEDDING AND COMPACTING SHALL COMPLY WITH SITE WORK SPECIFICATIONS.
- B. DIG TRENCHES TO THE REQUIRED DEPTH AS SHOWN ON THE DRAWINGS WITHOUT POCKETS OR DIPS. REMOVE LARGE STONES FROM THE BOTTOM OF THE TRENCH AND FIRMLY TAMP LOOSE FILL IN THE BOTTOM BEFORE CONDUIT IS LAID.
- C. INSTALL UNDERGROUND CONDUIT WITH A MINIMUM 3-INCH TO 100-FOOT SLOPE OR TO A SLOPE SHOWN ON THE DRAWINGS.
- D. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, TERMINATE AND CAP ALL STUB-UPS 12 INCHES ABOVE FINISHED GRADE ELEVATION.
- E. WHEREVER CONDUITS CROSS UNDER ROADWAYS, USE GALVANIZED RIGID STEEL CONDUITS IN ALL CASES, EXTENDING 5 FEET BEYOND THE EDGE OF THE ROAD BED. MINIMUM DEPTH FOR CONDUIT SHALL BE 4 FEET BELOW ROADWAY GRADE.
- F. MARK UNDERGROUND CONDUITS WITH A 6-INCH WIDE RED POLYETHYLENE TAPE BURIED 6 INCHES UNDER THE SURFACE DIRECTLY OVER THE CONDUITS. MARK THE TAPE THUS: CAUTION-BURIED ELECTRICAL CABLE.
- G. FOR SEALING CONDUITS, USE ONLY NONTHERMOPLASTIC COMPOUNDS SUCH AS J.M. DUXSEAL, OR AN APPROVED SUBSTITUTE. THE COMPOUND SHALL HAVE NO EFFECT ON RUBBER OR RUBBER-LIKE INSULATIONS, LEAD, ALUMINUM OR FERROUS ALLOYS; IT SHALL BE INSOLUBLE IN WATER AND WITHSTAND MAXIMUM TEMPERATURE RANGES OF THE LOCALITY.
- H. COAXIAL - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.
- I. ANTENNA - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.
- J. LNA/MHA - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.

END OF ELECTRICAL SPECIFICATIONS

PROJECT SPECIFICATION 16670 (GROUNDING)

NOT ALL SECTIONS MAY APPLY TO THIS PROJECT, COORDINATE WITH CONSTRUCTION MANAGER.

PART I: GENERAL

1.1 SCOPE

A. THIS SPECIFICATION PRESCRIBES THE REQUIREMENTS FOR FURNISHING, INSTALLATION AND TESTING OF THE GROUNDING CABLE, CONNECTORS AND ASSOCIATED COMPONENTS AS INDICATED ON THE DRAWINGS.

B. APPLICATIONS OF ELECTRICAL GROUNDING AND BONDING WORK SPECIFIED IN THIS SPECIFICATION INCLUDE THE FOLLOWING:

- 1. FENCE AND GATE POSTS
- 2. ELECTRICAL POWER SYSTEMS
- 3. GROUNDING ELECTRODES
- 4. GROUND BUS BAR
- 5. SERVICE EQUIPMENT
- 6. ENCLOSURES
- 7. MONOPOLE/LATTICE TOWER
- 8. ICE BRIDGE

1.2 REFERENCES: THE PUBLICATIONS LISTED BELOW FORM 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 NOTED OTHERWISE. EXCEPT AS MODIFIED BY THE REQUIREMENTS SPECIFIED HEREIN, OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE PUBLICATIONS.

- A. ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)
- B. IEEE (INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS)
- C. NEC (NATIONAL ELECTRICAL CODE), LATEST EDITION
- D. NEMA (NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION)
- E. NESC (NATIONAL ELECTRICAL SAFETY CODE), LATEST EDITION
- F. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
- G. U.L. (UNDERWRITERS LABORATORIES)
- H. APPLICABLE LOCAL CODES AND ORDINANCES

PART II: PRODUCTS

2.1 MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEMS INDICATED; WITH ASSEMBLY OF MATERIAL, INCLUDING, BUT NOT LIMITED TO, GROUNDING ELECTRODES, BONDING JUMPER AND ADDITIONAL ACCESSORIES NEEDED FOR A COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE COMPONENT PRODUCT MEETS INDICATED REQUIREMENTS, SELECTION IS INSTALLER'S OPTION. WHERE MATERIALS OR COMPONENTS ARE NOT INDICATED, PROVIDE PRODUCTS WHICH COMPLY WITH NEC, U.L. AND IEEE REQUIREMENTS AND WITH ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED.

- A. GROUNDING
  - 1. THE EQUIPMENT SHALL BE GROUNDED AS FOLLOWS, AS SHOWN ON THE DRAWINGS AND IN COMPLIANCE WITH NEC ARTICLE 250 AND STATE AND LOCAL CODES.
  - 2. GROUND RODS AND QUANTITY SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL PERFORM A GROUND-RESISTANCE-TO-EARTH TEST. SHOULD THE INSTALLATION HAVE A RESISTANCE OF 5 OHMS OR MORE, CONTRACTOR SHALL INSTALL MORE GROUND RODS AS NECESSARY SO THAT THE OVERALL GROUND-TO-EARTH RESISTANCE IS LESS THAN 5 OHMS.
  - 3. INSTALL ELECTRICAL GROUNDING AND BONDING SYSTEMS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, NEC'S "STANDARD OF INSTALLATION," AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS COMPLY WITH REQUIREMENTS.
  - 4. COORDINATE WITH OTHER ELECTRICAL WORK AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL GROUNDING AND BONDING SYSTEMS.
  - 5. INSTALL GROUND CONDUCTORS A MINIMUM OF 36 INCHES BELOW FINISHED GRADE WHICH ENCIRCLES THE TOWER AND EQUIPMENT AND ARE CONNECTED TO EACH DRIVEN GROUND ROD. GROUND TRENCH SHALL BE AT LEAST 24 INCHES AWAY FROM FOUNDATIONS.
  - 6. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUE FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUE SPECIFIED IN U.L. 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
  - 7. APPLY CORROSION-RESISTANT FINISH (NO-OX) TO FIELD-CONNECTIONS, AT COPPER GROUND BARS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATING HAVE BEEN DESTROYED, WHICH ARE SUBJECTED TO CORROSIVE AND/OR OXIDATION PROCESS.
  - 8. ON EXISTING LATTICE TOWERS, WATER TOWERS AND ROOF TOPS WHEN A NEW GROUNDING SYSTEM IS INSTALLED, THE CONTRACTOR SHALL TIE THE NEW GROUND SYSTEM TO THE EXISTING WATER TOWER, LATTICE TOWER STRUCTURAL STEEL OR BUILDING STRUCTURAL STEEL AS THE CASE MAY BE AT LEAST AT ONE LOCATION SO THAT THEY ARE AT THE SAME POTENTIAL.
- B. GROUND RODS
  - 1. GROUND RODS SHALL BE 3/4" DIAMETER 10'-0" LONG, COPPER CLAD DRIVEN ROD(S).
  - 2. GROUND ROD(S) SHALL BE LOCATED AT THE PERIMETER OF EQUIPMENT AS TO CREATE A GROUND RING AS SHOWN ON THE DRAWINGS.
  - 3. GROUND ROD(S) SHALL BE SPACED AT A MINIMUM SPACING OF 8'-0" AND A MAXIMUM SPACING OF 10'-0".
  - 4. GROUND RODS SHALL BE BURIED BELOW THE FROSTLINE. AT NO TIME SHALL THIS DEPTH BE LESS THAN 18" BELOW FINISHED GRADE.
  - 5. GROUND RODS WHICH CANNOT BE DRIVEN STRAIGHT DOWN THE ENTIRE (10) FEET, SHALL BE DRIVEN AT AN ANGLE NOT GRATER THAN 45 DEGREES (NEC 250-83 AND 250-84).
  - 6. GROUND ROD LOCATIONS SHALL BE NOTED ON THE AS-BUILT DRAWING COMPLETE WITH DIMENSIONS.
  - 7. PROVIDE GROUND TEST WELLS AS SHOWN ON THE CONSTRUCTION DRAWINGS.

C. GROUND CONDUCTOR

- 1. ALL DIRECT BURIED GROUND CONDUCTORS SHALL BE TINNED SOLID (#2 AWG CU) WIRE. BURIED GROUND CONDUCTOR SHALL BE INSTALLED AT MINIMUM DEPTH OF 36" BELOW GRADE.
- 2. ALL SUB GRADE GROUND CONNECTIONS SHALL BE MADE THROUGH THE USE OF EXOTHERMIC WELD PROCESS. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE SPLICES, TEES AND ALL GROUND ROD CONNECTIONS. MOLD, WELD KITS, ETC., SHALL BE MANUFACTURED BY CADWELD AND SHALL BE INSTALLED AS PER THE MANUFACTURER'S INSTRUCTIONS.
- 3. GROUND CONDUCTORS SHALL BE ROUTED IN THE SHORTEST AND STRAIGHTEST DISTANCES POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES. CONDUCTORS SHALL BE INSTALLED AS FOLLOWS:
  - A. ALL GROUND CONDUCTORS SHALL FOLLOW A CONTINUOUS DOWNWARD PATTERN TO THE GROUND SOURCE. (NEVER RUN GROUND CONDUCTOR IN AN UPWARD DIRECTION.)
  - B. CONDUCTORS SHALL BE INSTALLED WITH A MINIMUM OF 12 INCH MINIMUM BENDING RADIUS.
  - C. WHEN THE MINIMUM BENDING RADIUS CANNOT BE ACHIEVED, GROUND CABLES SHALL BE ROUTED AT 90 DEGREE BENDS WITH THE USE OF EXOTHERMIC CONNECTIONS AT 90 DEGREES. THE INTENT IS TO ELIMINATE THE CABLE BEND RADIUS AND REPLACE THE RADIUS WITH AN EXOTHERMIC CONNECTION.

PART III: EXECUTION

3.1 PREPARATION

- A. ALL SURFACES TO WHICH GROUND CONNECTIONS WILL BE MADE SHALL BE FREE OF PAINT, GALVANIZING DIRECT CORROSION ETC..
- B. ALL METAL SURFACES EXPOSED ON GROUNDING SHALL BE EITHER COLD GALVANIZE, OR PAINTED TO MATCH ORIGINAL SURFACE.

3.2 EXAMINATION.

- A. EXAMINE AREAS AND CONDITIONS UNDER WHICH ELECTRICAL GROUNDING AND BONDING CONNECTIONS ARE TO BE MADE AND NOTIFY DRW NX CONSTRUCTION SUPERVISOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER COMPLETION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN REMEDIED.
- B. THE CONTRACTOR SHALL NOTIFY THE DRW NX CONSTRUCTION SUPERVISOR 24 HOURS PRIOR TO TRENCH BACK FILL ALL WORK DONE BELOW FINISHED GRADE SHALL BE INSPECTED BY THE AERIAL CONSTRUCTION SUPERVISOR DURING THAT PERIOD OR THE CONTRACTOR SHALL PROCEED.

3.3 GROUND TESTING

- A. THE CONTRACTOR SHALL TEST THE GROUND ELECTRODE ROD RESISTANCE IN ACCORDANCE WITH THE METHODS OF MEASUREMENT SHOWN IN THE FALL OF POTENTIAL METHOD.
- B. TEST INSTRUMENTS SHALL OPERATE AT A FREQUENCY OTHER THAN 60 HERTZ AND SHALL CONTAIN STRAY CURRENT AND DC FILTERS, FAULT CURRENT PROTECTION AND HAVE SENSITIVITY TO OPERATE A LOW SIGNAL STRENGTH.
- C. PRIOR TO TESTING, THE CONTRACTOR SHALL DE-ENERGIZE ALL POWER SOURCES, DISCONNECT THE ELECTRODE CONDUCTOR FROM THE GROUND ROD, WEAR HIGH VOLTAGE RUBBER SAFETY GLOVES AND WILL NOT HANDLE TEST INSTRUMENTS IF AT ALL POSSIBLE.
- D. GROUND TESTS ARE TO BE PERFORMED BY QUALIFIED PERSONS FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED.
- E. AN INDEPENDENT, APPROVED OUTSIDE FIRM SHALL PERFORM THE GROUND TEST AS OUTLINED. ALL TEST RESULTS SHALL BE FORWARDED TO THE DRW NX CONSTRUCTION SUPERVISOR FOR APPROVAL.

END OF GROUNDING SPECIFICATIONS

CLOSE OUT DOCUMENTATION

CLOSEOUT BOOK CONTAINING THE FOLLOWING:

- A. AS BUILT DESIGN DRAWINGS
- B. SWEEP TEST RESULTS
- C. GROUND RESISTIVITY TEST
- D. PHOTO DOCUMENTATION OF:
  - 1. UNDERGROUND CONDUITS AND GROUND RING
  - 2. ANTENNA, COAXIAL, JUMPER ATTACHMENTS AND GROUND KIT ATTACHMENTS
  - 3. ANTENNA DOWN TILT MEASUREMENT USING AN INCLINOMETER ON THE BACK PLANE OF THE ANTENNA
  - 4. GROUND BAR ATTACHMENTS
- E. SIGNED OFF PERMIT CARDS
- F. CERTIFICATE OF OCCUPANCY
- G. RETURN OF KEYS AND/OR ACCESS AUTHORIZATION
- H. ORIGINAL BUILDING PERMIT



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DRAWING TITLE:

ELECTRICAL NOTES

DRAWING NUMBER:

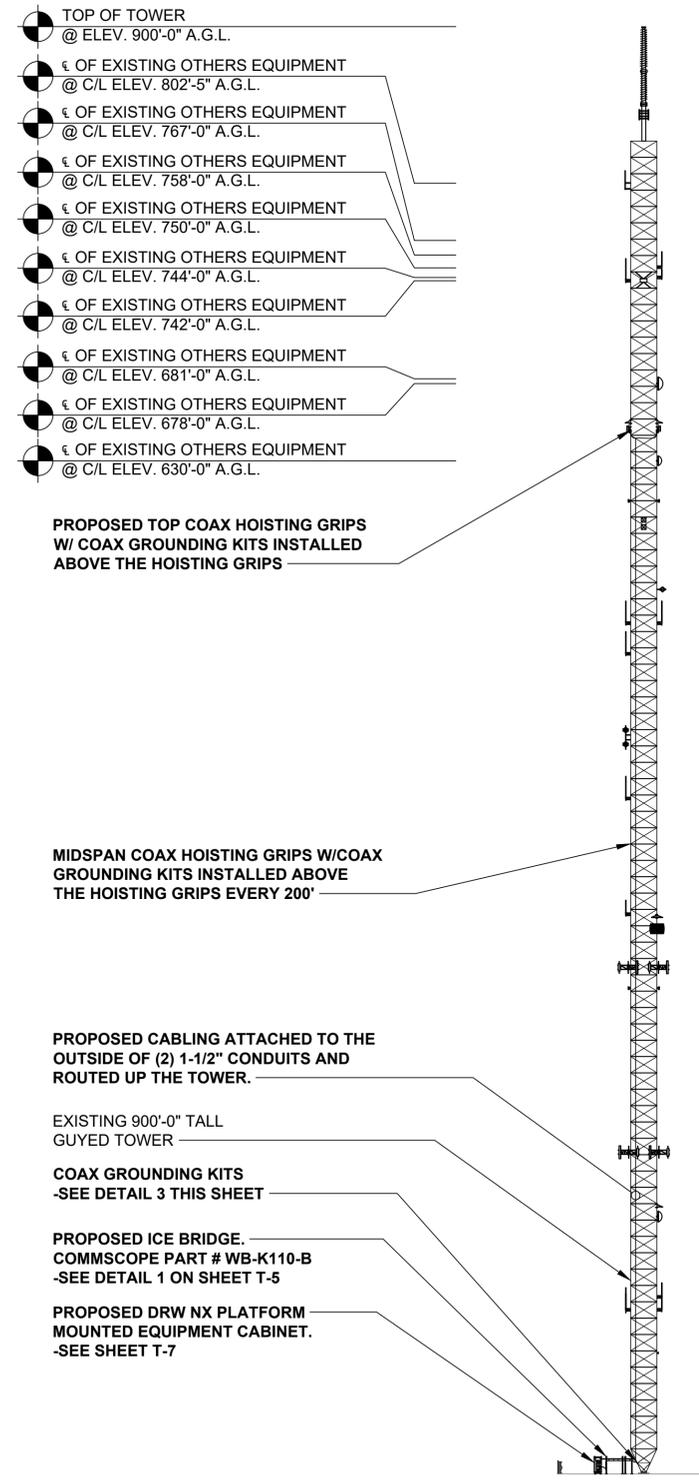
N-3

GPD#:2020796.01.US.CT.NXTR.1043980.01





NOTE:  
THE PASSING TOWER STRUCTURAL ANALYSIS FOR THE EXISTING 900'-0" GUYED TOWER WAS COMPLETED BY STAINLESS ON JULY 7TH, 2020. THE TOWER WAS FOUND TO HAVE SUFFICIENT CAPACITY FOR DRW NX'S PROPOSED LOADING.



- 1 OF PROP. DRW NX 6'-0" MW DISHES @ C/L ELEV. 650'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 605'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 591'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 550'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 529'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 510'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 458'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 420'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 348'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 339'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 315'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 302'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 200'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 166'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 160'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 110'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 102'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 100'-0" A.G.L.
- 1 OF EXISTING OTHERS EQUIPMENT @ C/L ELEV. 75'-0" A.G.L.

