

DAVID A. BALL

Please Reply To Bridgeport
E-Mail: dball@cohenandwolf.com

January 12, 2022

Via e-mail and overnight mail

Attorney Melanie Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Docket No. 504 - Arx Wireless Infrastructure, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Lot N-4, Sequin Drive, Glastonbury, Connecticut.

Development and Management Plan

Dear Attorney Bachman:

On behalf of ARX Wireless Infrastructure, LLC (“ARX”), I’ve enclosed an original and fifteen (15) copies of ARX’s Development and Management Plan pertaining to the telecommunications facility approved by the Connecticut Siting Council (“Council”) in the above-captioned docket (the “D&M Plan”). ARX submits this D&M Plan in accordance with the Council’s Decision and Order dated November 19, 2021 (“Decision”).

Development and Management Plan

Pursuant to Order Number 1, the telecommunications facility to be located at Lot 4-N, Sequin Drive, Glastonbury, Connecticut (“Facility”) includes a monopole at a height of 115 feet above ground level (“AGL”). The monopole will accommodate the antennas of New Cingular Wireless PCS, LLC d/b/a AT&T (“AT&T”), and other co-locators, both public and private. AT&T’s antennas will be located at a centerline height of 111 feet AGL.

Pursuant to Order Number 2, ARX has prepared a D&M Plan in accordance with the Decision and applicable Regulations.

The proposed D&M Plan includes:

- a) Pursuant to Condition 2(a) of the Order, ARX has provided the enclosed certified letter from AT&T with a firm commitment to install and operate its wireless equipment on the facility approved in Docket No. 504 after completion of construction.
- b) Pursuant to Condition 2(b) of the Order, ARX has provided the enclosed final site plans for the development of the facility that employ the governing standard in the State of Connecticut for tower design in accordance with the 2015 International Building Code Design Standard ANSI/TIA-222-G-2, and include specifications for the tower, tower foundation, antenna, equipment compound, fence design, ground equipment, access road, utility installation, and emergency backup power.
- c) Pursuant to Condition 2(c) of the Order, ARX has provided the enclosed Tapp Tower Drawings providing a tower and foundation design that incorporates a yield point to ensure that the tower setback radius remains within the boundaries of the subject property.
- d) Pursuant to Condition 2(d) of the Order, ARX has provided the enclosed site plans which include construction plans for site clearing, grading, water drainage and stormwater control, and erosion and sedimentation controls consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, as amended, and has also provided a Geotechnical Study dated November 22, 2021 prepared by Welti Geotechnical, P.C.
- e) Pursuant to Condition 2(e) of the Order, ARX has provided the enclosed construction schedule including hours and days of the week for construction activities. Construction will occur Mondays through Fridays, 7:30 a.m. to 6:30 p.m. ARX will coordinate with the Town of Glastonbury, as necessary.

Pursuant to Order Number 3, prior to commencement of operation, ARX will provide the Council with worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base.

Conclusion

ARX respectfully requests that this matter be included on the Council's next agenda for review and approval.

As indicated below, a copy of this D&M submittal has been provided to the service list and the Town of Glastonbury.

Please contact me if you have any questions.

Very truly yours,



David A. Ball

Enclosures

cc: Service List



November 24, 2021

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

Re: DOCKET NO. 504 – ARX Wireless Infrastructure, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at Lot N-4, Sequin Drive, Glastonbury, Connecticut. Certification Letter

Dear Attorney Bachman:

In accordance with condition 2a of the Siting Council's Decision and Order ("D&O") in Docket No. 500, this letter serves as AT&T's commitment to install and operate its wireless facility on the approved monopole facility upon completion of construction by ARX Wireless Infrastructure, LLC. AT&T anticipated that this Glastonbury facility will be operational within the eighteen-month timeframe included in the D&O.

Thank you for your consideration of this information.

Very truly yours,

Brian Leyden
Digitally signed by Brian
Leyden
Date: 2021.11.29 08:36:33
-05'00'

Brian Leyden
Sr. Manager, Real Estate & Construction
AT&T Mobility New England

AT&T Mobility New England
84 Deerfield Lane
Meriden CT 06450



Project
GLASTONBURY
 107 SEQUIN DRIVE
 GLASTONBURY, CT 06033

Prepared For:
ARX WIRELESS
 110 Washington Avenue
 North Haven, CT 06473

Project No. 2021.13
DOUGLAS J. ROBERTS - ARCHITECT
 110 Washington Avenue
 North Haven, CT 06473
 Tel. 203 234 6369
 Email: droberts - archinac@aol.com



WIRELESS COMMUNICATIONS FACILITY

DOCKET NUMBER 504

CT0114A GLASTONBURY

LOT N-4 SEQUIN DRIVE (107 SEQUIN DRIVE)

GLASTONBURY, CONNECTICUT

DEVELOPMENT AND MANAGEMENT



PROJECT SUMMARY

PROJECT NAME: CT0114A GLASTONBURY
SITE ADDRESS: 107 SEQUIN DRIVE GLASTONBURY, CT 06033
PARCEL ID: F5-6200-0004
ARX WIRELESS CONTACT: KEITH COPPINS, 107 SEQUIN AVENUE, FLOUR BLDG, NORTH HAVEN, CT 06473, 203.553.3287
LEGAL/REGULATORY COUNSEL: COHEN AND WOLF, P.C., 1115 BRIDGEMAN STREET, BRIDGEPORT, CT 06604, 203.537.4751
LAND LORD CONTACT: NEW LAND OF GLASTONBURY, LLC, 734 HERBOLD AVENUE, GLASTONBURY, CT 06033
ARCHITECT: DOUGLAS J. ROBERTS - ARCHITECT, 110 WASHINGTON AVENUE, FLOUR BLDG, NORTH HAVEN, CT 06473
SURVEYOR: NORTHEAST SURVEY CONSULTANTS, PC, 3 FERRY STREET - STUDIO 1 EAST, EASTHAMPTON, MA 01027
 N 41° - 42' - 51.27"
 W 72° - 34' - 54.32"
GRADE (PROPOSED): 94' - 0" +/- AMSL

CODE REFERENCES

- 2018 Connecticut State Building Code
- 2015 International Building Code
- 2015 International Existing Building Code
- 2015 International Fire Code
- 2015 International Residential Code
- 2015 International Energy Conservation Code
- National Electrical Code (NECA 70)
- 2008 ICC A117.1 Accessible and Usable Buildings & Facilities

SHEET NUMBER	SHEET NAME	CURRENT REVISION	CURRENT REVISION DATE
T - 001	TITLE SHEET		
GN - 001	GENERAL NOTES		
G - 101	AUDITORS PLAN		
G - 102	COMPOUND PLAN		
G - 104	EAST ELEVATION		
G - 105	SITE DETAILS		
G - 106	EROSION CONTROL NOTES AND DETAILS		
A - 101	A-TAT EQUIPMENT AND DETAILS		

SCOPE OF WORK

- ARX WIRELESS IS PROPOSING TO INSTALL THE FOLLOWING IMPROVEMENTS ON PROPOSED TELECOMMUNICATION SITE:
1. 30' x 60' FENCED COMPOUND WITH PA 60 x 60 X 1.5 FT. AREA.
 2. 11' X 16' CONCRETE FOUNDATION FOR FOUR CARRIER PLATFORMS WITH ANTENNAS.
 3. POWER AND TELECOMMUNICATIONS SHALL BE Routed UNDERGROUND UTILITIES ON SEQUIN DRIVE TO PROPOSED ELECTRICAL METER AND UTILITY BRACK ON PROPOSED FRAME.
 4. NATURAL GAS SERVICE SHALL BE ROUTED UNDERGROUND FROM THE EXISTING GAS LINE WITHIN SEQUIN DRIVE TO NATURAL GAS METER CENTER AT THE COMPOUND.
- A-TAT IS PROPOSING TO INSTALL THE FOLLOWING EQUIPMENT:
1. WALK IN CABINET #E2" x 6' EY AND 15 KW NATURAL GAS GENERATOR ON CONCRETE PADS
 2. TWO (2) ANTENNAS PER SECTOR FOR A TOTAL OF 36 (6) ANTENNAS, TWO (2) HYBRID CABLES, THREE (3) SOLID SURGE ARRESTOR, FIFTEEN (15) REMOTE RADI HEADS

