

MAGNETIC DECLINATION  
CALCULATED ON:  
03-17-16



**SITE NAME:**  
**GRAFTON**  
**US-MA-5025**  
**104 CREEPER HILL ROAD**  
**GRAFTON, MASSACHUSETTS 01536**

SITE INFORMATION	
SITE NAME:	GRAFTON US-MA-5025
SITE ADDRESS:	104 CREEPER HILL ROAD GRAFTON MASSACHUSETTS, 01536
JURISDICTION:	TOWN OF GRAFTON WORCESTER COUNTY, MASSACHUSETTS
ZONING:	OLI-OFFICE LIGHT INDUSTRIAL
TAX ACCOUNT ID:	GRAF-000017-000000-000008A
PARCEL SIZE / COMPOUND SIZE:	662,112 S.F. / 10,000 S.F.
SITE COORDINATES:	N 42° 14' 18.471" (NAD 83) W 71° 43' 42.679" (NAD 83)
GROUND ELEVATION:	362.7± (NAVD 88)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	180'-0"± AGL (TOP OF LIGHTNING ROD)
ANTENNA RAD CENTER:	120'-0"± AGL
GROUND LANDLORD NAME:	TOWN OF GRAFTON
GROUND LANDLORD ADDRESS:	30 PROVIDENCE ROAD GRAFTON, MASSACHUSETTS 01519
LANDLORD NAME:	VERTICAL BRIDGE
LANDLORD ADDRESS:	750 PARK OF COMMERCE DRIVE, SUITE 200 BOCA RATON, FLORIDA 33487
APPLICANT:	VERTICAL BRIDGE 750 PARK OF COMMERCE DRIVE, SUITE 200 BOCA RATON, FLORIDA 33487
APPLICANT PHONE:	(561) 948-6367

CODE ANALYSIS	
BUILDING CODE:	IBC 2009
ELECTRICAL CODE:	NEC 2014
FIRE CODE:	IFC 2009
USE GROUP:	U (UTILITY)
CONSTRUCTION TYPE:	IIB

PROJECT DESCRIPTION	
1.	NEW MONOPOLE TO BE INSTALLED.
2.	NEW 10,000 S.F. TELECOMMUNICATIONS COMPOUND TO BE INSTALLED.
3.	NEW POWER AND TELCO EQUIPMENT TO BE INSTALLED WITHIN COMPOUND.

**NEW MONOPOLE AND GROUND  
EQUIPMENT WITHIN THE  
PROPOSED LEASE AREA**



**AREA MAP**

GRAFTON, MASSACHUSETTS  
SCALE: 1" = 1000'-0"

**DIRECTIONS:**

HEADING FROM BOSTON AIRPORT: HEAD NORTHWEST TOWARD E BOSTON GREENWAY. TURN RIGHT ONTO PORTER ST. TURN RIGHT AT THE 1ST CROSS STREET ONTO BREMEN ST. SLIGHT RIGHT ONTO BENNINGTON ST. TURN RIGHT ONTO NEPTUNE RD. TURN RIGHT ONTO THE ROUTE 1 S RAMP TO LOGAN AIRPORT/BOSTON. MERGE ONTO MA-1A S/STATE HWY 1A S. CONTINUE ONTO I-90 W. KEEP LEFT TO STAY ON I-90 W. KEEP LEFT TO STAY ON I-90 W. TAKE EXIT 11 TOWARD MASSACHUSETTS 122/MILLBURY/WORCESTER. TURN LEFT ONTO MA-122 N/GRAFTON ST. TURN RIGHT ONTO THE US-20 W RAMP. MERGE ONTO US-20 E/SW CUTOFF. TURN RIGHT ONTO WESTBOROUGH ST. CONTINUE ONTO CREEPER HILL RD. THE EXISTING DIRT ACCESS ROAD WILL BE ON THE LEFT.

SHEET INDEX	
SHEET NO.	SHEET DESCRIPTION
T-1	TITLE SHEET
Z-1	EXPANDED SITE PLAN
Z-2	SITE PLAN
C-1	COMPOUND PLAN
C-2	ELEVATION
C-3	CONSTRUCTION DETAILS
E-1	UTILITY ROUTING PLAN & NOTES

NOTE TO GENERAL CONTRACTOR

NO WORK IS TO BE PERFORMED ON THIS SITE WITHOUT REVIEW OF THE APPROVED STRUCTURAL ANALYSIS, IF ANY DISCREPANCIES ARE FOUND THE GENERAL CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING. AT NO TIME WILL ANY ADDITIONAL ANTENNAS BE INSTALLED WITHOUT WRITTEN CONSENT FROM TOWER ENGINEER.

STRUCTURAL NOTE:

ADVANTAGE ENGINEERS IS NOT RESPONSIBLE FOR DESIGN OR STRUCTURAL CERTIFICATION OF NEW ANTENNA MOUNTS REQUIRED FOR THE INSTALLATION OF THE PROPOSED EQUIPMENT ASSOCIATED WITH THIS PROJECT. PLEASE REFER TO THE STRUCTURAL ANALYSIS COMPLETED BY OTHERS FOR ALL STRUCTURAL INFORMATION RELATED TO THE ANTENNA MOUNTS.



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SCHEDULE OF REVISIONS

REV. NO.	DATE	DRAFTER	DESCRIPTION OF CHANGES
4	09-28-16	LCW	FINAL
3	09-16-16	LCW	FINAL
2	08-29-16	JMC	CLIENT REVISIONS
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0	07-06-16	JLK	FINAL

DRAWN BY:	LCW
CHECKED BY:	TA
SCALE:	NOTED
JOB NO:	M880140.00

DRAWING TITLE:  
**TITLE SHEET**

DRAWING SHEET:  
**T-1**

SHEET NUMBER:  
**1 OF 7**

**SITE INFORMATION:**  
**SITE NAME:**  
**US-MA-5025**  
**GRAFTON**  
**SITE ADDRESS:**  
**104 CREEPER HILL ROAD**  
**GRAFTON,**  
**MASSACHUSETTS 01536**  
**ASSESSOR'S MAP:**  
**MAP 17**  
**LOT 08A**  
**JURISDICTION:**  
**TOWN OF GRAFTON**  
**WORCESTER COUNTY, MA**