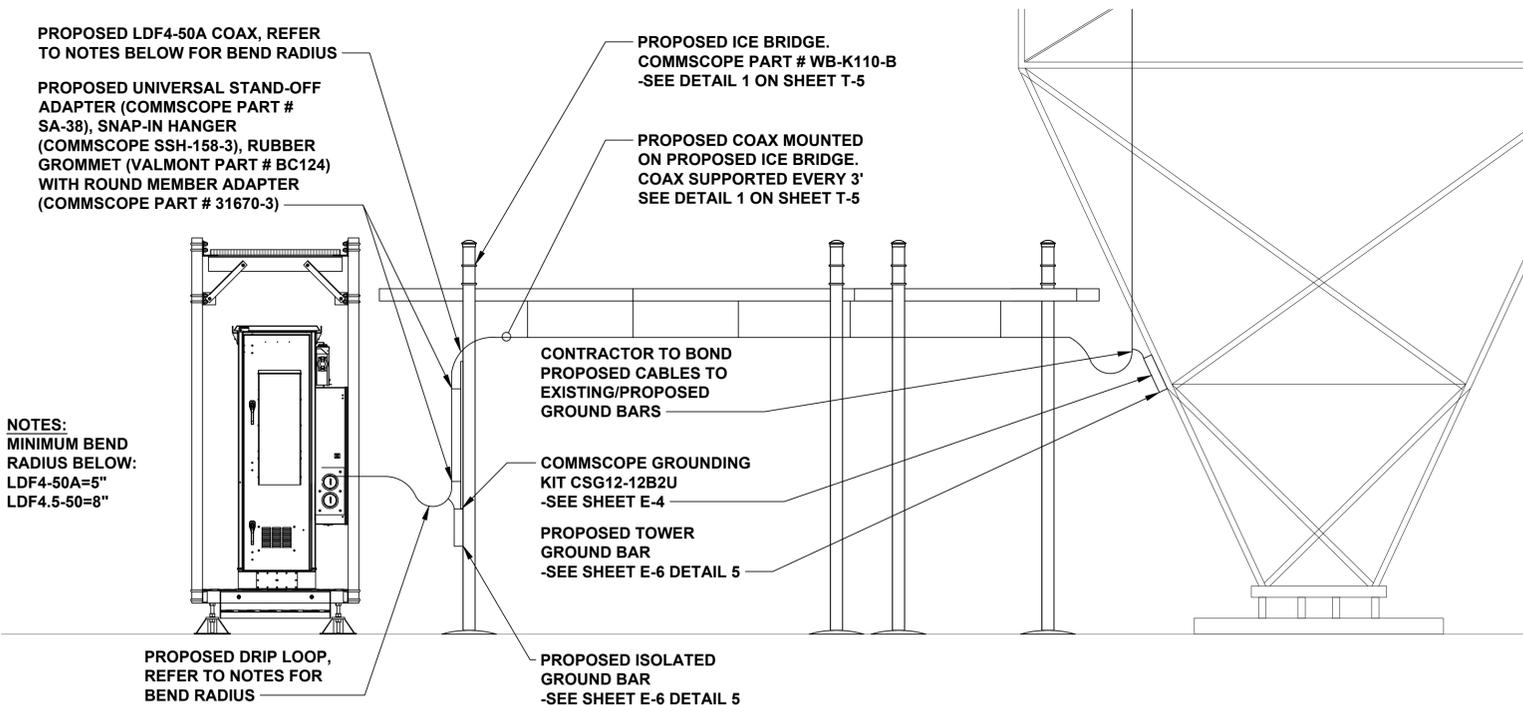
MICROWAVE DISH CONFIGURATION										CABLING TABLE		
DISH #	AZIMUTH	MODEL #	DIAMETER (FT)	WEIGHT (LBS)	RADIO MODEL #	RAD CENTER (FT)	MECH. DOWNTILT	ODU QUANTITY	# OF CABLES	MODEL #	DIA. (IN)	
1	51	VHLPX3-6W	3	102	SAF MMX MK2 ODU	650	-	2	3/3/3	LDF4-50A/SMF/COPPER POWER	1/2, 1/4, 1/4	
2	231	VHLPX3-6W	3	102	SAF MMX MK2 ODU	650	-	2	3/3/3	LDF4-50A/SMF/COPPER POWER	1/2, 1/4, 1/4	
ICE SHIELD	51	MD-SQ3	-	125	-	654	-	-	-	-	-	
ICE SHIELD	231	MD-SQ3	-	125	-	654	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	

EQUIPMENT QUANTITIES			
ITEM	MODEL #	QUANTITY	UNIT*
TOWER MOUNTED GROUND BAR		2	
ICE BRIDGE LENGTH	WB-K110-B	3	10 LF
TOWER COAX QTY	LDF4-50A	4488	LF
TOWER FIBER CABLE QTY	SMF	4488	LF
TOWER POWER CABLE QTY	COPPER POWER CABLE	4488	LF
GROUNDING KIT QTY	COMMSCOPE CSG12-12B2U	54	
MID-GROUNDING KIT QTY	COMMSCOPE CSG12-12B2U	54	
TOP HOISTING GRIP QTY	COMMSCOPE L4SGRIP	18	
MID-HOISTING GRIP QTY	COMMSCOPE 43094	54	

ANTENNA SCHEDULE

2



TOWER ELEVATION

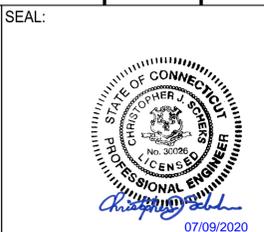
SCALE: N.T.S. 1

ENLARGED ELEVATION

SCALE: N.T.S. 3



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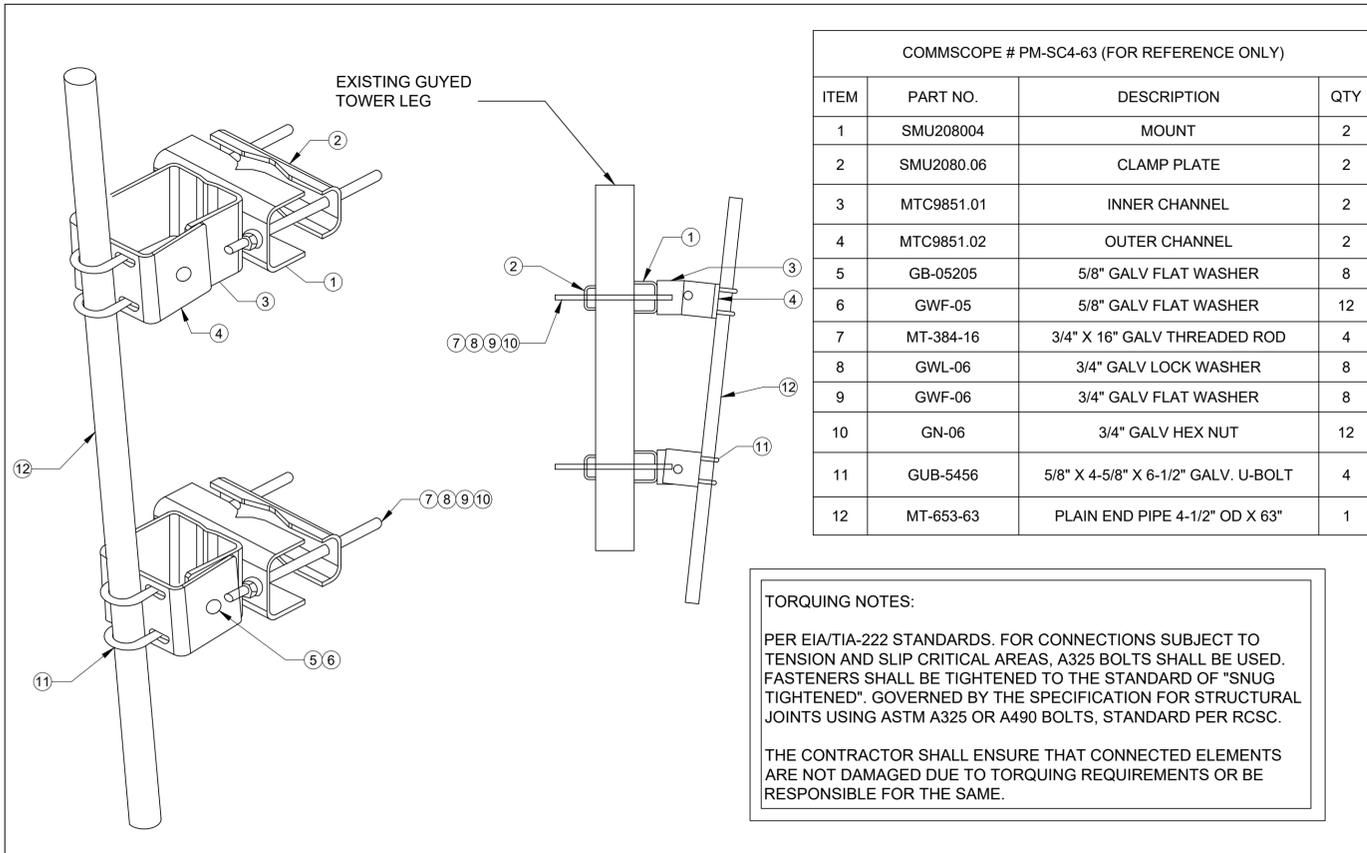


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0	FOR PERMITTING	ZDT	JWB 06/11/2020
A	90% REVIEW	ZDT	JWB 06/11/2020
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:
SCALE: AS SHOWN	DESIGNED BY: ZDT	DRAWN BY: ZDT	ISSUE DATE

PROJECT NAME:  
US.CT.NXTR.1043980  
DRAWING TITLE:  
TOWER ELEVATION &  
ANTENNA SCHEDULE  
DRAWING NUMBER:  
T-1

GPD#:2020796.01.US.CT.NXTR.1043980.01



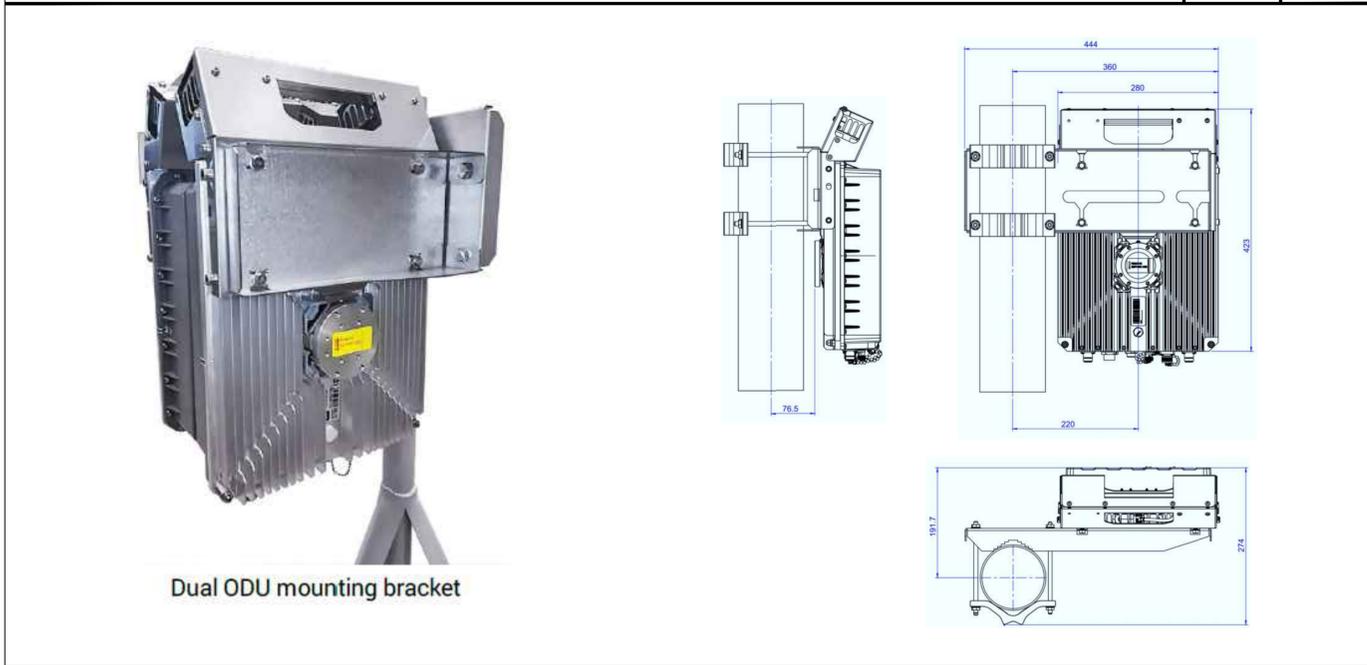
COMMSCOPE # PM-SC4-63 (FOR REFERENCE ONLY)

ITEM	PART NO.	DESCRIPTION	QTY
1	SMU208004	MOUNT	2
2	SMU2080.06	CLAMP PLATE	2
3	MTC9851.01	INNER CHANNEL	2
4	MTC9851.02	OUTER CHANNEL	2
5	GB-05205	5/8" GALV FLAT WASHER	8
6	GWF-05	5/8" GALV FLAT WASHER	12
7	MT-384-16	3/4" X 16" GALV THREADED ROD	4
8	GWL-06	3/4" GALV LOCK WASHER	8
9	GWF-06	3/4" GALV FLAT WASHER	8
10	GN-06	3/4" GALV HEX NUT	12
11	GUB-5456	5/8" X 4-5/8" X 6-1/2" GALV. U-BOLT	4
12	MT-653-63	PLAIN END PIPE 4-1/2" OD X 63"	1

**TORQUING NOTES:**  
 PER EIA/TIA-222 STANDARDS. FOR CONNECTIONS SUBJECT TO TENSION AND SLIP CRITICAL AREAS, A325 BOLTS SHALL BE USED. FASTENERS SHALL BE TIGHTENED TO THE STANDARD OF "SNUG TIGHTENED". GOVERNED BY THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, STANDARD PER RCSC.  
 THE CONTRACTOR SHALL ENSURE THAT CONNECTED ELEMENTS ARE NOT DAMAGED DUE TO TORQUING REQUIREMENTS OR BE RESPONSIBLE FOR THE SAME.

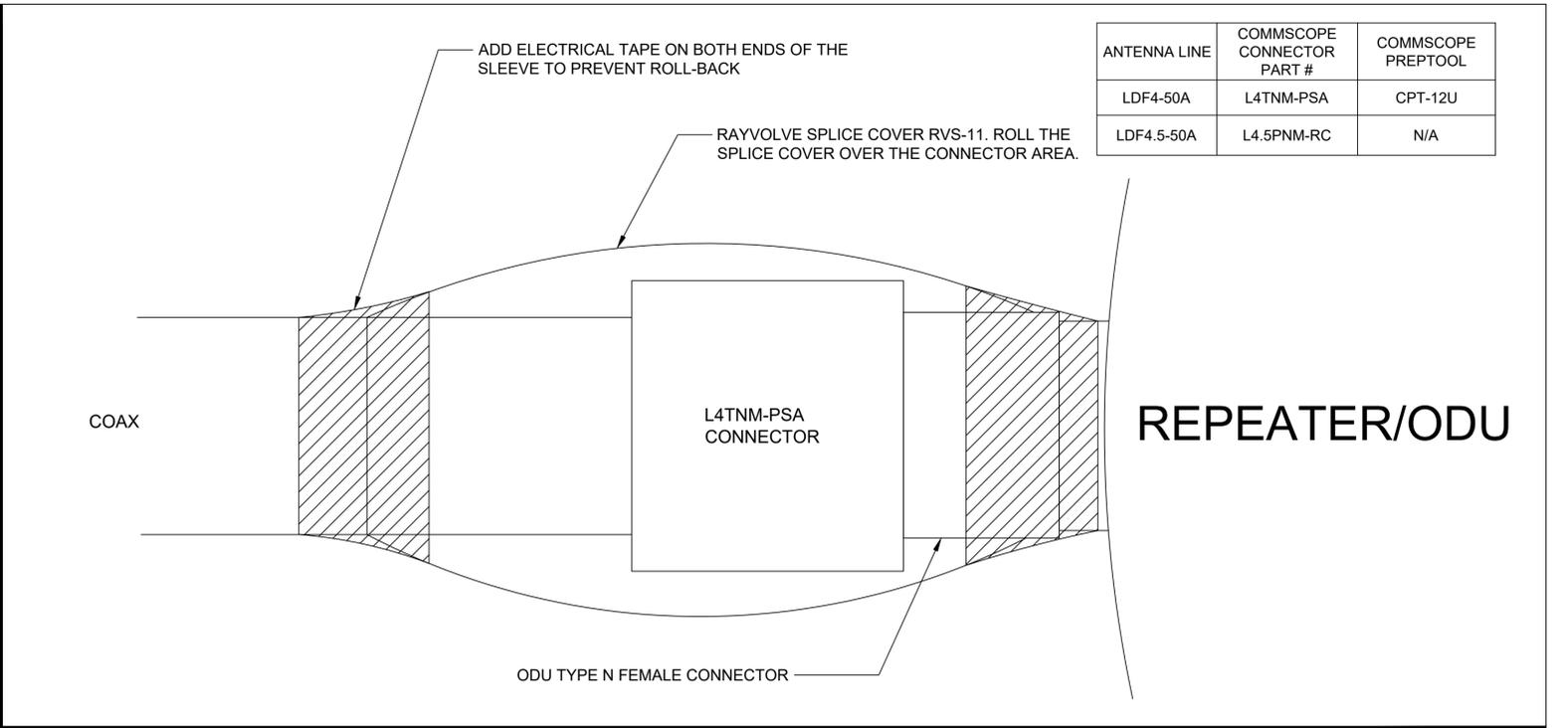
**COMMSCOPE PM-SC4-63 MOUNTING ASSEMBLY**

SCALE: N.T.S. **1**



**ODU MOUNT**

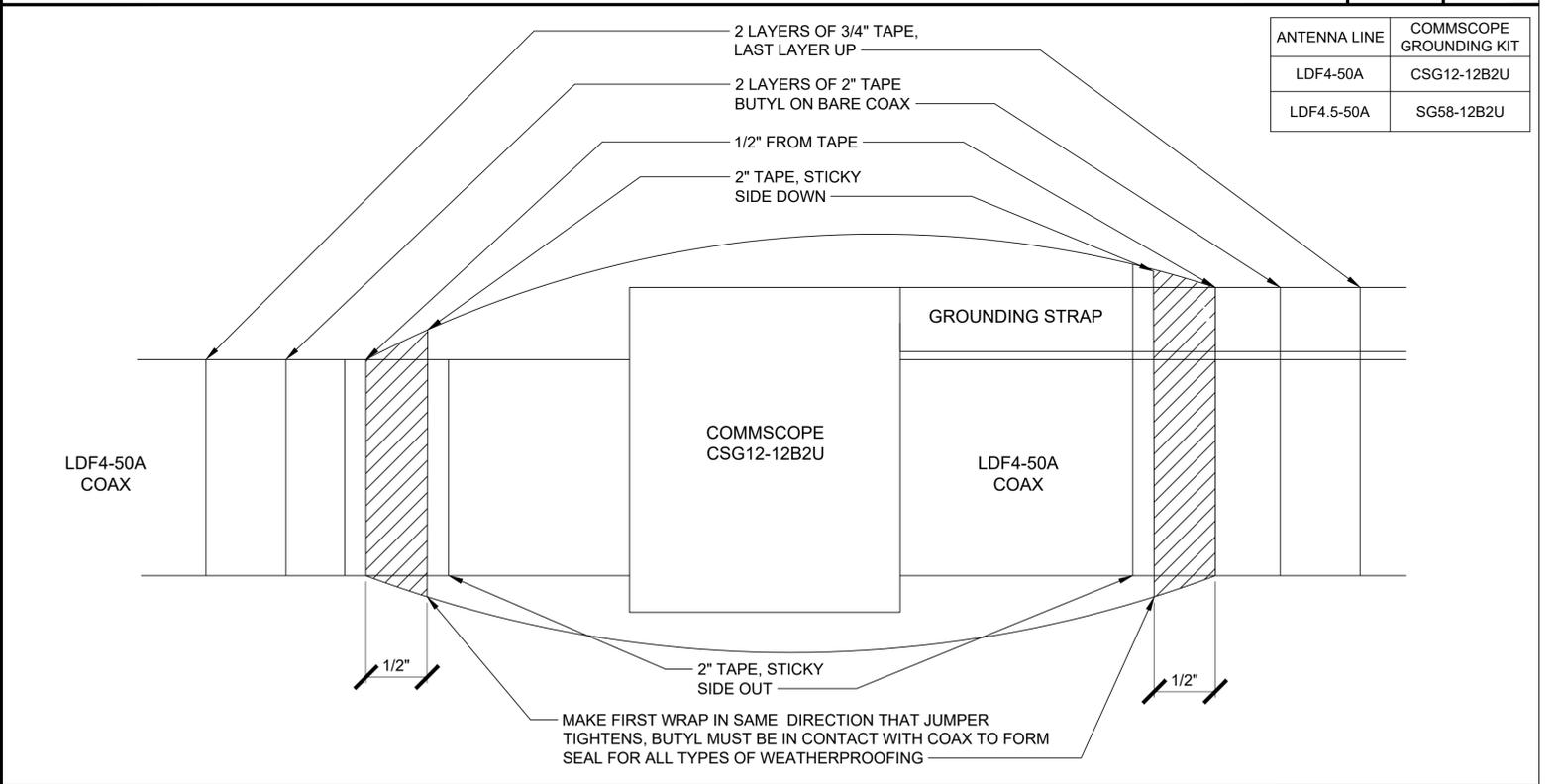
SCALE: N.T.S. **2**



ANTENNA LINE	COMMSCOPE CONNECTOR PART #	COMMSCOPE PREPTOOL
LDF4-50A	L4TNM-PSA	CPT-12U
LDF4.5-50A	L4.5PNM-RC	N/A

**COAX TO REPEATER/ODU WEATHERPROOFING DETAIL**

SCALE: N.T.S. **3**



ANTENNA LINE	COMMSCOPE GROUNDING KIT
LDF4-50A	CSG12-12B2U
LDF4.5-50A	SG58-12B2U

**GROUNDING KIT WEATHERPROOFING DETAIL**

SCALE: N.T.S. **4**



**GPD Engineering and Architecture**  
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PROJECT LOCATION:

US.CT.NXTR.1043980  
101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS				
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE
2	UPDATED PER COMMENTS	ZDT	JWB	07/09/2020
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SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT	