Drawing By: Douglas J. Roberts
 Drawing Date: Jan. 8, 2022
 Reviewed By: Keith Coppins
 Project No.: 2021.13
 Sheet Title: TITLE SHEET

T - 001

DEVELOPMENT AND MANAGEMENT



Project
GLASTONBURY
 107 SEQUIN DRIVE
 GLASTONBURY, CT 06033

Prepared For
ARX WIRELESS
 110 Washington Avenue
 North Haven, CT 06473

Project No: 2021 13
DOMINIK J. KONIETZ - ARCHITECT
 110 Washington Avenue
 North Haven, CT 06473
 Tel: 203 234 5388
 Email: dkonietz - architect@outlook.com

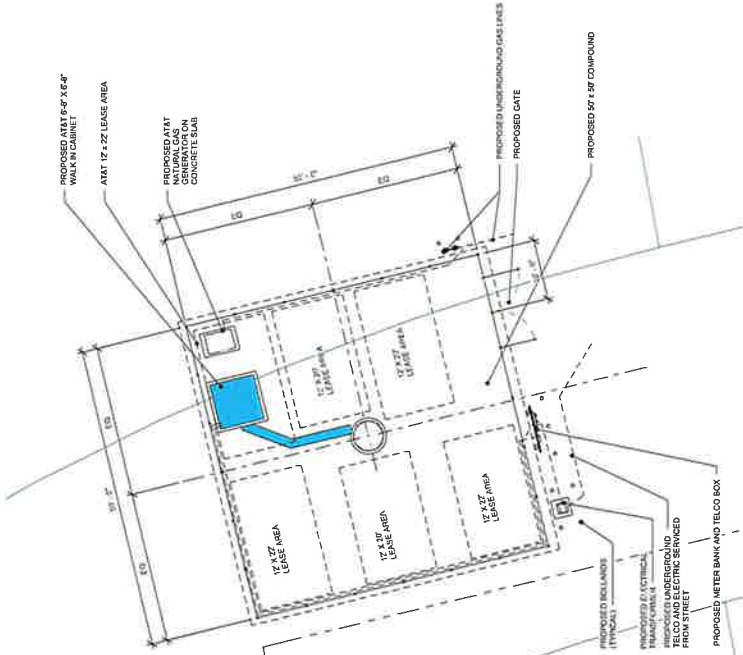
Utility Plan

This plan is only intended to be used in conjunction with other plans, and shall not be used as a sole basis for construction. It is the responsibility of the contractor to verify all conditions on-site before construction begins.

REVISION	DESCRIPTION	DATE

Drawn By: Emily J. Nigam
Drawing Date: JAN 8, 2022
Project No: 2021 13
Scale: 1" = 10'-0"

COMPOUND PLAN



1.1 COMPOUND PLAN
 C-103 1" = 10'-0"

Sheet Number
Revision

C - 103

DEVELOPMENT AND MANAGEMENT



Project
GLASTONBURY
 107 SECUN DRIVE
 GLASTONBURY, CT 06033

Prepared For:
ARX WIRELESS
 110 Washington Avenue
 North Haven, CT 06473

Project No.: 2021.13
DOUGLAS J. ROBERTS - ARCHITECT
 110 Washington Avenue
 North Haven, CT 06473
 Tel.: 203.274.6598
 Email: droberts_architect@outlook.com

Site Files

This Plan, Specification, and Schedule are prepared for the use of the Client and its authorized representatives only. It shall not be used for any other project, location, or purpose without the written consent of the Architect. The Architect is not responsible for the accuracy or completeness of the information furnished by the Client.

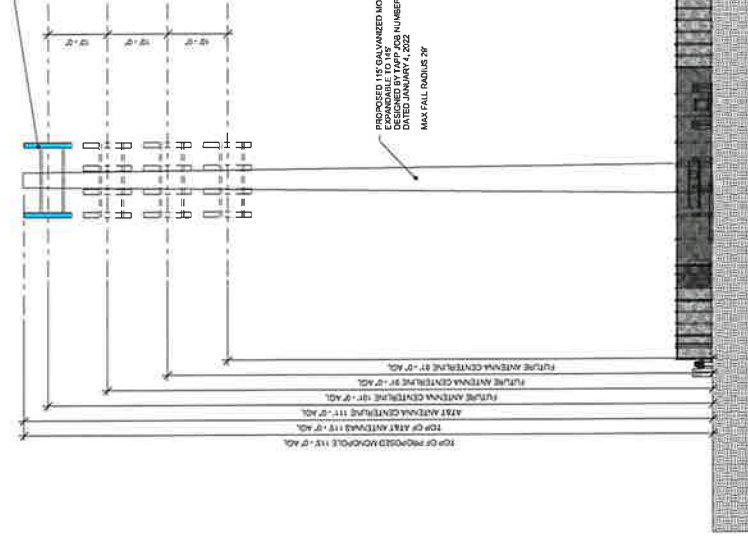
REVISION	DESCRIPTION	DATE

Drawing By: Zanev J. Roberts
 Drawing Date: JAN 4, 2022
 Reviewed By: Robbe Rowe
 Drawing No.: 107-ARX-2022-01
 Scale: 1" = 10'-0"

Sheet Title
EAST ELEVATION

Sheet Number
C - 104

ATM IS PROPOSED TO INSTALL THE FOLLOWING EQUIPMENT THE 11' HAZ. CENTERLINE:
 TWO (2) ANTENNAS PER SECTOR FOR A TOTAL OF SIX (6) ANTENNAS TWO (2) HYBRID
 CABLES, THREE (3) SOLID SURGE ARRESTOR, FIFTEEN (15) REMOTE MOUNT HEADS



PROPOSED 115 GALVANIZED MONOPOLE
 DESIGNED BY TAPP JOB NUMBER 2251-198
 DATED JANUARY 7, 2022
 MAX FALL RADIUS 2R

ATM IS PROPOSED TO INSTALL THE FOLLOWING EQUIPMENT:
 1. TWO SOLID SURGE ARRESTOR & 6x4" AND IS RW ANTIPAL GAS GENERATOR

1
 EAST ELEVATION
 1" = 10'-0"

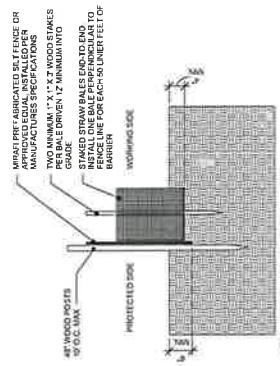
DEVELOPMENT AND MANAGEMENT

GENERAL CONSTRUCTION SEQUENCE

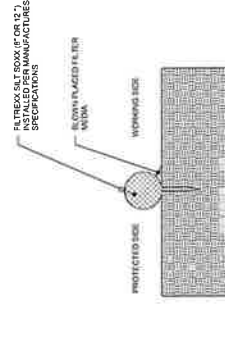
- THIS IS A GENERAL CONSTRUCTION SEQUENCE OUTLINING SOME ITEMS OF WHICH MAY NOT APPLY TO THIS SITE
1. CLEAR AND GRUB AREAS OF PROPOSED CONSTRUCTION AS REQUIRED
 2. INSTALL TEMPORARY STABILIZATION AND EROSION CONTROL MEASURES
 3. REMOVE AND STOCKPILE TOPSOIL TO LOCATION AS SHOWN ON THE DRAWINGS. STOCKPILE SHALL BE SEDED TO PREVENT EROSION
 4. CONSTRUCT CLOSED DRAINAGE SYSTEM, PROTECT COVERT TILIETS AND CATCH BASINS WITH STABILIZATION BARRIERS