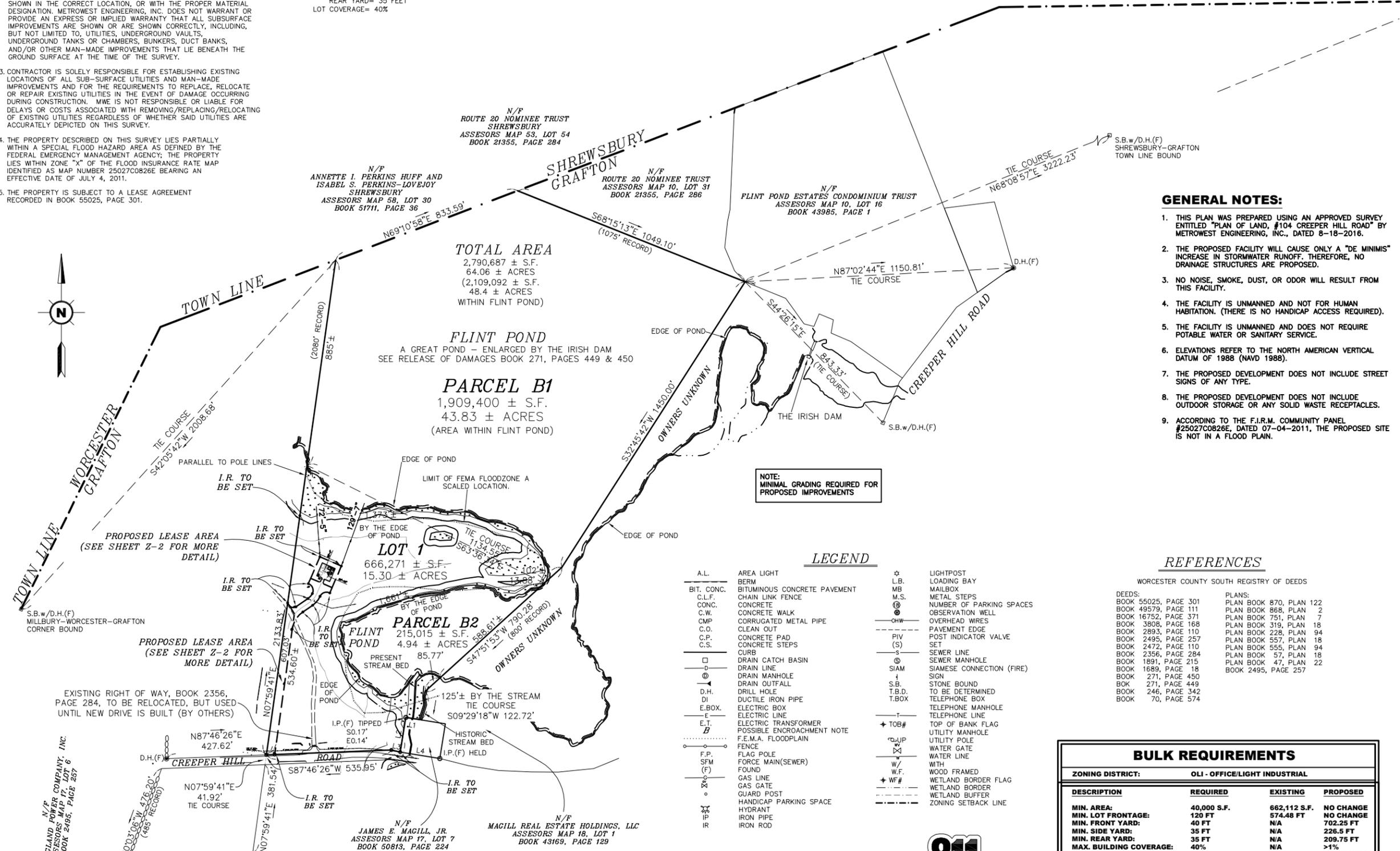
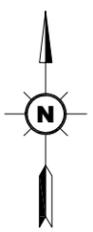
**ANDREW M. MILLER, P.E.**  
MASSACHUSETTS PROFESSIONAL ENGINEER  
LICENSE # 51675

**NOTES:**

- SUBJECT PARCEL IS SHOWN AS ASSESSORS MAP 17, LOT 08A. RECORD TITLE FROM BOOK 49579, PAGE 111.
- UTILITY LOCATIONS DEPICTED ON THIS PLAN, BOTH ABOVE- AND BELOW-GROUND, ARE BASED UPON DIRECT FIELD OBSERVATIONS MADE BY METROWEST ENGINEERING, INC. PERSONNEL DURING A FIELD SURVEY, RECORD PLAN LOCATIONS, OR DIGSAFE PAINT-INDICATORS. METROWEST ENGINEERING, INC. DOES NOT WARRANT THAT ALL UTILITIES ARE SHOWN OR THAT UTILITIES THAT ARE DEPICTED ARE SHOWN IN THE CORRECT LOCATION, OR WITH THE PROPER MATERIAL DESIGNATION. METROWEST ENGINEERING, INC. DOES NOT WARRANT OR PROVIDE AN EXPRESS OR IMPLIED WARRANTY THAT ALL SUBSURFACE IMPROVEMENTS ARE SHOWN OR ARE SHOWN CORRECTLY, INCLUDING, BUT NOT LIMITED TO, UTILITIES, UNDERGROUND VAULTS, UNDERGROUND TANKS OR CHAMBERS, BUNKERS, DUCT BANKS, AND/OR OTHER MAN-MADE IMPROVEMENTS THAT LIE BENEATH THE GROUND SURFACE AT THE TIME OF THE SURVEY.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR ESTABLISHING EXISTING LOCATIONS OF ALL SUB-SURFACE UTILITIES AND MAN-MADE IMPROVEMENTS AND FOR THE REQUIREMENTS TO REPLACE, RELOCATE OR REPAIR EXISTING UTILITIES IN THE EVENT OF DAMAGE OCCURRING DURING CONSTRUCTION. MWE IS NOT RESPONSIBLE OR LIABLE FOR DELAYS OR COSTS ASSOCIATED WITH REMOVING/REPLACING/RELOCATING OF EXISTING UTILITIES REGARDLESS OF WHETHER SAID UTILITIES ARE ACCURATELY DEPICTED ON THIS SURVEY.
- THE PROPERTY DESCRIBED ON THIS SURVEY LIES PARTIALLY WITHIN A SPECIAL FLOOD HAZARD AREA AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY; THE PROPERTY LIES WITHIN ZONE "X" OF THE FLOOD INSURANCE RATE MAP IDENTIFIED AS MAP NUMBER 25027C0826E BEARING AN EFFECTIVE DATE OF JULY 4, 2011.
- THE PROPERTY IS SUBJECT TO A LEASE AGREEMENT RECORDED IN BOOK 55025, PAGE 301.

**ZONING:**

**OLI- OFFICE/LIGHT INDUSTRIAL**  
 ANY NON-RESIDENTIAL USE  
 MINIMUM AREA= 40,000 SQUARE FEET  
 MAXIMUM FRONTAGE = 120 FEET  
 SETBACKS:  
 FRONT YARD= 40 FEET  
 SIDE YARD = 35 FEET  
 REAR YARD= 35 FEET  
 LOT COVERAGE= 40%