PROJECT NAME:  
**US.CT.NXTR.1043980**

DRAWING TITLE:  
**DISH MOUNT DETAILS**

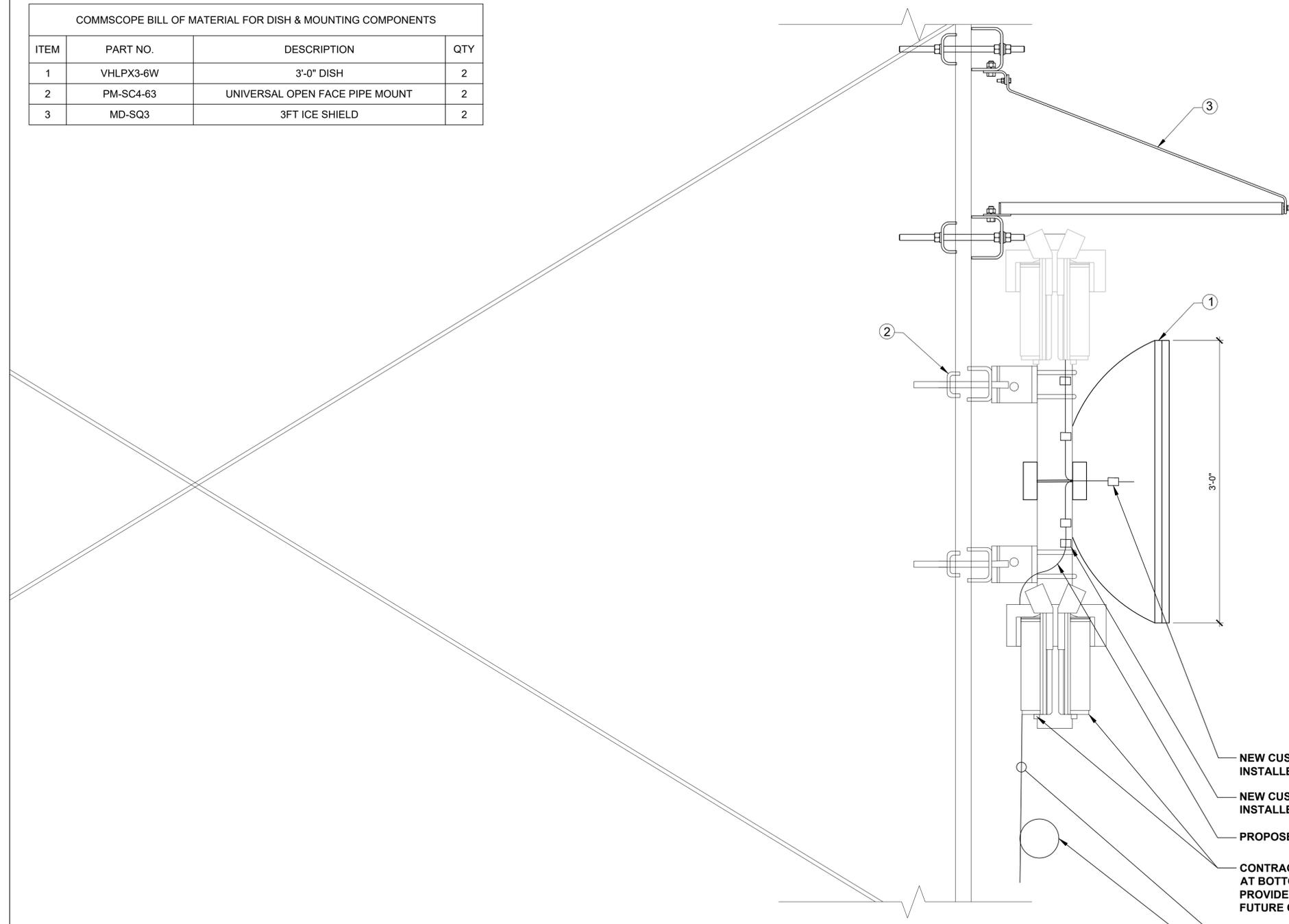
DRAWING NUMBER:

**T-2**

GPD#:2020796.01.US.CT.NXTR.1043980.01



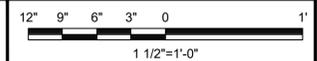
COMMSCOPE BILL OF MATERIAL FOR DISH & MOUNTING COMPONENTS			
ITEM	PART NO.	DESCRIPTION	QTY
1	VHLPX3-6W	3'-0" DISH	2
2	PM-SC4-63	UNIVERSAL OPEN FACE PIPE MOUNT	2
3	MD-SQ3	3FT ICE SHIELD	2



- NOTE:**
- THE SIDE STRUTS MUST BE ATTACHED POINTING DIRECTLY BEHIND THE ANTENNA WITHIN THE FOLLOWING ANGULAR LIMITS:  
 SIDE STRUT (WITH AZIMUTH ADJUSTMENT):  
 25° HORIZONTALLY  
 5° VERTICALLY  
 SIDE STRUT (WITHOUT AZIMUTH ADJUSTMENT):  
 25° HORIZONTALLY  
 25° VERTICALLY
  - REFER TO SOW DOCUMENT FOR ODU CABLING DETAILS
  - THE PIPE MOUNT CAN BE EXTENDED VERTICALLY TO ACCOMMODATE THE PROPOSED ODU'S IF SITE CONSTRAINTS PREVENT THE INSTALLATION OF ODU'S BELOW THE PROPOSED DISH
  - CONTRACTOR SHALL FIELD ADJUST/MODIFY BACK STRUTS VERTICALLY UP TO 5° TO AVOID CONFLICT

- NEW CUSHION HANGER TO BE INSTALLED 6"-12" FROM DISH HORN
- NEW CUSHION HANGER TO BE INSTALLED 6"-12" FROM ODU (TYP.)
- PROPOSED FLEX TWIST FROM ODU TO DISH (TYP.)
- CONTRACTOR SHALL INSTALL NEW ODU AT BOTTOM OF MOUNT PIPE AND PROVIDE ADEQUATE SPACE FOR (1) FUTURE ODUs AT TOP OF MOUNT PIPE
- PROPOSED LDF COAX
- SPARE COAX TO BE TERMINATED AND SPOOLED 6' (2 LOOPS) CLOSE TO THE CONNECTION END AND WEATHERPROOFED

**TYPICAL 3' MW DISH MOUNT ELEVATION**



1



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PROJECT LOCATION:

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 101 TALMADGE ROAD  
 HAMDEN, CT 06518  
 NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE
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A	90% REVIEW	ZDT	JWB	06/11/2020
SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT	

PROJECT NAME:

US.CT.NXTR.1043980

DRAWING TITLE:

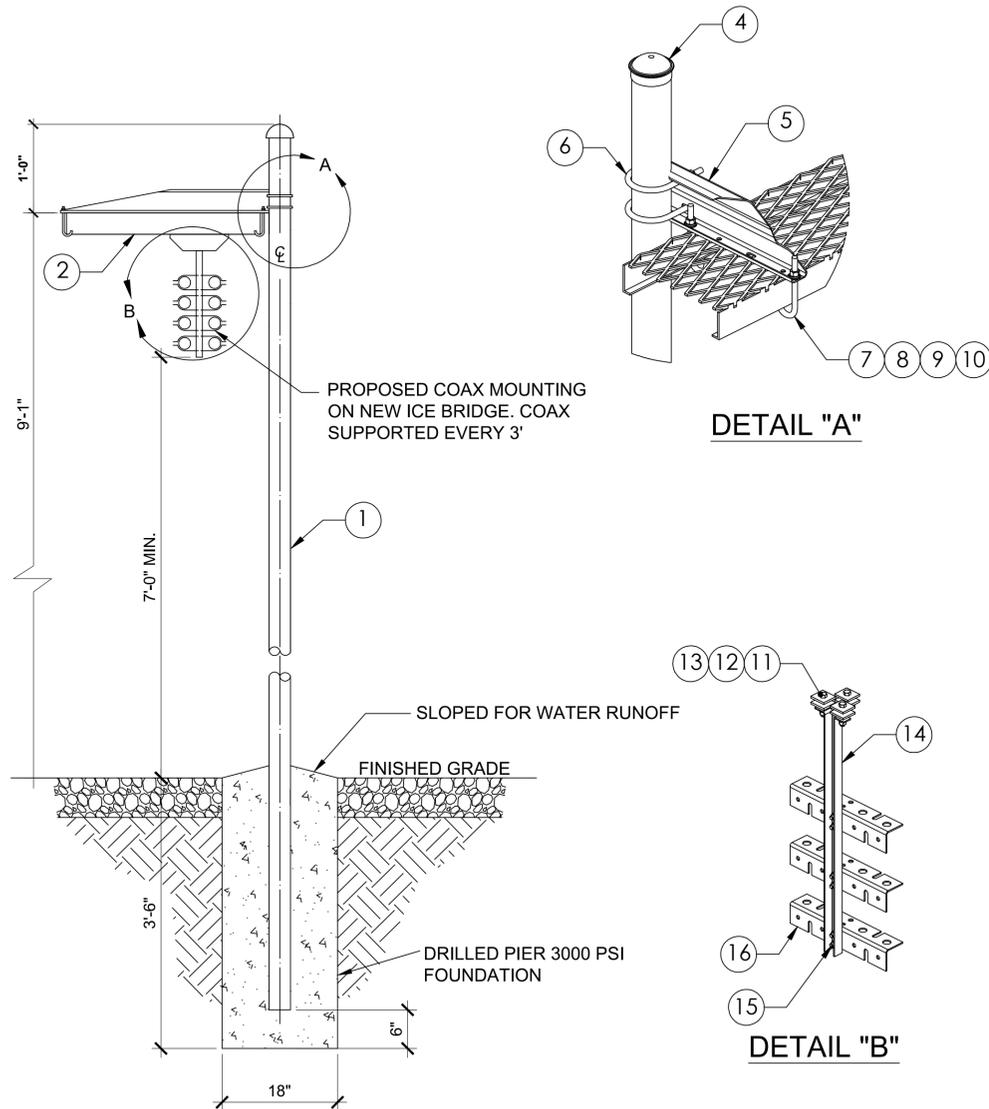
DISH ELEVATIONS

DRAWING NUMBER:

T-4

GPD#:2020796.01.US.CT.NXTR.1043980.01

COMMSCOPE # WB-K110-B (FOR REFERENCE ONLY)			
ITEM	PART NO.	DESCRIPTION	QTY
1	MF-130	DIRECT BURIAL PIPE COLUMN, 13'-1"	2
2	WB-CY110	SAFETY GRATING 12" X 10"	1
3	WBK110BHK	HARDWARE KIT (ITEMS 4-16)	1
4	PC-034	PIPE CAP 3-1/2"	2
5	WBLB123.07	12" WAVEGUIDE BRIDGE SUPPORT BRACKET	2
6	GUB-4356	1/2" X 3-5/8" X 6" GALV U-BOLT KIT	4
7	WB-JB-6	1/2" J-BOLT	4
8	GWF-04	1/2" GALV FLAT WASHER	4
9	GWL-04	1/2" GALV LOCK WASHER	4
10	GN-04	1/2" GALV HEX NUT	4
11	GB-03205	3/8" X 2" GALV BOLT KIT	9
12	MT-387	SQUARE WASHER, 1-1/2" X 1-5/8" W/ 7/16" HOLE	18
13	GWF-03	3/8" GALV FLAT WASHER	9
14	WBT243.01	VERTICAL TRAPEZE SECTION	3
15	GB-03105	3/8" X 1" GALV BOLT KIT	18
16	WBT123.02	12" HORIZONTAL TRAPEZE SECTION	9



DETAIL NOT USED

SCALE:  
N.T.S.      2

EXECUTION

- STRUCTURAL EXCAVATION
  - FOUNDATION EXCAVATIONS SHALL BE CUT TO FIRM MATERIAL HAVING A SAFE BEARING VALUE OF 3000 PSF AND SHALL BE FREE OF ALL LOOSE AND WET MATERIALS. IF THE BOTTOM OF THE EXCAVATION IS NOT FIRM AND STABLE, OVER-EXCAVATE AN ADDITIONAL 12 INCHES, COMPACT SUB-GRADE AND FILL WITH 12 INCHES OF SELECT STRUCTURAL FILL.
  - AFTER EXCAVATION, THE EXPOSED SOILS SHALL BE INSPECTED AND TESTED AND ANY UNSUITABLE DEPOSITS REMOVED AS DIRECTED TO REACH SUITABLE BEARING SOIL. ALL OVER-EXCAVATED AREAS SHALL BE BACK FILLED WITH SELECT STRUCTURAL FILL OR WITH LEAN CONCRETE FILL TO THE ELEVATION OF THE BOTTOM OF FOOTING OR FOUNDATION AS INDICATED ON THE DRAWINGS.
  - PRIOR TO PLACEMENT OF CONC. FOUNDATIONS, THE SURFACE ON WHICH THE CONCRETE IS TO BE PLACED SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR DENSITY BY THE MODIFIED PROCTOR TEST, ASTM D1557.
  - NO FOUNDATIONS OR STRUCTURES SHALL BE CONSTRUCTED UNTIL THE BASE MATERIALS HAVE BEEN INSPECTED BY THE DRW NX CONSTRUCTION SUPERVISOR.
- STRUCTURAL FILL:
 

ALL COMPACTED FILL SHALL BE PLACED IN LAYERS NOT EXCEEDING A LOOSE 8" THICKNESS AND COMPACTED TO A MINIMUM DENSITY OF 95% OF THE MODIFIED PROCTOR DENSITY OBTAINED IN ACCORDANCE WITH ASTM D-1557.

ICE BRIDGE DETAIL (COMMSCOPE PART # WB-K110-B)

SCALE:  
N.T.S.      1

NOTES

SCALE:  
N.T.S.      3



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HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE
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SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT	

PROJECT NAME:

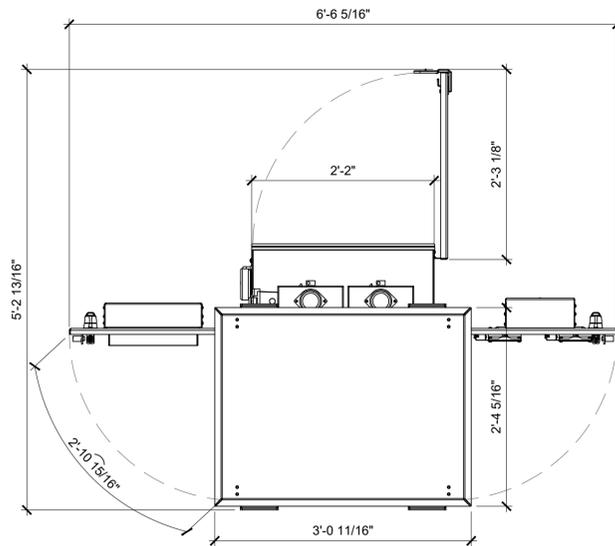
US.CT.NXTR.1043980

DRAWING TITLE:  
COAX MOUNTING  
DETAILS  
DRAWING NUMBER:

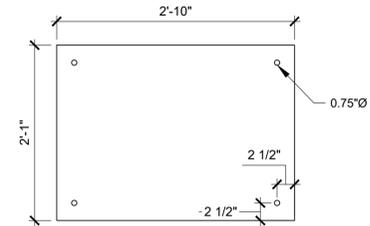
T-5

GPD#:2020796.01.US.CT.NXTR.1043980.01

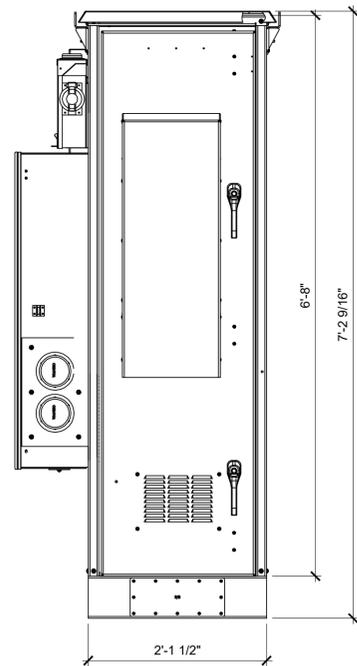




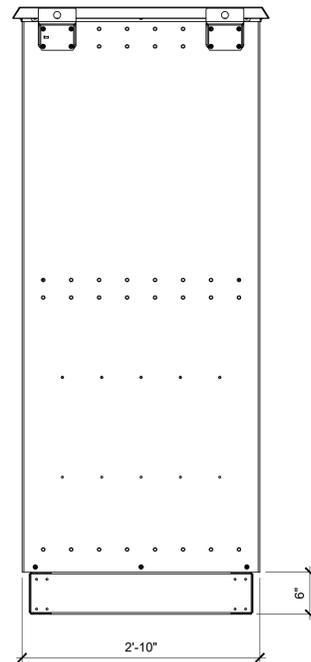
PLAN VIEW



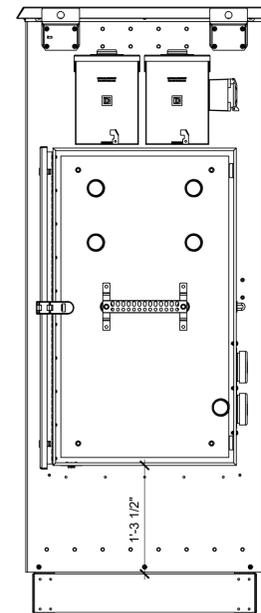
MOUNTING DETAIL



SIDE VIEW



FRONT VIEW



BACK VIEW

CABINET SPECIFICATIONS

SCALE:  
N.T.S.