EROSION CONTROL MEASURE NOTES

1. DISTURBED AREAS SHALL BE KEPT TO THE MINIMUM AREA NECESSARY TO CONSTRUCT THE ROADWAY AND ASSOCIATED DRAINAGE FACILITIES.
2. HAY BALE BARRIERS AND SEDIMENT TRAPS SHALL BE INSTALLED AS DESCRIBED AND MAINTAINED AS NECESSARY UNTIL SLOPES HAVE BEEN STABILIZED AND CLEARED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
3. BALED HAY AND HULCH SHALL BE ROWINGS OF ACCEPTABLE HERMACEOUS GROWTH, FALE FROM MORMUS WETDER ON WOODY STEMS, AND SHALL BE DRY. NO SALT WAY SHALL BE USED.
4. FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
5. STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SILTATION FENCE AND STOCKPILES SHALL BE COVERED WITH TOPSOIL OR MULCH UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPERSED OFF SITE.
6. ALL DISTURBED AREAS SHALL BE LOADED AND SEDED. A MINIMUM OF 4 INCHES OF OAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SED PER 50 SQUARE INCHES OF AREA.
7. COVERTS, TILIETS AND WETLANDS SHALL BE PROTECTED BY SILTATION BARRIERS AND SEDIMENT TRAPS AS SHOWN ON THE PLANS.
8. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.
9. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
10. ALL CATCH BASIN INLETS WILL BE PROTECTED WITH LOW POINT SEDIMENTATION BARRIER.
11. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEARED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
12. ALL DEMONSTRATION OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA.
13. NO DISCHARGE SHALL BE DIRECTED TOWARDS ANY PROPOSED DITCHES, SWALES, OR PONDS UNTIL THEY HAVE BEEN PROPERLY STABILIZED.



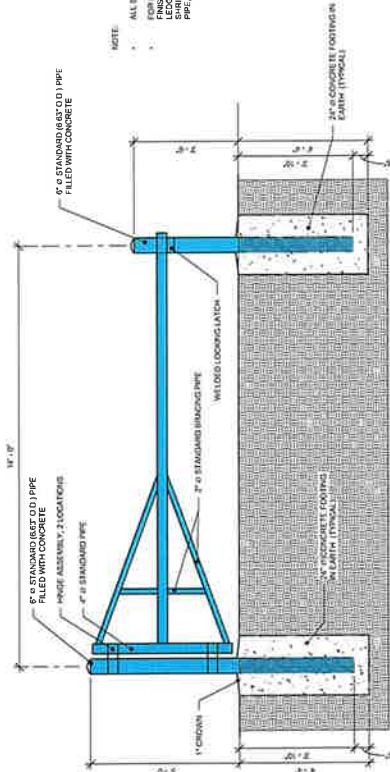
1. EROSION CONTROL BARRIER HAY BALE



2. EROSION CONTROL BARRIER SILT SOXX

SILT SOXX NOTES

1. USE SILT SOXX WHERE CONDITIONS DO NOT ALLOW STRALES TO BE DRIVEN.
2. STRAW BALES TO BE TIED WITH BIODEGRADABLE TWINE.
3. SILT SOXX TO MEET FILTER SPECIFICATIONS AND APPLICATION REQUIREMENTS.
4. SILT SOXX COMPOSE MATERIAL TO BE DISPENSED ON SITE BYS DETERMINED BY THE ARCHITECT.



3. SWING GATE

ARX
 WIRELESS
GLASTONBURY
 107 SECURITY DRIVE
 GLASTONBURY, CT 06033

 Prepared For:
ARX WIRELESS
 110 Washington Avenue
 North Haven, CT 06473
 Project No. 2021.13
DOUGLAS J. DROBIS - ARCHITECT
 110 Washington Avenue
 North Haven, CT 06473
 Tel. 203.234.6388
 Email: drobis_architect@outlook.com

Rev: 0/0

REVISION	DESCRIPTION	DATE

Drawing By: Zachary J. Roberts
 Drawing Date: JAN 6, 2022
 Prepared By: Zachary J. Roberts
 Scale: As indicated
 Sheet Title: EROSION CONTROL NOTES AND DETAILS



Project:
GLASTONBURY
 107 SECOND DRIVE
 GLASTONBURY, CT 06033

Prepared For:
ARX WIRELESS
 110 Washington Avenue
 North Haven, CT 06473

Project No 2021.13
DOUGLAS J. ROBLES - ARCHITECT
 110 Washington Avenue
 North Haven, CT 06473
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 Email: douglas.architect@worldnet.att.net

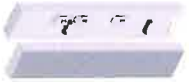
DEVELOPMENT AND MANAGEMENT



AT&T - DMP65R-BUBDA-K			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
DMP65R-BUBDA-K	20.7"	7.7"	95"
			87.1 LBS



AT&T - SQUID DC6-48-4860-0-8F			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
SQUID DC6-48-4860-0-8F	10.24"	24"	33"
			33 LBS



AT&T - TPAGSR-BUBDA-K			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
TPAGSR-BUBDA-K	20.7"	7.7"	95"
			119 LBS



AT&T - SQUID DC9-48-60-24-8C-EV			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
SQUID DC9-48-60-24-8C-EV	18.24"	24"	33"
			33 LBS



AT&T GENERATOR SPECIFICATIONS			
MODEL NUMBER	LENGTH	WIDTH	HEIGHT
20 MW 48VDC VEROCORE104	50"	32"	72"
			1,024 LBS



AT&T WALK-IN-CABINET SPECIFICATIONS			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
WFE 603 SERIES CABINET	79.2"	79.2"	134"
			7,300 LBS



AT&T - RRU 4449 B5/B12			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
RRU 4449 B5/B12	13.19"	9.84"	13.9"
			72.05



AT&T - RRU 3843 B2/B6GA			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
RRU 3843 B2/B6GA	13.2"	10.9"	14.1"
			72 LBS



AT&T - RRU 4478 B14			
MODEL NUMBER	WIDTH	DEPTH	HEIGHT
RRU 4478 B14	13.2"	7.7"	19"
			59.4 LBS

Key Files
 Revision Schedule
 DRAWING BY: DOUGLAS J. ROBLES
 DRAWING DATE: JAN 6, 2022
 PROJECT NO: 2021.13
 SCALE: AS INDICATED

Project Title:
AT&T EQUIPMENT AND DETAILS
 Drawing By: Zachary J. Robles
 Drawing Date: JAN 6, 2022
 Project No: 2021.13
 Scale: As Indicated
 Sheet No: 1
 Revision:

A - 101

Michael F. Plahovinsak, P.E.

18301 State Route 161, Plain City, Ohio 43064

(614) 398-6250 - mike@mfpeng.com

January 4, 2022

ARX

Re: Proposed 115-ft Monopole
Located in Hartford Co., CT: CT0114 Glastonbury
MFP Project #: 23521-386 / TAPP Project Number: TP-20437

I understand that there may be some concern on the part of local building officials regarding the potential for failure of the proposed communication monopole. Communication structures are designed in accordance with the Telecommunications Industry Association ANSI/TIA-222-G, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures". This Structure is to be fabricated by TransAmerican Power Products

I have designed this monopole to withstand a 3-sec. gusted wind speed of 103 mph as recommended by ANSI/TIA-222-G for Hartford Co., CT. The design also conforms to the requirements of the 2016 Connecticut Building Code for an equivalent ultimate wind speed of 133 mph (Vult).

This monopole has been designed to accommodate a theoretical fall radius. The upper 29' of the pole has been designed to meet the wind loads of the design, however, the lower portion of the pole has been designed with a minimum 10% extra capacity. Assuming the pole has been fabricated according to my design, and well maintained, in the event of a failure due to extreme wind and comparable appurtenance antenna load (winds in excess of the design wind load), it would yield/buckle at the 86' elevation. The yielded section would result in a maximum 29' fall radius, but would most likely remain connected and hang from the standing section.

The structure has been designed with all of the applicable factors as required by the code. A properly designed, constructed and maintained pole has never collapsed; monopoles are safe structures with a long history of reliable operation.

I hope this review of the monopole design has given you a greater degree of comfort regarding the design capacity inherent in pole structures. If you have any additional questions please call me at 614-398-6250 or email mike@mfpeng.com.

Sincerely,

Michael F. Plahovinsak, P.E.



