Robinson+Cole

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

December 18, 2019

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

Re: **Notice of Exempt Modification – Facility Modification**
225 North Main Street (a/k/a 32 Valley Street), Bristol, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains a wireless telecommunications facility at 225 North Main Street in Bristol, Connecticut (the "Property"). The facility consists of twelve (12) antennas (six (6) at the 98-foot level and six (6) at the 108-foot level) on an existing roof-top tower, associated equipment located in a 28'-6" x 28'-4" equipment room on the roof of the existing building and a 60 kW generator, located on the roof adjacent to the tower. The tower and Property are owned by Carpenter Realty. The Council approved the establishment of Cellco's facility in July of 1992. A copy of the Siting Council's approval letter is included in Attachment 1.

Cellco now intends to modify the existing facility by installing a Centralized Radio Access Network ("C-RAN") at the Property. The purpose of a C-RAN is to allow several existing cell sites in a particular geographic area (traditional macro cell sites and small cells), to connect to a centralized hub. By doing so, Cellco can deploy less cell site hardware at each individual facility location, giving it more flexibility in the selection of new cell site locations. This approach also allows Cellco to realize some cost savings by not having to deploy fiber connections, for example, from each individual cell site location back to the mobile telephone switching office (MTSO). C-RAN facilities can be established at existing cell sites, as in this instance, or at other locations not currently used for telecommunications purposes.

Cellco's proposed C-RAN equipment will be installed inside an expanded equipment room on the roof. Cellco also intends to replace the 60 kW generator with a 100 kW generator in the same location on the roof. Plans showing the C-RAN Facility modifications and the specifications for the 100 kW generator are included in Attachment 2.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Bristol's Mayor, Ellen Zoppo-Sassu; Robert Flanagan, Bristol's City Planner; and Carpenter Realty, the owner of the Property and tower.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary. All improvements will be located on the roof of the building and will remain within the limits of the Property.

3. The operation of the modified facility will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The proposed facility modifications will not change, in any way, radio frequency (RF) emissions at the facility.

5. The proposed facility modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The building can support the proposed facility modifications. *See* Structural Design Calculations included in Attachment 3.

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Ellen Zoppo-Sassu, Mayor
Robert Flanagan, City Planner
Carpenter Realty
Steve McGovern

ATTACHMENT 1

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

136 Main Street, Suite 401
New Britain, Connecticut 06051
Phone: 827-7682

July 16, 1992

David S. Malko
Manager, Engineering and
Regulatory Service
Bell Atlantic Metro Mobile
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492

RE; Bell Atlantic Metro Mobile notice of intent to modify an existing tower structure on top of an existing building at 32 Valley Street Street, Bristol, Connecticut.

Dear Mr. Malko:

At a public meeting held on July 15, 1992, the Connecticut Siting Council (Council) ruled that the proposed facility would not cause a significant change or alteration in the physical and environmental characteristics of the site by the placement of six cellular antennas on an existing non-facility 30-foot high tower structure, and acknowledged your notice of intent to modify this existing non-facility tower and associated equipment located on the roof of an existing building at 32 Valley Street, Bristol, Connecticut, pursuant to section 16-50j-73 of the Regulations of State Agencies (RSA).

The proposed modifications are to be implemented as specified in your notice dated June 26, 1992. As proposed, the modifications are in compliance with the exemption criteria specified in RSA 16-50j-72 as changes to an existing non-facility site that do not increase the tower height, do not extend the boundaries of the tower site, do not increase noise levels at the tower site boundary by six decibels or more, do not add radio frequency sending or receiving capability which increases total frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State of Connecticut, Department of Environmental Protection pursuant to section 22a-162 of the Connecticut General Statutes, and has received all municipal zoning approvals and building permits.

The Council is pleased to note that the use of an existing tower serves the Council's long-term goal of protecting the public interest by avoiding proliferation of additional tower structures.

Please notify the Council upon completion of construction.

Very truly yours,

Mortimer A. Gelston

Mortimer A. Gelston
Chairman

MAG/TEF/cp

cc: William T. Stortz, Mayor, City of Bristol

6248E

ATTACHMENT 2

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

DRAWING INDEX

SITE INFORMATION

SITE NAME:	BRISTOL CT CRAN
VERIZON FUZE PROJECT NO.:	2463647
VERIZON LOCATION CODE:	467663
VERIZON PROJECT CODE:	20171648057
SITE ADDRESS:	225 NORTH MAIN STREET, BRISTOL, CT 06011
LATITUDE:	41° 40' 35.2259" N (41.6764516° N)
LONGITUDE:	72° 56' 51.6828" W (72.9476897° W)
GROUND ELEVATION:	318.6'± AMSL
TOP OF HIGHEST APPURTENANCE (ASSOCIATED W/ CRAN FACILITY)	95.2.0'± AGL (413.8'± AMSL)
HEIGHT OF SUPPORT STRUCTURE:	80.7'± AGL (399.3'± AMSL)
HEIGHT OF GPS ANTENNAS:	95.2.0'± AGL (413.8'± AMSL)
MAP/BLOCK/LOT:	26------21B
OWNER/LANDLORD:	CARPENTER REALTY COMPANY
CONTACT:	P.O. BOX 176 BRISTOL, CT 06011
APPLICANT:	CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS
SITE TYPE/DESCRIPTION:	EXIST. 18'-8"±x28'-6"± (562± SF) EQUIPMENT ROOM W/ PROP. 9'-2"±x29'-8"± (272± SF) EXPANSION TO ACCOMMODATE PROP. LESSEE HUB EQUIPMENT FACILITY LOCATED ON 5TH FLOOR (PENTHOUSE) LEVEL OF EXIST. BUILDING. IN ADDITION TO THE REPLACEMENT OF AN EXIST. LESSEE 60kW NATURAL GAS POWERED EMERGENCY STANDBY POWER GENERATOR W/ PROP. 100kW NATURAL GAS FIRED EMERGENCY STANDBY POWER GENERATOR MOUNTED ON EXIST. STEEL DUNNAGE FRAME ATOP EXIST. BUILDING ROOF.

CONTACT INFORMATION

VERIZON REAL ESTATE CONSULTANT:	STEPHEN McGOVERN (617) 913-4849
VERIZON CONSTRUCTION MANAGER:	JOHN P. ROMANO (203) 858-5500
ENGINEER CONTACT:	JASON R. MEAD (860) 663-1697 x212

NOTE:
LATITUDE, LONGITUDE & GROUND ELEVATION TAKEN FROM FAA-2C SURVEY PREPARED BY MARTIN SURVEYING ASSOCIATES LLC, DATED MAY 18, 2018.

ABBREVIATION LIST:

AGL =	ABOVE GROUND LEVEL;
AMSL =	ABOVE MEAN SEA LEVEL;
ARL =	ABOVE ROOF LEVEL;
BCLC =	BIT. CONC. LIPPED CURB

LOCATION MAP
SCALE: 1" = 500'

500 0 250 500 1000

(IN FEET)1 inch = 500ft.