1



**REFERENCE  
ONLY**

**REFERENCE  
ONLY**

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A	90% REVIEW	ZDT	JWB	06/11/2020
SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT	

PROJECT NAME:

US.CT.NXTR.1043980

DRAWING TITLE:

CABINET DETAILS

DRAWING NUMBER:

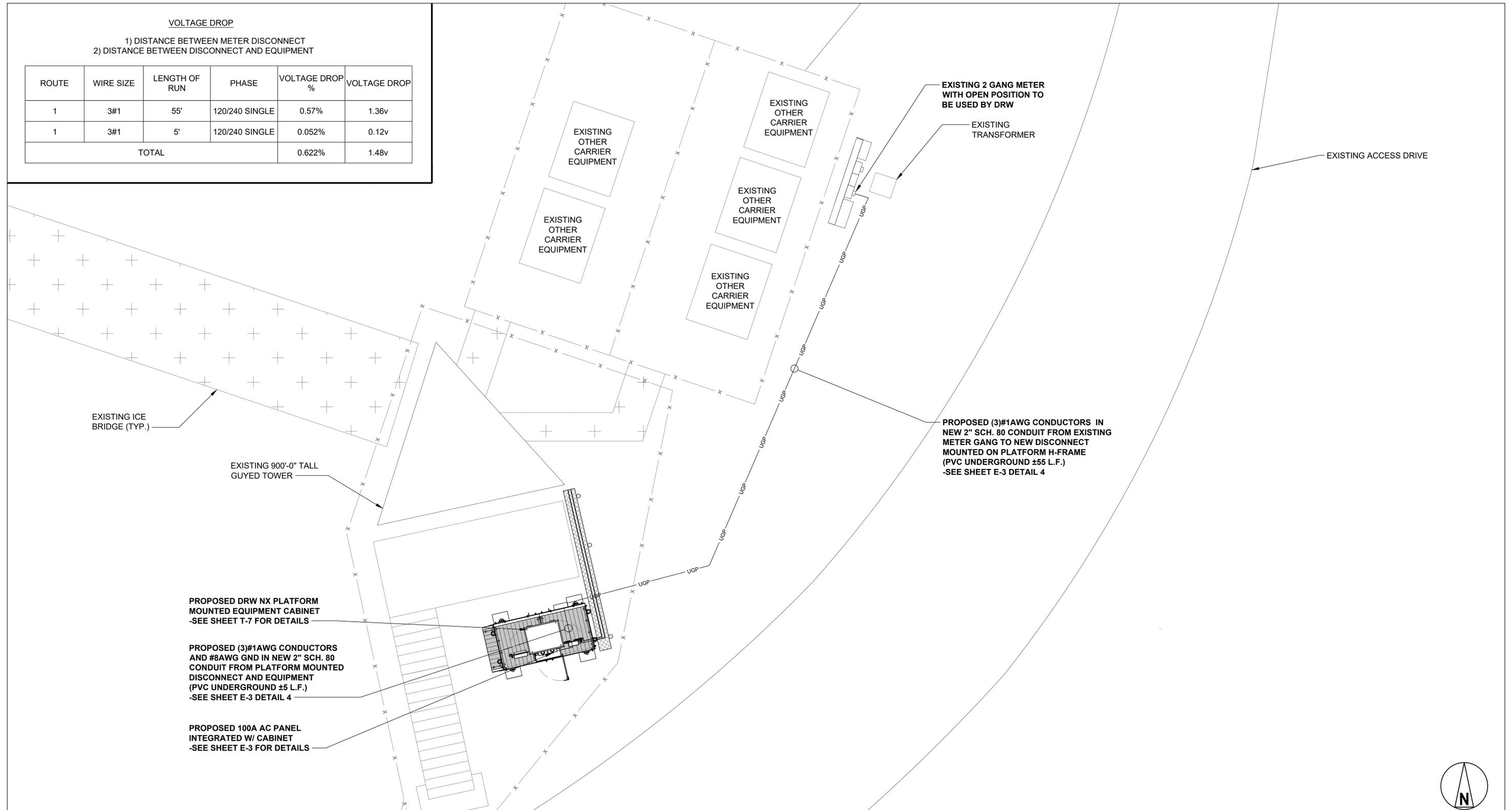
T-7

GPD#:2020796.01.US.CT.NXTR.1043980.01

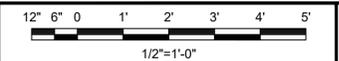
VOLTAGE DROP

- 1) DISTANCE BETWEEN METER DISCONNECT
- 2) DISTANCE BETWEEN DISCONNECT AND EQUIPMENT

ROUTE	WIRE SIZE	LENGTH OF RUN	PHASE	VOLTAGE DROP %	VOLTAGE DROP
1	3#1	55'	120/240 SINGLE	0.57%	1.36v
1	3#1	5'	120/240 SINGLE	0.052%	0.12v
TOTAL				0.622%	1.48v



SITE UTILITY PLAN



1



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101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

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SCALE: AS SHOWN | DESIGNED BY: ZDT | DRAWN BY: ZDT

PROJECT NAME:

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DRAWING TITLE:

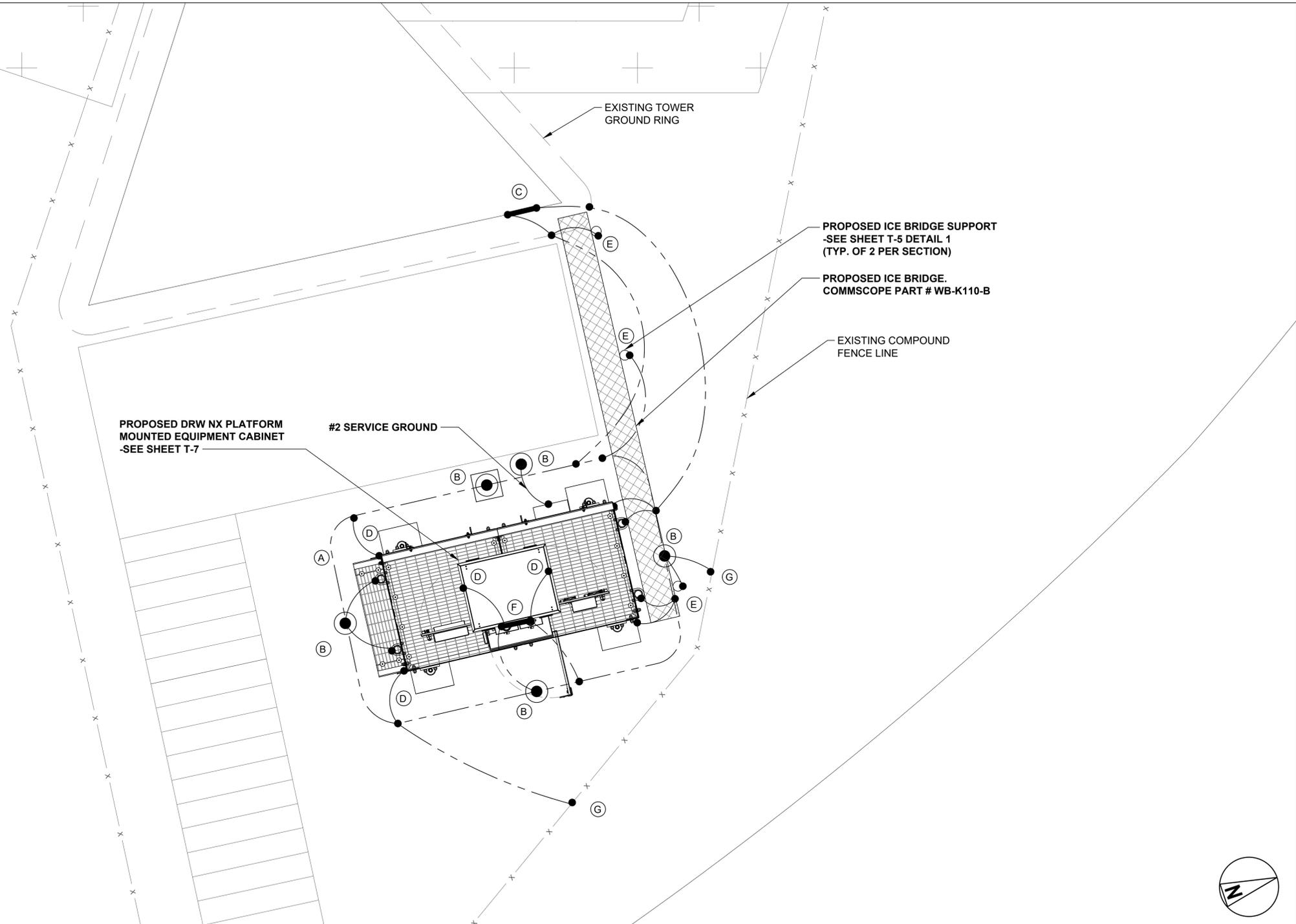
UTILITY PLAN

DRAWING NUMBER:

E-1

GPD#:2020796.01.US.CT.NXTR.1043980.01

- (A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OF FOOTING. (REFER TO SHEET N-3 PART II: 2.1 A.2. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE EQUIPMENT, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE EQUIPMENT GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.
- (B) GROUND ROD: UL LISTED COPPER CLAD STEEL, MINIMUM 3/4" DIAMETER BY TEN FEET LONG. TWO GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR. (REFER TO SHEET N-3 PART II: 2.1 A.2)
- (C) TOWER EXIT GROUND BAR: MECHANICALLY SECURE THE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL. CONTRACTOR TO VERIFY THAT THE STRUCTURE IS PROPERLY GROUNDED TO THE TOWER GROUND RING. #2 AWG SOLID TINNED COPPER TO GROUND.
- (D) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE H-FRAME, CABINETS, SHALL BE BONDED TO THE EXTERIOR GROUND RING W/ #2 AWG SOLID TINNED CU.
- (E) 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.
- (F) MASTER GROUNDING BAR: EXTEND TWO (2) #2 AWG TINNED CU CONDUCTORS FROM BURIED GROUNDING RING UP TO MASTER GROUNDING BAR & MAKE EXOTHERMIC CONNECTIONS.
- (G) 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 COPPER FLEX ACROSS GATE OPENINGS.



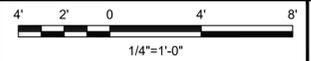
CONTRACTOR SHALL FIELD VERIFY ALL EXISTING GROUNDING PRIOR TO COMMENCING WORK

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	3/4" x 10' COPPER CLAD STEEL GROUND ROD		3/4" x 10' COPPER CLAD TEST WELL GROUND ROD W/INSPECTION SLEEVE		EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)		EXOTHERMIC WELD (CADWELD) WITH INSPECTION SLEEVE

**GROUNDING NOTES**

1

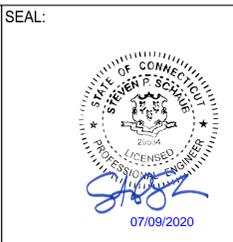
**GROUNDING PLAN**



2



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PROJECT LOCATION:  
**US.CT.NXTR.1043980**  
101 TALMADGE ROAD  
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NEW HAVEN COUNTY

SCHEDULE OF REVISIONS			
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:
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			07/09/2020
SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT

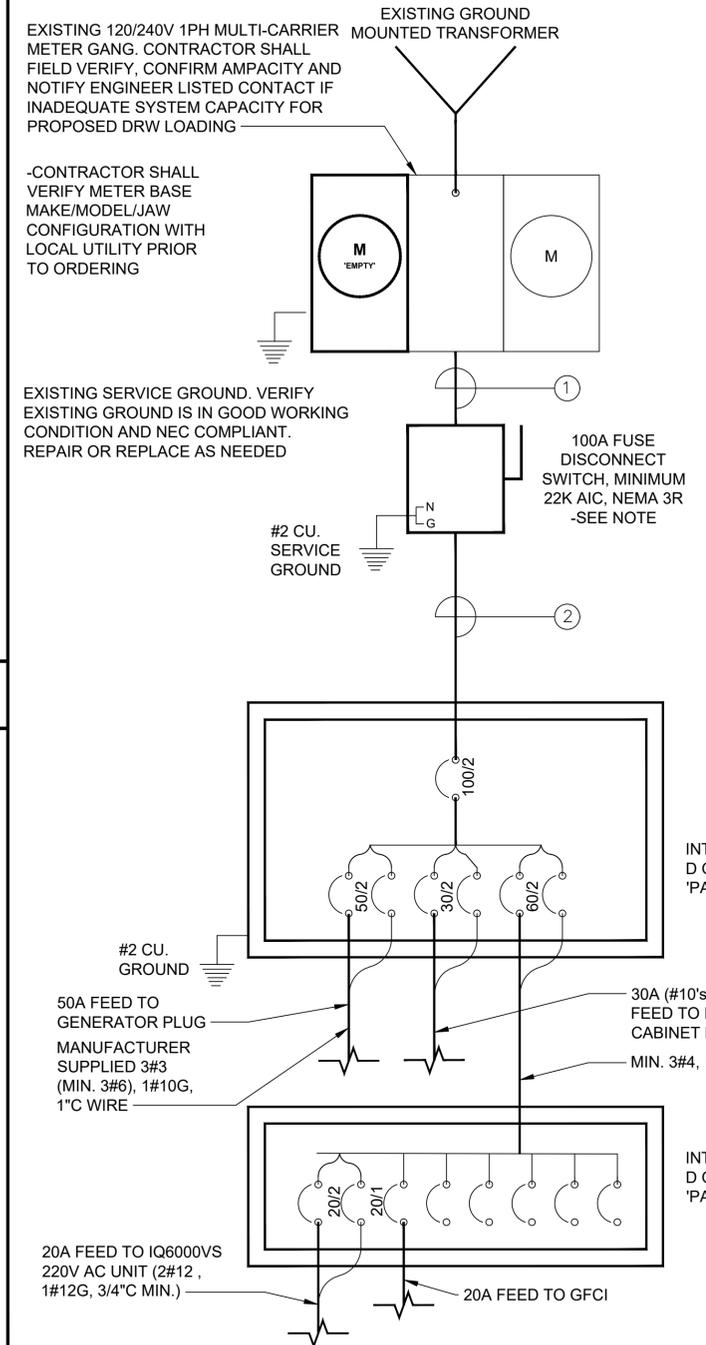
PROJECT NAME:  
**US.CT.NXTR.1043980**

DRAWING TITLE:  
**GROUNDING PLAN**

DRAWING NUMBER:  
**E-2**

GPD#:2020796.01.US.CT.NXTR.1043980.01

①	METER	DISCONNECT	(3)#1AWG 2" CONDUIT
②	DISCONNECT	100A DISTR. PANEL	(3)#1AWG & (1)#8AWG GND 2" CONDUIT

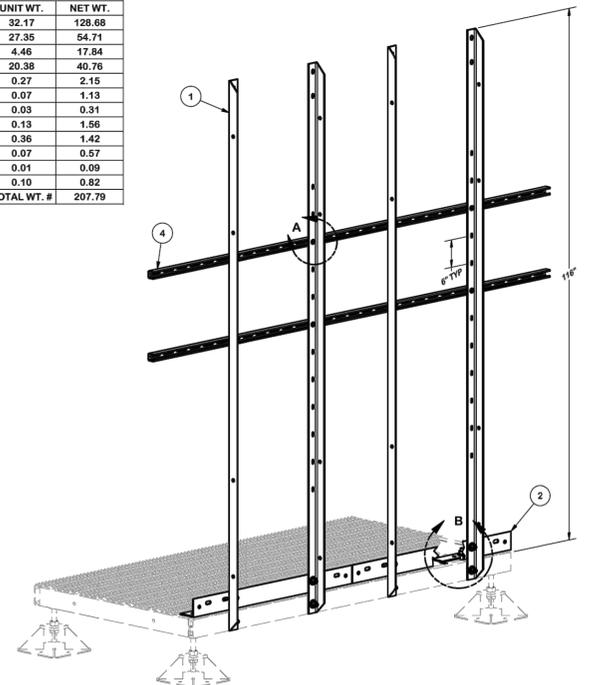
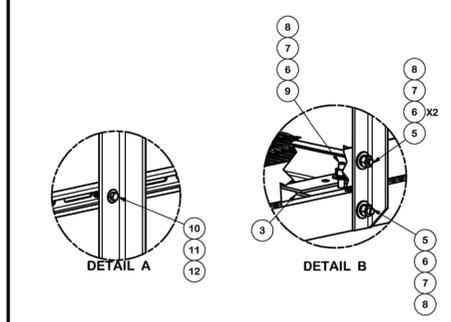


NOTE:  
CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY TO VERIFY EXISTING TRANSFORMER SHORT CIRCUIT FAULT CURRENT AT PANEL, AND VERIFY ALL NEW ELECTRICAL EQUIPMENT HAS AN AIC RATING THAT EXCEEDS FAULT CURRENT AT SOURCE.