Michael F. Plahovinsak, P.E.
Sole Proprietor - Independent Engineer
P.E. Licensed in 48 Jurisdictions

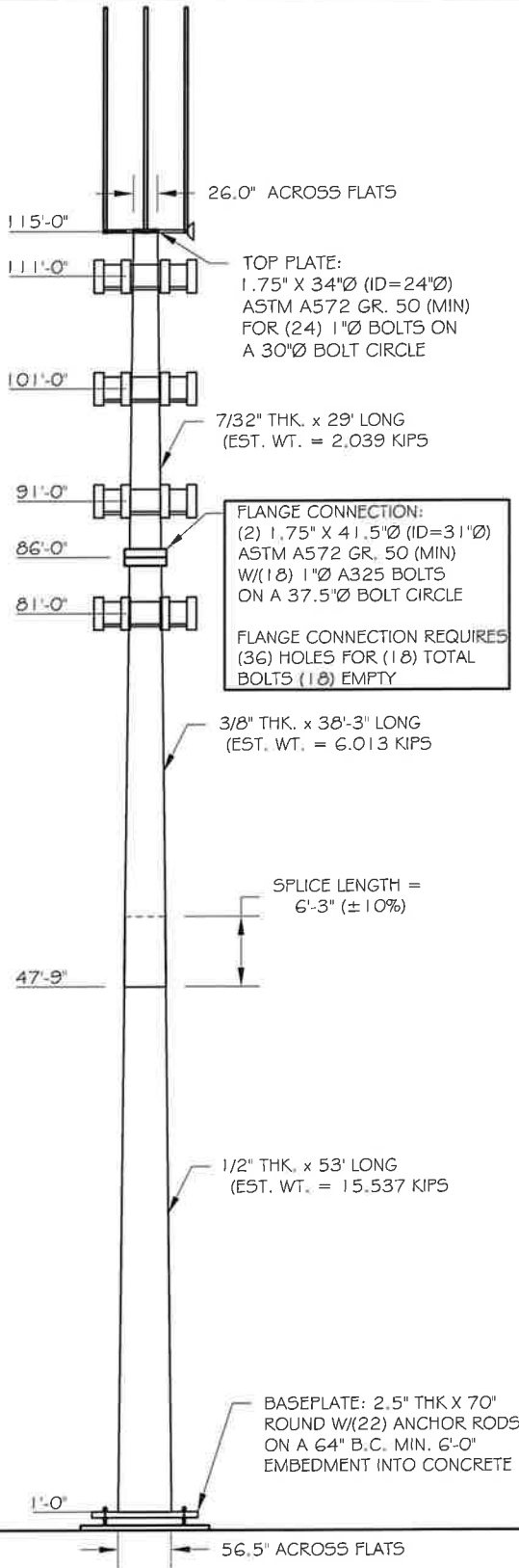




TAPP

2427 Kelly Lane
Houston, Texas 77066
281-444-8277

QUALITY STEEL POLES. DELIVERED.



Page 1 of 2	Job Number: 23521-386
Eng: MFP	Customer Ref: TP-20437
	Date: 1/4/2022
Structure: 115-FT MONOPOLE	
Site: CTO 114 GLASTONBURY	
Location: HARTFORD CO., CT / 41°42'51.27", -72°34'54.32"	
Owner: ARX	
Revision No.: Revision Date:	

DESIGN			
Building Code: 2016 CONNECTICUT BUILDING CODE			
Design Standard: ANSI/TIA-222-G			
Wind Speed Load Cases: ASCE-7-05*			
Load Case #1: 103 MPH Design Wind Speed			
Load Case #2: 50 MPH Wind with 1" Ice Accumulation			
Load Case #3: 60 MPH Service Wind Speed			
Structure Class Risk Category	Exposure Cat.	Topography Cat.	Crest Height
III	B	I	

STRUCTURE MEETS THE MINIMUM REQUIREMENTS OF TIA-222-H
* DESIGN ALSO MEETS ASCE-7-10 133 MPH RISK CATEGORY 3

EQUIPMENT LIST	
Elev.	Description
125	(3) 20-FT X Ø3" WHIP ANTENNAS
115	(1) 2-FT DISH + (3) 6-FT SIDE ARM MOUNTS
111	(12) ANTENNAS + MOUNT (EPA 250 FT2)
111	GENERIC ANTENNA MOUNT
101	(12) ANTENNAS + MOUNT (EPA 250 FT2)
101	GENERIC ANTENNA MOUNT
91	(12) ANTENNAS + MOUNT (EPA 250 FT2)
91	GENERIC ANTENNA MOUNT
81	(12) ANTENNAS + MOUNT (EPA 250 FT2)
81	GENERIC ANTENNA MOUNT

ANTENNA FEED LINES ROUTED ON THE INSIDE OF THE POLE
POLE DESIGNED FOR A MAX 29-FT FALL RADIUS

STRUCTURE PROPERTIES					
Cross-Section: 18-Sided			Taper: 0.274 2 in/ft		
Shaft Steel: ASTM A572 GR 65			Baseplate Steel: ASTM A572 GR 50		
Anchor Rods: 2.25 in. A615 GR. 75 X 7'-0"					
Sect.	Length (ft)	Thickness (in)	Splice (ft)	Top Dia. (in)	Bot Dia. (in)
1	29.00	0.2188	0.00	26.00	33.95
2	38.25	0.3750	6.25	33.95	44.43
3	53.00	0.5000	0.00	41.97	56.50



BASE REACTIONS FOR FOUNDATION DESIGN

Moment: 7196 ft-kip
Shear: 81 kip
Axial: 54 kip

Page 2 of 2	Job Number: 23521-386
Eng: MFP	Customer Ref: TP-20437
	Date: 1/4/2022
Structure: 115-FT MONOPOLE	
Site: CTO 114 GLASTONBURY	
Location: HARTFORD CO., CT / 41°42'51.27", -72°34'54.32"	
Owner: ARX	
Revision No.:	Revision Date:

FOUNDATION NOTES:

1. ALL FOUNDATION CONCRETE SHALL USE TYPE II CEMENT AND ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS. CONCRETE SHALL HAVE A MAXIMUM WATER/CEMENT RATIO OF 0.45 AND SHALL BE AIR ENTRAINED 6% (± 1.5%). ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318, "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION.

2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 VERTICAL BARS SHALL BE GRADE 60, AND TIES OR STIRRUPS SHALL BE A MINIMUM OF GRADE 40. THE PLACEMENT OF ALL REINFORCEMENT SHALL CONFORM TO ACI 315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.