**TOTAL AREA**  
 2,790,687 ± S.F.  
 64.06 ± ACRES  
 (2,109,092 ± S.F.  
 48.4 ± ACRES  
 WITHIN FLINT POND)

**FLINT POND**  
 A GREAT POND - ENLARGED BY THE IRISH DAM  
 SEE RELEASE OF DAMAGES BOOK 271, PAGES 449 & 450

**PARCEL B1**  
 1,909,400 ± S.F.  
 43.83 ± ACRES  
 (AREA WITHIN FLINT POND)

**LOT 1**  
 666,271 ± S.F.  
 15.30 ± ACRES

**FLINT POND**  
 215,015 ± S.F.  
 4.94 ± ACRES

**PARCEL B2**  
 588,611 ± S.F.  
 13.45 ± ACRES

**NOTE:**  
 MINIMAL GRADING REQUIRED FOR  
 PROPOSED IMPROVEMENTS

**LEGEND**

A.L.	AREA LIGHT	☆	LIGHTPOST
BIT. CONC.	BITUMINOUS CONCRETE PAVEMENT	MB	MAILBOX
C.L.F.	CHAIN LINK FENCE	M.S.	METAL STEPS
CONC.	CONCRETE	○	NUMBER OF PARKING SPACES
C.W.	CONCRETE WALK	⊙	OBSERVATION WELL
CMP	CORRUGATED METAL PIPE	—OHW—	OVERHEAD WIRES
C.O.	CLEAN OUT	—P—	PAVEMENT EDGE
C.P.	CONCRETE PAD	—PIV—	POST INDICATOR VALVE
C.S.	CONCRETE STEPS	—S—	SEWER LINE
□	DRAIN CATCH BASIN	⊙	SEWER MANHOLE
—D—	DRAIN LINE	⊕	SIAMSE CONNECTION (FIRE)
⊙	DRAIN MANHOLE	+	SIGN
—D—	DRAIN OUTFALL	+	STONE BOUND
D.H.	DRILL HOLE	T.B.D.	TO BE DETERMINED
D	DUCTILE IRON PIPE	⊕	TELEPHONE BOX
E.BOX.	ELECTRIC BOX	—T—	TELEPHONE MANHOLE
E	ELECTRIC LINE	—T—	TELEPHONE LINE
E.T.	ELECTRIC TRANSFORMER	+	TOP OF BANK FLAG
B	POSSIBLE ENCROACHMENT NOTE	+	UTILITY MANHOLE
—F.E.M.A.—	F.E.M.A. FLOODPLAIN	+	UTILITY POLE
—F—	FENCE	+	UTILITY POLE
F.P.	FLAG POLE	+	WATER GATE
SFM	FORCE MAIN(SEWER)	+	WATER LINE
(F)	FOUND	+	WETLAND BORDER FLAG
G	GAS LINE	+	WETLAND BORDER
G	GAS GATE	+	WETLAND BUFFER
—G—	GUARD POST	+	ZONING SETBACK LINE
—H—	HANDICAP PARKING SPACE		
—H—	HYDRANT		
—IP—	IRON PIPE		
—IR—	IRON ROD		

**REFERENCES**

WORCESTER COUNTY SOUTH REGISTRY OF DEEDS

DEEDS:	PLANS:
BOOK 55025, PAGE 301	PLAN BOOK 870, PLAN 122
BOOK 49579, PAGE 111	PLAN BOOK 868, PLAN 2
BOOK 16752, PAGE 371	PLAN BOOK 751, PLAN 7
BOOK 3808, PAGE 168	PLAN BOOK 319, PLAN 18
BOOK 2893, PAGE 110	PLAN BOOK 228, PLAN 94
BOOK 2495, PAGE 257	PLAN BOOK 557, PLAN 18
BOOK 2472, PAGE 110	PLAN BOOK 555, PLAN 94
BOOK 2356, PAGE 284	PLAN BOOK 57, PLAN 18
BOOK 1891, PAGE 215	PLAN BOOK 47, PLAN 22
BOOK 1689, PAGE 18	BOOK 2495, PAGE 257
BOOK 271, PAGE 450	
BOOK 271, PAGE 449	
BOOK 246, PAGE 342	
BOOK 70, PAGE 574	

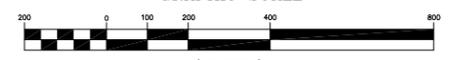
**BULK REQUIREMENTS**

DESCRIPTION	REQUIRED	EXISTING	PROPOSED
MIN. AREA:	40,000 S.F.	662,112 S.F.	NO CHANGE
MIN. LOT FRONTAGE:	120 FT	574.48 FT	NO CHANGE
MIN. FRONT YARD:	40 FT	N/A	702.25 FT
MIN. SIDE YARD:	35 FT	N/A	226.5 FT
MIN. REAR YARD:	35 FT	N/A	209.75 FT
MAX. BUILDING COVERAGE:	40%	N/A	>1%
MAX BUILDING HEIGHT:	35 FT	N/A	NO CHANGE

\*EXISTING NON-CONFORMING CONDITION  
 \*\* VARIANCE REQUESTED

**LINE TABLE**

LINE	LENGTH	BEARING
L1	63.00'	N80°43'26"W
L2	150.00'	S09°16'34"W
L3	38.53'	N77°03'34"W
L4	172.00'	S80°43'26"E



(SCALE BASED ON FULL SIZE 24"x36" SHEETS ONLY)  
 (DO NOT USE SCALE ON OTHER SIZED DRAWINGS)



PROTECT YOURSELF, USE THREE WORKING DAYS NOTICE  
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0	07-06-16	JLK	FINAL

DRAWN BY: LCW  
 CHECKED BY: TA  
 SCALE: NOTED  
 JOB NO: M880140.00

**DRAWING TITLE:**  
**EXPANDED SITE PLAN**

**DRAWING SHEET:**  
**Z-1**

**SHEET NUMBER:**  
**2 OF 7**

**SITE INFORMATION:**  
**SITE NAME:**  
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**GRAFTON,**  
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**ASSESSOR'S MAP:**  
**MAP 17**  
**LOT 08A**  
**JURISDICTION:**  
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**WORCESTER COUNTY, MA**