**ONE-LINE DIAGRAM** SCALE: N.T.S. 3

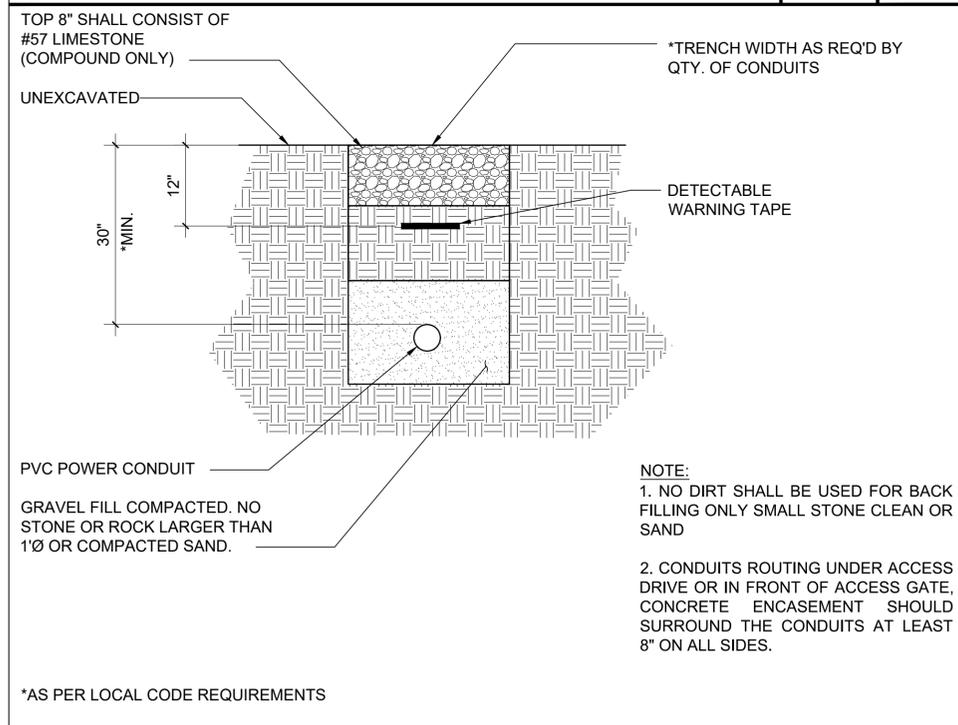
SCHEDULE OF REVISIONS				PROJECT NAME:	
				US.CT.NXTR.1043980	
				DRAWING TITLE:	
				ONE-LINE DIAGRAM & UTILITY DETAILS	
				DRAWING NUMBER:	
				E-3	
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE	
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SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT		
GPD#:2020796.01.US.CT.NXTR.1043980.01					

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	4	X-MCOVUP	UPRIGHT SUPPORT FOR MCOV-4 & MCOV-6	120 in	32.17	128.68
2	2	X-MCOV4	HORIZONTAL SUPPORT ANGLE FOR MCOV-4	47 7/8 in	27.35	54.71
3	4	X-MUPBP	BACKING PLATE FOR X-MCOVUP		4.46	17.84
4	2	UNT10	UNISTRUT	120 in	20.38	40.76
5	8	G58134	5/8" x 1-3/4" HDG BOLT	1 3/4 in	0.27	2.15
6	16	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.13
7	12	G58LW	5/8" HDG LOCKWASHER	5/32 in	0.03	0.31
8	12	G58NUT	5/8" HDG HEAVY 2H HEX NUT	5/8 in	0.13	1.56
9	4	G58234	5/8" UNC HEX BOLT (A325)	2 3/4 in	0.36	1.42
10	8	G38112	3/8" x 1-1/2" HDG HEX BOLT GR5		0.07	0.57
11	8	G38FW	3/8" HDG USS FLATWASHER		0.01	0.09
12	8	SP158	SPRING NUT FOR 1-5/8" STRUT		0.10	0.82
				TOTAL WT. #		207.79



**MOUNTED H-FRAME (SITE PRO1 PART #: MER8-P)** SCALE: N.T.S. 5

**DETAIL NOT USED** SCALE: N.T.S. 1



**TYPICAL CONDUIT TRENCH DETAIL** SCALE: N.T.S. 4

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101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SITE NUMBER:		US.CT.NXTR.1043981		MODEL NUMBER:		SQUARE D QO816L100RBCU - 1	
VOLTAGE:		120/240V		PHASE:		1	
MAIN BREAKER:		100 AMP		BUSS RATING:		100 AMPS	
MOUNT:		SURFACE		NEUTRAL BAR:		YES	
ENCLOSURE TYPE:		NEMA 3R		N to GROUND BOND:		NO	
PANEL STATUS:		PROPOSED		INTERNAL TVSS:		YES	
WIRE:		3		AIC:		22K (SEE NOTE)	
GROUND BAR:		YES					

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA
1	100A MAIN	100	2	ON	0	1.00	0	
2					0	1.00		0
3	GENERATOR PLUG	50	2	ON	0	1.00	0	
4					0	1.00		0
5	DC POWER SHELF	30	2	ON	2800	1.00	2800	
6					2800	1.00		2800
7	PANEL 2 (PROVIDED BY MANUFACTURER)	60	2	ON	1850	1.00	1850	
8					1850	1.00		1850

PROPOSED PANEL		4650	4650	VA	TOTAL KVA	9.30
					AMPS	38.75

NOTE:  
CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY TO VERIFY EXISTING TRANSFORMER SHORT CIRCUIT FAULT CURRENT AT PANEL, AND VERIFY ALL NEW ELECTRICAL EQUIPMENT HAS AN AIC RATING THAT EXCEEDS FAULT CURRENT AT SOURCE.

DRW NX PANEL SCHEDULE - PANEL 1

1

SITE NUMBER:		US.CT.NXTR.1043981		MODEL NUMBER:		SQUARE D QO816L100RBCU - 2	
VOLTAGE:		120/240V		PHASE:		1	
MAIN BREAKER:		N/A (MLO)		BUSS RATING:		100 AMPS	
MOUNT:		SURFACE		NEUTRAL BAR:		YES	
ENCLOSURE TYPE:		NEMA 3R		N to GROUND BOND:		NO	
PANEL STATUS:		PROPOSED		INTERNAL TVSS:		YES	
WIRE:		3		AIC:		22K (SEE NOTE)	
GROUND BAR:		YES					

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA
1	AC UNIT	20	2	ON	1760	1.00	1760	
2					1760	1.00		1760
3	GFCI	20	1	ON	180	1.00	180	
4	---	---	---	N/A	0	1.00		0
5	---	---	---	N/A	0	1.00	0	
6	---	---	---	N/A	0	1.00		0
7	---	---	---	N/A	0	1.00	0	
8	---	---	---	N/A	0	1.00		0

PROPOSED PANEL		1940	1760	VA	TOTAL KVA	3.70
					AMPS	15.42

NOTE:  
CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY TO VERIFY EXISTING TRANSFORMER SHORT CIRCUIT FAULT CURRENT AT PANEL, AND VERIFY ALL NEW ELECTRICAL EQUIPMENT HAS AN AIC RATING THAT EXCEEDS FAULT CURRENT AT SOURCE.

DRW NX PANEL SCHEDULE - PANEL 2

2



GPD Engineering and Architecture  
Professional Corporation  
520 South Main Street  
Akron, OH 44311  
330.572.2100 Fax 330.572.2102

SEAL:



PROJECT LOCATION:

US.CT.NXTR.1043980  
101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS

REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:	ISSUE DATE
2	UPDATED PER COMMENTS	ZDT	JWB	07/09/2020
1	UPDATED PER COMMENTS	ZDT	JWB	06/23/2020
0	FOR PERMITTING	ZDT	JWB	06/11/2020
A	90% REVIEW	ZDT	JWB	06/11/2020

SCALE: AS SHOWN | DESIGNED BY: ZDT | DRAWN BY: ZDT

PROJECT NAME:

US.CT.NXTR.1043980

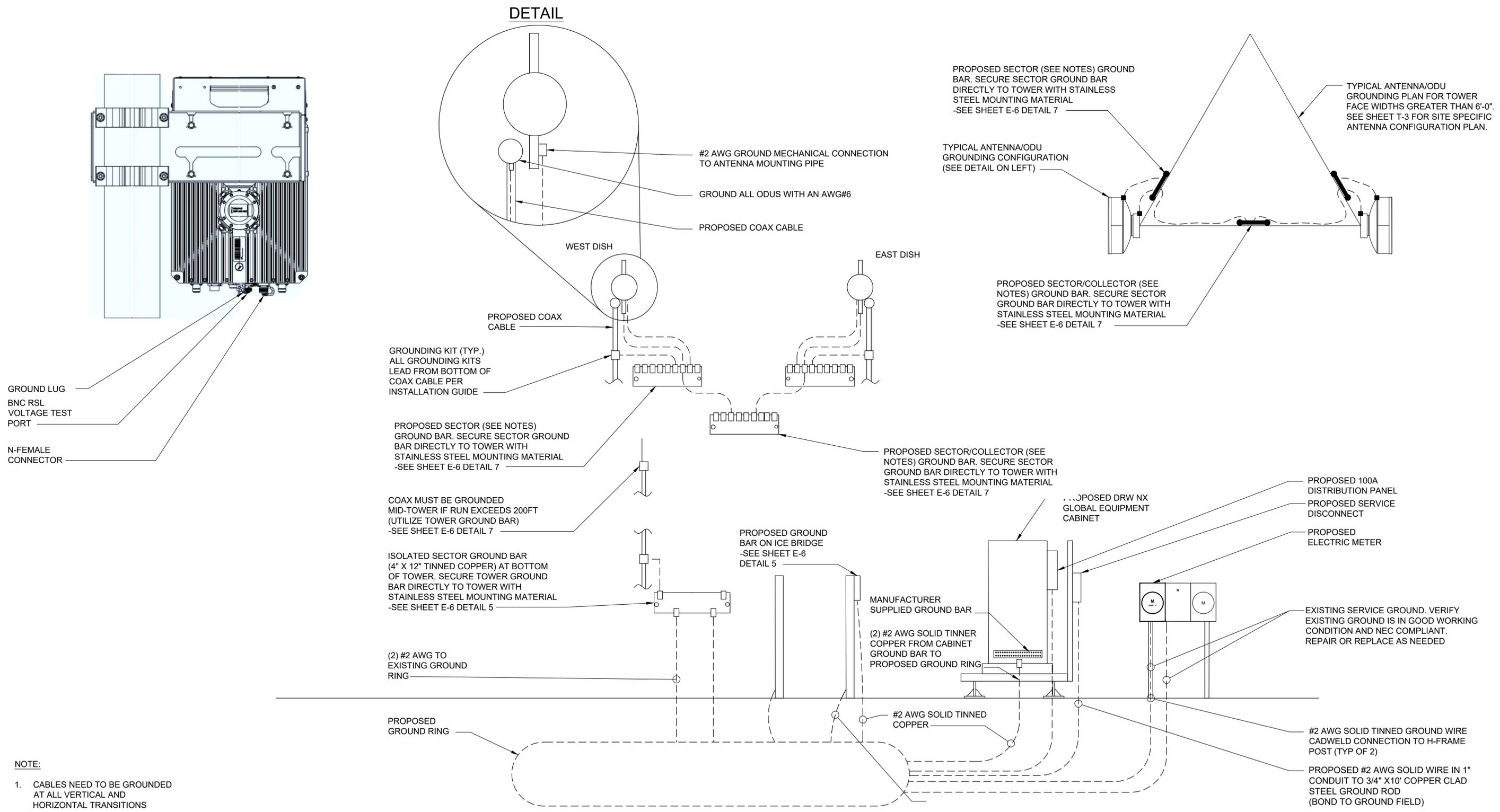
DRAWING TITLE:

PANEL SCHEDULE

DRAWING NUMBER:

E-4

GPD#:2020796.01.US.CT.NXTR.1043980.01



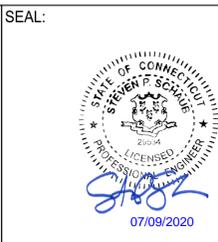
**NOTE:**  
1. CABLES NEED TO BE GROUNDED AT ALL VERTICAL AND HORIZONTAL TRANSITIONS

**ANTENNA GROUNDING RISER**

SCALE: N.T.S. 1



**GPD Engineering and Architecture**  
Professional Corporation  
520 South Main Street  
Akron, OH 44311  
330.572.2100 Fax 330.572.2102



PROJECT LOCATION:  
**US.CT.NXTR.1043980**  
101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

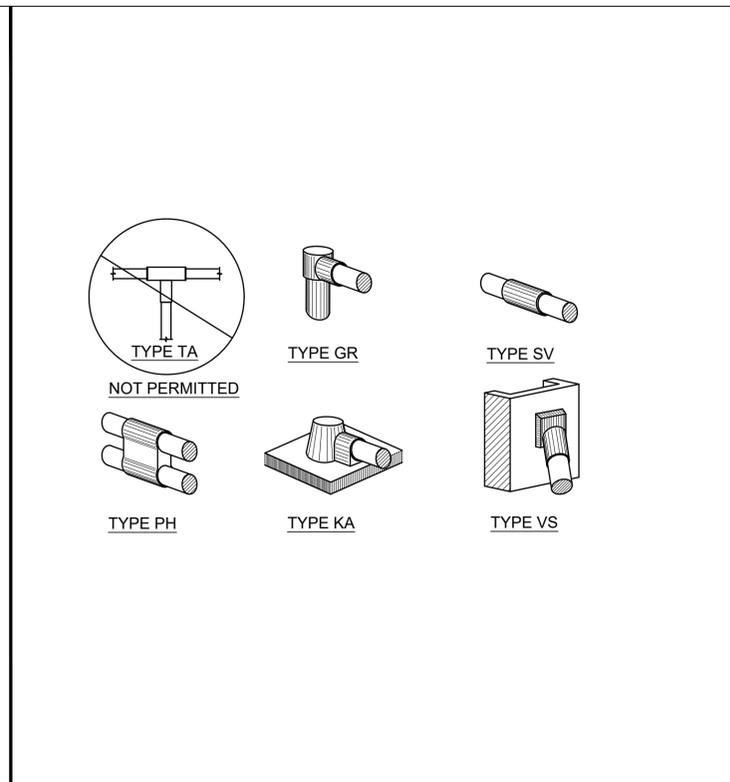
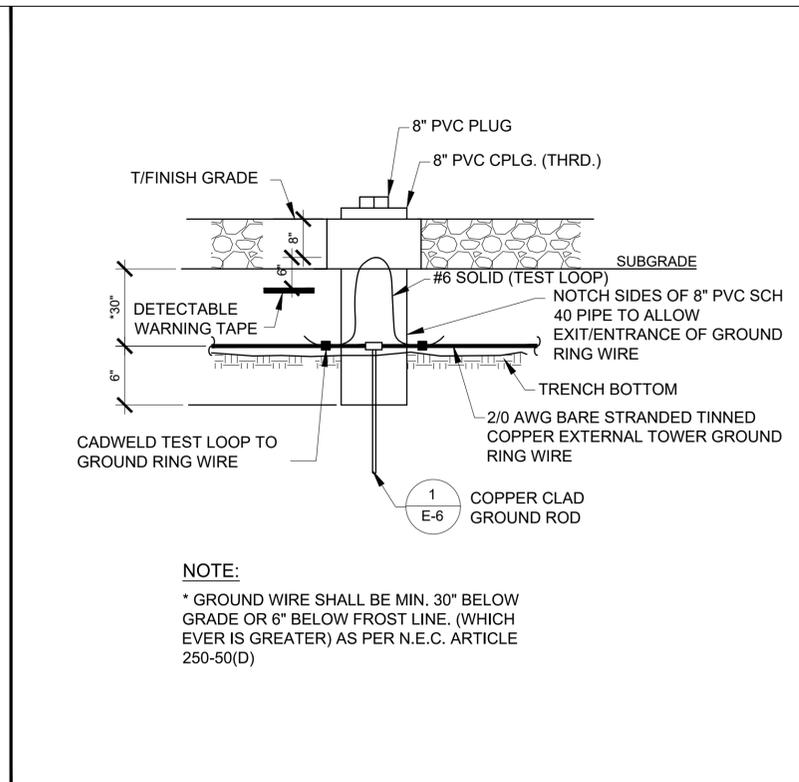
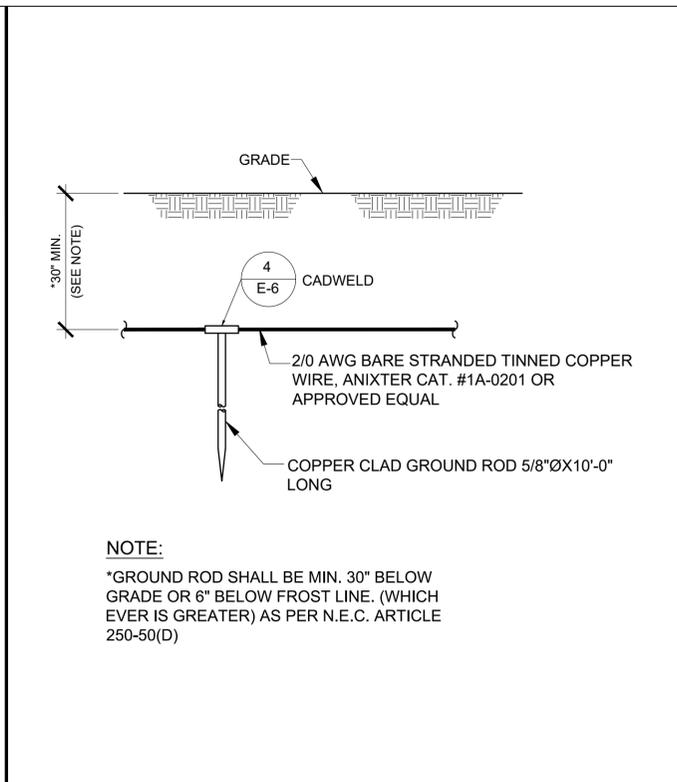
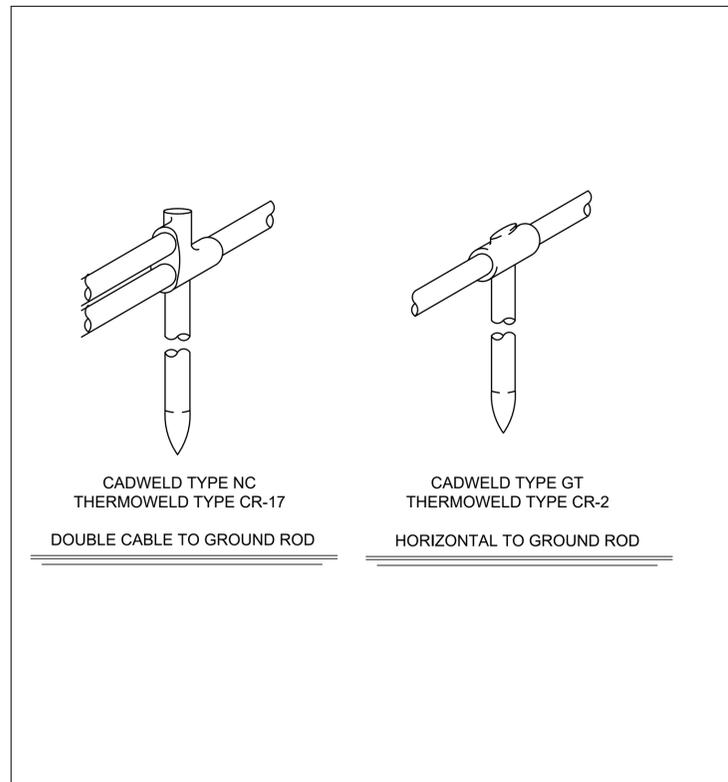
SCHEDULE OF REVISIONS			
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:
2	UPDATED PER COMMENTS	ZDT	JWB
1	UPDATED PER COMMENTS	ZDT	JWB
0	FOR PERMITTING	ZDT	JWB
A	90% REVIEW	ZDT	JWB
			ISSUE DATE
			07/09/2020
SCALE: AS SHOWN		DESIGNED BY: ZDT	DRAWN BY: ZDT