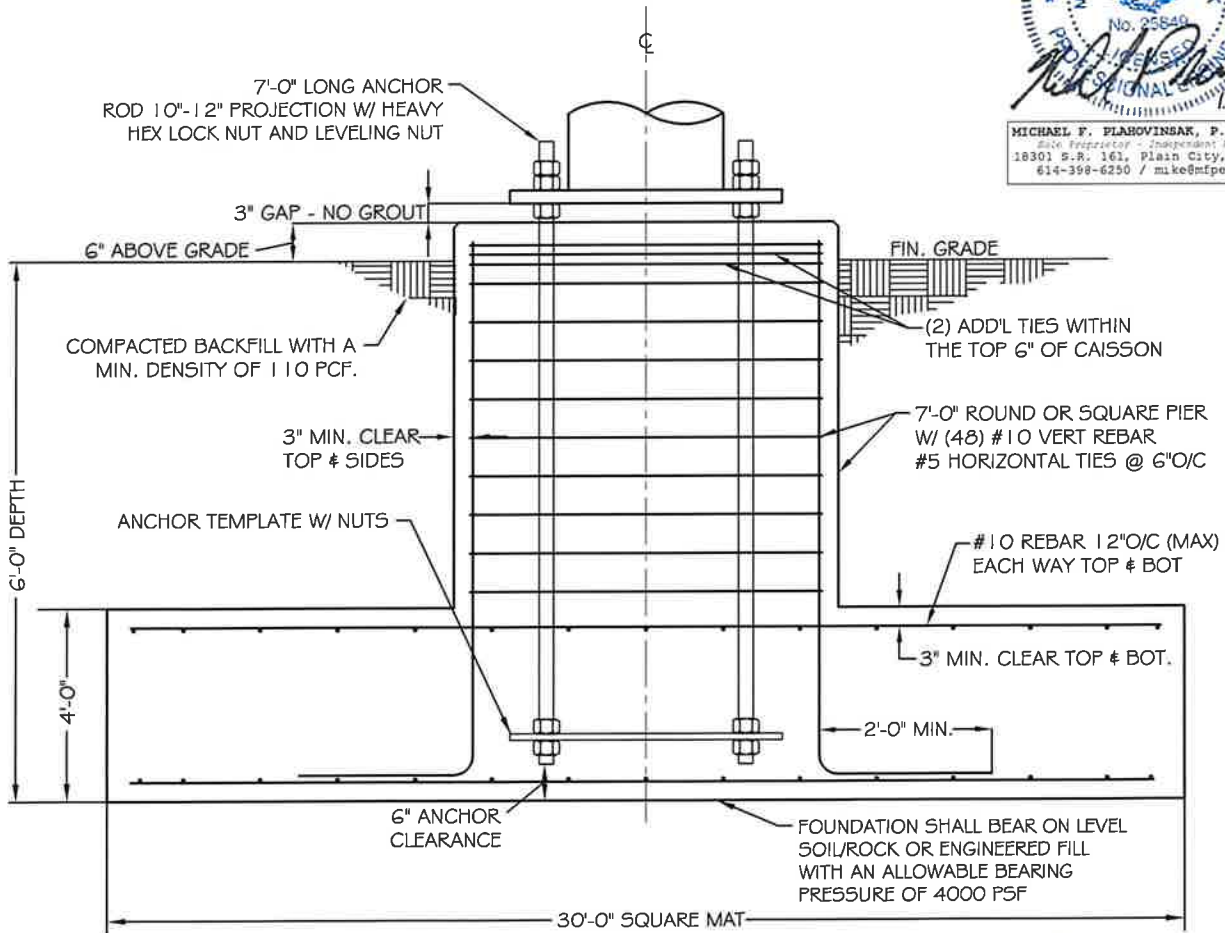
3. THE CONTRACTOR SHALL DETERMINE THE MEANS AND METHODS TO SUPPORT THE EXCAVATION DURING CONSTRUCTION. THE CONTRACTOR SHALL READ THE GEOTECHNICAL REPORT AND SHALL CONSULT THE GEOTECHNICAL ENGINEER AS NECESSARY PRIOR TO CONSTRUCTION.

4. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL REPORT BY:
ENGINEER: WELTI GEOTECHNICAL
REPORT NO.: N/A (DATED 11/22/21)

5. ESTIMATED CONCRETE VOLUME = 137.9 CUBIC YARDS.

6. THE FOUNDATION HAS BEEN DESIGNED TO RESIST THE FOLLOWING FACTORED LOADS:

MOMENT: 7196 FT*KIPS
SHEAR: 81 KIPS
AXIAL: 54 KIPS



SPREAD FOOTING

NOT TO SCALE

tnxTower Michael Plahovinsak, P.E. 18301 State Route 161 Plain City, OH 43064 Phone: 614-398-6250 FAX: mike@mfpeng.com	Job 115-ft Pole - MFP #23521-386 r3	Page 1 of 6
	Project CT00114 Glastonbury	Date 16:27:00 01/04/22
	Client TP-20437	Designed by Mike

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

- Basic wind speed of 103 mph.
- Structure Class III.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	115.00-86.00	29.00	0.00	18	26.0000	33.9496	0.2188	0.8750	A572-65 (65 ksi)
L2	86.00-47.75	38.25	6.25	18	33.9496	44.4348	0.3750	1.5000	A572-65 (65 ksi)
L3	47.75-1.00	53.00		18	41.9715	56.5000	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	26.3673	17.9002	1503.1570	9.1523	13.2080	113.8066	3008.2919	8.9518	4.1910	19.159
	34.4395	23.4197	3366.4548	11.9744	17.2464	195.1978	6737.3392	11.7121	5.5901	25.555
L2	34.4154	39.9621	5691.2370	11.9190	17.2464	329.9961	11389.9626	19.9849	5.3151	14.174
	45.0624	52.4421	12861.8071	15.6412	22.5729	569.7908	25740.5381	26.2260	7.1605	19.095
L3	44.2815	65.8153	14300.8985	14.7224	21.3215	670.7261	28620.6146	32.9139	6.5070	13.014
	57.2945	88.8720	35211.0080	19.8800	28.7020	1226.7789	70468.3476	44.4444	9.0640	18.128

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 115.00-86.00				1	1	1			
L2 86.00-47.75				1	1	1			
L3 47.75-1.00				1	1	1			

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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A ₁ ft ² /ft	Weight plf
1 5/8"	C	No	Yes	Inside Pole	115.00 - 1.00	6	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
1 5/8"	C	No	Yes	Inside Pole	111.00 - 1.00	18	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
1 5/8"	C	No	Yes	Inside Pole	101.00 - 1.00	18	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
1 5/8"	C	No	Yes	Inside Pole	91.00 - 1.00	18	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92
1 5/8"	C	No	Yes	Inside Pole	81.00 - 1.00	18	No Ice	0.00	0.92
							1/2" Ice	0.00	0.92
							1" Ice	0.00	0.92

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A ₁ In Face ft ²	C _A A ₁ Out Face ft ²	Weight K
L1	115.00-86.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.90
L2	86.00-47.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	2.65
L3	47.75-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	3.34

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A ₁ In Face ft ²	C _A A ₁ Out Face ft ²	Weight K
L1	115.00-86.00	A	2.793	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.90
L2	86.00-47.75	A	2.681	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	2.65
L3	47.75-1.00	A	2.426	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	3.34

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A		Weight
			Horz Lateral	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	K
20 ft x 3" dia whip	A	From Face	3.00	0.0000	125.00	No Ice	6.00	6.00	0.06
			0.00			1/2" Ice	8.03	8.03	0.10
			0.00			1" Ice	10.08	10.08	0.16
20 ft x 3" dia whip	B	From Face	3.00	0.0000	125.00	No Ice	6.00	6.00	0.06
			0.00			1/2" Ice	8.03	8.03	0.10
			0.00			1" Ice	10.08	10.08	0.16
20 ft x 3" dia whip	C	From Face	3.00	0.0000	125.00	No Ice	6.00	6.00	0.06
			0.00			1/2" Ice	8.03	8.03	0.10
			0.00			1" Ice	10.08	10.08	0.16
(3) 6' Side Arm Mount	C	None		0.0000	115.00	No Ice	1.67	1.67	0.08
						1/2" Ice	2.46	2.46	0.09
						1" Ice	2.83	2.83	0.11
**									
EPA 250 ft2	C	None		0.0000	111.00	No Ice	250.00	250.00	4.00
						1/2" Ice	280.00	280.00	5.00
						1" Ice	310.00	310.00	6.00
EPA 250 ft2	C	None		0.0000	101.00	No Ice	250.00	250.00	4.00
						1/2" Ice	280.00	280.00	5.00
						1" Ice	310.00	310.00	6.00
EPA 250 ft2	C	None		0.0000	91.00	No Ice	250.00	250.00	4.00
						1/2" Ice	280.00	280.00	5.00
						1" Ice	310.00	310.00	6.00
EPA 250 ft2	C	None		0.0000	81.00	No Ice	250.00	250.00	4.00
						1/2" Ice	280.00	280.00	5.00
						1" Ice	310.00	310.00	6.00
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
			ft	ft	°	°	ft	ft	ft ²	K	
2 ft standard	A	Paraboloid w/o Radome	From Face	1.00	0.0000	115.00		2.00	No Ice	3.14	0.01
				0.00					1/2" Ice	3.41	0.06
				0.00					1" Ice	3.68	0.10

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp

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Comb. No.	Description
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	115 - 86	Pole	Max Tension	12	0.00	-0.00	-0.00
			Max. Compression	8	-40.51	0.39	0.22
			Max. Mx	4	-14.95	-732.79	-5.06
			Max. My	6	-14.96	-8.23	-730.93
			Max. Vy	4	46.03	-732.79	-5.06
			Max. Vx	6	45.97	-8.23	-730.93
			Max. Torque	2			0.26
L2	86 - 47.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-63.78	0.39	0.22
			Max. Mx	4	-28.90	-2618.67	-10.75
			Max. My	6	-28.91	-17.46	-2614.73
			Max. Vy	4	62.92	-2618.67	-10.75
			Max. Vx	6	62.85	-17.46	-2614.73
			Max. Torque	2			0.26
L3	47.75 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-95.57	0.39	0.22
			Max. Mx	4	-54.32	-6116.37	-20.03
			Max. My	6	-54.32	-32.54	-6109.00
			Max. Vy	4	68.67	-6116.37	-20.03
			Max. Vx	6	68.60	-32.54	-6109.00
			Max. Torque	2			0.26