**ANDREW M. MILLER, P.E.**  
 MASSACHUSETTS PROFESSIONAL ENGINEER  
 LICENSE # 51675



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0	07-06-16	JLK	FINAL

DRAWN BY:	LCW
CHECKED BY:	TA
SCALE:	NOTED
JOB NO:	M880140.00

DRAWING TITLE:  
**SITE PLAN**

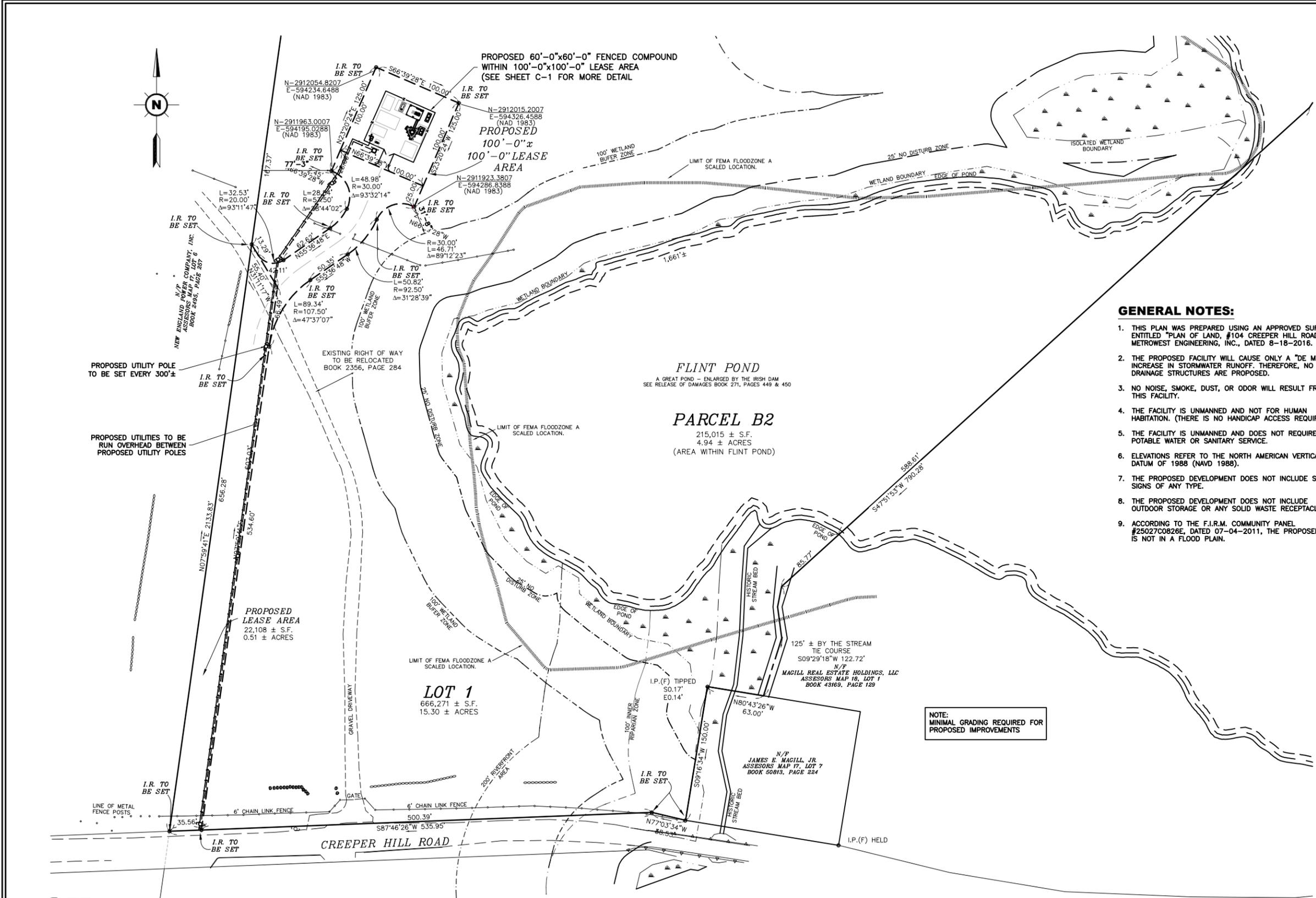
DRAWING SHEET:  
**Z-2**

SHEET NUMBER:  
**3 OF 7**

SITE INFORMATION:  
**SITE NAME:**  
US-MA-5025  
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- GENERAL NOTES:**
- THIS PLAN WAS PREPARED USING AN APPROVED SURVEY ENTITLED "PLAN OF LAND, #104 CREEPER HILL ROAD" BY METROWEST ENGINEERING, INC., DATED 8-18-2016.
  - THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
  - NO NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
  - THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. (THERE IS NO HANDICAP ACCESS REQUIRED).
  - THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
  - ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).
  - THE PROPOSED DEVELOPMENT DOES NOT INCLUDE STREET SIGNS OF ANY TYPE.
  - THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
  - ACCORDING TO THE F.I.R.M. COMMUNITY PANEL #25027C0826E, DATED 07-04-2011, THE PROPOSED SITE IS NOT IN A FLOOD PLAIN.



**FLINT POND**  
A GREAT POND - ENLARGED BY THE IRISH DAM  
SEE RELEASE OF DAMAGES BOOK 271, PAGES 449 & 450

**PARCEL B2**  
215,015 ± S.F.  
4.94 ± ACRES  
(AREA WITHIN FLINT POND)

**LOT 1**  
666,271 ± S.F.  
15.30 ± ACRES

**PROPOSED LEASE AREA**  
22,108 ± S.F.  
0.51 ± ACRES

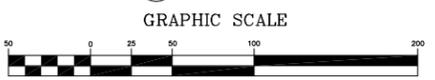
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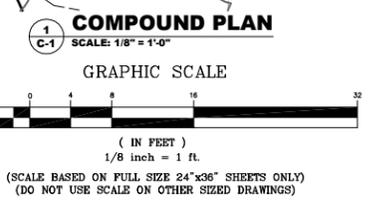
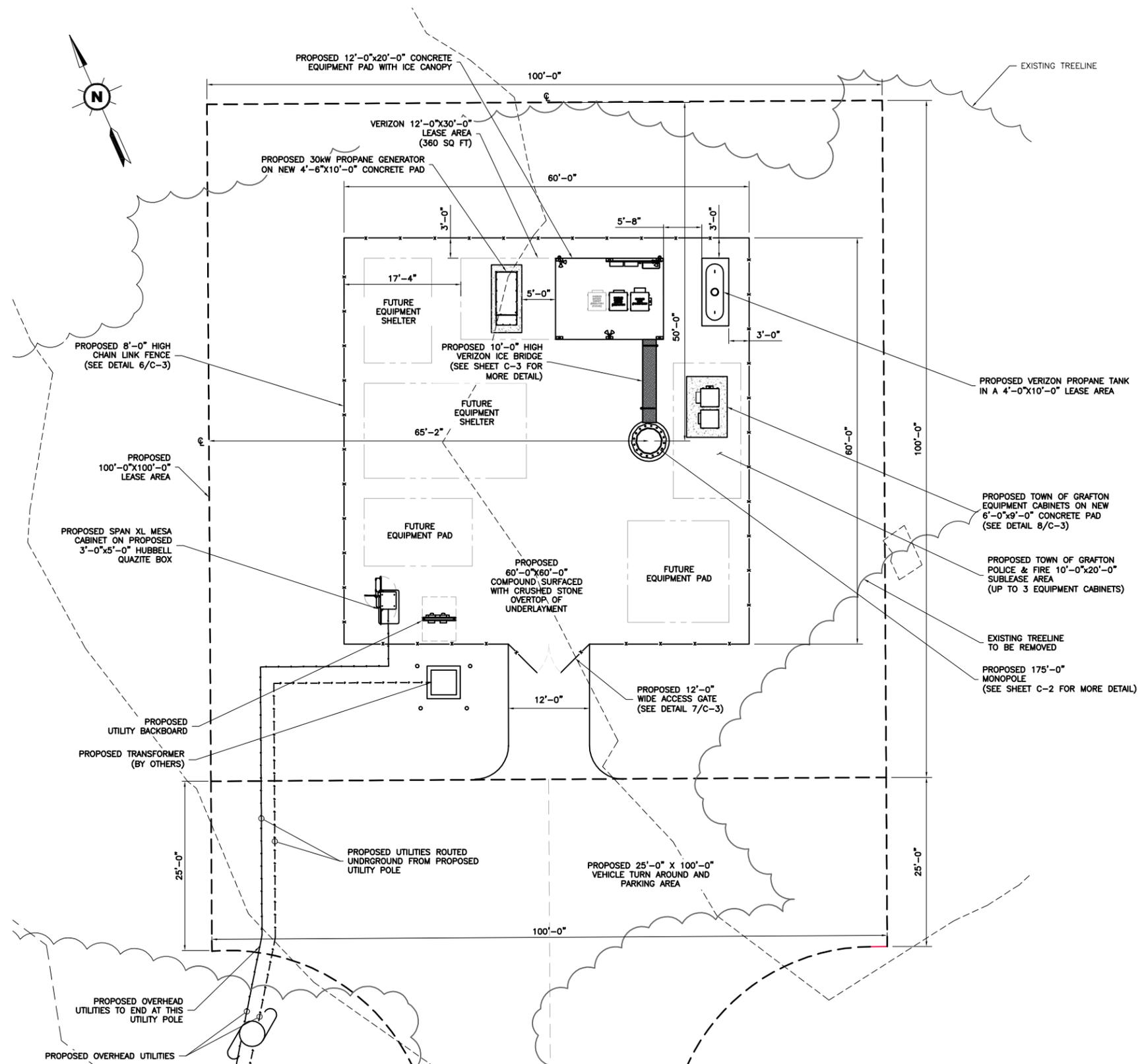