PROJECT NAME:  
**US.CT.NXTR.1043980**

DRAWING TITLE:  
**GROUNDING RISER  
DIAGRAM**

DRAWING NUMBER:  
**E-5**

GPD#:2020796.01.US.CT.NXTR.1043980.01

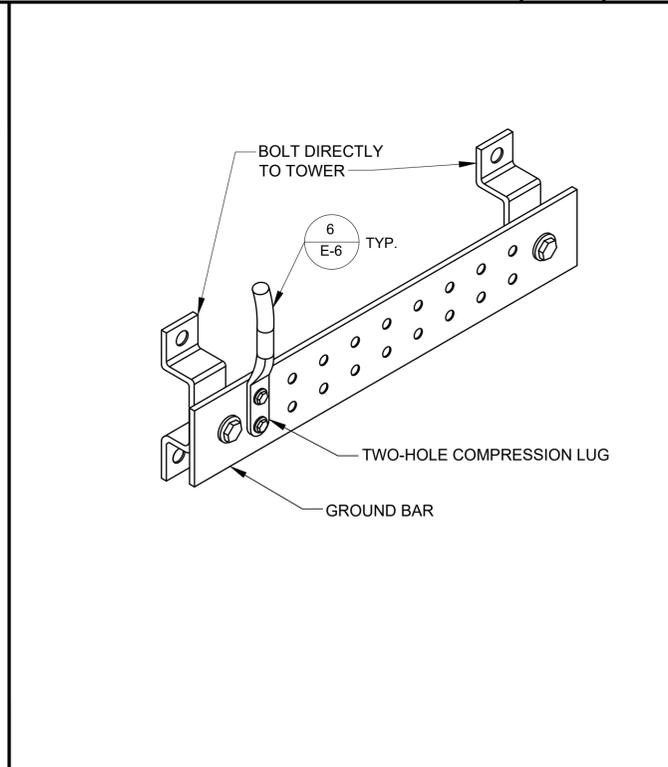
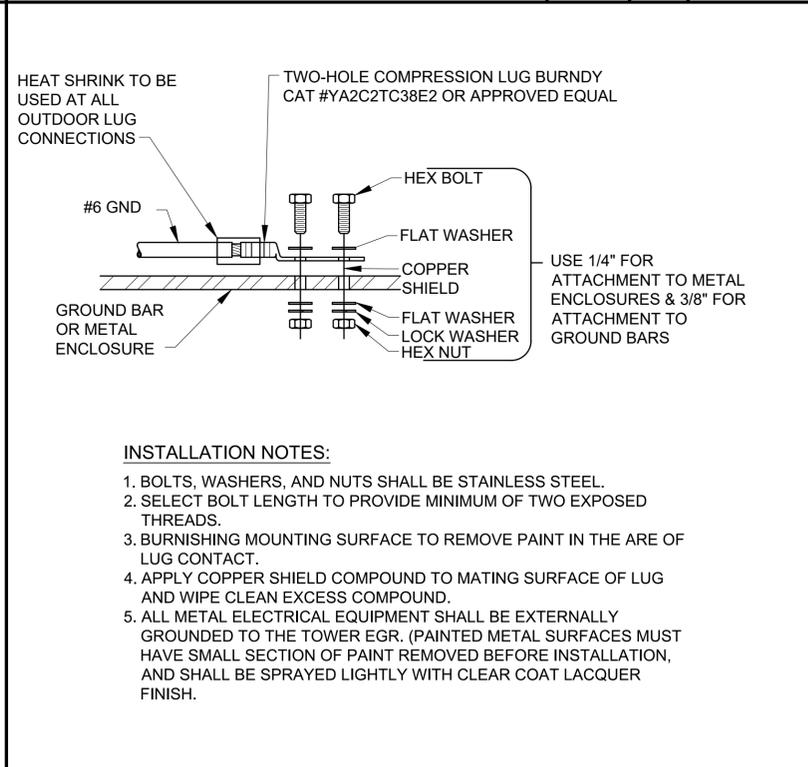
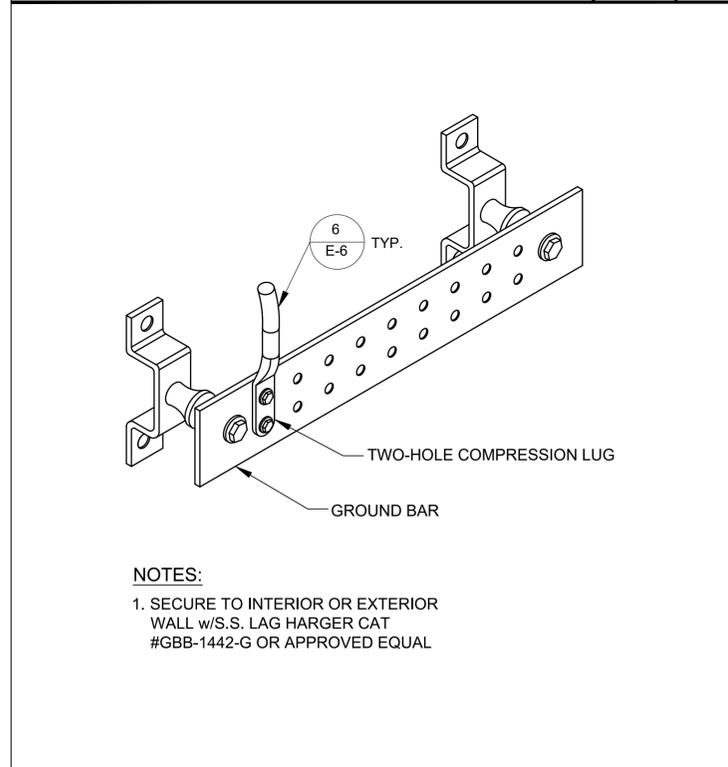


**GROUND ROD** SCALE: N.T.S. 1

**GROUND ROD DETAIL** SCALE: N.T.S. 2

**INSPECTION PORT DETAIL** SCALE: N.T.S. 3

**CADWELDS (TYPICAL)** SCALE: N.T.S. 4



**TOWER BASE INSULATED GROUND BAR** SCALE: N.T.S. 5

**GROUNDING FLAT SURFACES (TYPICAL)** SCALE: N.T.S. 6

**TOWER GROUND BAR** SCALE: N.T.S. 7

**DETAIL NOT USED** SCALE: N.T.S. 8



**GPD Engineering and Architecture**  
Professional Corporation

520 South Main Street  
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PROJECT LOCATION:  
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101 TALMADGE ROAD  
HAMDEN, CT 06518  
NEW HAVEN COUNTY

SCHEDULE OF REVISIONS			
REV.	DESCRIPTION OF CHANGE	DRAWN BY:	AUTH BY:
2	UPDATED PER COMMENTS	ZDT	JWB
1	UPDATED PER COMMENTS	ZDT	JWB
0	FOR PERMITTING	ZDT	JWB
A	90% REVIEW	ZDT	JWB
ISSUE DATE			
07/09/2020			
DESIGNED BY:	ZDT	DRAWN BY:	ZDT

PROJECT NAME:  
**US.CT.NXTR.1043980**

DRAWING TITLE:  
**GROUNDING DETAILS**

DRAWING NUMBER:  
**E-6**

GPD#:2020796.01.US.CT.NXTR.1043980.01

Exhibit B  
Structural Analysis



# REPORT 362027

DATE: 7/8/2020

SUFFICIENT CAPACITY – 99%

PASSING STRUCTURAL ANALYSIS  
FOR A 907' G-12 GUYED TOWER  
NEW HAVEN (HAMDEN), CONNECTICUT

PREPARED BY: TM  
CHECKED BY: AP

APPROVED: KP



Date	Pages	Remarks
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Rev.	Date	Description
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<u>SECTION</u>	<u>PAGE</u>
A. AUTHORIZATION/PURPOSE .....	1
B. TOWER HISTORY .....	1
C. CONDITIONS INVESTIGATED .....	3
D. LOADS AND STRESSES .....	5
E. METHOD OF ANALYSIS .....	5
F. RESULTS .....	5
G. CONCLUSIONS AND RECOMMENDATIONS .....	7
H. PROVISIONS OF ANALYSIS .....	7
 <u>APPENDIX</u>	
GENERAL ARRANGEMENT .....	E-1
LINEAR APPURTENANCES .....	A-2

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Rev.	Date	Description
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A. AUTHORIZATION/PURPOSE

As authorized by Eric Bellerive of DRW NX LLC, a structural analysis was performed to investigate the adequacy of a 907' overall height Stainless G-12 guyed tower located at 101 Talmadge Road in Hamden, Connecticut to support specified equipment.

B. TOWER HISTORY

The tower was originally designed and furnished in 1995 by Stainless. It was designed in accordance with TIA/EIA-222-E for a wind speed of 85 mph and 73.6 mph with 1/2" ice while supporting the following equipment:

1. One (1) top mounted Dielectric TCL-12A8 (S) antenna, fed by two (2) 6-1/8" rigid lines.
2. One (1) top mounted HDTV antenna, fed by one (1) WR1150 waveguide (future).
3. One (1) Dielectric TFU-28JSM Ch. 59 antenna, at the 730' level, fed by one (1) WR1150 waveguide.
4. One (1) Dielectric TFU-28JSM HDTV Ch. 14 antenna, at the 670' level, fed by one (1) WR1150 waveguide (future).
5. Two (2) ENG Super Quad antennas at the 760' level, fed by one (1) 1-5/8" line and one (1) 1/2" control cable (one future).
6. One (1) ERI 6-bay panel type FM antenna at the 610' level, fed by one (1) 6-1/8" rigid line (future).
7. Two (2) Andrew MMDS wireless cable antennas at the 565' level, fed by one (1) EW20 waveguide (future).
8. One (1) ERI SHPX-3AE FM antenna at the 545' level, fed by one (1) 3" line.
9. One (1) ERI SHPX-3AE FM antenna at the 520' level, fed by one (1) 3" line.
10. Three (3) whip antennas at the 750' level, fed by one (1) 1-5/8" line to each.
11. Three (3) whip antennas at the 500' level, fed by one (1) 1-5/8" line to each.
12. Three (3) whip antennas at the 400' level, fed by one (1) 1-5/8" line to each.
13. Three (3) whip antennas at the 350' level, fed by one (1) 1-5/8" line to each (future).
14. Three (3) whip antennas at the 325' level, fed by one (1) 1-5/8" line to each (future).
15. Three (3) whip antennas at the 300' level, fed by one (1) 1-5/8" line to each (future).
16. One (1) Scala PR-450U antenna at the 339' level, fed by one (1) 7/8" line.
17. One (1) Scala PR-450U antenna at the 247' level, fed by one (1) 7/8" line.
18. One (1) 6' grid dish at the 400' level, fed by one (1) 1-5/8" line.
19. Two (2) 6' grid dishes at the 325' level, fed by one (1) 1-5/8" line to each (future).
20. Two (2) 6' grid dishes at the 225' level, fed by one (1) 1-5/8" line to each (future).

Rev.	Date	Description
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21. Two (2) 8' dishes with radomes at the 325' level, fed by one (1) EW63 waveguide to each (one future).
  22. One (1) 8' dish with radome at the 166' level, fed by one (1) EW63 waveguide (future).
  23. One (1) 8' dish with radome at the 150' level, fed by one (1) EW63 waveguide (future).
  24. One (1) inside climbing ladder with cable type safety device for the full height of the tower.
  25. One (1) single car elevator with guide rails, cables, motor and elevator equipment.
  26. Ice shields for all side mounted antennas, except the whip antennas.
  27. One (1) red lighting system with circuits in rigid conduit for the full height of the tower.
- ❖ In 1998, the bottom stack Dielectric THP-O-2-1 antenna of the top mounted stack system was installed per Stainless Report 362006. The guy wires of all the four levels were also re-tensioned.
  - ❖ The tower was modified in 2015 by Stainless per Report 362017. The modifications were as follows:
    - Installed additional horizontal sub-bracing at the midpoints of the following bay:

Location	No of bays
591.3' – 583.8'	1

- Replaced existing diagonal braces with new, higher capacity members at the following bay:
- | Location        | No of bays |
|-----------------|------------|
| 621.3' – 613.8' | 1          |
- ❖ In 2018, the tower was modified per Stainless Report 362023. The modifications consisted the following:
    - Installed additional horizontal sub-bracing at the midpoints of the following bay:

Location	No of bays
553.8' – 546.3'	1

- ❖ In 2020, the tower was recommended to be modified per Stainless Report 362026 dated 6/16/2020. These modifications are considered to be installed for this analysis and consist of the following:
  1. Adjusted guy wire tensions in all guy levels.

Stainless has no record of any other modifications to the tower structure or its foundations.

Rev.	Date	Description
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**C. CONDITIONS INVESTIGATED**

The analysis was performed for the tower supporting the equipment listed below based on the following sources:

- Stainless Proposal P20\_3620\_002 dated 6/24/2020.
- Stainless Report 362026 dated 6/19/2020.
- Emails from Christian Pigeon of DRW NX dated 5/26/2020 through 6/15/2020 with details of proposed equipment.

APPURTENANCE	ELEVATION, ft.	FEED LINES
Stacked TCL-12A8(S) Ch. 8 / THP-O-2-1 Ch. 10	Tower top	6-1/8"/3-1/8" rigid
10' omni	758	1-5/8"*
5' omni	750	7/8"
Super Quad ENG	744	1-5/8"* & 1/2" control cable
DB408	742	1-5/8"*
Ice shield	681	-
PL8 8' diameter dish/radome	678	EW63 & 1/2" cable
<b>(2) Commscope MD-SQ3 (Assumed Installed, (1) above each VHLPX3-6W dish at 650')</b>	<b>655</b>	--
<b>(1) Commscope VHLPX3-6W dish (Assumed Installed, azimuth 231 degrees)</b> <b>(1) Commscope VHLPX3-6W dish (Assumed Installed, azimuth 51 degrees)</b> <b>(4) SAF MXM MK2 Radio units (Assumed Installed)</b>	<b>650</b>	<b>(6) LDF4-50A coax (Assumed Installed)</b> <b>(6) 1/4" fiber cables (Assumed Installed)</b> <b>(6) 1/4" copper power cables (Assumed Installed)</b>
PL6-65 6' diameter dish/radome	630	EW63 & 1/2" cable
(2) Dualight 12004-rot-1r07-001	605	--
6015-2/3R FM	591	4-1/16" rigid
SWR FMEC/ 2-HWS-TA	550	7/8" (420'-550') 1-5/8" (0'-420')
(2) DB408	529	(2) 7/8"
DB408	510	7/8"
6810-2R 2-bay FM	458	6-1/8" rigid**
15' omni (unused)	420	1/2"
5' omni	348	7/8"
Ice shield	346	-
6' diameter grid dish	339	7/8"

Rev.	Date	Description
(3) RFS APX16DWV-16DWV-S-E-A20 (3) RFS APXVAARR24 43-U-NA20 (3) Radio 4449 B71+B12 (3) Radio 4415 B25 (3) Radio 4415 B66 (3) Sector mounts	315	(3) 1-3/8" hybrid cables
(2) Dualight 12004-rot-1r07-001	302	--
(3) APXVSPP18-C-A20 (3) APXVTM14-C-120 (3) TD-RRH8x20 (6) RRUs (3) sector mounts	200	(3) 1-1/4" Hybriflex (1) 1-1/4" Hybriflex cable
Ice shield	166	-
8' diameter dish/radome	160	(2) EW63
(1) DSiF03F36D-D on sidearm	110	(2) 7/8 lines
15' omni (unused)	102	1/2"
ASPG952 (unused)	100	2-1/4"
GPS unit	75	1/2"
(2) support conduits	To 200 & 45	1" conduit
Support conduit	To 315	1-1/4" conduit
(7) support conduits	To 200', 348', 2 x 420', 529', 758', top of tower	1-1/2" conduit
<b>(2) support conduits (Assumed Installed)</b>	<b>To 650</b>	<b>1-1/2" conduit (Assumed Installed)</b>
Ladder with cable safety device	To top of tower	3/8" cable
Elevator system	To top of tower	-
FAA red lighting system	To top of tower	1" conduit to 45 1-1/2" conduit from 45' to tower top

\* Shared line

\*\* This coax was cut at the 440' – 480' level and a 20' length of 3" heliax was used to connect the 6-1/8" rigid coax to the antenna. The remaining length of the 6-1/8" rigid coax from 480' to the top of tower was left in place

The locations of the transmission lines have been based upon the cross section from Stainless Report 362026 dated 6/19/2020 and shown on Page A-2 of this Report. Deviating from the line arrangement as shown may invalidate the results of this analysis.

Rev.	Date	Description
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**D. LOADS AND STRESSES**

The analysis was performed using the following design parameters in accordance with the 2018 Connecticut Building Code, based on the 2015 IBC, and ANSI/TIA 222-G-2005, Structural Standard for Antenna Supporting Structures and Antennas, including Addenda 1 & 2, dated 2007 and 2009 respectively.

- Risk Category II
- 125 mph ultimate design wind speed with no ice.
- 50 mph nominal design wind speed with 3/4” design ice thickness
- Exposure Category B
- Topographic Category 5 (Mad Mare Ridge, SEE wind direction, ridge, crest = 650’, base = 400’, L/2 = 980’, x = 390’ windward, Kzt max=1.546)
- 0.185 earthquake spectral response acceleration at short periods (Ss)
- Earthquake Site Class D

The ultimate design wind speed is converted to a nominal design wind speed for use in ANSI/TIA 222-G based upon the following formula:

$$\begin{aligned}
 V_{asd} &= V_{ult} * (0.6)^{1/2} \\
 &= 125 * (0.6)^{1/2} \\
 &= 97 \text{ mph}
 \end{aligned}$$

Seismic effects need not be considered as the value of Ss is less than 1.0 per Section 2.7.3 of ANSI/TIA 222-G. Load and resistance factors used to evaluate the adequacy of the structure were in accordance with ANSI/TIA 222-G.

**E. METHOD OF ANALYSIS**

The analysis was performed using tnxTower, a computerized program which idealizes the tower as a structure consisting of finite elements, and subjected to simultaneous transverse and axial loads.

**F. RESULTS**

The results of the analysis show the following ratings:

COMPONENT	SPAN	RATING %
Tower top	--	69
Leg compression	4	93
	3	99
	2	83
	1	87

Rev.	Date	Description
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Leg tension	4	70
	3	--
	2	--
	1	--
Diagonals	4	64
	3	75
	2	82
	1	87
Horizontals	4	53
	3	77
	2	59
	1	52
Guys	4	71
	3	66
	2	76
	1	86
Foundations	Base	87
	Inner anchors	99
	Outer anchors	69

The rating is defined as the percentage of the component design capacity that is used up in supporting itself and the loading from the antennas and transmission lines under the design wind and ice loading conditions. Ratings of up to 105% for tower members, and up to 110% for foundations are typically considered acceptable due to tolerances in calculating the applied loads on the tower as well as member design capacities.

However the state of Connecticut mandates a maximum rating of 100%, and the tower has been reviewed based on 100% maximum rating.

The twist and sway of the dishes under a service wind load of 60 mph are as follows:

Dish	Elevation, ft.	Twist, degrees	Sway, degrees
PL8 8' diameter dish/ radome	678	0.90	0.08
<b>Commscope VHLPX3-6W dish (Assumed Installed)</b>	650	0.67	0.07
PL6-65 6' diameter dish/ radome	630	0.88	0.08
6' diameter grid dish	339	0.83	0.03
8' diameter dish/ radome	160	0.70	0.07

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Rev.	Date	Description
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**G. CONCLUSIONS AND RECOMMENDATIONS**

Based on the preceding results, the following conclusions may be drawn:

1. While considering the recommended modifications per the Stainless Report 362026 dated 6/19/2020 have been installed, the tower supporting equipment as specified in Section C above is adequate to achieve an ultimate design wind speed of 125 mph with no ice, and a nominal design wind speed of 50 mph with 3/4" design ice thickness in accordance with the 2018 Connecticut Building Code, based on the 2015 IBC, and ANSI/TIA 222-G with the analysis parameters of Section D.