REVISIONS:
-REV0: 07/11/17: FOR REVIEW: JRM
-REV1: 06/11/18: REVISED PER REGULATORY COMMENTS: JRM
-REV2: 08/01/18: REVISED PER VZW COMMENTS: JRM
-REV3: 08/07/18: REVISED PER VZW COMMENTS: JRM
-REV4: 12/16/19: REVISED PER VZW COMMENTS: JRM

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE, KILLINGWORTH, CT 06419
PHONE: (860) 663-1697
FAX: (860) 663-0935
WWW.ALLPOINTSTECH.COM

SHEET NUMBER: LE-1

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

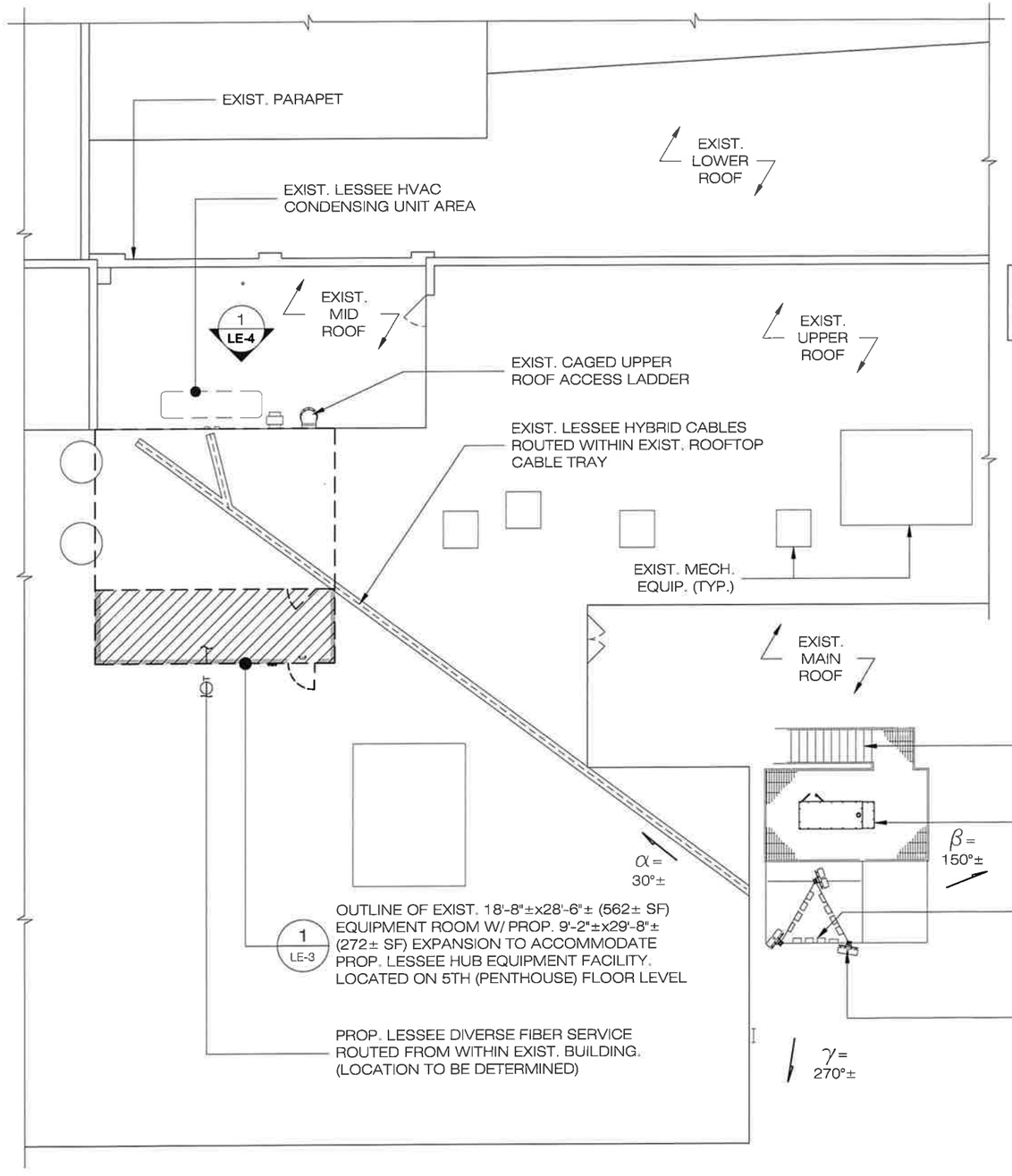
VZW
VZW PROJECT CODE: 20171648057 LC: 467663 CM: JR
VZW FUZE ID: 2463647

APT FILING NUMBER: CT141CRAN8900

TITLE SHEET

DRAWN BY: THK
CHECKED BY: JRM
DATE OF DV: 02/22/17
DATE: 07/11/17

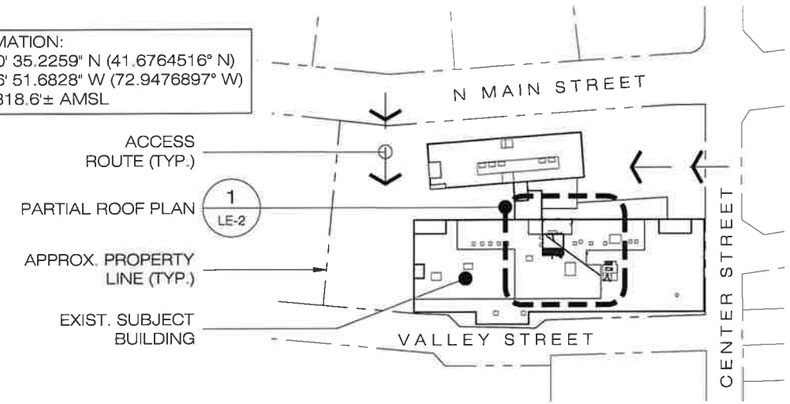
Cellco Partnership d/b/a verizon



NOTES:

1. LEASE EXHIBIT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CONVEY GENERAL INFORMATION PERTAINING TO THE SIZE AND LOCATION OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. FINAL SITE LAYOUT AND FACILITY DESIGN WILL BE CONTINGENT UPON COMPLETION OF A STRUCTURAL VERIFICATION OF THE HOST SUPPORT STRUCTURE AND A SITE SURVEY (WHERE APPLICABLE).
2. PROPOSED UTILITY ROUTING SHOWN IS PRELIMINARY. FINAL UTILITY ROUTING TO BE DETERMINED DURING CONSTRUCTION DOCUMENT PHASE OF THE PROJECT AND WILL BE COORDINATED WITH BUILDING OWNER AND LOCAL UTILITY COMPANY REQUIREMENTS.

SITE INFORMATION:
LAT. 41° 40' 35.2259" N (41.6764516° N)
LONG. 72° 56' 51.6828" W (72.9476897° W)
GRADE EL. 318.6'± AMSL



KEY PLAN
SCALE: 1" = 200'-0"

1 LE-2 PARTIAL ROOF PLAN
SCALE: 1/16" = 1'-0"

16 0 8 16 32
(IN FEET) 1 inch = 16 ft.

REVISIONS:
-REV0: 07/11/17: FOR REVIEW: JRM
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-REV2: 08/01/18: REVISED PER VZW COMMENTS: JRM
-REV3: 08/07/18: REVISED PER VZW COMMENTS: JRM
-REV4: 12/16/19: REVISED PER VZW COMMENTS: JRM

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
WWW.ALLPOINTSTECH.COM
PHONE: (860)-663-1697
FAX: (860)-663-0935

SHEET NUMBER: LE-2

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

VZW
VZW PROJECT CODE: 20171648057 LC: 467663 CM: JR
VZW FUZE ID: 2463647

APT FILING NUMBER: CT141CRAN8900

PARTIAL ROOF PLAN

DATE OF DV: 02/22/17 DRAWN BY: THK
DATE: 07/11/17 CHECKED BY: JRM

Cellco Partnership d/b/a verizon

NOTES:

1. LEASE EXHIBIT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CONVEY GENERAL INFORMATION PERTAINING TO THE SIZE AND LOCATION OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. FINAL SITE LAYOUT AND FACILITY DESIGN WILL BE CONTINGENT UPON COMPLETION OF A STRUCTURAL VERIFICATION OF THE HOST SUPPORT STRUCTURE AND A SITE SURVEY (WHERE APPLICABLE).