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COMPONENTS FOR CONSTRUCTION SAFETY. ALL  
CONSTRUCTION MUST BE DONE IN COMPLIANCE  
WITH THE OCCUPATIONAL SAFETY AND HEALTH  
ACT OF 1970 AND ALL RULES AND REGULATIONS  
THERE TO APPURTAINANT.

**SITE PLAN**  
SCALE: 1" = 50'-0"





**GENERAL NOTES**

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. THIS PLAN WAS PREPARED USING AN APPROVED PLAN ENTITLED "CELLULAR SURVEY" BY CLARK SURVEYING, DATED 2-18-2016.
8. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
9. NO NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
10. THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (THERE IS NO HANDICAP ACCESS REQUIRED).
11. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
12. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.
13. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
14. MOUNTS AND ANTENNAS ARE DESIGNED TO MEET ANSI/TIA-222-G-2 AS PER IBC 2009 REQUIREMENTS.
15. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
16. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
17. IF ANY PIPING EXISTS BENEATH THE SITE AREA, CONTRACTOR MUST LOCATE IT AND CONTACT OWNERS REPRESENTATIVE.
18. CONSTRUCTION TO COMMENCE UPON COMPLETION OF A PASSING STRUCTURAL ANALYSIS. STRUCTURAL ANALYSIS TO BE PERFORMED BY OTHERS.

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DRAWING TITLE:  
**COMPOUND PLAN**

DRAWING SHEET:  
**C-1**

SHEET NUMBER:  
**4 OF 7**

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**811**

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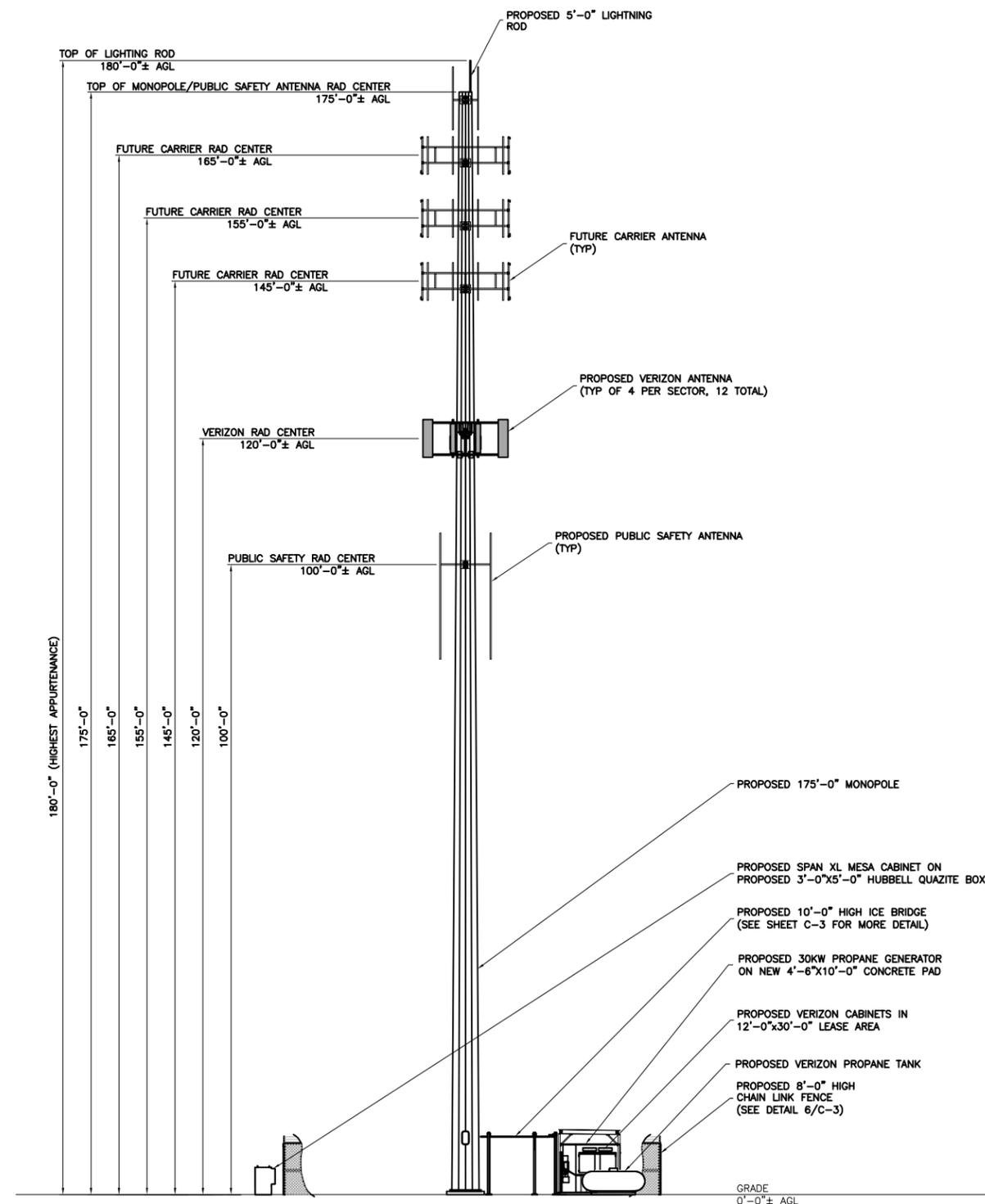
DRAWING TITLE:  
**ELEVATION**