**H. PROVISIONS OF ANALYSIS**

The analysis performed and the conclusions contained herein are based on the assumption that the tower has been properly installed and maintained, including, but not limited to the following:

1. Proper alignment and plumbness.
2. Correct bolt tightness.
3. Correct guy tensions.
4. No significant deterioration or damage to any component.

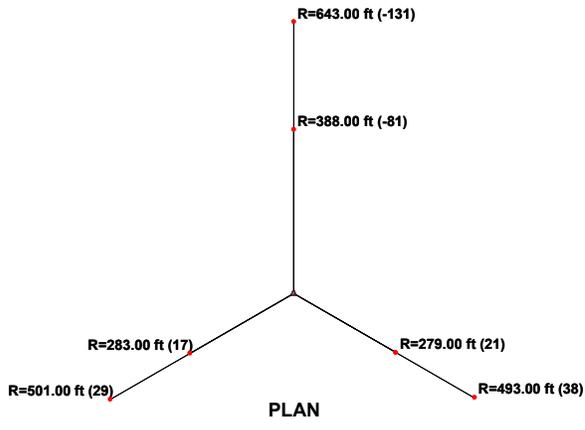
Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-arts" engineering and analysis procedures and formulae, and Stainless assumes no obligations to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. The maximum liability of Stainless, if any, pursuant to this Report shall be limited to the total funds actually received by Stainless for preparation of this Report.

Customer has requested Stainless to prepare and submit to Customer an engineering analysis with respect to the Subject Tower and has further requested Stainless to make appropriate recommendations regarding suggested structural modifications and changes to the Subject Tower. In making such request of Stainless, Customer has informed Stainless that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by Stainless and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice.

Customer hereby agrees and acknowledges that Stainless shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than Stainless in connection with the implementation of any structural changes or modifications recommended by Stainless including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that Stainless shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor.

Section  
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163.8 ft  
133.8 ft  
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43.8 ft  
28.8 ft  
15.0 ft  
5.0 ft  
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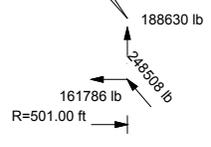
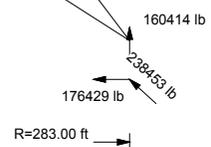
**DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION
Dielectric THP-O2-1 wraparound	802.58	Sector mount	315
ELEVATOR BEAMS_WEIGHT	767	Sector mount	315
10' WHIP	758	APX16DWWV-16DWWVS-E-A20 w/ Mount Pipe	315
5' OMNI ANTENNA	750	APX16DWWV-16DWWVS-E-A20 w/ Mount Pipe	315
NURAD SUPERQUAD II ENG	744	APX16DWWV-16DWWVS-E-A20 w/ Mount Pipe	315
DB408	742	APXVAARR24_43-U-NA20	315
ICE SHIELD	681	Radio 4449 B71+B12	315
PL8	678	APXVAARR24_43-U-NA20	315
MD-SQ3	655	APXVAARR24_43-U-NA20	315
MD-SQ3	655	APXVAARR24_43-U-NA20	315
(2) SAF MXM Mk2 Radio Unit	655	APX16DWWV-16DWWVS-E-A20 w/ Mount Pipe	315
(2) SAF MXM Mk2 Radio Unit	655	(2) Dualight 12004-RTO-1R07-001	302
VHLPX3-6W Dish	650	(2) Beacon	302
VHLPX3-6W Dish	650	(2) 800 MHz RRR	200
Andrew PL6-65	630	(2) 800 MHz RRR	200
(2) Dualight 12004-RTO-1R07-001	605	(2) 800 MHz RRR	200
(2) Beacon	605	Sector mount	200
SHIVELY 6015-2/3R wraparound FM	591	Sector mount	200
SWR FMEC/2-HWS-TA	550	Sector mount	200
Mounts for SWR FMEC	550	APXSPP18-C-A20 w/ Mount Pipe	200
(2) DB408	529	APXSPP18-C-A20 w/ Mount Pipe	200
DB408	510	TD-RRH8x20	200
SHVLY 6810 FW RAD_MT	458	APXSPP18-C-A20 w/ Mount Pipe	200
15' WHIP (UNUSED)	420	TD-RRH8x20	200
5' OMNI ANTENNA	348	APXVTM14-C-I20 w/ Mount Pipe	200
ICE SHIELD	346	APXVTM14-C-I20 w/ Mount Pipe	200
6' Grid Dish	339	APXVTM14-C-I20 w/ Mount Pipe	200
Radio 4449 B71+B12	315	TD-RRH8x20	200
Radio 4415 B25	315	ICE SHIELD	166
Radio 4415 B25	315	8' MW Dish/radome	160
Radio 4415 B25	315	DSIF03F36D-D on sidearm	110
Radio 4415 B66	315	15' WHIP (UNUSED)	102
Radio 4415 B66	315	ASGP952 ANTENNA (UNUSED)	100
Radio 4415 B66	315	GPS ANTENNA	75
Sector mount	315		

**TOWER DESIGN NOTES**

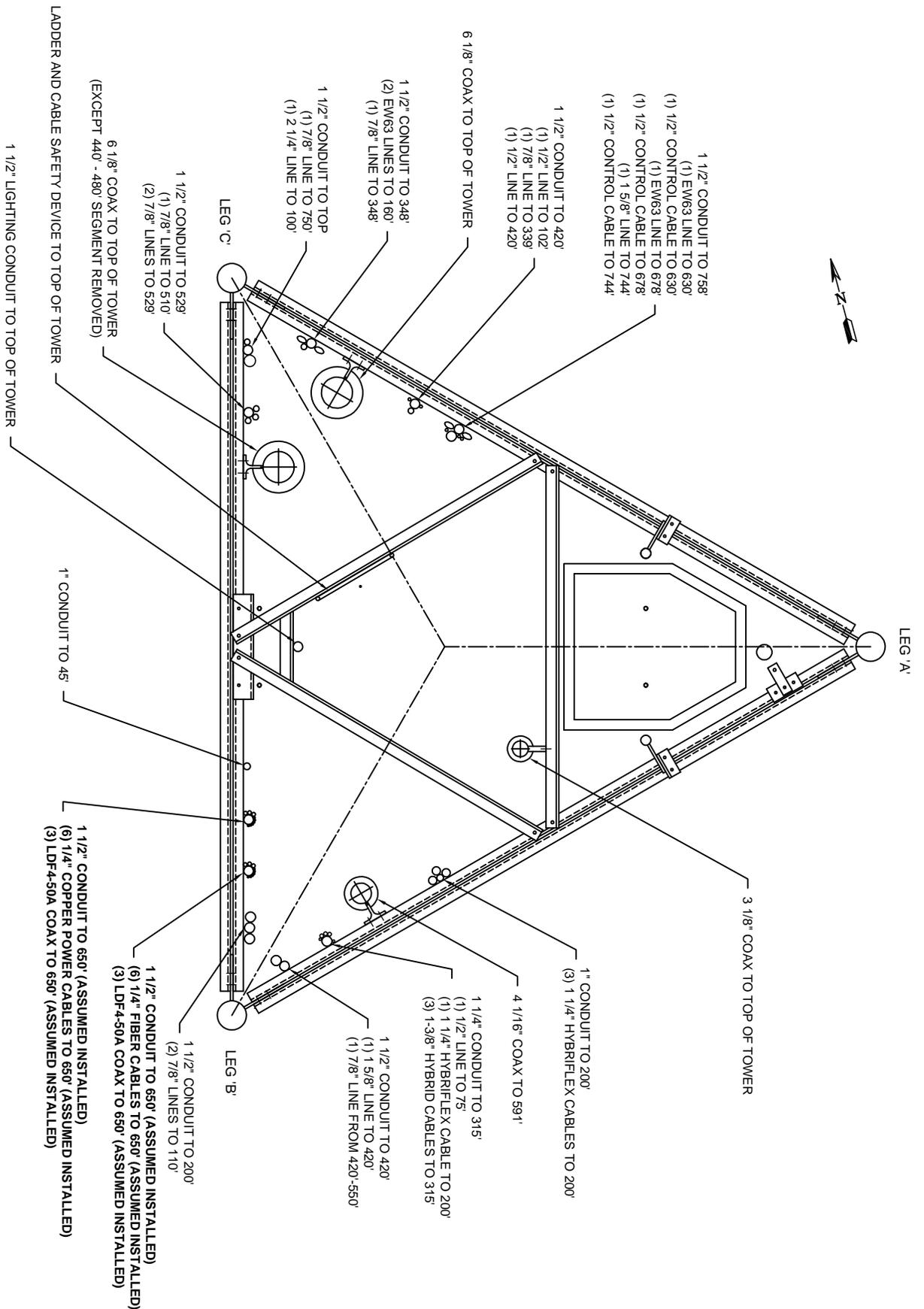
1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 5 with Crest Height of 250.00 ft.
7. 129.00 ft TCL-12A8 (S) is included for load transfer only.

23484 lb  
1327309 lb (Axial)  
47 kip-ft (Torque)



ALL REACTIONS ARE FACTORED

<p><b>STAINLESS</b> A BUSINESS OF FDH INFRASTRUCTURE SERVICES Tower Engineers</p>	<p><b>STAINLESS</b> 100 W Main St Ste 400 Lansdale, PA 19446 Phone: (215) 309-8086 FAX:</p>	<p>Job: <b>362027 New Haven (Hamden) CT</b> Project: <b>907' overall height Stainless G-12 guyed tower</b> Client: DRW NX LLC    Drawn by: Tyler Moore    App'd: Code: TIA-222-G    Date: 07/08/20    Scale: NTS Path: C:\Users\l.moore\Desktop\Projects\3620 New Haven CT\362027\eng\ltnxTower\362027.dwg    Dwg No. E-1</p>
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100 West Main Street, Suite 400  
 Lansdale, PA 19386

**LINEAR APPURTENANCES  
 NEW HAVEN (HAMDEN), CT**

THIS DRAWING IS THE PROPERTY OF STAINLESS AND TRANSMITTED IN CONFIDENCE, AND THE REPRODUCTION, USE OR DISCLOSURE, IN WHOLE OR IN PART, OF THE DESIGN AND DETAILS CONTAINED HEREIN IS PROHIBITED WITHOUT THE WRITTEN PERMISSION OF STAINLESS.

PREPARED BY	TM	7/8/2020					
CHECKED BY							
ENGINEER REVIEW							
PROJECT NUMBER	362027						
DRAWING NUMBER	A-2						
REV	BY	DATE	REVISION DESCRIPTION	D.CK	DATE	E.CK	DATE
*							
*							
*							
*							
*							

Exhibit C  
Mount Analysis



## SUMMARY & RESULTS

The purpose of this analysis was to verify whether the proposed mounts are capable of carrying the proposed loading configuration as specified by DRW NX LLC.

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph (converted to an equivalent 97 mph nominal 3-second gust wind speed per Section 1609.3.1 for use with TIA-222 G) as required by the 2015 International Building Code & 2018 Connecticut Building Code. Applicable Standard references and design criteria are listed in Appendices A & B.

**The mount was verified to be capable of withstanding a 500 lb live load concurrent with 30-mph wind speeds.**

### MOUNT SUMMARY AND RESULTS

Member	Capacity	Results
Mount	1.8%	Pass
Mount to Tower Connection	3.4%	Pass

## RECOMMENDATIONS

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

## ANALYSIS METHOD

RISA-3D (Version 17.0.2), a commercially available analysis software package, and hand calculations were used to create a three-dimensional model of the mount and calculate member stresses for the proposed loading configuration. Selected calculations from this analysis are included in Appendices B & C. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information.

### DOCUMENTS PROVIDED

Document	Remarks	Source
Construction Drawings	GPD Project #: US.CT.NXTR.1043980.01, dated 6/12/2020	DRW NX LLC
Mount Design	Commscope Drawing #: PM-SC Series, dated 4/20/2010	Commscope
Mount Mapping	Not Provided	N/A
Previous Mount Analysis	Not Provided	N/A
Mount Modification Drawings	Not Provided	N/A
Tower Design	Not Provided	N/A
Previous Tower Analysis	Not Provided	N/A

## ASSUMPTIONS

This mount structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the mount. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The mount member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed based on experience with similar mounts.
2. The antenna configuration is as supplied and/or as modeled in the analysis. When information was not provided, the configuration was modeled based upon past experience with similar loading.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. The mount has been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
5. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
6. The threaded rods at the mount to tower connection are considered to be sufficiently tightened to resist rotation.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the mount.

## DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the mount to verify the member sizes and antenna/coax loading. If the existing conditions are not as represented on the mount elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the mount. This report does not replace a full mount inspection. The mount is assumed to have been properly fabricated, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Mount Analysis are limited to a computer analysis of the mount structure and theoretical capacity of its main structural members. All mount components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing mount standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing mount. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed mount. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this mount. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

## **APPENDIX A**

### Mount Analysis Summary Form

## Mount Analysis Summary Form

### General Info

Site Name	US.CT.NXTR.1043980
Date of Analysis	6/18/2020
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped mount analysis.

### Structure Info

Description	Date
Tower Type (G, SST, MP)	G
Tower Height (top of steel AGL)	900'
Mount Manufacturer	Commscope
Mount Model	PM-SC4-63
Mount Design	Commscope Drawing #: PM-SC Series
Mount Mapping	4/20/2010
Previous Mount Analysis	n/a
Mount Modification Design	n/a
Tower Design	n/a
Previous Tower Analysis	n/a

### Design Parameters

Design Code Used	TIA-222-G, 2015 IBC, 2018 Connecticut Building Code, & AISC-360
Location of Tower (County, State)	New Haven, CT
Wind Speed (mph)	97 (nominal 3-second gust)
Ice Thickness (in)	1
Risk Category (I, II, III)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

### Analysis Results (% Maximum Usage)

Proposed Condition	
Mount (%)	1.8%
Mount to Tower Connection (%)	3.4%

### Steel Yield Strength (ksi)

Pipes	35
Bolts	A325

Note: Steel grades have been assumed based upon experience with similar mounts.

The mount was verified to be capable of withstanding a 500 lb live load concurrent with 30-mph wind speeds.

### Proposed Configuration

Antenna								Mount		
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type
DRW NX	654	654	2	Ice Shield	Commscope	MD-SQ3				Tower Mounted
DRW NX										
DRW NX	650	650	2	Dish	Commscope	VHLPX3-6W	51/231	2	Commscope	PM-SC4-63
DRW NX	650	650	4	ODU	SAF	MXM MK2				on the same mounts

## **APPENDIX B**

### Wind Calculations and RISA-3D Output File



TIA-222-G: Mount Analysis Wind Loading  
 US.CT.NXTR.1043980  
 US.CT.NXTR.1043980.01

Structure Information		
Structure Type:	Guyed Tower	
Structure Height:	900	ft
z (Mount Centerline) =	650	ft
Gh (Mount Gust Effect Factor) =	1.00	
Risk Category:	II	

Code Specifications		
IBC Edition:	2012	
TIA/EIA Code:	G	
Nominal Wind Speed (No Ice) =	97	mph (3-s gust)
Nominal Wind Speed (With Ice) =	50	mph (3-s gust)
Ice Thickness	1	in
Exposure Category	B	

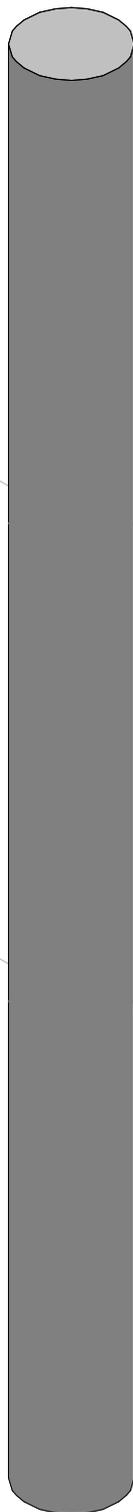
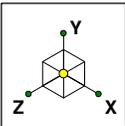
Topographic Inputs	
Topographic Feature:	N/A

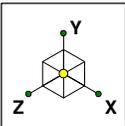
Section Sets										No Ice		Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K <sub>s</sub>	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*	
Mount Pipe	Pipe	63.000	4.5	4.5		4.50	Round	1.00	1.00	13.83	6.64	23.68	

\*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K <sub>s</sub> and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(1) VHLPX3-6W	650	39.4	39.4	24.3	102	Dish w/o Radome	0%	0%	1.00	543.91	102.00	186.75	246.29
(2) MXM MK2	650	16.65351	11.023628	5.2851519	35	Flat	0%	0%	1.00	59.06	35.00	24.58	93.70

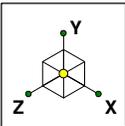
\*All forces are unfactored.