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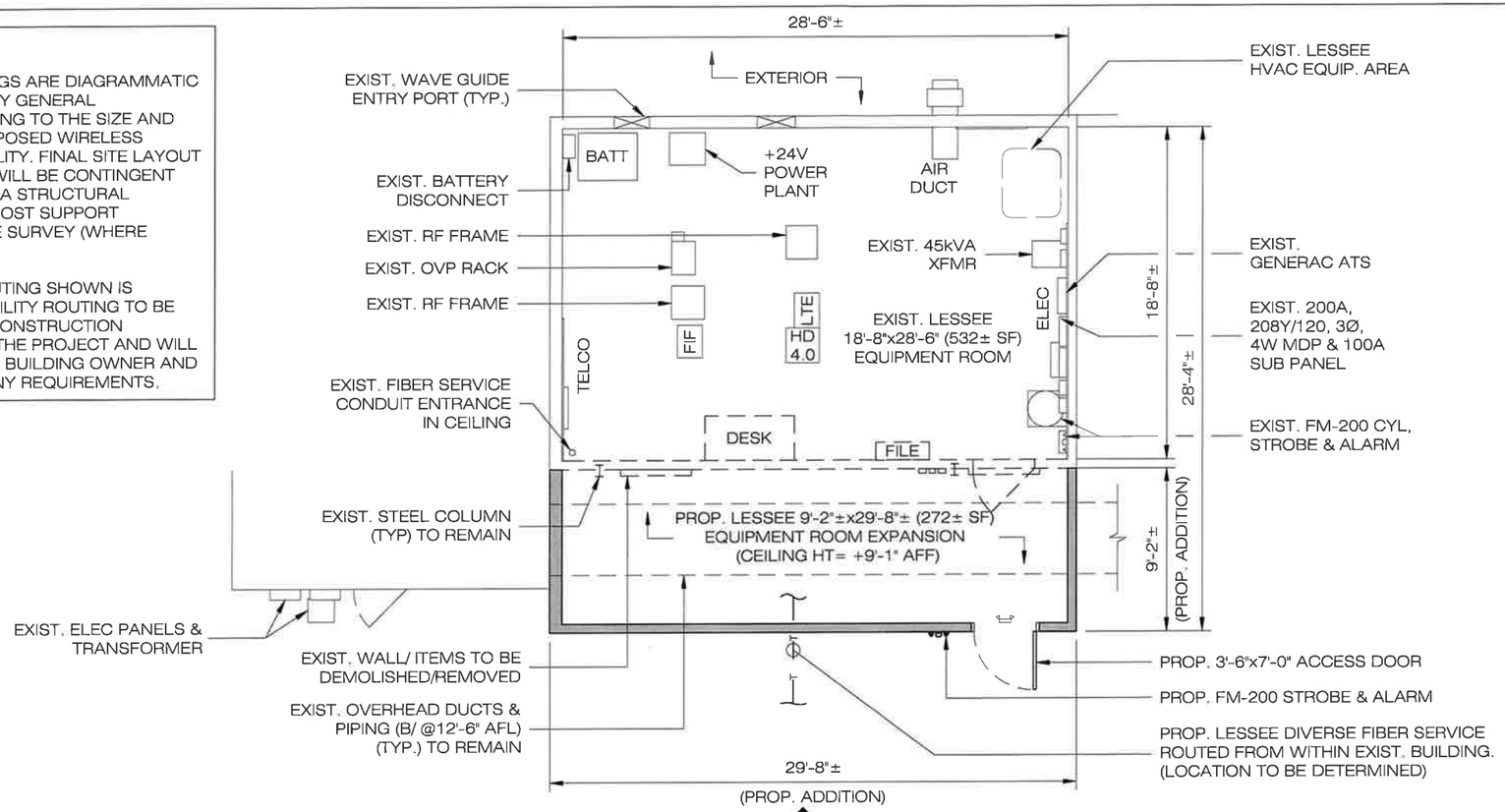
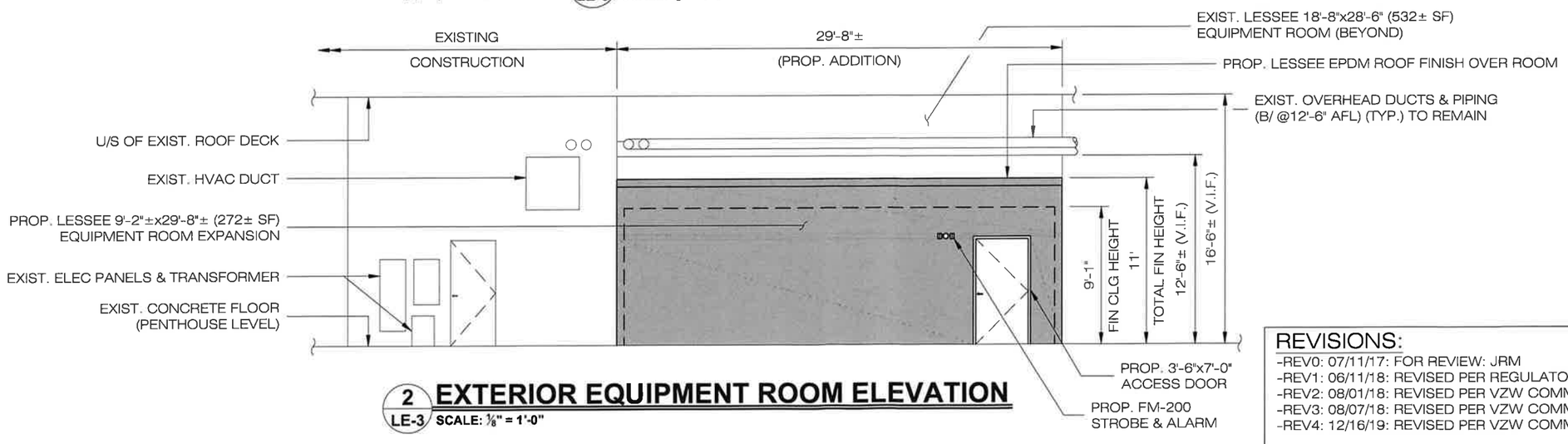


1 EQUIPMENT ROOM PLAN
LE-3 SCALE: 1/8" = 1'-0"



2 EXTERIOR EQUIPMENT ROOM ELEVATION
LE-3 SCALE: 1/8" = 1'-0"

REVISIONS:
-REV0: 07/11/17: FOR REVIEW: JRM
-REV1: 06/11/18: REVISED PER REGULATORY COMMENTS: JRM
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-REV4: 12/16/19: REVISED PER VZW COMMENTS: JRM

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
WWW.ALLPOINTSTECH.COM
PHONE: (860) 663-1697
FAX: (860) 663-0935

SHEET NUMBER: LE-3

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

VZW
VZW PROJECT CODE: 20171648057 LC: 467663 CM: JR
VZW FUZE ID: 2463647

APT FILING NUMBER: CT141CRAN8900

EQUIPMENT ROOM PLAN & EXTERIOR ROOM ELEVATION

DRAWN BY: THK
CHECKED BY: JRM
DATE OF DV: 02/22/17
DATE: 07/11/17

Cellco Partnership d/b/a verizon

NOTES:

1. LEASE EXHIBIT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CONVEY GENERAL INFORMATION PERTAINING TO THE SIZE AND LOCATION OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. FINAL SITE LAYOUT AND FACILITY DESIGN WILL BE CONTINGENT UPON COMPLETION OF A STRUCTURAL VERIFICATION OF THE HOST SUPPORT STRUCTURE AND A SITE SURVEY (WHERE APPLICABLE).

