EBI Consulting
environmental | engineering | due diligence

21 B Street
Burlington, MA 01803
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August 17, 2020

Town of Madbury, Planning Board
Mr. Mark Avery, Chair
13 Town Hall Road
Madbury, NH 03823
madplanboard@gmail.com

Subject: Invitation to Comment
SITE # FRN 0025580549 / Town of Durham LMR Tower
46 Beech Hill Road, Durham, Strafford County, New Hampshire 03824
EBI Project # 6120006553

Dear Mr. Avery:

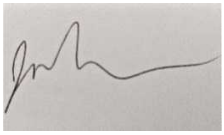
Pursuant to Section 106 of the National Historic Preservation Act, the regulations promulgated thereunder and interagency agreements developed thereto, EBI Consulting, Inc., on behalf of the Town of Durham, provides this notice of a proposed telecommunications facility installation near the address listed above.

EBI would like to inquire if you would be interested in commenting on this proposed project. Please refer to the attached project plans for additional details regarding this proposed project.

Please note that we are requesting your review of the attached information as part of the Section 106 process only and not as part of the local zoning process. We are only seeking comments related to the proposed project's potential effect to historic properties.

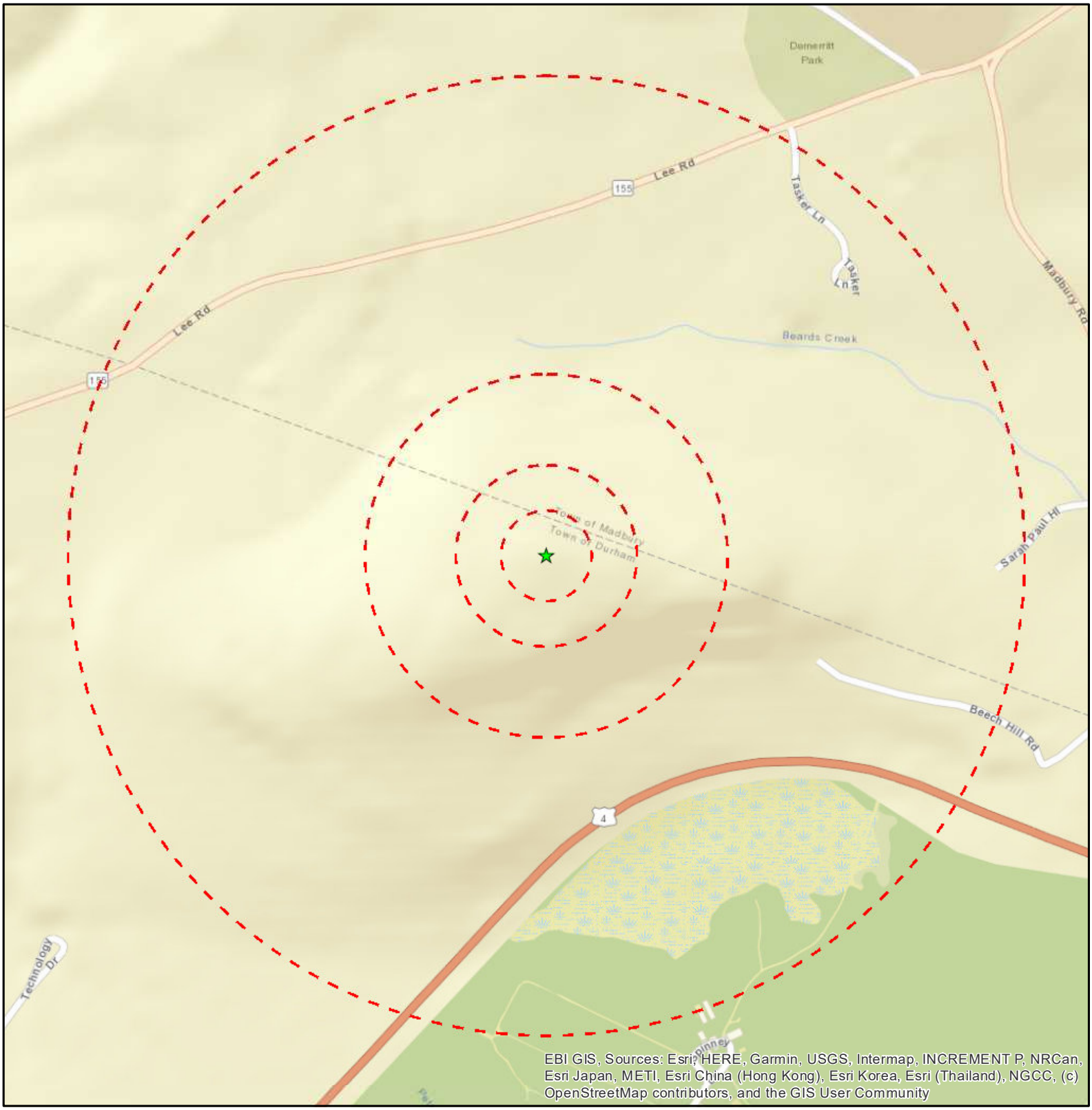
Please submit your comments regarding the proposed project's potential effect on historic properties to EBI Consulting, to my attention at 21 B Street, Burlington, MA 01803, or contact me via email at the address listed below. Please reference the EBI project number. We would appreciate your comments as soon as possible within the next 30 days. Please do not hesitate to contact me if you have any questions or concerns about the proposed project.