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 86	11.374	13	0.8527	0.0001
L2	86 - 47.75	6.445	13	0.7197	0.0000
L3	54 - 1	2.496	13	0.4332	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.00	20 ft x 3" dia whip	13	11.374	0.8527	0.0003	41818
115.00	2 ft standard	13	11.374	0.8527	0.0003	41818
111.00	EPA 250 ft2	13	10.663	0.8388	0.0003	41818
101.00	EPA 250 ft2	13	8.908	0.8006	0.0002	14935
91.00	EPA 250 ft2	13	7.234	0.7512	0.0001	8712
81.00	EPA 250 ft2	13	5.697	0.6828	0.0001	6755

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Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	115 - 86	68.915	4	5.1679	0.0014
L2	86 - 47.75	39.071	4	4.3642	0.0004
L3	54 - 1	15.135	4	2.6278	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.00	20 ft x 3" dia whip	4	68.915	5.1679	0.0017	7017
115.00	2 ft standard	4	68.915	5.1679	0.0017	7017
111.00	EPA 250 ft2	4	64.608	5.0839	0.0016	7017
101.00	EPA 250 ft2	4	53.987	4.8535	0.0011	2505
91.00	EPA 250 ft2	4	43.850	4.5546	0.0007	1459
81.00	EPA 250 ft2	4	34.539	4.1405	0.0005	1128

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _n K	φP _n K	Ratio P _n φP _n
L1	115 - 86 (1)	TP33.9496x26x0.2188	29.00	0.00	0.0	23.4197	-14.95	1503.77	0.010
L2	86 - 47.75 (2)	TP44.4348x33.9496x0.375	38.25	0.00	0.0	50.4029	-28.90	3623.91	0.008
L3	47.75 - 1 (3)	TP56.5x41.9715x0.5	53.00	0.00	0.0	88.8720	-54.32	6405.09	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio M _{ux} φM _{ux}	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio M _{uy} φM _{uy}
L1	115 - 86 (1)	TP33.9496x26x0.2188	732.80	1044.46	0.702	0.00	1044.46	0.000
L2	86 - 47.75 (2)	TP44.4348x33.9496x0.375	2618.69	3152.53	0.831	0.00	3152.53	0.000
L3	47.75 - 1 (3)	TP56.5x41.9715x0.5	6116.40	7367.92	0.830	0.00	7367.92	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V _u K	φV _u K	Ratio V _u φV _u	Actual T _u kip-ft	φT _u kip-ft	Ratio T _u φT _u
L1	115 - 86 (1)	TP33.9496x26x0.2188	46.03	751.88	0.061	0.02	2093.53	0.000
L2	86 - 47.75 (2)	TP44.4348x33.9496x0.375	62.92	1811.95	0.035	0.02	6321.18	0.000
L3	47.75 - 1 (3)	TP56.5x41.9715x0.5	68.67	3202.54	0.021	0.02	14773.75	0.000

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Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_u	ϕM_{ux}	ϕM_{uy}	ϕV_u	ϕT_u			
L1	115 - 86 (1)	0.010	0.702	0.000	0.061	0.000	0.715 ✓	1.000	4.8.2 ✓
L2	86 - 47.75 (2)	0.008	0.831	0.000	0.035	0.000	0.840 ✓	1.000	4.8.2 ✓
L3	47.75 - 1 (3)	0.008	0.830	0.000	0.021	0.000	0.839 ✓	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	115 - 86	Pole	TP33.9496x26x0.2188	1	-14.95	1503.77	71.5	Pass	
L2	86 - 47.75	Pole	TP44.4348x33.9496x0.375	2	-28.90	3623.91	84.0	Pass	
L3	47.75 - 1	Pole	TP56.5x41.9715x0.5	3	-54.32	6405.09	83.9	Pass	
							Summary		
							Pole (L2)	84.0	Pass
							RATING =	84.0	Pass

Monopole Flange Connection Calculation

TIA-222

Factored Connection Reactions:	Pole Shape:	Bolts:	Flange Plate:
Moment: 733 ft-kips	18-Sided	(18) 1 dia. A325 Bolts	1.75 in. x 41.5 in. Round
Shear: 46 kips	Pole Dia. (D_p):	On a 37.5 in Bolt Circle	fy = 50 ksi
Axial: 15 kips	33.95 in		Inner Dia = 31 in

Bolt Calculation TIA 4.9.6.4 (Combined Shear and Tension)

The following Interaction Equation Shall Be Satisfied:

$$\begin{aligned} \phi &= 0.75 \text{ TIA 4.9.9} \\ I_{\text{bolts}} &= 3164.06 \text{ in}^2 \text{ Moment of Inertia} \\ T_u &= 52.12 \text{ kips Tension Force} \\ P_u &= 52.96 \text{ kips Compressive Force} \\ V_u &= 2.56 \text{ kips Shear Force} \\ \phi R_{nv} &= 28.30 \text{ kips From AISC 7-1} \\ \phi R_{nt} &= 53.00 \text{ kips From AISC 7-2} \end{aligned}$$

$$\left(\frac{V_{ub}}{\phi R_{nv}} \right)^2 + \left(\frac{T_{ub}}{\phi R_{nt}} \right)^2 \leq 1.0$$

$$0.975 < 1.0 \rightarrow \text{OK}$$

Base Plate Calculation According to TIA-222

$$\begin{aligned} \phi &= 0.90 \text{ TIA 4.7} \\ M_{PL} &= 94.01 \text{ in-kip Plate Moment} \\ L &= 5.93 \text{ in Section Length} \\ Z &= 4.54 \text{ Plastic Section Modulus} \\ M_P &= 226.83 \text{ in-kip Plastic Moment} \\ \phi M_n &= 204.1455 \text{ in-kip Factored Resistance} \end{aligned}$$

Calculated Moment vs Factored Resistance

$$94.01167 \text{ in-kip} \leq 204 \text{ in-kip}$$

Bolts Are Adequate	97.5%
Plate is Adequate	46.1%

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	Client TAPP TP-20437	Designed by Mike

Anchor Rod and Base Plate Calculation

ANSI/TIA-222-G

Factored Base Reactions:	Pole Shape:	Anchor Rods:	Base Plate:
Moment: 6116 ft-kips	18-Sided	(22) 2.25 in. A615 GR. 75	2.5 in. x 70 in. Round
Shear: 69 kips	Pole Dia. (D_f):	Anchor Rods Evenly Spaced	$f_y = 50$ ksi
Axial: 54 kips	56.50 in	On a 64 in Bolt Circle	

Anchor Rod Calculation According to TIA-222-G section 4.9.9

$\phi_t, \phi_v = 0.80$ TIA 4.9.9
 $I_{bolts} = 11264.00 \text{ in}^2$ Momet of Inertia
 $P_u = 211 \text{ kips}$ Compr Force
 $V_u = 3.1 \text{ kips}$ Shear Force
 $R_{nt} = 325.00 \text{ kips}$ Nominal Tensile Strength
 $n = 0.50$ for detail type (d)
Stress Rating = 83.5% Satisfies TIA-G 4.9.9

Base Plate Calculation According to TIA-222-G

$\phi = 0.90$ TIA 4.7
 $M_{PL} = 479.0 \text{ in-kip}$ Plate Moment
 $L = 8.1 \text{ in}$ Section Length
 $Z = 12.6$ Plastic Section Modulus
 $M_p = 630.3 \text{ in-kip}$ Plastic Moment
 $\phi M_n = 567.3 \text{ in-kip}$ Factored Resistance

Calculated Moment vs Factored Resistance

$479.03 \text{ in-kip} \leq 567 \text{ in-kip}$

Stress Rating = 84.4%

Anchor Rods Are Adequate	83.5% <input checked="" type="checkbox"/>
Base Plate is Adequate	84.4% <input checked="" type="checkbox"/>