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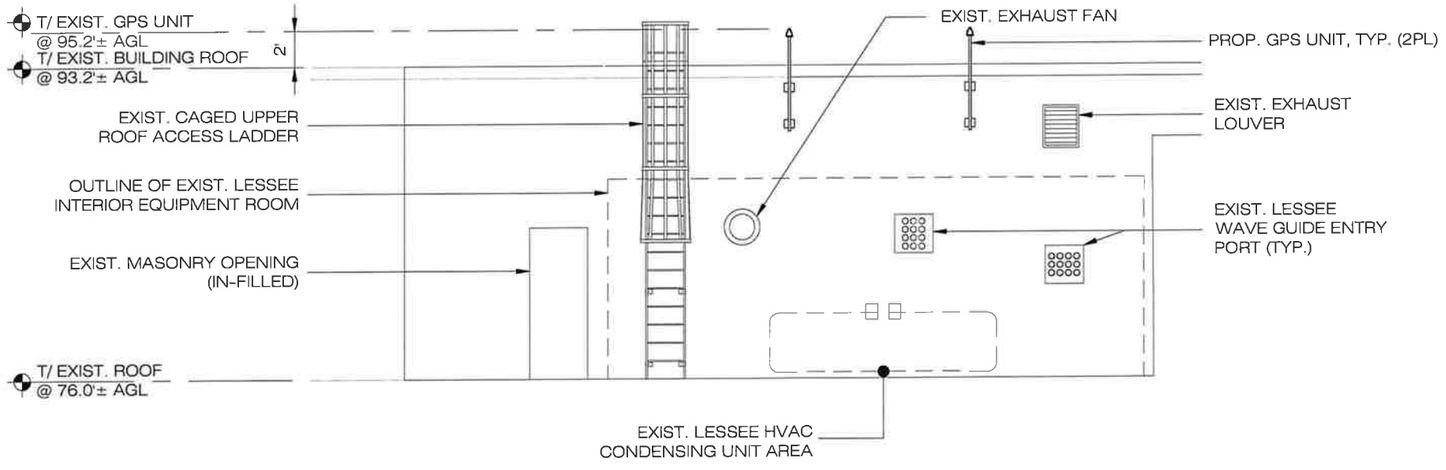

1 LE-4 EXTERIOR EQUIPMENT ROOM ELEVATION

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

REVISIONS:
-REV0: 07/11/17: FOR REVIEW: JRM
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WWW.ALLPOINTSTECH.COM
PHONE: (860)-663-1697
FAX: (860)-663-0935

SHEET NUMBER: LE-4

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011
VZW
VZW PROJECT CODE: 20171648057 LC: 467663 CM: JR
VZW FUZE ID: 2463647

APT FILING NUMBER: CT141CRAN8900

EXTERIOR EQUIPMENT ROOM ELEVATION

DATE OF DV: 02/22/17 DRAWN BY: THK
DATE: 07/11/17 CHECKED BY: JRM

Cellco Partnership d/b/a verizon

SG100 | 9.0L | 100 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

DEMAND RESPONSE READY

Standby Power Rating
100 kW, 125 kVA, 60 Hz

Prime Power Rating
90 kW, 113 kVA, 60 Hz

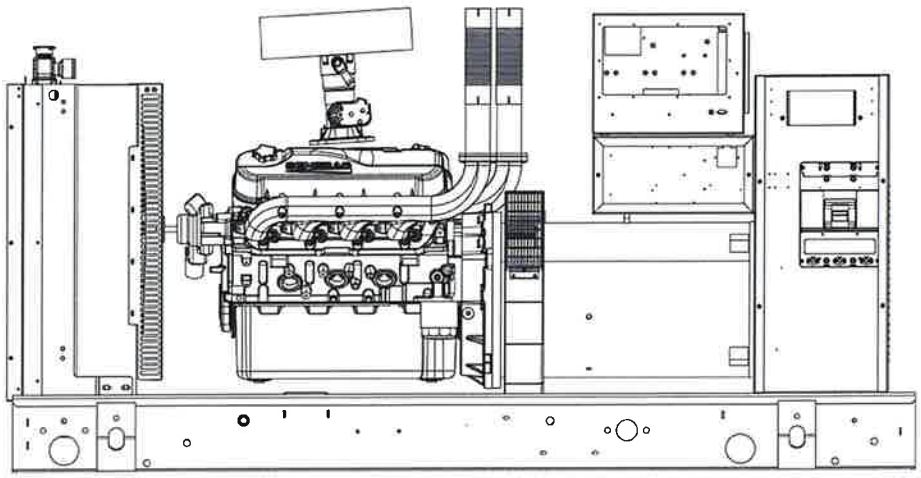


Image used for illustration purposes only

*EPA Certified Prime ratings are not available in the US or its Territories

Codes and Standards

Generac products are designed to the following standards:

UL2200, UL508, UL489

CSA 22.2

BS5514 and DIN 6271

SAE J1349

NFPA 37, 70, 99, 110

NEC700, 701, 702, 708

ISO 3046, 7637, 8528, 9001

NEMA ICS10, MG1, 250, ICS6, AB1

ANSI C62.41

IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Powering Ahead

Generac ensures superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise to ensure reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

SG100 | 9.0L | 100 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

STANDARD FEATURES

DEMAND RESPONSE READY

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Exhaust Silencer

Fuel System

- Fuel Line - NPT Connection
- Primary and Secondary Fuel Shutoff

Cooling System

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

Electrical System

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Brushless Excitation
- Sealed Bearing
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- 1 Year Warranty (Prime Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Only)

ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuation Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM

Digital H Control Panel- Dual 4x20 Display

Program Functions

- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable Logic Controller
- RS-232/485 Communications
- 3-Phase Sensing Digital Voltage Regulator
- 2-Wire Start Capability
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus® Protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- 16 Channel Remote Trending
- 0.2 msec High Speed Remote Trending
- Alarm Information Automatically Annunciated on the Display

Full System Status Display

- Power Output (kW)
- Power Factor
- kW Hours, Total, and Last Run
- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency

Alarms and Warnings

- Oil Pressure
- Coolant Temperature
- Coolant Level
- Low Fuel Pressure Alarm
- Engine Overspeed
- Battery Voltage
- Alarms and Warnings Time and Date Stamped
- Snap Shots of Key Operation Parameters During Alarms and Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

SG100 | 9.0L | 100 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

CONFIGURABLE OPTIONS

DEMAND RESPONSE READY

ENGINE SYSTEM

- Engine Block Heater
- Oil Heater
- Air Filter Restriction Indicator
- Stone Guard (Open Set Only)

ELECTRICAL SYSTEM

- 2.5A UL Battery Charger
- 10A UL Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater
- Tropical Coating
- Permanent Magnet Excitation

CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- 2nd Main Line Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