Respectfully Submitted,



Julia Robinson
Senior Architectural Historian
jrobinson@ebiconsulting.com

Attachments - Drawings and Maps



Legend

★ Project Site

Site Radius at 250', 500', 1000' and ½ mile

Date: 7/14/2020

Figure 1: Site Location Map

TOWN OF DURHAM LMR TOWER TOWN OF DURHAM LMR TOWER
46 BEECH HILL ROAD
DURHAM, NH 03824

N

PN: 6120006553

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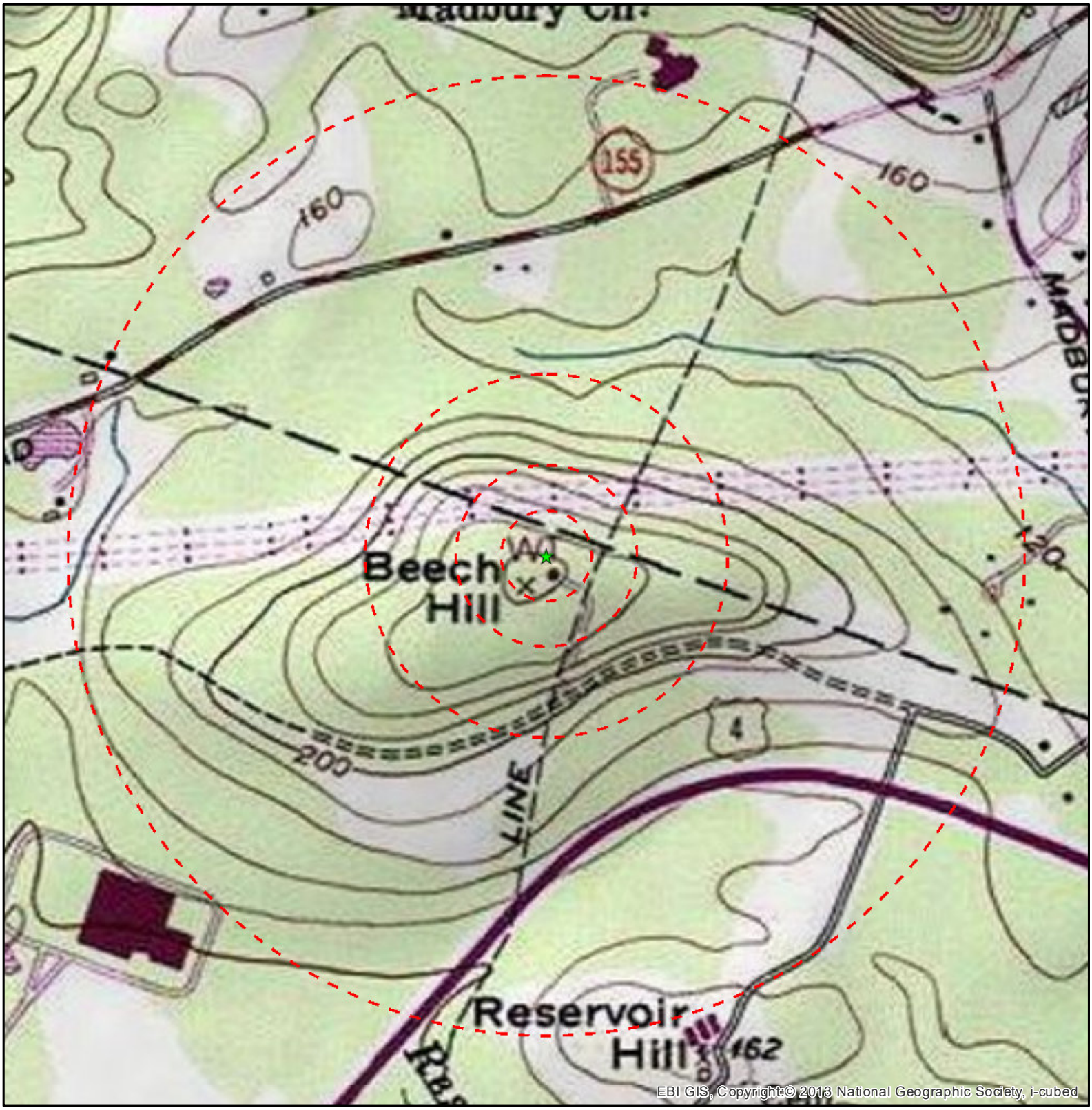

Legend

★ Project Site

Site Radius at 250', 500', 1000' and ½ mile

USGS 24K Quad: Dover West, NH 1986

Date: 7/14/2020

Figure 2 - Topographic Map

TOWN OF DURHAM LMR TOWER TOWN OF DURHAM LMR TOWER
46 BEECH HILL ROAD
DURHAM, NH 03824

PN: 6120006553

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TIMBERLINE COMMUNICATIONS INC.

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300 PINE STREET, CANTON, MA 02021

TOWN OF DURHAM LMR TOWER

46 BEECH HILL ROAD
DURHAM, NH 03824

PROJECT TYPE: PROPOSED RADIO COMMUNICATIONS SYSTEM
INFRASTRUCTURE MOUNTED TO PROPOSED 180' SELF-SUPPORTING TOWER

SITE INFORMATION:

BUILDING OWNER:	TOWN OF DURHAM 8 NEWMARKET ROAD DURHAM, NH 03824
APPLICANT:	TIMBERLINE COMMUNICATIONS INC. 300 PINE STREET CANTON, MA 02021
SITE ADDRESS:	46 BEECH HILL ROAD DURHAM, NH 03824
COUNTY:	STRAFFORD
LATITUDE:	N 43°-09'-30.41" (CENTER OF PROP. TOWER)
LONGITUDE:	W 70°-56'-43.11" (CENTER OF PROP. TOWER)
ZONING DISTRICT:	R (RURAL)
ZONING JURISDICTION:	TOWN OF DURHAM, NH
PARCEL ID NUMBER:	101192
ARCHITECT / ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
POWER COMPANY:	EVERSOURCE 265 CALEF HIGHWAY EPPING, NH 03042 (800) 662-7764
TELEPHONE COMPANY:	VERIZON 185 FRANKLIN STREET BOSTON, MA 02107 (800) 941-9900

GENERAL NOTES

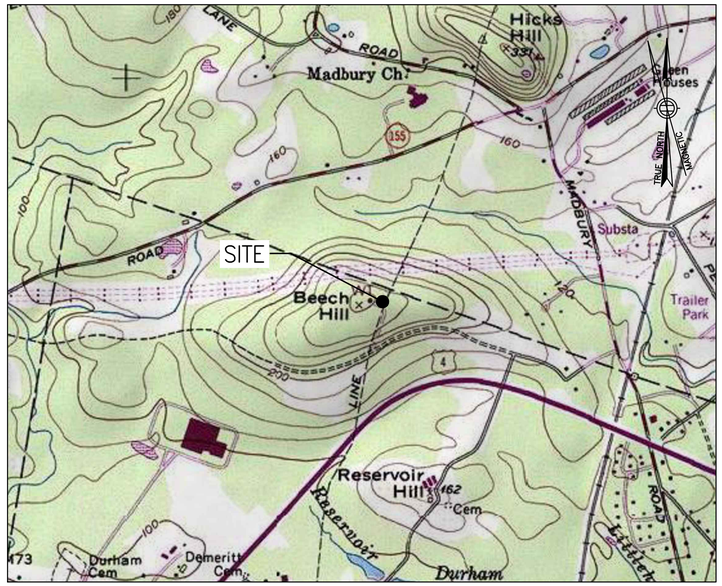
1. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
2. NEW CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2009 INTERNATIONAL BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811

811 DigSafe MA ME NH RI VT

VICINITY MAP

SCALE: 1"=1000'



DRIVING DIRECTIONS

FROM CANTON, TAKE I-95N. TAKE EXIT 4 ON THE LEFT TO MERGE ONTO NH-16 NORTH/US-4 WEST TOWARD WHITE MOUNTAINS. TAKE EXIT 6 NORTH TOWARD DOVER. KEEP LEFT AT THE FORK TO CONTINUE TOWARD US-4 WEST. TURN LEFT ONTO US-4 WEST. CONTINUE STRAIGHT TO STAY ON US-4 WEST. AT THE TRAFFIC CIRCLE, TAKE THE SECOND EXIT ONTO US-4 WEST/ BOSTON HARBOR ROAD. TURN RIGHT. TURN LEFT AT BEECH HILL ROAD. THE SITE WILL BE LOCATED ON THE LEFT HAND SIDE.

SHEET INDEX

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DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS INSTALLATION AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC WIRELESS TELECOMMUNICATIONS SERVICE.
2. THIS FACILITY WILL CONSUME NO UNRECOVERABLE ENERGY.
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

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201 BOSTON POST ROAD WEST
SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF NEW HAMPSHIRE — CLEMENT J. SAJER — No. 12906 — LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR — DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:

TOWN OF DURHAM
LMR TOWER

46 BEECH HILL ROAD
DURHAM, NH 03824

DRAWING TITLE:

TITLE SHEET

DRAWING NO:

T01

SCALE: AS SHOWN	DESIGNED BY: GRS	SHEET NUMBER
	DRAWN BY: JRV	
	CHECK'D BY: CJS/GRS	1 OF 7
PROJECT NO. 747.27	ORIGINAL ISSUE DATE: 6/29/20	

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR – TIMBERLINE COMMUNICATIONS, INC.
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
OWNER – TOWN OF DURHAM
OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND THE TOWN PRIOR TO EXECUTING.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AT THE CLOSE OF EACH WORKDAY.

13. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

14. SUBCONTRACTOR SHALL NOTIFY DESIGN ENGINEER 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACK FILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.