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**C-2**

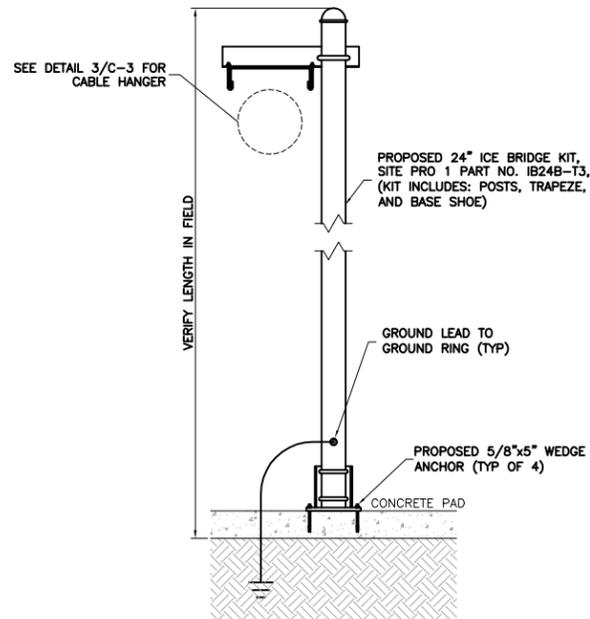
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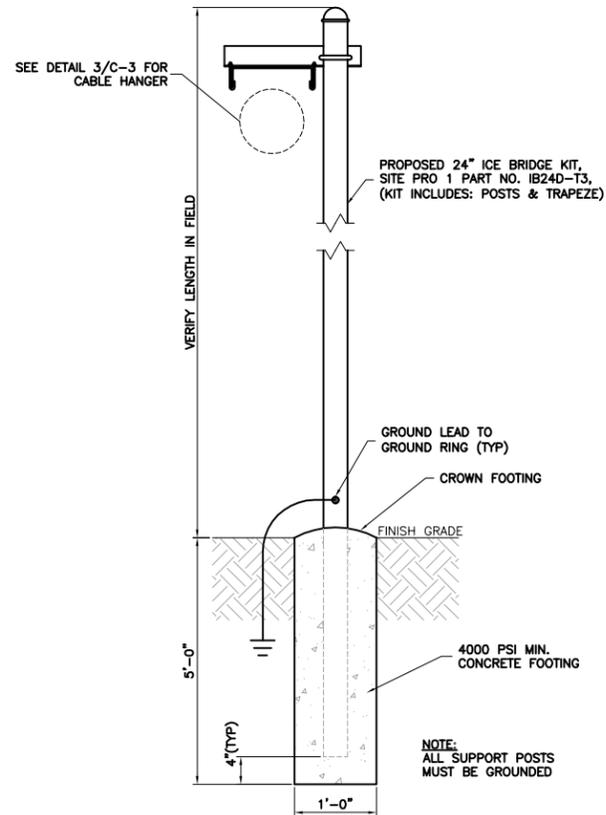
**ANDREW M. MILLER, P.E.**  
MASSACHUSETTS PROFESSIONAL ENGINEER  
LICENSE # 51675



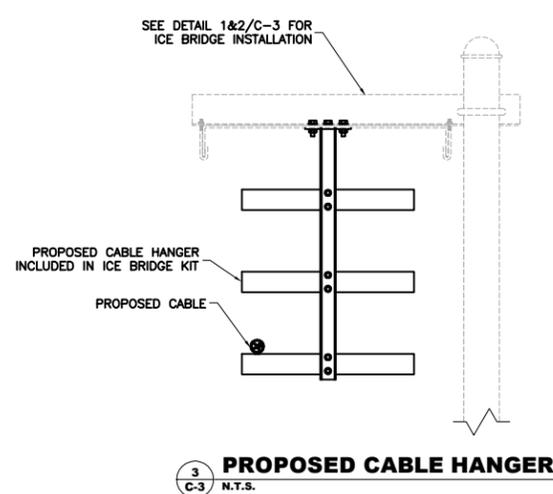
**1 ELEVATION**  
SCALE: 3/32" = 1'-0"  
**C-2**  
GRAPHIC SCALE  
1 2 4 8 16 24 32 40  
( IN FEET )  
3/32 inch = 1 ft.  
(SCALE BASED ON FULL SIZE 24"x36" SHEETS ONLY)  
(DO NOT USE SCALE ON OTHER SIZED DRAWINGS)



1  
C-3  
N.T.S.  
**PROPOSED ICE BRIDGE DETAIL**



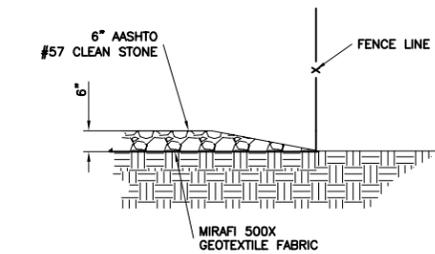
2  
C-3  
N.T.S.  
**PROPOSED ICE BRIDGE DETAIL**



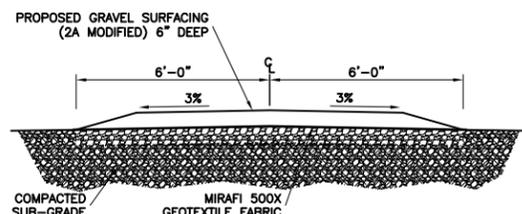
3  
C-3  
N.T.S.  
**PROPOSED CABLE HANGER**

**GENERAL NOTES**

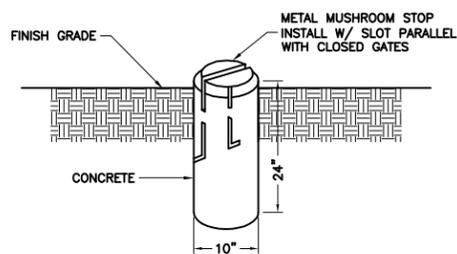
- DESIGN REQUIREMENTS PER INTERNATIONAL BUILDING CODE 2009 AND THE ANSI/TIA-222-G-2 STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED BY FIELD MEASUREMENT AND FROM THE EXISTING STRUCTURAL DRAWINGS. THE GENERAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIALS OR PROCEEDING WITH CONSTRUCTION.
- THE GENERAL CONTRACTOR AND HIS CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK.
- STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN INCLUDING THE COMMENTARY AND THE AISC CODE FOR STANDARD PRACTICE.
- STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A992. ALL STRUCTURAL STEEL PIPES SHALL CONFORM TO ASTM A53 GRADE B. ALL STRUCTURAL STEEL COMPONENTS AND FABRICATED ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
- WELDING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY (AWS). STRUCTURAL WELDING CODE - STEEL WELD ELECTRODES SHALL BE E70XX.
- ALL THREADED STRUCTURAL FASTENERS FOR ANTENNA SUPPORT ASSEMBLIES SHALL CONFORM TO ASTM A307 OR ASTM A36. ALL STRUCTURAL FASTENERS FOR STRUCTURAL STEEL FRAMING SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8 INCH MIN. DIAMETER BEARING TYPE CONNECTIONS WITH THREADS INCLUDED IN THE SHEAR PLANE. ALL EXPOSED FASTENERS, NUTS AND WASHERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. CONCRETE EXPANSION ANCHORS SHALL BE HILTI KWIK BOLTS UNLESS OTHERWISE NOTED.
- LUMBER (IF APPLICABLE) SHALL COMPLY WITH THE REQUIREMENTS OF AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- ALL COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE AS SPECIFIED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
- THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL MUNICIPAL CONTRACTOR BUSINESS LICENSES.