GENERATOR SET

- GenLink® Communications Software (English Only)
- Extended Factory Testing (3-Phase Only)
- 8 Position Load Center
- IBC Seismic Certification

ENCLOSURE

- Standard Enclosure
- Level 1 Sound Attenuation
- Level 2 Sound Attenuation
- Level 2 Sound Attenuation with Motorized Dampers
- Steel Enclosure
- Aluminum Enclosure
- AC/DC Enclosure Lighting Kit
- Door Alarm Switch

CONTROL SYSTEM

- NFPA 110 Compliant 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Oil Temperature Indicator with Alarm
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- Remote Communication - Modem
- 10A Run Relay
- Ground Fault Indication and Protection Functions
- Damper Kit Auxiliary Contacts

WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM

- Coolant Heater Ball Valves
- Fluid Containment Pan

ALTERNATOR SYSTEM

- 3rd Breaker System

CONTROL SYSTEM

- Spare Inputs (x4) / Outputs (x4)
- Battery Disconnect Switch

GENERATOR SET

- Special Testing
- Battery Box

ENCLOSURE

- Enclosure Ambient Heaters
- Up to 200 MPH Wind Load Rating*

*Consult factory for availability

SG100 | 9.0L | 100 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

DEMAND RESPONSE READY

ENGINE SPECIFICATIONS

General

Make	Generac	
Cylinder #	8	
Type	V	
Displacement - Cu In (L)	540 (8.9)	
Bore - in (mm)	4.49 (114.23)	
Stroke - in (mm)	4.25 (107.15)	
Compression Ratio	10.5:1 - G18	9.9:1 - G26
Intake Air Method	Naturally Aspirated	
Number of Main Bearings	5	
Connecting Rods	Forged Steel	
Cylinder Head	Cast Iron	
Cylinder Liners	No	
Ignition	High Energy	
Piston Type	Aluminum Alloy	
Crankshaft Type	Forged Steel	
Lifter Type	Hydraulic Roller	
Intake Valve Material	Steel Alloy	
Exhaust Valve Material	Stainless Steel	
Hardened Valve Seats	Yes	

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear	
Oil Filter Type	Full-Flow Spin-On Cartridge	
Crankcase Capacity - qts (L)	8.0 (8.5) - G18	10.5 (9.9) w/ Filter - G26

Cooling System

Cooling System Type	Pressurized Closed Recovery	
Fan Type	Pusher	
Fan Speed (rpm)	2,330 - G18	2,385 - G26
Fan Diameter - in (mm)	22 (558)	

Fuel System

Fuel Type	Natural Gas, Propane Vapor
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure in H_2O	11 - 14
Optional Operating Fuel Pressure in H_2O	7 - 11

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 10000016949
Battery Voltage	12 VDC
Ground Polarity	Negative

NOTE: G18 is all engines manufactured before October 12, 2017. G26 is all engines manufactured after October 12, 2017.

ALTERNATOR SPECIFICATIONS

Standard Model	Generac 390 mm
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5% (3-Phase)
Telephone Interference Factor (TIF)	<50

Standard Excitation	Synchronous Brushless
Bearings	Sealed Ball
Coupling	Direct Drive
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.5%

SG100 | 9.0L | 100 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

OPERATING DATA

DEMAND RESPONSE READY

POWER RATINGS - NATURAL GAS/PROPANE VAPOR

	Standby/Demand Response	
Single-Phase 120/240 VAC @1.0pf	100 kW	Amps: 417
Three-Phase 120/208 VAC @0.8pf	100 kW	Amps: 347
Three-Phase 120/240 VAC @0.8pf	100 kW	Amps: 301
Three-Phase 277/480 VAC @0.8pf	100 kW	Amps: 150
Three-Phase 346/600 VAC @0.8pf	100 kW	Amps: 120

STARTING CAPABILITIES (sKVA)

sKVA vs. Voltage Dip

		277/480 VAC									208/240 VAC						
Alternator	kW	10%	15%	20%	25%	30%	35%	Alternator	kW	10%	15%	20%	25%	30%	35%
Standard	100	79	118	157	197	236	275	Standard	100	59	89	118	148	177	206
Upsize 1	130	116	174	232	290	348	406	Upsize 1	130	87	131	174	218	261	305

FUEL CONSUMPTION RATES*

Natural Gas – ft³/hr (m³/hr)	
Percent Load	Standby
25%	494.0 (14.1)
50%	759.6 (21.5)
75%	1,011.1 (28.6)
100%	1,261.4 (35.7)

Propane Vapor – ft³/hr (m³/hr)	
Percent Load	Standby
25%	192.1 (5.4)
50%	290.3 (8.2)
75%	392.6 (11.1)
100%	485.7 (13.8)

* Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Coolant System Capacity	gal (L)	6.0 (22.7)
Coolant Flow	gal/min (L/min)	27.5 (104)
Heat Rejection to Coolant	BTU/hr (kW)	390,000 (114.3)
Inlet Air	cfm (m^3/hr)	5,797 (164.2)
Maximum Operating Ambient Temperature	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin No. 0199270SSD	
Maximum Radiator Backpressure	in H_2O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm (m^3/min)	282 (7.9)

ENGINE

		Standby
Rated Engine Speed	rpm	1,800
Horsepower at Rated kW**	hp	149
Piston Speed	ft/min (m/min)	1,273 (388.2)
BMEP	psi	125

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m^3/min)	866 (24.5)
Maximum Exhaust Backpressure	inHg (kPa)	1.5 (5.1)
Exhaust Temp (Rated Output - Post Catalyst)	°F (°C)	1,200 (649)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.
Please consult a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with ISO3046, BS5514, ISO8528, and DIN6271 standards.
Standby - See Bulletin 0187500SSB
Demand Response - See Bulletin 10000018250.

SG100 | 9.0L | 100 kW

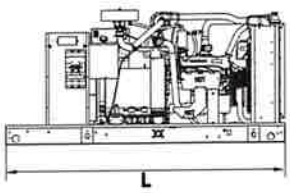
INDUSTRIAL SPARK-IGNITED GENERATOR SET

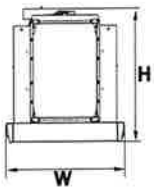
EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

DIMENSIONS AND WEIGHTS*

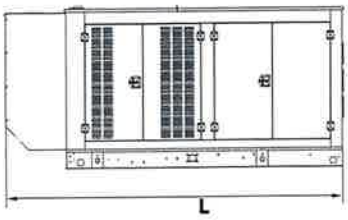
DEMAND RESPONSE READY

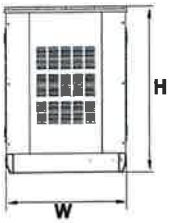




OPEN SET (Includes Exhaust Flex)

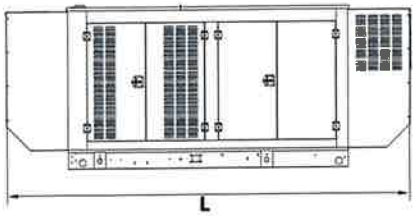
L x W x H in (mm)	94.2 (2,394) x 40.0 (1,016) x 47.5 (1,206)
Weight lbs (kg)	2,064 (936.2)