15. CONSTRUCTION SHALL COMPLY WITH TIMBERLINE COMMUNICATIONS SITES AND THEIR CONTRACT WITH THE TOWN.

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR AND THE TOWN OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. TEST PITTING WILL BE REQUIRED PRIOR TO CONSTRUCTION TO PREVENT INTERFERENCE WITH EXISTING UNDERGROUND UTILITIES/WATER LINE.

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.

6. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.

9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TIMBERLINE COMMUNICATIONS SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS. CONTRACTOR SHALL FURNISH OWNER WITH COMPRESSIVE STRENGTH TESTS VIA EMAIL ATTACHMENT.

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE, WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER .....2 IN.
#5 AND SMALLER & WWF .....1½ IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL .....¾ IN.
BEAMS AND COLUMNS .....1½ IN.

5. A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.

7. CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND TIMBERLINE COMMUNICATIONS SPECIFICATION 25252-000-3PS-GET-00001 UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (¾"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.

4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ⅝" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.

5. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.

6. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL

7. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.

4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #1 SIEVE.

5. AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). AND SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

1. HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, TIMBERLINE COMMUNICATIONS ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.

2. COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR AND OWNER PRIOR TO EXECUTING.

3. CABLE LADDER RACK:
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

1. WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

2. SUBCONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR AND OWNER FOR APPROVAL.

3. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

4. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.

5. EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.

6. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, ½ INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS

7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANEL BOARD AND CIRCUIT ID'S).

8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.

9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.

13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).

15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

17. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

18. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE

20. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

21. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

22. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

23. CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.

24. CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

25. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

26. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS

27. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

28. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

30. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

31. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

32. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

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STATE OF NEW HAMPSHIRE
CLEMENT J. SAUER
No. 12596
LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

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

REVISIONS

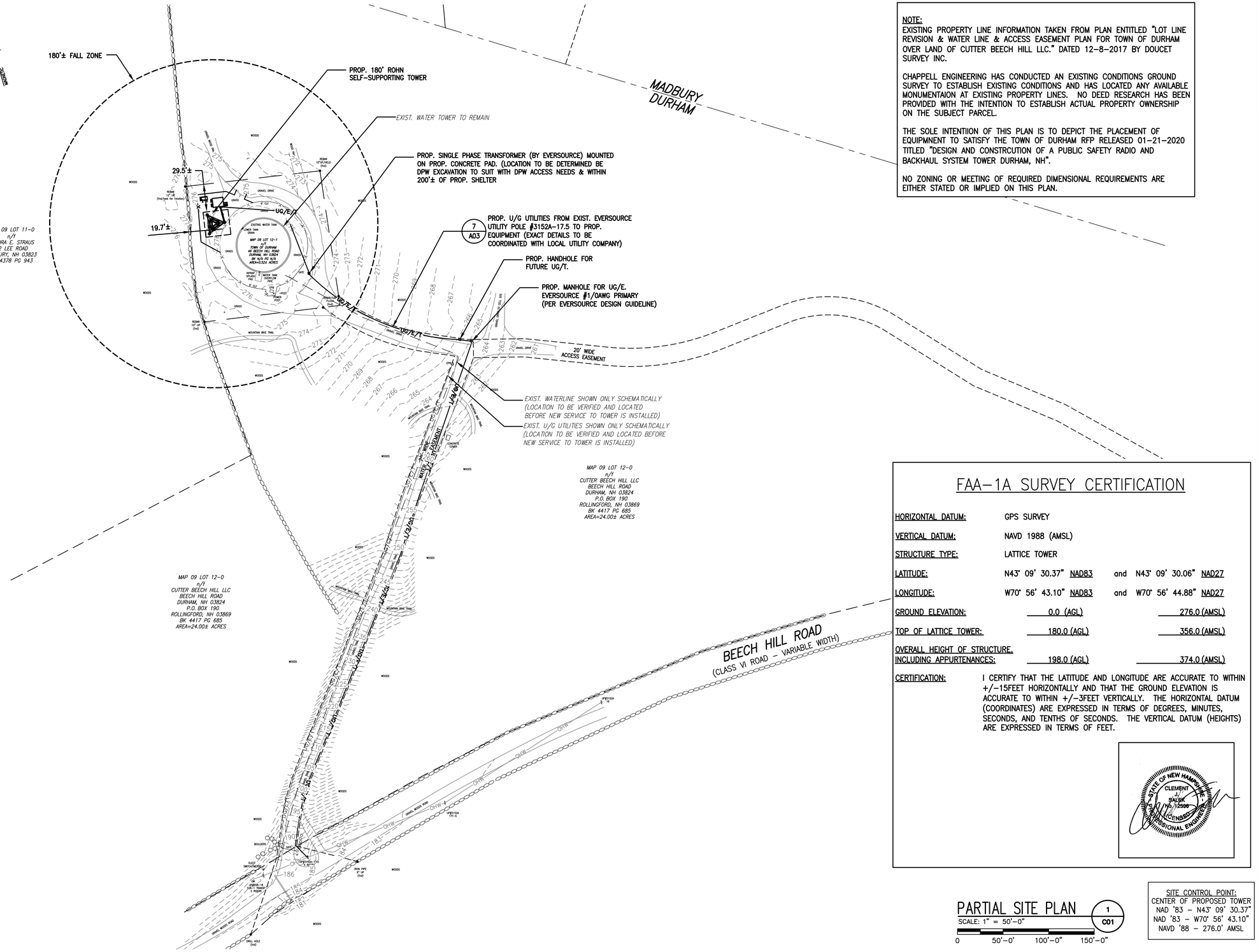
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:
TOWN OF DURHAM
LMR TOWER
46 BEECH HILL ROAD
DURHAM, NH 03824

DRAWING TITLE:
GENERAL NOTES

DRAWING NO:
GN01

SCALE:	DESIGNED BY: GRS	SHEET NUMBER
NONE	DRAWN BY: JRV	2 OF 7
	CHECK'D BY: CJS/GRS	
PROJECT NO.	ORIGINAL ISSUE DATE:	
747.27	6/29/20	



NOTE:
EXISTING PROPERTY LINE INFORMATION TAKEN FROM PLAN ENTITLED "LOT LINE REVISION & WATER LINE & ACCESS EASEMENT PLAN FOR TOWN OF DURHAM OVER LAND OF CUTTER BEECH HILL LLC." DATED 12-8-2017 BY DOUCET SURVEY INC.

CHAPPELL ENGINEERING HAS CONDUCTED AN EXISTING CONDITIONS GROUND SURVEY TO ESTABLISH EXISTING CONDITIONS AND HAS LOCATED ANY AVAILABLE MONUMENTAION AT EXISTING PROPERTY LINES. NO DEED RESEARCH HAS BEEN PROVIDED WITH THE INTENTION TO ESTABLISH ACTUAL PROPERTY OWNERSHIP ON THE SUBJECT PARCEL.

THE SOLE INTENTIION OF THIS PLAN IS TO DEPICT THE PLACEMENT OF EQUIPMNENT TO SATISFY THE TOWN OF DURHAM RFP RELEASED 01-21-2020 TITLED "DESIGN AND CONSTRCUTION OF A PUBLIC SAFETY RADIO AND BACKHAUL SYSTEM TOWER DURHAM, NH".

NO ZONING OR MEETING OF REQUIRED DIMENSIONAL REQUIREMENTS ARE EITHER STATED OR IMPLIED ON THIS PLAN.