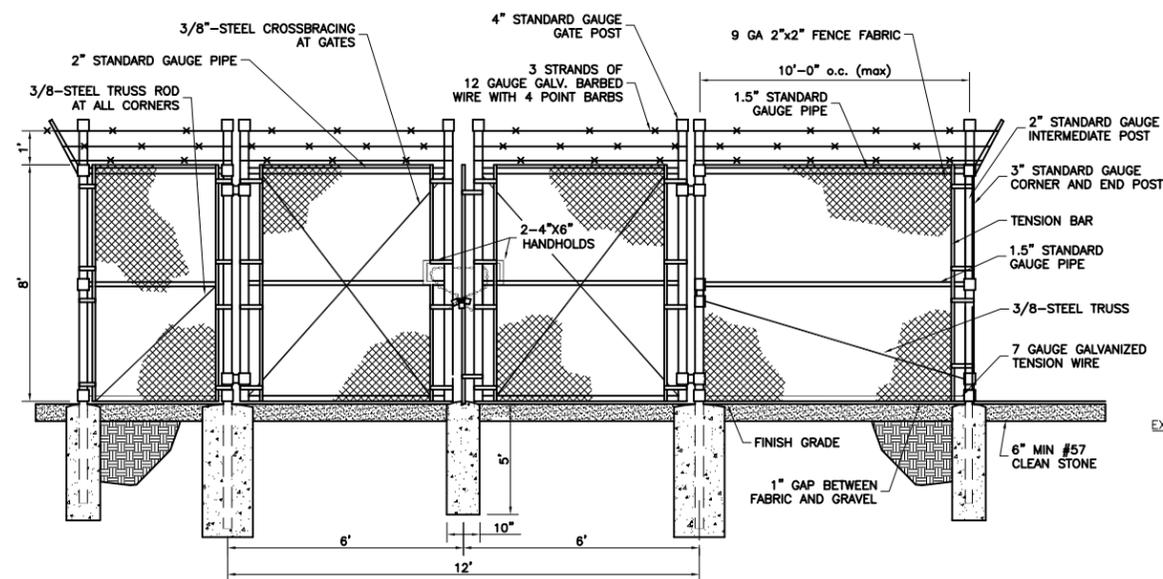
4  
C-3  
N.T.S.  
**GRAVEL COMPOUND DETAIL**



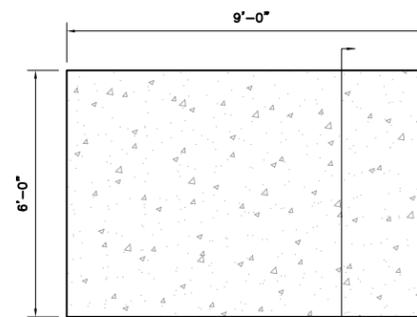
5  
C-3  
N.T.S.  
**GRAVEL DRIVEWAY TYPICAL SECTION**



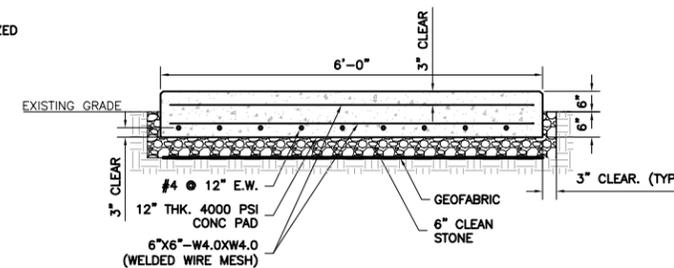
7  
C-3  
N.T.S.  
**MUSHROOM STOP DETAIL**



6  
C-3  
N.T.S.  
**TYPICAL FENCE AND GATE DETAIL**



8  
C-3  
N.T.S.  
**CONCRETE PAD PLAN**



9  
C-3  
N.T.S.  
**CONCRETE PAD SECTION**

**NOTES**

- ALL FILL/BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM1557).
- ALL CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH (FC) OF 4000 PSI. CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 318-11 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-11). REINFORCING STEEL: ASTM A615, GRADE 60, WELDED WIRE FABRIC: ASTM A185. ALL CONCRETE EXPOSED TO THE WEATHER SHALL CONTAIN AN AIR ENTRAINING ADMIXTURE AT A RATE THAT SHALL RESULT IN AN AIR CONTENT OF 6% +/- 1%.
- PROVIDE 3'-0" #2 AWG COPPER PIGTAIL CAD-WELDED TO LONGEST REBAR MEMBER STUBBED OUT 6" BELOW FINISHED GRADE FOR CONNECTION TO ELECTRICAL GROUNDING SYSTEM.

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MOUNT LAUREL, NEW JERSEY 08054  
PHONE (856) 231-0800  
www.advantageengineers.com

SCHEDULE OF REVISIONS			
REV. NO.	DATE	DRAFTER	DESCRIPTION OF CHANGES
4	09-28-16	LCW	FINAL
3	09-16-16	LCW	FINAL
2	08-29-16	JMC	CLIENT REVISIONS
1	08-28-16	JMC	CLIENT REVISIONS
0	07-06-16	JLK	FINAL

DRAWN BY: LCW  
CHECKED BY: TA  
SCALE: NOTED  
JOB NO: M880140.00

DRAWING TITLE:  
**CONSTRUCTION  
DETAILS**

DRAWING SHEET:  
**C-3**

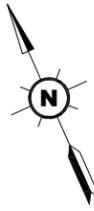
SHEET NUMBER:  
**6 OF 7**

SITE INFORMATION:  
SITE NAME:  
**US-MA-5025  
GRAFTON**  
SITE ADDRESS:  
**104 CREEPER HILL ROAD  
GRAFTON,  
MASSACHUSETTS 01536**  
ASSESSOR'S MAP:  
**MAP 17  
LOT 08A**  
JURISDICTION:  
**TOWN OF GRAFTON  
WORCESTER COUNTY, MA**