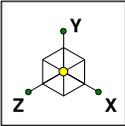
P4 STD





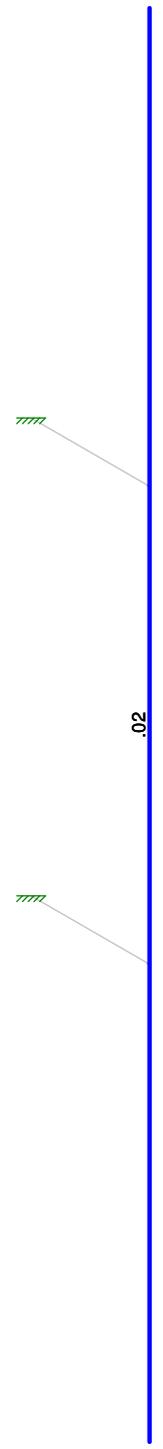
Code Check ( Env )	
Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



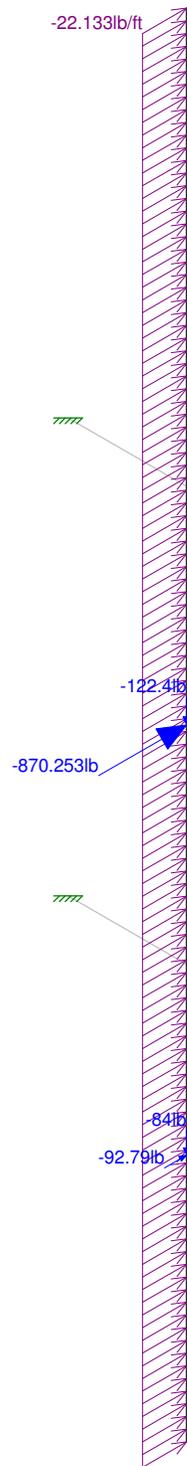
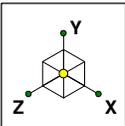


Shear Check ( Env )

Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



Member Shear Checks Displayed (Enveloped)  
Results for LC 1, 1.4 Dead





Company : GPD  
 Designer : bbrookbank  
 Job Number : US.CT.NXTR.1043980.01  
 Model Name : US.CT.NXTR.1043980

June 18, 2020  
 2:51 PM  
 Checked By: \_\_\_\_\_

### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1...	Density[k/...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	.49	35	1.5	60	1.2

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design ...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipe	P4 STD	None	None	A53 Gr. B	Typical	3.174	7.233	7.233	14.465

### Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Dead	DL		-1			4		
2	No Ice Wind 0 deg	None					4	1	
3	No Ice Wind 30 deg	None					8	2	
4	No Ice Wind 60 deg	None					8	2	
5	No Ice Wind 90 deg	None					4	1	
6	No Ice Wind 120 deg	None					8	2	
7	No Ice Wind 150 deg	None					8	2	
8	No Ice Wind 180 deg	None					4	1	
9	No Ice Wind 210 deg	None					8	2	
10	No Ice Wind 240 deg	None					8	2	
11	No Ice Wind 270 deg	None					4	1	
12	No Ice Wind 300 deg	None					8	2	
13	No Ice Wind 330 deg	None					8	2	
14	Ice Weight	None					4	1	
15	Ice Wind 0 deg	None					4	1	
16	Ice Wind 30 deg	None					8	2	
17	Ice Wind 60 deg	None					8	2	
18	Ice Wind 90 deg	None					4	1	
19	Ice Wind 120 deg	None					8	2	
20	Ice Wind 150 deg	None					8	2	
21	Ice Wind 180 deg	None					4	1	
22	Ice Wind 210 deg	None					8	2	
23	Ice Wind 240 deg	None					8	2	
24	Ice Wind 270 deg	None					4	1	
25	Ice Wind 300 deg	None					8	2	
26	Ice Wind 330 deg	None					8	2	
27	Live Load - M3	None					1		

### Load Combinations

	Description	S...	P...	S...	B...	Fa...																	
1	1.4 Dead	Yes	Y			1	1.4	0		0		0		0		0		0		0		0	
2	1.2 Dead + 1.6 Wind @ 0°...	Yes	Y			1	1.2	2	1.6	0		0		0		0		0		0		0	
3	0.9 Dead + 1.6 Wind @ 0°...	Yes	Y			1	.9	2	1.6	0		0		0		0		0		0		0	
4	1.2 Dead + 1.6 Wind @ 30°...	Yes	Y			1	1.2	3	1.6	0		0		0		0		0		0		0	
5	0.9 Dead + 1.6 Wind @ 30°...	Yes	Y			1	.9	3	1.6	0		0		0		0		0		0		0	
6	1.2 Dead + 1.6 Wind @ 60°...	Yes	Y			1	1.2	4	1.6	0		0		0		0		0		0		0	
7	0.9 Dead + 1.6 Wind @ 60°...	Yes	Y			1	.9	4	1.6	0		0		0		0		0		0		0	
8	1.2 Dead + 1.6 Wind @ 90°...	Yes	Y			1	1.2	5	1.6	0		0		0		0		0		0		0	



## **APPENDIX C**

### Additional Calculations



**TIA-222-G CONNECTION CHECK**  
**Mount to Tower Connection - Typ. All Sectors**  
**US.CT.NXTR.1043980.01**

<b>Bolt Information</b>	
Bolt Diameter (d)	0.75 in
Net Tensile Area (A <sub>n</sub> )	0.334 in <sup>2</sup>
# of Bolts Total (n)	2
Bolt Grade	A307
Bolt Tensile Strength (F <sub>ub</sub> )	60 ksi

<b>RISA 3D Reactions</b>	
Moment (M)	0.00 k-ft
Axial (T)	0.00 kips
Shear (V)	0.61 kips

<b>Bolt Capacity</b>	
Nominal Tensile Strength (R <sub>nt</sub> )	20.068 kips
Nominal Shear Strength (R <sub>nv</sub> )	11.93 kips
Bolt Tensile Force (T <sub>ub</sub> )	0.00 kips
Bolt Shear Force (V <sub>ub</sub> )	0.306 kips
$T_{ub}/\phi R_{nt}$	0.00000
$V_{ub}/\phi R_{nv}$	0.03425
$(V_{ub}/\phi R_{nv})^2 + (T_{ub}/\phi R_{nt})^2$	0.00117
<b>Bolt Capacity =</b>	3.4% <b>OK</b>

Exhibit D

Letter of Authorization

Letter of Authorization

Site: US.CT.NXTR.1043980

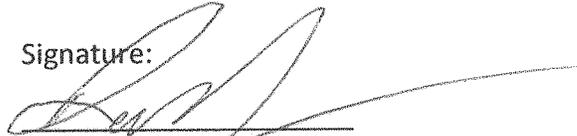
Owner: Nexstar Broadcasting, Inc. ("Nexstar")

Lessee: DRW NX, LLC

Nexstar, owner of the tower facility located at the address identified above (the "Tower Facility"), do hereby authorize DRW NX, LLC its successors and assigns, and/or its agent, (collectively, the "Lessee") to act as our non-exclusive agent for the sole purpose of filing and consummating any land-use, zoning, or building permit application(s) as may be required by the applicable permitting authorities for Lessee's telecommunications' installations, provided however, that any such application(s) or form(s) are reviewed and approved by Nexstar prior to submission.

We understand that this application may be denied, modified or approved with conditions. The above authorization is limited to the acceptance by Lessee only of conditions related to Lessee's installation and any such conditions of approval or modifications will be Lessee's sole responsibility.

Signature:

A handwritten signature in black ink, appearing to read 'Rich Graziano', is written over a horizontal line. The signature is stylized and extends to the right.

Print Name: Rich Graziano

Date: 06/18/2020

Exhibit E  
Emissions Analysis Report



Sublight Engineering PLLC

# US.CT.NXTR.1043980 RF EXPOSURE ASSESSMENT

GPD Group

## Abstract

This installation will have no measurable effect on RF exposure levels near this facility. There are no accessible areas that will exceed the FCC RF exposure limits based on this assessment of the proposed installation.



---

Matthew J Butcher  
Registered Professional Engineer  
Commonwealth of Virginia Lic. No.0402 40784

June 17, 2020

Matthew J Butcher  
matt@sublight.net



## US.CT.NXTR.1043980 RF Exposure Assessment

Sublight Engineering PLLC (Sublight) has been asked to assess Radio Frequency (RF) exposure levels near the proposed installation detailed below. GDP Group engaged Sublight and provided information for this report.

DRW NX proposes to add equipment at this location. The new installation will operate in the 6 GHz point-to-point microwave band.

This installation will have no measurable effect on RF exposure levels near this facility. There are no accessible areas that will exceed the FCC RF exposure limits based on this assessment of the proposed installation.

## Installation Location

The site is a collocation on an existing WTNH – News 8 owned telecommunications tower in Hamden, CT.

Address: 199 Talmadge Road, Hamden, CT 06518

Coordinates 41.423547° N, 72.950347° W.

Antenna Height (radiation center): 450 feet above ground level



*Figure 1 Overhead View*



US.CT.NXTR.1043980 RF Exposure Assessment

### Antenna and Transmitter Information

The proposed DRW NX installation will add two microwave dish antennas to an existing communications tower.

The antennas proposed are Comscope VHLPX3-6W microwave dishes.

### VHLPX3-6W-4WH/A



0.9m | 3 ft ValuLine® High Performance Low Profile Antenna, dual-polarized, 5.925–7.125 GHz, PDR70 flange, white antenna, composite broadband grey radome without flash, standard pack-one-piece reflector

The two antennas are to be mounted at 650 feet above ground level and oriented at 51° and 231° relative to true north.

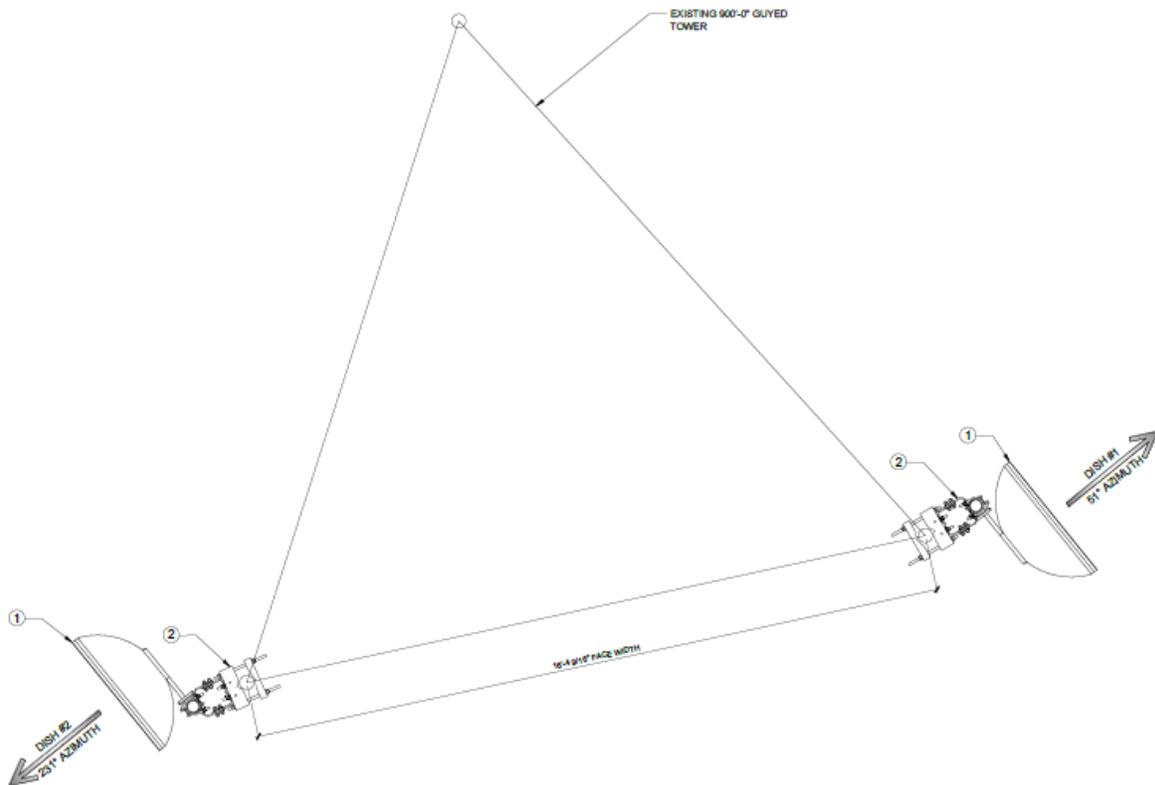


Figure 2 Antenna and Radio Configuration

Each antenna is connected to a microwave radio operating at 5787 MHz with a transmit power of 1.25 W, 1 dB of loss, and an effective isotropic radiated power (EIRP) of 62.7 dBmW.



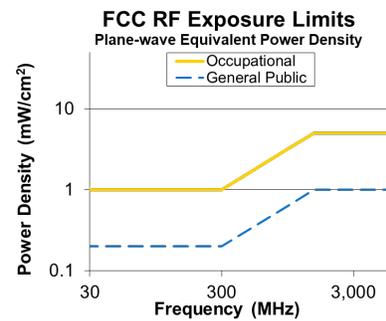
US.CT.NXTR.1043980 RF Exposure Assessment

RF Exposure Assessment

This RF Exposure assessment is based on exposure limits set by the Federal Communications Commission (FCC), as addressed most recently in 2019<sup>1</sup>, and codified in their rules<sup>2</sup>. The FCC has two limits: one for the General Public and a less conservative or higher limit for Occupational workers. An Occupational worker is defined as someone who through training and notification can understand and control their exposure to RF that they may encounter in the workplace. Everyone else is considered the General Public. In this assessment, both limits are considered but the stricter, General Public, limits are used to determine compliance.

This assessment uses worst-case modelling of maximum transmitter power to the antennas and conservative techniques to determine compliance boundaries. Outside the boundaries, exposure levels will be below the limits.

FCC plane-wave equivalent power density limits for maximum permissible exposure are derived from the whole-body SAR limits and expressed in milliwatts per square centimeter (mW/cm<sup>2</sup>). FCC exposure limits are for continuous exposure spatial-averaged over the whole body and time-averaged, over 6 minutes for Occupational and 30 minutes for General Public limits. To account for changes in absorption relative to frequency, the limits are dependent on the frequency of the RF energy. This graph indicates that frequency relationship.



To calculate exposure and compliance boundaries, power density from each source (exposure value by frequency  $EV_f$ ) is divided by the appropriate exposure limit ( $EL_f$ ), creating an exposure ratio ( $ER_f$ ).

$$ER_f = \frac{EV_f}{EL_f}$$

Ratios from each source are combined to determine a total exposure ratio  $TER$ . This ratio is used to determine exposure and compliance boundaries.

$$TER = \sum_{i=1}^n ER_i$$

RF power density levels are calculated using the IXUS Modeler<sup>3</sup>. IXUS employs a synthetic ray tracing method for panel and omnidirectional antennas and a conservative cylindrical envelope method for microwave dish (parabolic reflector / aperture) antennas.

<sup>1</sup> FCC-19-126 *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields; Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies*

<sup>2</sup> 47 CFR § 1.1310 Radiofrequency radiation exposure limits, US Code of Federal Regulations

<sup>3</sup> IXUS EMF Compliance Management Software version 3.8 (0) (Calculator 15.0) provided by Alphawave Mobile Network Products <http://www.ixusapp.com>.



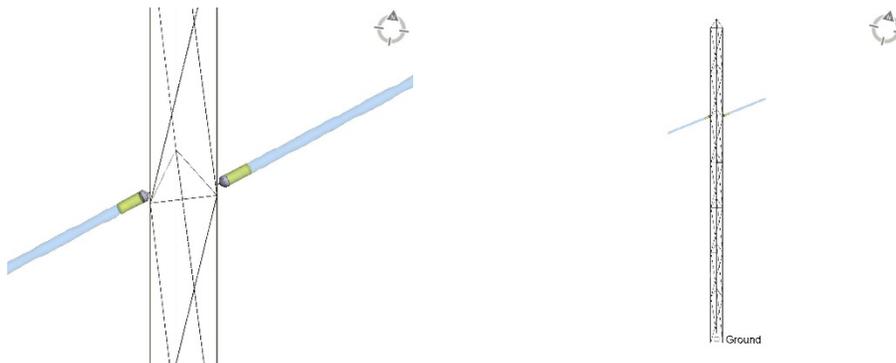
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The ray tracing method is an advanced computation method described in IEC 62232<sup>4</sup>. The power is summed from elemental sources representing the individual components of the antenna. These elemental sources are selected by an analysis of the proposed antennas and their manufacturers datasheets. Ray tracing algorithms typically overestimate RF field strength due to absorption of RF energy in the ground, building walls and other man-made structures.

The conservative cylindrical envelope method for microwave dish antennas from ETSI<sup>5</sup> is used to determine worst-case RF power density. This technique is derived from common configurations and shown to be conservative based on measurement results from real systems. Dish antennas are extremely directional and almost all the RF energy is confined to a cylindrical beam in the direction the antenna is pointed, levels outside the beam are negligible.

IXUS combines results from all sources to create graphic 3D compliance boundaries around antennas.

The following depiction graphically shows the worst-case compliance boundaries with respect to surrounding structures. Yellow indicates areas that may exceed the FCC's General Public exposure limits while red indicates areas that may exceed the Occupational limits. Because of the low power to this installation there are no areas that exceed the limits. To show the modeling, light blue indicates areas that exceed 5% or 1/20<sup>th</sup> of the limit.

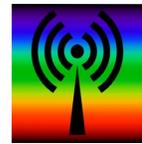


*Figure 3 Modeling of Installation – antenna level & whole tower*

The graph below shows the power density estimation (ETSI Envelope) for the proposed antenna in this installation with respect to the FCC Whole Body Limit for the General Public. It also shows 5% or 1/20<sup>th</sup> of that limit. Only a short, inaccessible region, in front of the VHLPX3-6W antennas, will exceed the FCC's General Public exposure limit.

<sup>4</sup> IEC 62232:2017, Determination of RF field strength and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure, International Electrotechnical Commission, Geneva.

<sup>5</sup> ETSI TR 102 457. Fixed Radio Systems; Evaluation of the ElectroMagnetic Field (EMF) radiated by Line-of-Sight (LoS) fixed radio stations using parabolic dish directional antennas. V2.1.0 (2018-09)



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Efficiency  $\eta$  0.57  
 Gain dBi 32.4  
 Diameter [m] 0.9  
 Frequency [MHz] 5878  
 Power [W, dBm] 1., 30  
 ETSI F 15

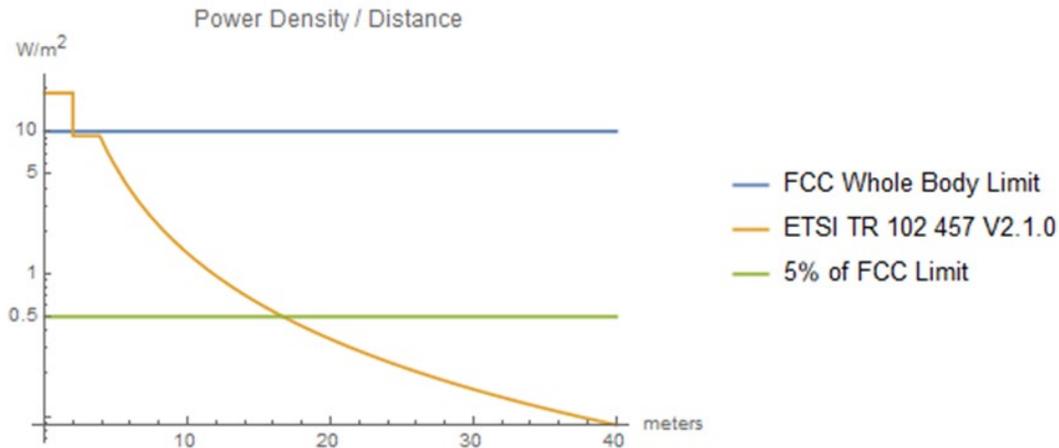


Figure 4 ETSI power density estimation

Because of the low power, installation height, and directionality of the proposed installation, there will be no change to the RF exposure levels on or around this site. RF levels on the ground from this installation will not be measurable.

## RF Safety Program

WTNH – News 8, the tower owner, has an RF Exposure Safety Program for their transmitting sites. Part of this program requires the installation of signs near antennas where workers could access areas that exceed FCC RF exposure limits.

Because this installation will have no effect on RF exposure levels on or around the tower, there will be no need to update the existing RF Exposure Safety Program.

## Conclusions

This installation will have no measurable effect on RF exposure levels near this facility. There are no accessible areas that will exceed the FCC RF exposure limits based on this assessment of the proposed installation.

This engineer hereby certifies that this proposed wireless facility, installed by GPD Group, will comply with the RF exposure limits set forth by the FCC and as required by federal law.

If you have any questions on this assessment, please contact Sublight Engineering PLLC.



## US.CT.NXTR.1043980 RF Exposure Assessment

### Engineering Statement

My professional engineer seal on this document certifies and affirms that:

I am registered as a Professional Engineer.

I am the principal of Sublight Engineering PLLC, in Arlington, Virginia.

I provide RF engineering services.

I am thoroughly familiar with the rules and regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC radiofrequency radiation exposure limits.

That I have prepared this RF Exposure Assessment and believe it to be true and accurate to the best of my knowledge.

June 17, 2020