FAA-1A SURVEY CERTIFICATION

HORIZONTAL DATUM:	GPS SURVEY		
VERTICAL DATUM:	NAVD 1988 (AMSL)		
STRUCTURE TYPE:	LATTICE TOWER		
LATITUDE:	N43° 09' 30.37" NAD83	and	N43° 09' 30.06" NAD27
LONGITUDE:	W70° 56' 43.10" NAD83	and	W70° 56' 44.88" NAD27
GROUND ELEVATION:	0.0 (AGL)		276.0 (AMSL)
TOP OF LATTICE TOWER:	180.0 (AGL)		356.0 (AMSL)
OVERALL HEIGHT OF STRUCTURE, INCLUDING APPURTENANCES:	198.0 (AGL)		374.0 (AMSL)

CERTIFICATION: I CERTIFY THAT THE LATITUDE AND LONGITUDE ARE ACCURATE TO WITHIN +/-15FEET HORIZONTALLY AND THAT THE GROUND ELEVATION IS ACCURATE TO WITHIN +/-3FEET VERTICALLY. THE HORIZONTAL DATUM (COORDINATES) ARE EXPRESSED IN TERMS OF DEGREES, MINUTES, SECONDS, AND TENTHS OF SECONDS. THE VERTICAL DATUM (HEIGHTS) ARE EXPRESSED IN TERMS OF FEET.

STATE OF NEW HAMPSHIRE
CLEMENT J. SALSK
No. 12506
LICENSED PROFESSIONAL ENGINEER

PARTIAL SITE PLAN
SCALE: 1" = 50'-0"
1 / C01
0 50'-0' 100'-0" 150'-0"

SITE CONTROL POINT:
CENTER OF PROPOSED TOWER
NAD '83 - N43° 09' 30.37"
NAD '83 - W70° 56' 43.10"
NAVD '88 - 276.0' AMSL

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STATE OF NEW HAMPSHIRE
CLEMENT J. SALSK
No. 12506
LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

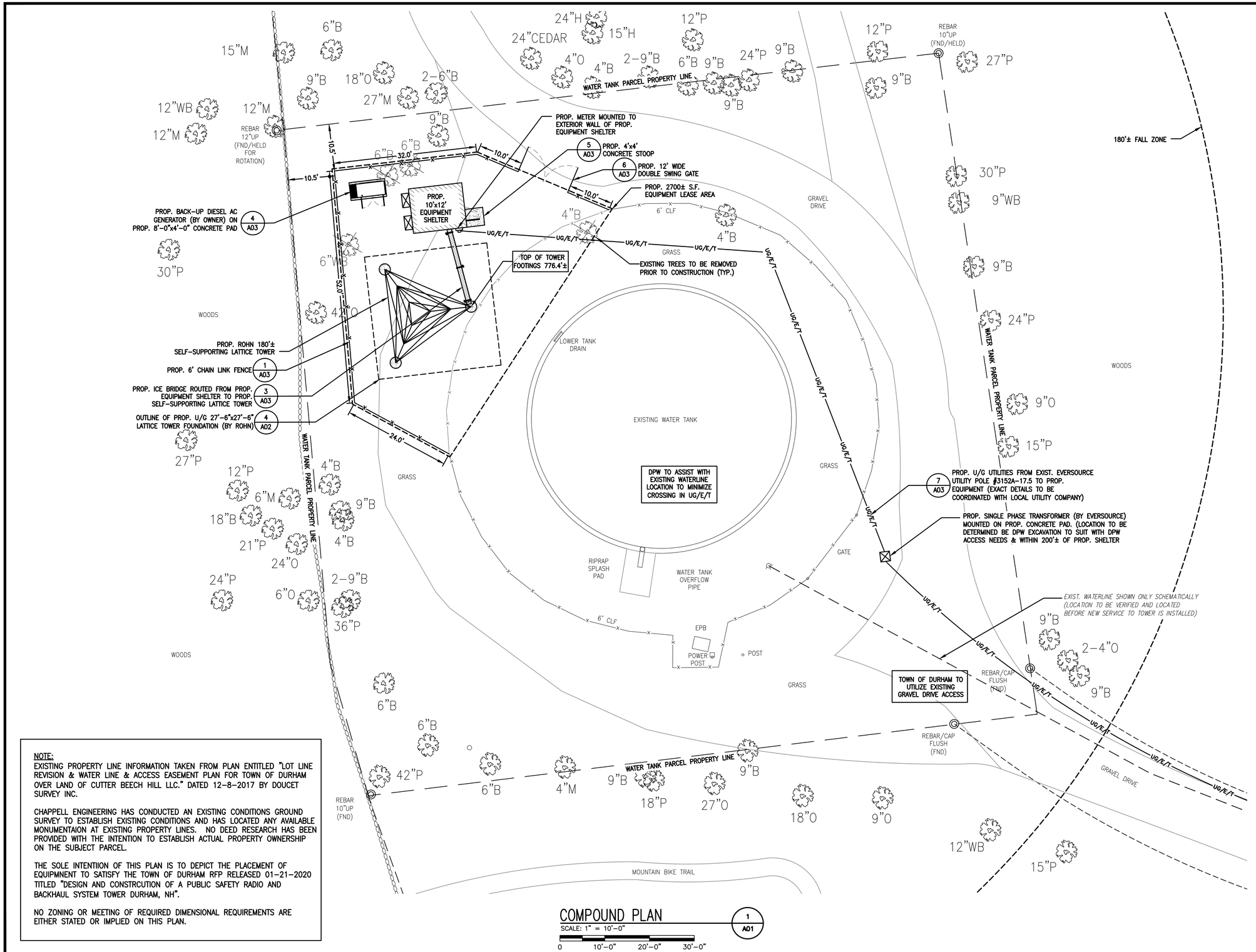
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:
TOWN OF DURHAM
LMR TOWER
46 BEECH HILL ROAD
DURHAM, NH 03824

DRAWING TITLE:
PARTIAL SITE PLAN

DRAWING NO:
C01

SCALE: 1" = 50'-0"	DESIGNED BY: GRS	SHEET NUMBER
	DRAWN BY: JRV	
	CHECK'D BY: CJS/GRS	3 OF 7
PROJECT NO. 747.27	ORIGINAL ISSUE DATE: 6/29/20	



COMPOUND PLAN
SCALE: 1" = 10'-0"
1 A01
0 10'-0" 20'-0" 30'-0"

NOTE:
EXISTING PROPERTY LINE INFORMATION TAKEN FROM PLAN ENTITLED "LOT LINE REVISION & WATER LINE & ACCESS EASEMENT PLAN FOR TOWN OF DURHAM OVER LAND OF CUTTER BEECH HILL LLC." DATED 12-8-2017 BY DOUCET SURVEY INC.

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NO ZONING OR MEETING OF REQUIRED DIMENSIONAL REQUIREMENTS ARE EITHER STATED OR IMPLIED ON THIS PLAN.