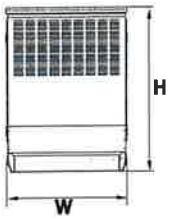




STANDARD ENCLOSURE

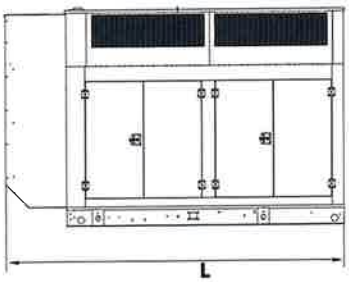
L x W x H in (mm)	111.8 (2,840) x 40.5 (1,027.8) x 56.2 (1,427)
Weight lbs (kg)	Steel: 2,708 (1,228) Aluminum: 2,413 (1,094)

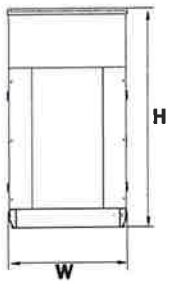




LEVEL 1 ACOUSTIC ENCLOSURE

L x W x H in (mm)	129.4 (3,287) x 40.5 (1,028) x 56.2 (1,427)
Weight lbs (kg)	Steel: 2,798 (1,269.2) Aluminum: 2,355 (1,068)





LEVEL 2 ACOUSTIC ENCLOSURE

L x W x H in (mm)	111.8 (2,840) x 40.5 (1,028) x 68.6 (1,743)
Weight lbs (kg)	Steel: 3,022 (1,370.8) Aluminum: 2,431 (1,103)

* All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.

SPEC SHEET

Generac Power Systems, Inc. | P.O. Box 8 | Waukesha, WI 53189
P: (262) 544-4811

Part No. 0K4291
Rev. E 10/09/17

ATTACHMENT 3

BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011

STRUCTURAL DESIGN CALCULATIONS

FOR

VERIZON WIRELESS
20 ALEXANDER DRIVE
WALLINGFORD, CT 06492

MARCH 14, 2019

PREPARED BY

TECTONIC
ENGINEERING & SURVEYING CONSULTANTS P.C.
1279 ROUTE 300
NEWBURGH, NY 12550

W.O. 8814.27

W.O. 8814.27
BRISTOL CT CRAN
225 NORTH MAIN STREET
BRISTOL, CT 06011
STRUCTURAL DESIGN CALCULATIONS
LEAD SHEET

PURPOSE

Analyze the existing building structure and rooftop platform for the proposed Verizon Wireless CRAN installation.

REFERENCES

1. 2018 Connecticut State Building Code Supplement.
2. Minimum Design Loads for Buildings and Other Structures ASCE 7-10.
3. Tower Structural Analysis report by Centek Engineering dated 6/7/12.

PROCEDURE

1. Determine the design loads.
2. Estimate existing building loads.
3. Check existing rooftop platform members.
4. Perform reaction comparison.
5. Design steel to support batteries.
6. Check floor slab bending and shear.
7. Check floor slab punching shear.

ASSUMPTIONS

1. As noted.

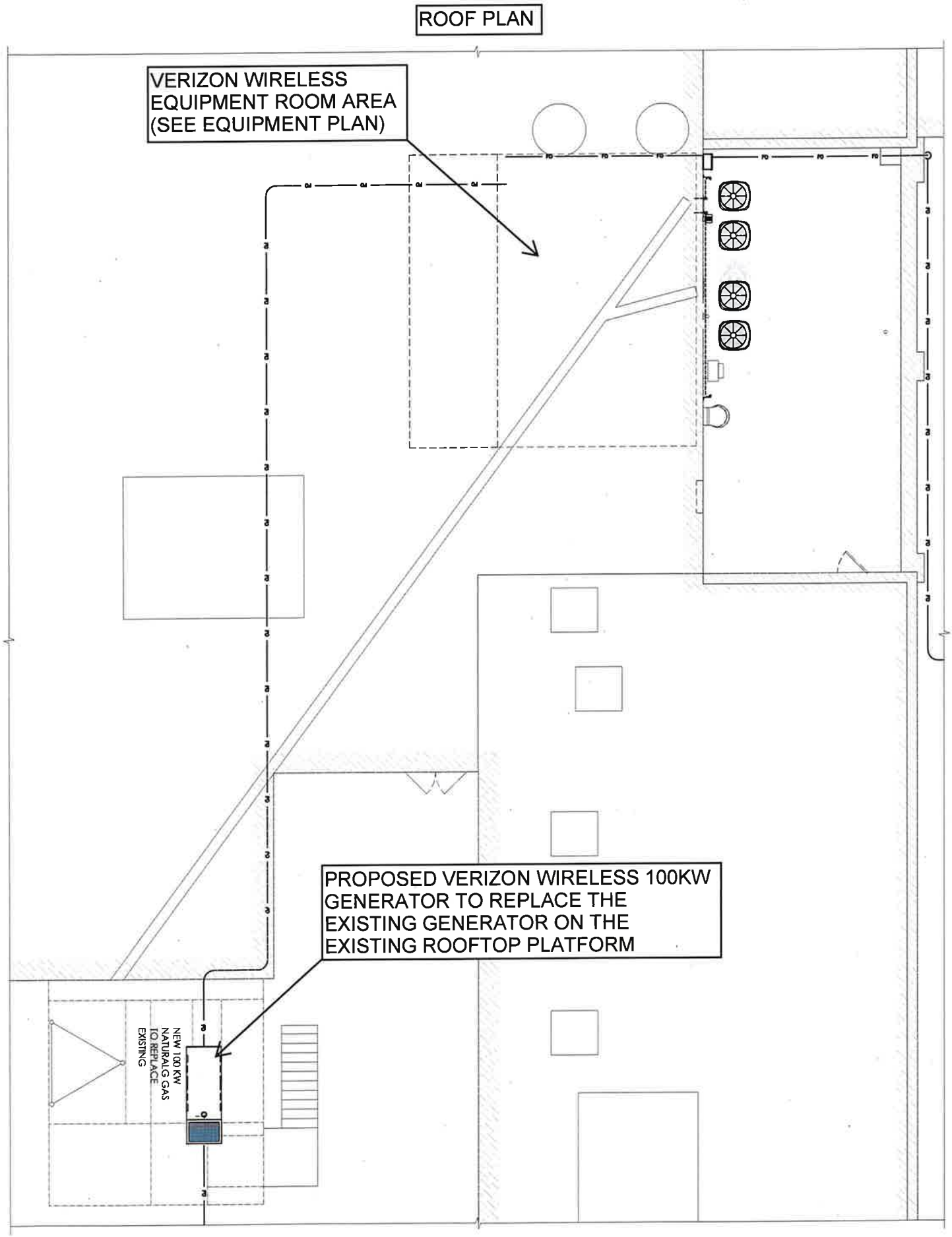
RESULTS / CONCLUSIONS

The existing building structure and rooftop platform are adequate to support the proposed Verizon Wireless CRAN installation.