ANDREW M. MILLER, P.E.  
MASSACHUSETTS PROFESSIONAL ENGINEER  
LICENSE # 51675

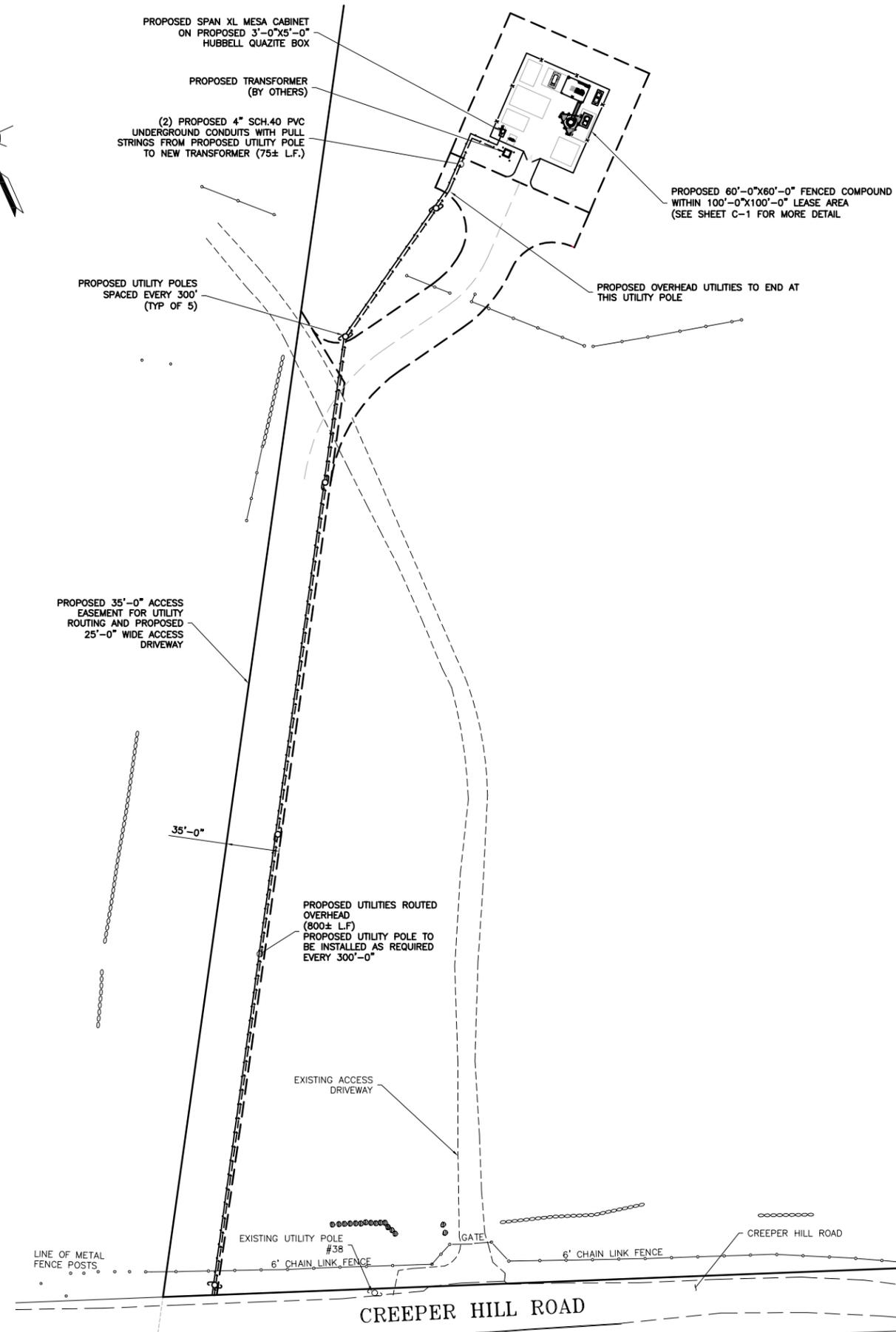
**ELECTRICAL NOTES:**

- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH-IN.
- THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
- PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
- ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC CHAPTER 9, TABLE #2. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
- ALL CONDUIT TERMINATIONS SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
- ALL WIRE SHALL BE TYPE THHN/THWN, SOLID, ANNEALED COPPER UP TO SIZE #10 AWG (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75°C (167°F), 98% CONDUCTIVITY, MINIMUM #12.
- ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
- ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN NOT HAND WRITTEN.
- INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
- THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS, DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
- ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS.)
- ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
- PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTION MANAGERS APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
- ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT. (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS). LOCATION OF ALL OUTLET, BOXES, ETC., AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.



**ELECTRICAL NOTE:**

PER N.E.C. ARTICLE 358.26 BENDS - NUMBER IN ONE RUN. THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL) BETWEEN PULL POINTS, FOR EXAMPLE, CONDUIT BODIES AND BOXES. NOTE: CONTRACTOR SHALL PROVIDE AND INSTALL ANY/ALL JUNCTION BOXES SIZED IN ACCORDANCE WITH N.E.C. GUIDELINES AS REQUIRED FOR THE INSTALLATION.



**ELECTRICAL & GROUND SYMBOLS:**

- GROUND ROD WITH ACCESS
- XIT GROUND ROD
- 5/8"x10'-0" GALVANIZED GROUND ROD
- DISCONNECT SWITCH
- METER ON METER/BREAKER UNIT
- CIRCUIT BREAKER
- GENERATOR
- MECHANICAL TYPE CONNECTION
- CADWELD TYPE CONNECTION
- GROUNDING WIRE
- CB INTERLOCKING MECHANISM
- POWER WIRE/CONDUIT
- TELCO FIBER/CONDUIT

**ABBREVIATIONS:**

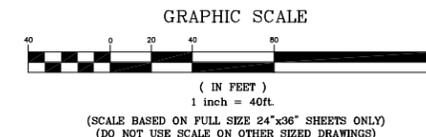
- AWG AMERICAN WIRE GAUGE
- BCTW BARE COPPER TINNED WIRE
- GPS GLOBAL POSITIONING SYSTEM
- PCS PERSONAL COMMUNICATION SYSTEM
- PPC POWER PROTECTION CABINET
- PRC PRIMARY RADIO CABINET
- RWY RACEWAY
- TYP TYPICAL
- RGS RIGID GALVANIZED STEEL
- EMT ELECTRICAL METALLIC TUBING
- DWG DRAWING
- IGR INTERIOR GROUND RING (HALO)
- ACCA ANTENNA CABLE COVER ASSEMBLY
- MIGB MASTER ISOLATED GROUND BAR
- CIBGE COAX ISOLATED GROUND BAR EXTERNAL
- BTS BASE TRANSMISSION SYSTEM
- GEN GENERATOR
- GR GROWTH
- SICW STRANDED INSULATED COPPER WIRE



**Know what's below.  
Call before you dig.**

PROTECT YOURSELF, ONE THREE WORKING DAYS NOTICE  
THIS DRAWING DOES NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND ALL RULES AND REGULATIONS THERE TO APPURTENANT.

**UTILITY ROUTING PLAN**  
SCALE: 1" = 40'-0"



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SCHEDULE OF REVISIONS			
REV. NO.	DATE	DRAFTER	DESCRIPTION OF CHANGES
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DRAWN BY: LCW  
CHECKED BY: TA  
SCALE: NOTED  
JOB NO: M880140.00

DRAWING TITLE:  
**UTILITY ROUTING PLAN & NOTES**

DRAWING SHEET:  
**E-1**

SHEET NUMBER:  
**7 OF 7**

SITE INFORMATION:  
SITE NAME:  
**US-MA-5025 GRAFTON**  
SITE ADDRESS:  
**104 CREEPER HILL ROAD GRAFTON, MASSACHUSETTS 01536**  
ASSESSOR'S MAP:  
**MAP 17 LOT 08A**  
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