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STATE OF NEW HAMPSHIRE
CLEMENT J. SAJDAK
No. 12996
LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

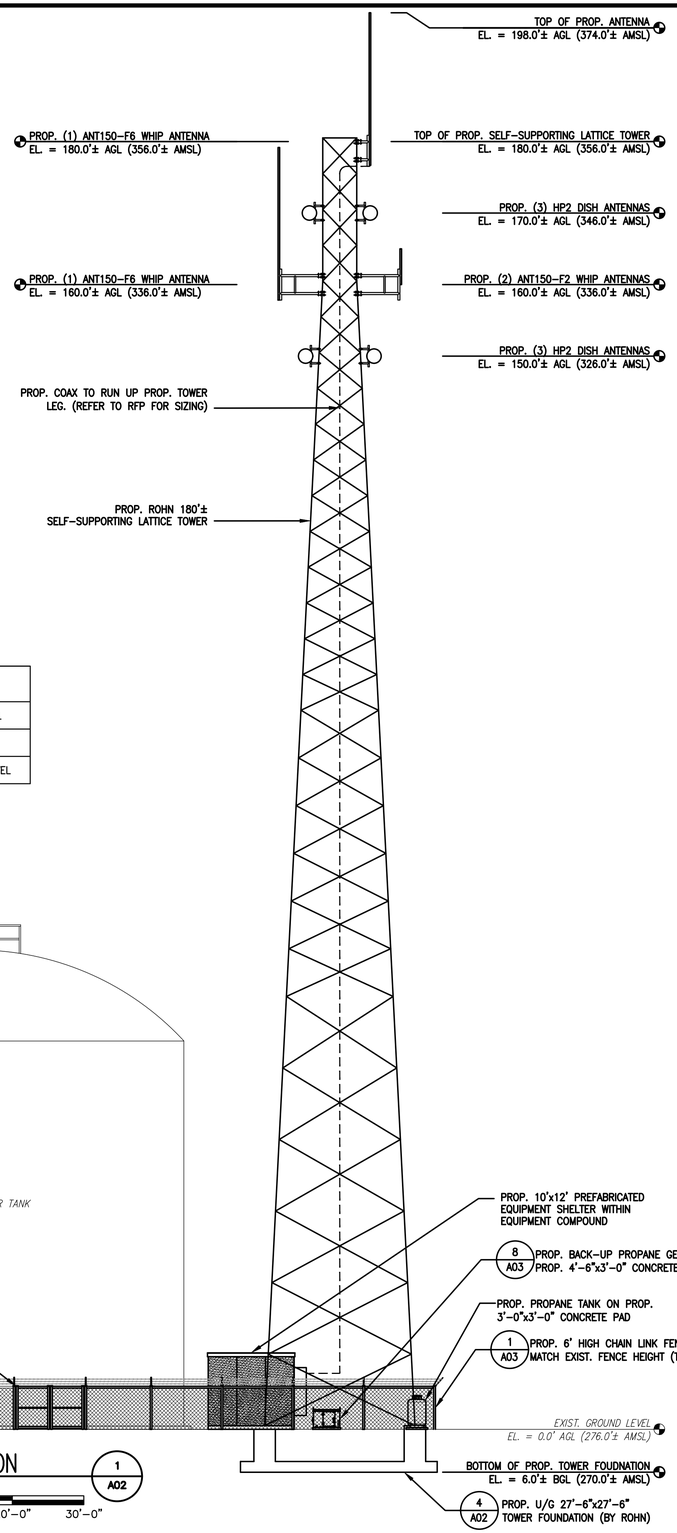
NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:
TOWN OF DURHAM
LMR TOWER
46 BEECH HILL ROAD
DURHAM, NH 03824

DRAWING TITLE:
COMPOUND PLAN

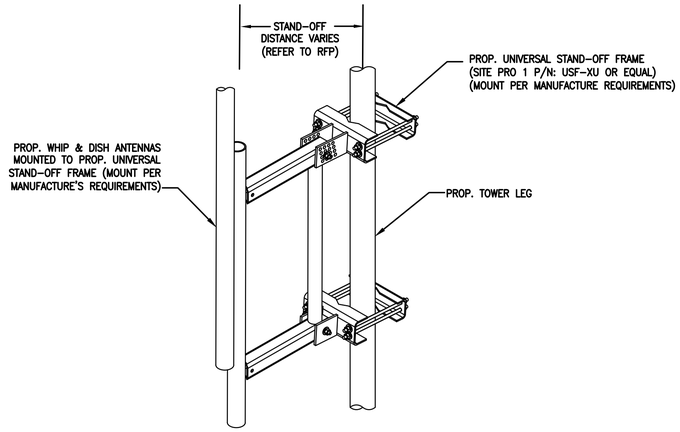
DRAWING NO:
A01

SCALE:	DESIGNED BY: GRS	SHEET NUMBER
1" = 10'-0"	DRAWN BY: JRV	4 OF 7
	CHECK'D BY: CJS/GRS	
PROJECT NO. 747.27	ORIGINAL ISSUE DATE: 6/29/20	

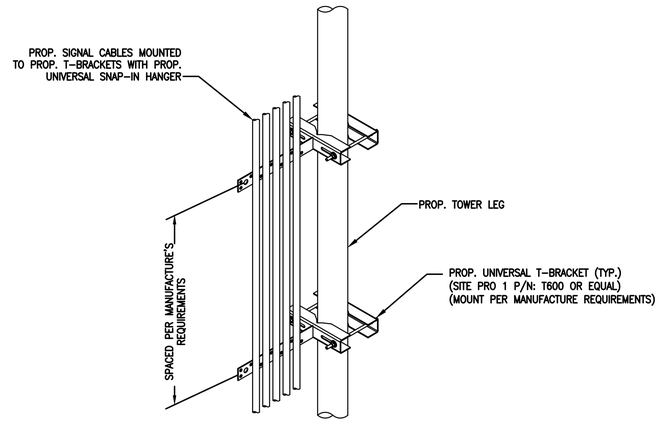


LEGEND	
AGL	ABOVE GROUND LEVEL
BGL	BELOW GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL

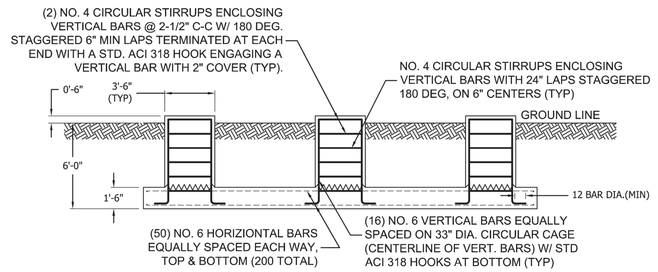
SITE ELEVATION (1 / A02)
SCALE: 1" = 10'-0"
0 10'-0" 20'-0" 30'-0"



ANTENNA SUPPORT DETAIL (2 / A02)
SCALE: N.T.S.



TOWER LEG CABLE SUPPRT (3 / A02)
SCALE: N.T.S.



TOWER FOUNDATION DETAIL (BY ROHN) (4 / A02)
SCALE: 1" = 5'-0"
0 5'-0" 10'-0" 15'-0"

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STATE OF NEW HAMPSHIRE — CLEMENT J. SAUER No. 12996 LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:

TOWN OF DURHAM
LMR TOWER

46 BEECH HILL ROAD
DURHAM, NH 03824

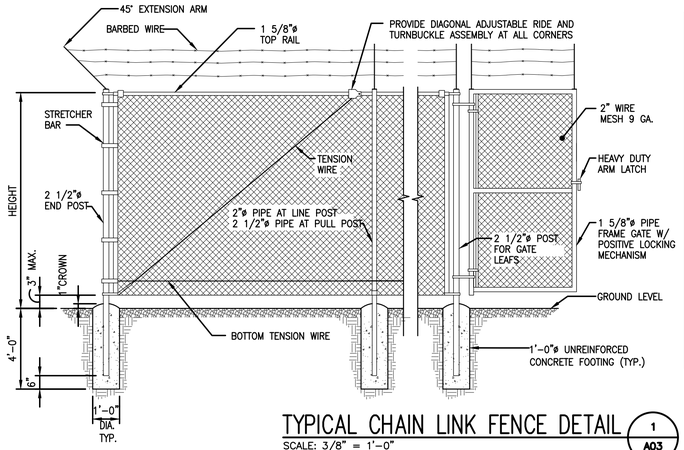
DRAWING TITLE:

SITE ELEVATION

DRAWING NO:

A02

SCALE:	DESIGNED BY: GRS	SHEET NUMBER
AS SHOWN	DRAWN BY: JRV	5 OF 7
	CHECK'D BY: CJS/GRS	
PROJECT NO.	ORIGINAL ISSUE DATE:	
747.27	6/29/20	



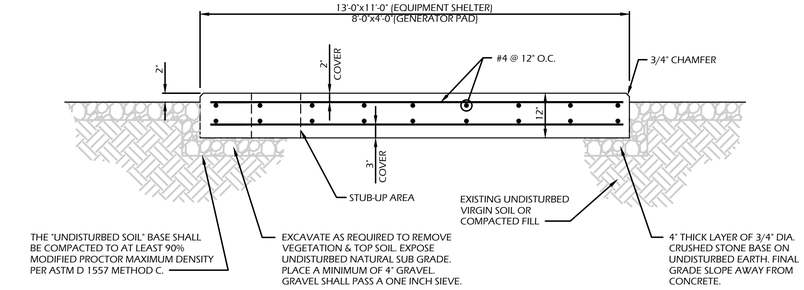
FENCING NOTES

1. INSTALL FENCING PER ASTM F-567, SWING GATE PER ASTM F-900.
2. ALL POSTS AND TOP RAILS SHALL BE SCHEDULE 40 PIPE PER ASTM F-1083.
3. ALL FABRIC SHALL BE 12 GA. CORE WIRE SIZE 2" MESH CONFORMING TO ASTM A-392.
4. TIE WIRE SHALL BE 11 GA. GALV. STEEL (MIN.) AT POSTS AND RAILS. A SINGLE WRAP FABRIC TIE AT TENSION WIRE BY HOG RINGS SPACED MAX. OF 24" INTERVALS.
5. STEEL FENCE SYSTEM SHALL INCLUDE THE POSTS, FABRIC, GATE SYSTEM AND ALL NECESSARY ERECTION ACCESSORIES, FITTINGS AND FASTENINGS. ALL FENCE SYSTEM COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. GATES SHALL BE SWING GATES (SEE PLAN FOR SIZES(S)).
6. BARBED WIRE SHALL BE DOUBLE STRAND 12 1/2" O.D. TWISTED WIRE TO MATCH W/FABRIC 14 GA., 4 PT. BARBS SPACES AT APPROXIMATELY 5" O.C.
7. COMPLY WITH LOCAL ORDINANCES OF BARBED WIRE PERMIT REQUIREMENTS, IF REQUIRED.

TYPICAL CHAIN LINK FENCE DETAIL (1 / A03)

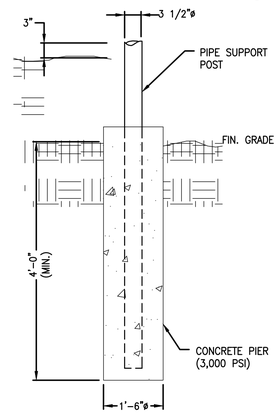
SCALE: 3/8" = 1'-0"

0 2'-8" 5'-4" 8'-0"



EQUIPMENT SLAB DETAIL (4 / A03)

SCALE: 1/16" = 1'-0"

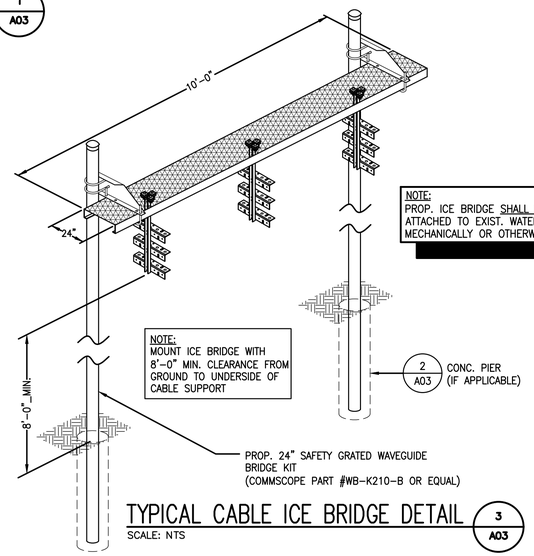


NOTES:

1. FOR EXPOSED LEDGE, PROVIDE GROUT LEVELING PAD. INSTALL (2)-⅝"ø EXPANSION ANCHORS, (6" LONG).
2. FOR BURIED LEDGE AT LESS THAN 3'-6" BELOW FINISH GRADE, CORE 8"ø HOLE INTO LEDGE 18" DEEP. FILL AROUND PIPE WITH NON-SHRINK GROUT. USE COAL TAR ON BURIED LENGTH OF PIPE, AND BACKFILL TO FINISH GRADE
3. FOR CONCRETE, FASTEN BASEPLATE WITH (2)-⅝"ø EXPANSION ANCHORS, (6" LONG).
4. FOR POSTS ON CONCRETE OR EXPOSED LEDGE, PROVIDE 4"x8"x⅜" BASE PLATE WITH (2)-$^{13}/_{16}$"ø HOLES @ 6" O.C.

TYPICAL CABLE BRIDGE PIER (2 / A03)

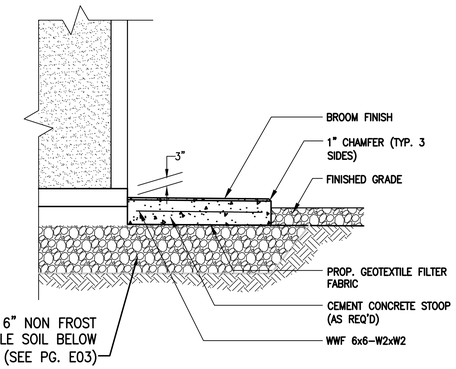
SCALE: NTS



NOTE:
PROP. ICE BRIDGE SHALL NOT BE ATTACHED TO EXIST. WATER TANK MECHANICALLY OR OTHERWISE.

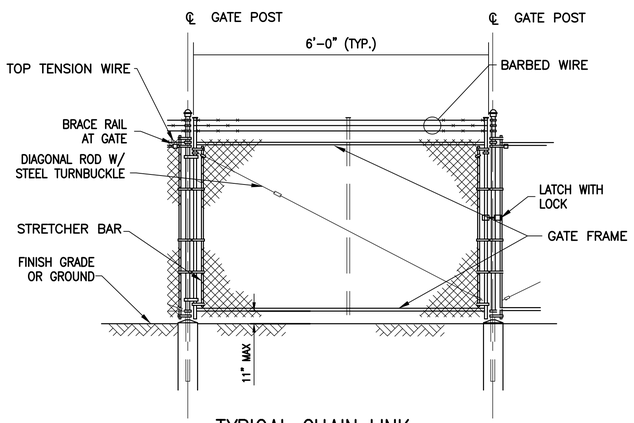
TYPICAL CABLE ICE BRIDGE DETAIL (3 / A03)

SCALE: NTS



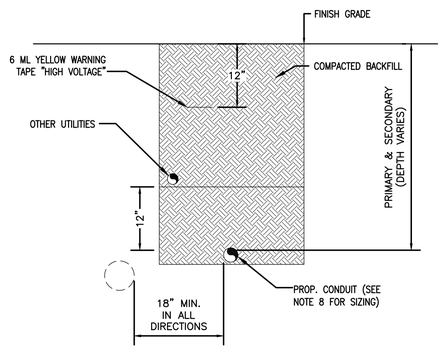
STOOP AND MISC SLABS (5 / A03)

SCALE: 1/2" = 1'-0"



TYPICAL CHAIN LINK SWING GATE DETAIL (6 / A03)

SCALE: N.T.S.