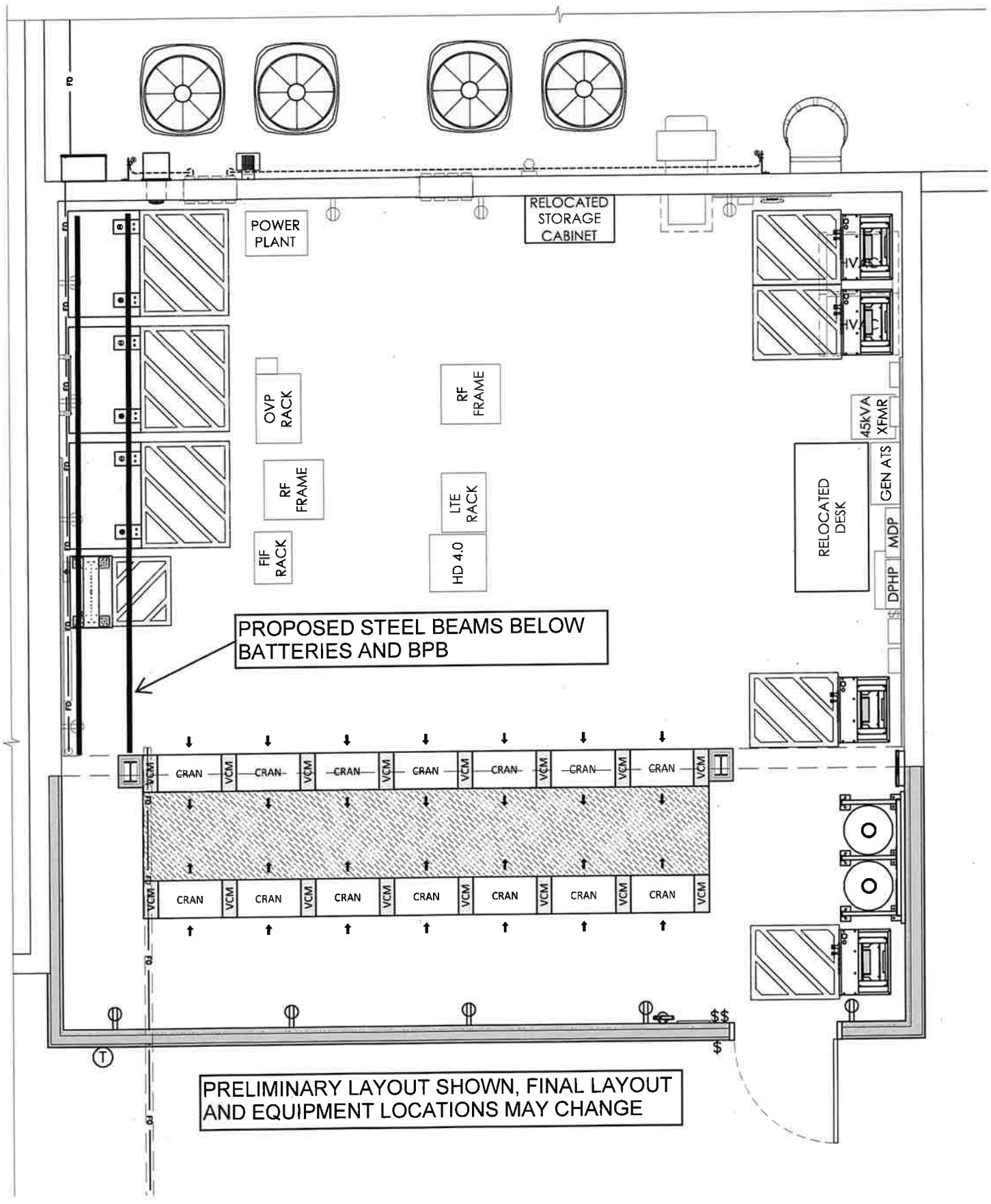
Prepared By: Craig Buechele Date: 03/14/19
Craig Buechele
Senior Engineer

Checked By: Edward Iamiceli Date: 03/14/19
Edward N. Iamiceli, P.E.
Senior Project Manager

ROOF PLAN


VERIZON WIRELESS
EQUIPMENT ROOM AREA
(SEE EQUIPMENT PLAN)
PROPOSED VERIZON WIRELESS 100KW
GENERATOR TO REPLACE THE
EXISTING GENERATOR ON THE
EXISTING ROOFTOP PLATFORM
NEW 100 KW
NATURALG GAS
TO REPLACE
EXISTING

EQUIPMENT PLAN



Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 3/15/2019

Indoor Slab Loading

Slab Thickness =	8	in
Density of Concrete =	150	pcf
Slab Weight =	100	psf
Floor Finish =	5	psf (VCT Tile)
Hung Load =	10	psf
Room Width =	28.58	ft
Room Length =	28	ft

Proposed Verizon Wireless Equipment Load

Equipment	Length (ft)	Width (ft)	Weight (lbs)	Quantity
CRAN Racks	2.17	1.25	1500	14
AHU	1.75	2.20	200	4
Power Plant	2.08	1.50	2000	1
FIF Rack	1.75	1.25	1000	1
OVP Rack	2.33	1.50	1000	1
RF Frame	2.00	2.00	1000	2
HD 4.0	1.92	1.92	1000	1
LTE Rack	2.00	1.50	1000	1
FM 200 Tank	2.08	2.04	300	2
BPB	2.38	1.25	2000	1

The proposed Batteries have been excluded, they are being supported by steel beams spanning column to column

Total Equipment Load =	40	psf
Equipment Room Live Load =	75	psf
Floor Span =	20	ft
Total Floor Load =	230	psf
Maximum Moment on Floor =	**9.219**	**k-ft**
Maximum Shear on Floor =	**2.766**	**kips**

Check Existing Slab for Bending

$\Phi Mn=\Phi*As*fy*(d-a/2)$

Where:

Φ =	0.9	
fy =	60000	psi
f'c =	3000	psi
Width =	12	in
ρmin =	0.0018	(Consider Minimum Steel Area based on temperature and shrinkage)
d =	7.00	in
a =	0.61	in
ΦMn =	**9.34**	**k-ft > Max Moment therefore OK**

Check Deflection

I =	1003	in^4 (Per 12" width)
$E_{concrete}$ =	4500	ksi
E_{steel} =	29000	ksi
Deflection =	**1.17**	**in Therefore the slab deflection is acceptable**
Allowable Delfection L/180 =	**1.33**	**in**

Check Existing Slab for Shear

$\Phi V_c=\Phi*2*\lambda*\sqrt{f'_c}*b_w*d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
b_w =	12	in
d =	7.00	in
ΦV_c =	**6.901**	**kips > Max Shear therefore OK**

Therefore, the existing floor slab is adequate to support the proposed Verizon Wireless installation.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date: 3/15/2019

Outdoor Slab Loading

Slab Thickness =	8	in
Density of Concrete =	150	pcf
Slab Weight =	100	psf
Roofing/Insulation =	10	psf
Hung Load =	10	psf

Proposed Verizon Wireless Equipment Load

Equipment	Length (ft)	Width (ft)	Weight (lbs)	Quantity
HVAC Condensor	3.10	2.85	270	4

Per the Connecticut 2018 supplement and ASCE 7-10

$P_f=0.7C_eC_tIP_g$

P_f= 29.4 psf

But not less than (30 psf)

P_f= 30 psf **GOVERNS**

C_e = 1.0 [Table 7-2]
C_t = 1.2 [Table 7-3]
I = 1.0 [Table 7-4]
P_g = 35 psf [CBC 2018 Supplement Appendix N]

Snow Drift Load (Around Bulkhead)

$\gamma = 0.13xp_g + 14$ =	18.55	pcf	
Height of Bulkhead =	20	ft (Approximately)	
h_b =	1.62	ft	
h_c =	18.38	ft Does not Govern	
	Windward		Length of Roof
$(3/4)h_d$ =	0.94	ft Figure 7-9	l_u = 25 ft (Use Min)
$W = 4h_d$=	4	ft	
$p_d = \gamma h_d$ =	17	psf	
	Leeward		Length of Bulkhead
h_d =	3.48	ft Figure 7-9	l_u = 90 ft
$W = 4h_d$=	**14**	**ft**	**GOVERNS**
$p_d = \gamma h_c$ =	**65**	**psf**	