Monopole Spread Footing Calculation

ANSI/TIA-222-G

Factored Base Reactions:	Footing Dimensions:	Concrete:
Moment: 7196 ft-kips	30 ft x 30 ft	7 ft Square Pier
Shear: 81 kips	x 4 ft thick	w/6 in Reveal
Axial: 54 kips	Bearing 6 ft B.G.	137.9 Yd3 Concrete
Soil Backfill 110 pcf	Ultimate Bearing:	8000 psf
		Water Table n/a

Foundation Weight

Weight of Pole	54.0 kips
Weight of Concrete	558.375 kips
Weight of Soil	187.22 kips
Bouyancy of Water	0.0 kips
Total	799.6 kips

Overturning Resistance:

Overturning Moment (M_u)	7722.5 ft-kips	7196 ft-kips + (81 kips x 6.5 ft)
Resisting Moment (R_s)	11993.925 ft-kips	799.595 kips x 30 ft / 2
$\phi \times R_s > M_u$	$M_{\text{overturning}} / f M_{\text{resist}}$	85.8% OK

Soil Bearing Pressure:

Eccentricity (e)	9.66 ft	7722.5 ft-kips / 799.595 kips
$6(e)$	57.9 ft >	30.0 ft $6e > 30$
Maximum Soil Bearing	3460.9185 psf	Calculated across corners
Soil Overburden	-660 psf	
Net Soil Bearing	2800.9185 psf	
Resisting Soil Bearing (R_s)	8000 psf	
Net Soil Bearing $< \phi \times R_s$	Net Bearing / $f R_s$	46.7% OK

Bending Moment in Pier:

Bending Moment	7398.5 ft-kips	7196 ft-kips + (81 kips x 2.5 ft)
Min. Pier Steel	35.28 in ²	1/2% (Based on Square Pier)

Bending Moment in Footing:

Max Bending Moment	5020.1301 ft-kips	Σ Moments about pier face
Footing Steel Req'd (Loads)	1.14 in ² /ft	
Min. Footing Steel	1.04 in ² /ft	0.18%

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November 22, 2021

Mr. Keith Coppins
ARX Wireless
110 Washington Avenue
North Haven, CT 06473

Ref: Geotechnical Study for Proposed Cell Tower (CT0114A), Sequin Drive, Glastonbury, CT

Dear Keith:

1.0 Herewith are the data from the test boring taken at the above referenced site. One boring was taken at the proposed tower location. The boring was drilled to auger refusal on bedrock at 27 feet below the existing grade and cored into the bedrock from 27 to 32 feet. A tower/boring location plan is included with boring logs. *The boring was drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The **Subject Project** will include the construction of a 115 foot monopole tower.

3.0 The **Soils Cross Section** from the boring is generally as follows:

Topsoil to 6"

Possible FILL or disturbed soils; fine to coarse SAND, little Silt, trace Roots and Gravel to 6 feet, loose

Fine to coarse SAND, little Silt and Gravel to 8 feet, medium compact

Moraine; fine to coarse SAND, some Silt, little Gravel to 28 feet, dense to very dense

Weathered Rock to auger refusal on hard rock at 27 feet

Bedrock; Sandstone

Groundwater was at 7.0 feet below the existing grade at the completion of the boring

4.0 In general the criteria for tower support is that the foundation capacity would exceed the loads, which might collapse the tower. **Movements from strains in the soils should be limited to differential settlement (or lateral movements of less than ½").**

5.0 The foundation for the tower could be one of the following:

1. A large mat designed to prevent overturning by gravity resistance of the mat and soil cover.

2. A caisson/drilled pier foundation

5.1 In **alternate (1)** the weight of the mat and soil cover (if any) would provide the required resistance to over turning. The mat foundation can be placed on the natural inorganic soils at least 6 feet below the existing grade. There should be a minimum 6" layer of 3/8" crushed stone beneath foundations on the natural soils. The **Allowable Bearing Pressure** on the crushed stone atop the natural soils can be 3.0 Tons/sf.

5.2 In **summary** the following soil properties and design values would apply to alternate 1.

Soil Property/Parameter	Value
Soil Unit Weight (Backfill)	125 pcf
Soil Unit Weight (Natural)	125 pcf
Soil Unit Weight Submerged (Natural)	63 pcf
Angle of Internal Friction (ϕ)	34°
Cohesion	0
Pull Out Angle from Vertical	30°
Sliding Coefficient	0.6
Frost Protection Depth (by code)	3.5 feet
Allowable Soil Bearing Pressure on the natural soil inorganic at 6+ feet below the existing grade	3.0 Tons/sf

5.3 **Alternate 2** would be a caisson foundation. The depth of the caissons is to be determined by the designer to provide the required resistance to uplift and overturning forces as well as maintaining the allowable lateral deflection**. The following is summary of design parameters which can be used

in the design of the drilled pier/caisson type foundation using the L-Pile computer program.

stratum depth	Total Unit Weight (pcf)	Effective (submerged) Unit Weight (pcf)	Friction Angle degrees	Soil Modulus Parameter, k - above groundwater (pci)	Soil Modulus Parameter, k - below groundwater (pci) *	Allowable Bearing Pressure at 8+ feet (Tsf)
0 to 6 feet; FILL or disturbed soils; fine to coarse SAND, little Silt, trace Roots and Gravel	120	58	30	25	20	-
6 to 26 feet; fine to coarse SAND, some Silt, little Gravel	125	63	34	-	125	3.0
26 to 27 feet, Weathered Rock	140	78	36	-	125	10.0
Bedrock, Sandstone	160	98	-	-	-	20.0

The lateral deflection can be analyzed from Lpile Program or from a empirical formulas in Drilled Pier Foundations; Woodward Gardener Greer; McGraw Hill 1972. The soils to about 2 feet below the finished grades should be ignored in the calculating the lateral resistance.

** Typically this value would be about 1/2"

5.3.1 The bedrock can be considered as "strong rock" when modeling with the L-Pile program. The estimated elastic modulus (E_o) for the intact rock would be 2.1×10^6 psi (from a table in AASHTO, Summary of Elastic Moduli for Intact Rock Modified After Kulhawy 1978).

6.0 Regarding **backfill of foundations**, the material should conform to the following or be 3/8" crushed stone.

Percent Passing	Sieve Size
100	3.5"
50 - 100	3/4"
25 - 85	No.4

The fraction, passing the No.4 sieve should have less than 15% passing the No. 200 sieve.

All backfill and fill must be compacted to at least 95% of modified optimum density in accordance with ASTM D-1557.

7.0 The soils at the subject site are generally in OSHA class C which would require excavations that are in excess of 5 feet to have slopes which are less than 34° (i.e., 1.5H to 1.0V).

8.0 This report has been prepared for specific a application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless

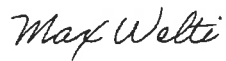
the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Wolti Geotechnical, P.C., should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented as they were intended.