NOTES:

1. ALL NON-METALLIC CONDUIT AND FITTINGS SHALL BE ELECTRICAL GRADE, SCHEDULE 40 PVC, AND SHALL CONFORM TO THE APPLICABLE SECTIONS OF NEMA TC2-1990 AND BE UL LISTED. ONLY GRAY-COLORED CONDUIT WILL BE ACCEPTED. ANY PVC CONDUIT NOT HAVING THE PROPER NEMA AND UL MARKINGS WILL NOT BE ACCEPTED. ALL STEEL CONDUITS SHALL CONFORM TO ASTM A120 AND BE RIGID GALVANIZED STEEL. ALL PVC CONDUIT JOINTS MUST BE CEMENTED. STEEL FITTINGS SHALL BE SEALED WITH COMPOUND.
2. ALL 90 DEGREE SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 24 INCHES FOR THREE INCH, 36 INCHES FOR FOUR AND FIVE INCH, AND 48 INCHES FOR SIX INCH CONDUIT. ALL STEEL SWEEPS WITHIN EIGHTEEN INCHES OF SURFACE SHALL BE PROPERLY GROUNDED.
3. A TEN-FOOT HORIZONAL SECTIONS OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP FOR PRIMARY. FOR SECONDARY AND SERVICES A TEN-FOOT HORIZONTAL SECTION IF SCHEDULE 40 AS PER ANSI/NEMA TC2-1990.
4. THE CONDUIT SHOULD CROSS PAVED AREAS AT APPROXIMATELY 90 DEGREES.
5. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY PSNH. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE THOROUGHLY COMPACTED IN SIX-INCH LAYERS.
6. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE PSNH IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
7. ROUTING OF THE CONDUIT AND INSPECTION PRIOR TO BACKFILL WILL BE PROVIDED BY PSNH. INSTALLATION OF THE CONDUIT WILL BE DONE BY THE CONTRACTOR. THE PSNH SUPERVISOR MUST BE NOTIFIED TWO BUSINESS DAYS PRIOR TO BACKFILLING THE TRENCH. IN THE EVENT THAT A CABLE CANNOT BE SUCCESSFULLY PULLED THROUGH THE COMPLETED CONDUIT SYSTEM DUE TO A CONSTRUCTION ERROR, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND REPAIR THE INVOLVED CONDUIT. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL RESULTING EXPENSES.
8. NORMAL CONDUIT SIZES FOR PSNH ARE THREE-INCH FOR SINGLE-PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, FOUR-INCH FOR THREE-PHASE SECONDARY, AND FIVE-INCH FOR THREE-PHASE PRIMARY.
9. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.

TYPICAL BURIED CONDUIT DETAIL (7 / A03)

SCALE: N.T.S.

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STATE OF NEW HAMPSHIRE — CLEMENT J. SAUER — NO. 12906 — LICENSED PROFESSIONAL ENGINEER

ENGINEER/LAND SURVEYOR DATE

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

PROJECT NAME:

TOWN OF DURHAM LMR TOWER

46 BEECH HILL ROAD
DURHAM, NH 03824

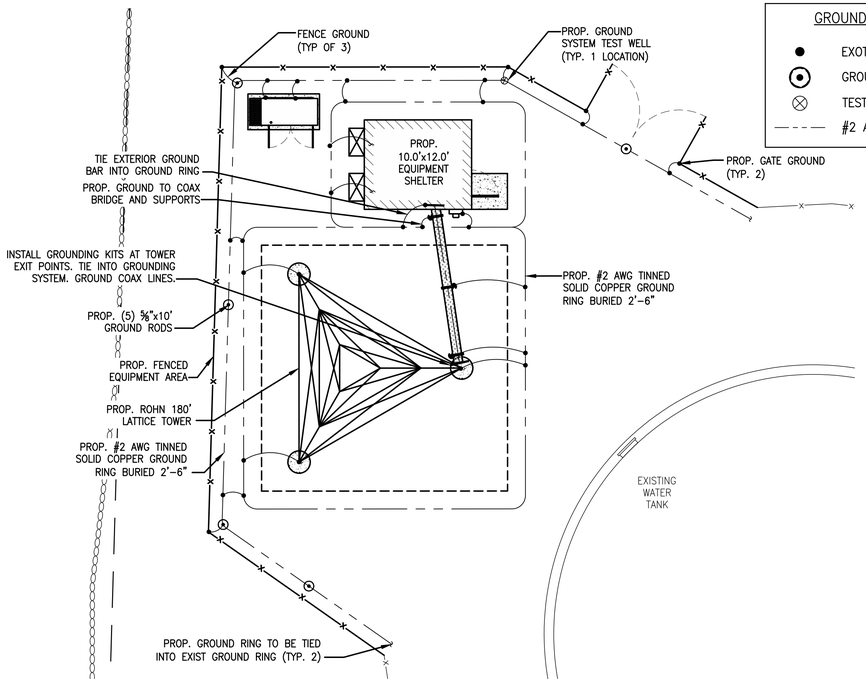
DRAWING TITLE:

SITE DETAILS

DRAWING NO:

A03

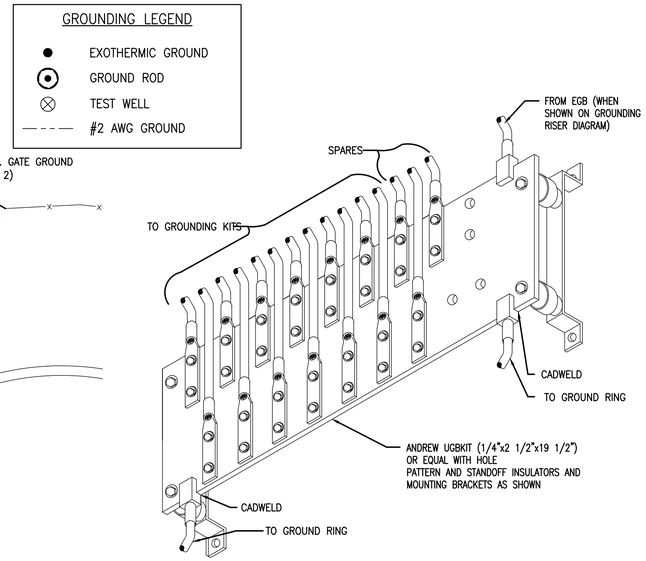
SCALE:	DESIGNED BY: GRS	SHEET NUMBER
AS SHOWN	DRAWN BY: JRV	6 OF 7
	CHECK'D BY: CJS/GRS	
PROJECT NO.	ORIGINAL ISSUE DATE:	
747.27	6/29/20	



GROUNDING PLAN — 1 / E01

SCALE: 1/8" = 1'-0"

0 8'-0" 16'-0" 24'-0"



MASTER GROUND BAR (MGB) — 2 / E01

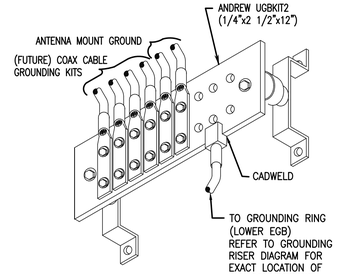
SCALE: NOT TO SCALE

NOTES:
ALL GROUNDING PLANS AND DETAILS SHOWN ON THESE DRAWINGS ARE SHOWN SCHEMATICALLY AND INTENDED TO REFLECT THE GENERAL INTENT OF THE GROUNDING MEANS AND METHODS SET FORTH IN "MOTOROLA STANDARDS AND GUIDELINES FOR COMMUNICATION SITES R56" (PUBLICATION 68P81089E50-C, APRIL 2017), IN PARTICULAR THE FOLLOWING FIGURES....

- OVERALL SITE GROUNDING (FIGURES 4-4, 4-24, 4-26 AND 4-73)
- TOWER GROUNDING (FIGURE 4-67)
- TRANSMISSION LINE GROUNDING (FIGURES 4-72, 4-73 AND 4-82)
- ICE BRIDGE GROUNDING (FIGURES 4-89 AND 4-90)
- FENCE GROUNDING (FIGURES 4-84 AND 4-87)
- EGB ON BUILDING EXTERIOR (FIGURE 4-90)

IN RELATION TO PUBLICATION 68P81089E50-C, THE PROPOSED INSTALLATION IS A "B SITE".

IN ANY AND ALL INSTANCES WHERE THE DETAILS AND SPECIFICATIONS SHOWN IN SAID PUBLICATION EXCEED THOSE SHOWN ON THESE DRAWINGS, SUCH DETAILS AND SPECIFICATIONS SHALL BE STRICTLY ADHERED TO.



GROUND BAR (EGB) — 3 / E01

SCALE: NOT TO SCALE

Underground metallic piping systems typically include water service, well castings located within 7.6 m (25 ft) of the structure, gas piping, underground conduits, underground liquefied petroleum gas piping systems and so on. Interconnection to a gas line **shall** be made on the customer's side of the meter (IEC 60364-5-54:2011, section 542.2.6; and Annex B; NFPA 780-2017, section 4.14.6.7).

See Figure 4-3 for a common grounding example.

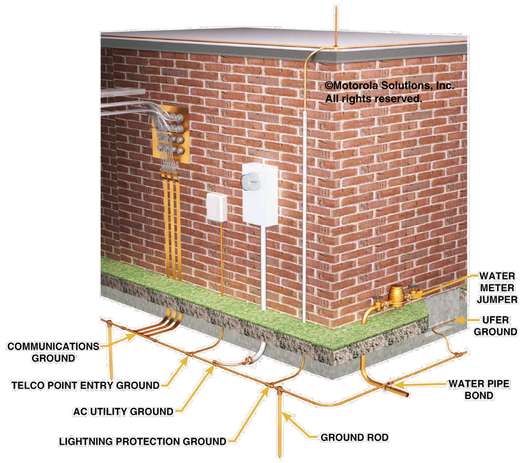


Figure 4-3 Common Grounding Example – All Grounding Electrodes Bonded Together

WARNING

Failure to interconnect all grounding electrode systems at a communications site can result in hazardous potential differences, which may lead to injury to personnel and/or equipment failure.

EXCERPT FROM MOTOROLA R56 PUBLICATION — 7 / E01

SCALE: NONE

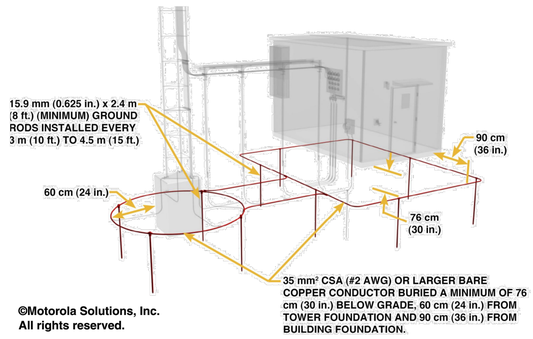
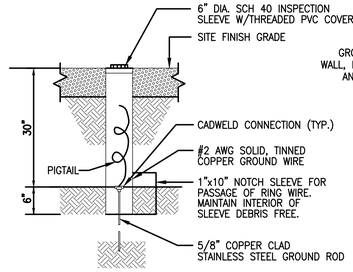


Figure 4-24 Example of Building and Tower Ground Ring

- Where the conductor completely encircles the building, the ends of the conductor **shall** be joined together to form a continuous ring using an exothermic weld or listed irreversible high-compression connector (ATIS-0600334.2013, section 5.3.1, and MIL-STD-188-124B). This may be easily completed at a ground rod.
- Ground rings **shall** be installed in direct contact with the earth at a minimum depth of 762 mm (30 in.) where practicable or below the frost line, whichever is deeper (ATIS-0600334.2013, section 5.3.1; NFPA 70-2017, Article 250.53; TIA-607-C, section B.7; and Telcordia GR-3171-CORE, section 10.2.5).
- The ground ring conductors **shall** be 35 mm² csa (#2 AWG) or larger solid, bare, copper (ATIS-0600313.2013; ATIS-0600334.2013, section 5.3.1; IEEE 1692-2011, section 8.2; and NFPA 70-2017, Article 250.52). Conductors larger than 35 mm² csa (#2 AWG) may be stranded, but should be tinned to help reduce corrosion. See "Grounding (Earthing), Bonding and Down-Conductors" on page 4-37 for grounding conductor specifications.
- **Tinned-**copper conductors should be used to minimize galvanic corrosion between tower legs (and other galvanized items) and other parts of the grounding electrode system (ATIS-0600313.2013, section 10.7; and IEEE 1692-2011, section 8.2).
- For areas highly prone to lightning and/or military installations, larger conductors, such as 50 mm² csa (#1/0 AWG) or larger, should be considered (MIL-HDBK-419A, MIL-STD-188-124B, and TIA-607-C, section B.7); stranded conductors may be used in this application, but should be tinned to help reduce corrosion (see TIA-607-C, section B.7).
- Building ground rings and tower ground rings **shall** be bonded together in at least two points using two 35 mm² csa (#2 AWG) or larger, bare, solid, copper conductors (ATIS-0600334.2013, Figure 1; MIL-STD-188-124B; and TIA-607-C, section C.2.5). The conductors **shall** be buried to the same depth as the ground rings (TIA-607-C, section B.2.5) and should be physically separated as much as practicable. See Figure 4-26.

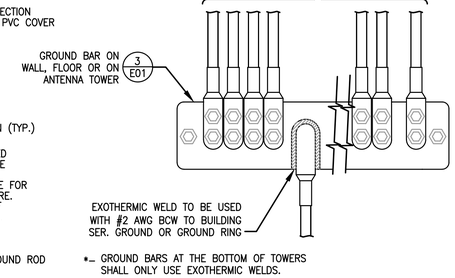
EXCERPT FROM MOTOROLA R56 PUBLICATION — 8 / E01

SCALE: NONE



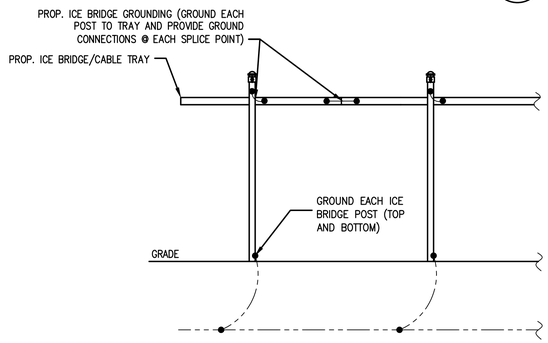
GROUND ROD TEST WELL DETAIL — 4 / E01

SCALE: NOT TO SCALE



INSTALLATION OF GROUND WIRE TO GROUND BAR DETAIL — 5 / E01

SCALE: NOT TO SCALE



ICE BRIDGE GROUNDING DETAIL — 6 / E01

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REVISIONS

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0	ISSUED FOR REVIEW	6/29/20
1	ISSUED FOR CONSTRUCTION	7/10/20

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LMR TOWER

46 BEECH HILL ROAD
DURHAM, NH 03824

DRAWING TITLE:

GROUNDING SCHEMATIC & DETAILS

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E01

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