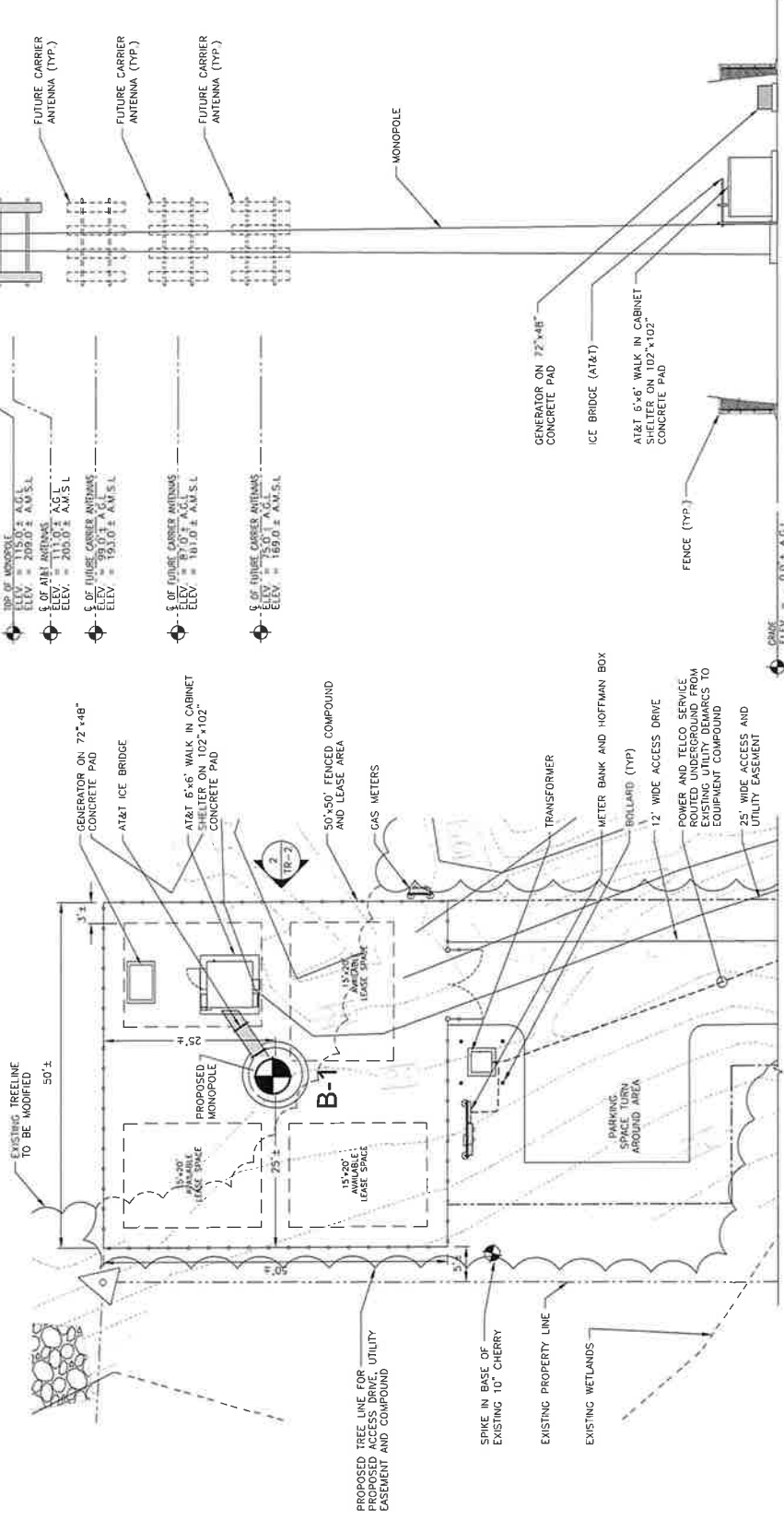
If you have any questions please call me.

Very truly yours,

A handwritten signature in cursive script that reads "Max Wolti".

Max Wolti, P. E.

TEST BORING LOCATION PLAN
CLARENCE WELTI ASSOCIATES, INC.
 11/8/21



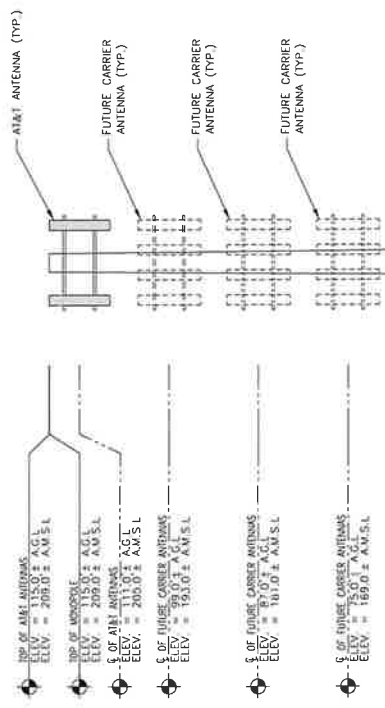
GRAPHIC SCALE
 0 4 8 16 24 FEET

1
 TR-2

COMPOUND PLAN
 22x34 SCALE: 1/8"=1'-0"
 11x17 SCALE: 1/16"=1'-0"



TECH REPORT



GRAPHIC SCALE
 0 5 10 20 30 FEET

2
 TR-2

EAST ELEVATION
 22x34 SCALE: 1/8"=1'-0"
 11x17 SCALE: 1/16"=1'-0"



AECOM
 500 ENTERPRISE DRIVE
 ROCKY HILL, CONNECTICUT
 (860) 255-0442

CHECKED BY: DJR
 APPROVED BY: DJR

SUBMITTALS

NO.	DATE	DESCRIPTION	BY
1	10/27/2021	ISSUED FOR PERMITS	AW
2	11/10/2021	ISSUED FOR PERMITS	AW
3	12/14/2021	ISSUED FOR PERMITS	AW
4	12/14/2021	ISSUED FOR PERMITS	AW
5	12/14/2021	ISSUED FOR PERMITS	AW
6	12/14/2021	ISSUED FOR PERMITS	AW

SITE NAME
**CT0114A
 GLASTONBURY**
 SITE ADDRESS
 LOT N-4, SEQUIN DRIVE
 GLASTONBURY, CT 06033

SHEET TITLE
**COMPOUND PLAN
 AND ELEVATION**

SHEET NUMBER
TR-2

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT ARX WIRELESS			PROJECT NAME PROPOSED CELL TOWER		
							LOCATION SEQUIN DRIVE, GLASTONBURY, CT		
	AUGER	CASING	SAMPLER	CORE BAR	OFFSET	SURFACE ELEV.		HOLE NO. B-1	
TYPE	HSA		SS	NQ	LINE & STA.		GROUND WATER OBSERVATIONS AT 7.0 FT. AFTER 0 HOURS AT FT. AFTER HOURS START DATE 11/8/21 FINISH DATE 11/8/21		
SIZE I.D.	3.75"		1.375"	2.0"	N. COORDINATE				
HAMMER WT.			140lbs		E. COORDINATE				
HAMMER FALL			30"						
DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS			ELEV.	
	NO.	BLOWS/6"	DEPTH						
0	1	4-4-4	0.0'-2.0'		TOPSOIL BR.FINE-CRS.SAND, LITTLE SILT, TRACE ROOTS & GRAVEL - FILL			0.50	
	2	3-3-3-2	2.0'-4.0'						
	3	3-3-2-5	4.0'-6.0'						
5									
	4	5-8-11-11	6.0'-8.0'		BR.FINE-CRS.SAND, LITTLE SILT & GRAVEL			6.0	
					BR.FINE-CRS.SAND, SOME SILT, LITTLE GRAVEL			8.0	
10									
	5	26-16-13	10.0'-11.5'						
15									
	6	27-36-60	15.0'-16.4'						
20									
	7	60	20.0'-20.4'						
25									
	8	60	25.0'-25.5'		WEATHERED ROCK			26.0	
					CORED BEDROCK - SANDSTONE			27.0	
					RUN #1 27.0' - 32.0' RECOVERED 57" RQD=93%				
30									
					BOTTOM OF BORING @ 32.0'			32.0	
35									
LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%						DRILLER: T. CZMYR INSPECTOR:			
						SHEET 1 OF 1	HOLE NO. B-1		



Keith Coppins
203-623-3287

Glastonbury
CT 0114
Sequin Dr Glastonbury

Week of:	3/7/2022	3/14/2022	3/21/2022	3/28/2022	4/4/2022	4/11/2022	4/18/2022	4/25/2022	5/2/2022	5/9/2022	5/16/2022	5/23/2022	5/30/2022																													
ACTIVITY	M	T	W	T	F	S	M	T	W	T	F	S	M	T	W	T	F	S	M	T	W	T	F	S	M	T	W	T	F	S	M	T	W	T	F	S	M	T	W	T	F	S
Mobilization																																										
Easement	X	X	X	X	X																																					
Primary Utilities																																										
Compound Clearing, Cut and Fill																																										
Foundation - Set Hole																																										
Foundation - Rebar and Formwork																																										
Foundation - Pour																																										
Foundation - Strip and backfill																																										
Ground Ring																																										
Compound Stone/Finish																																										
Tower Delivery & Erection																																										
Fencing																																										
Clean up and restoration																																										

Notes:

Hours of Operation will be from 7:30 am until 6:30 pm Monday through Friday