Roof Span =	20	ft
Total Roof Load =	215	psf
Maximum Moment on Roof =	**8.887**	**k-ft**
Maximum Shear on Roof =	**2.845**	**kips**

Check Existing Slab for Bending

$\Phi Mn=\Phi*As*fy*(d-a/2)$

Where:

Φ =	0.9	
fy =	60000	psi
f'c =	3000	psi
Width =	12	in
ρmin =	0.0018	(Consider Minimum Steel Area based on temperature and shrinkage)
As =	0.31	in^2
d =	7.00	in
a =	0.61	in
ΦMn =	**9.34**	**k-ft > Max Moment therefore OK**

Check Deflection

I =	1003	in^4 (Per 12" width)
$E_{concrete}$ =	4500	ksi
E_{steel} =	29000	ksi
Deflection =	**1.09**	**in Therefore the slab deflection is acceptable**
Allowable Delfection L/180 =	**1.33**	**in**

Check Existing Slab for Shear

$\Phi V_c=\Phi*2*\lambda*\sqrt{f'_c}*b_w*d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
b_w =	12	in
d =	7.00	in
ΦV_c =	**6.901**	**kips > Max Shear therefore OK**

Therefore, the existing roof slab is adequate to support the proposed Verizon Wireless installation.

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/11/19

Proposed Battery Design Loads

Dead Load

	Height (ft)	Width (ft)	Depth (ft)	Weight (lbs)
BPB CABINET	7.94	3.325	2.39	8616

Vertical Force per Connection = **2154** **lbs (4 Points of Connection)**
Beam Spacing = **2** **ft**

Wind Load (Interior)

Per ASCE 7-10

q_z= 16 PSF - Section 29.8 (Minimum Wind Load)

Lateral Force per Connection = **106** **lbs (4 Points of Connection)**
Overturning Force = **351** **lbs (4 Points of Connection)**
Lateral Force (Other Direction) = **152** **lbs (4 Points of Connection)**

Seismic Load

ASCE 13.3-1

ap	1.00	Table 3.6-1
SDS	0.197	Per USGS
Wp	8616	lbs
Rp	2.5	Table 3.6-1
Ip	1.5	Risk Cat IV
z/h	1	(z/h need not exceed 1.0)

[(.4*ap*SDS*Wp)*(1+2(z/h)] / (Rp/Ip)]	Fp	1222	lbs	Equation 13.3-1	Apply to center of gravity
.3*SDS*Ip*Wp	Fp Min	764	lbs		
1.6*SDS*Ip*Wp	Fp Max	4074	lbs		
	Fp (Lateral)	1222	lbs/Unit		
.2*SDS*Wp	Fp (Vertical)	339	lbs/Unit		

Lateral Force per Connection = **306** **lbs (4 Points of Connection)**
Overturning Force = **1213** **lbs (4 Points of Connection)**
Vertical Seismic Force = **85** **lbs (4 Points of Connection)**

By inspection seismic loads govern over wind

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/13/19

Proposed Battery Design Loads

Dead Load

Deka Unigy II AVR125-33 (Typ of 4)	Height (ft)	Width (ft)	Depth (ft)	Weight (lbs)
	8	2.380	1.25	2000

Vertical Force per Connection = 500 lbs (4 Points of Connection)
Beam Spacing = 2 ft

Wind Load (Interior)

Per ASCE 7-10

q_z= 16 PSF - Section 29.8 (Minimum Wind Load)

Lateral Force per Connection = 76 lbs (4 Points of Connection)
Overturning Force = 487 lbs (4 Points of Connection)
Lateral Force (Other Direction) = 80 lbs (4 Points of Connection)

Seismic Load

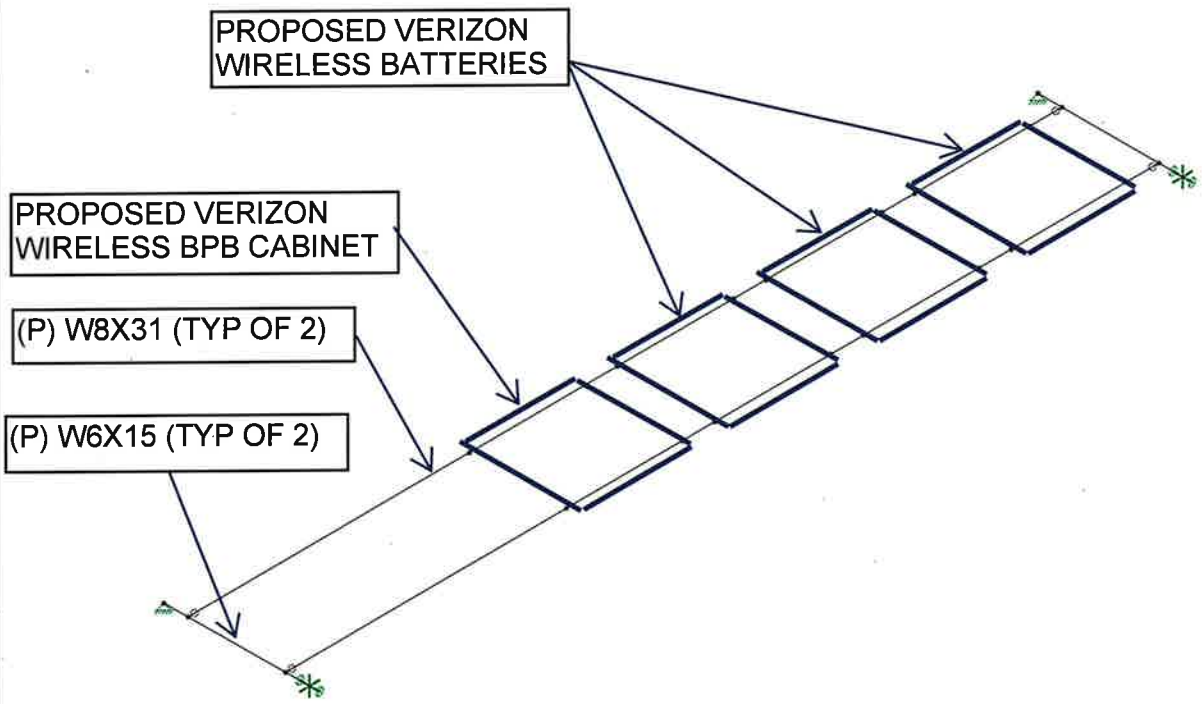
ASCE 13.3-1

ap	1.00	Table 3.6-1 (Batteries)
SDS	0.197	Per USGS
Wp	2000	lbs
Rp	2.5	Table 3.6-1 (Batteries)
Ip	1.5	Risk Cat IV
z/h	1	(z/h need not exceed 1.0)

[(.4*ap*SDS*Wp)*(1+2(z/h)] / (Rp/Ip)]	Fp	284	lbs	Equation 13.3-1	Apply to center of gravity
.3*SDS*Ip*Wp	Fp Min	177	lbs		
1.6*SDS*Ip*Wp	Fp Max	946	lbs		
	Fp (Lateral)	284	lbs/Unit		
.2*SDS*Wp	Fp (Vertical)	79	lbs/Unit		

Lateral Force per Connection = 71 lbs (4 Points of Connection)
Overturning Force = 284 lbs (4 Points of Connection)
Vertical Seismic Force = 20 lbs (4 Points of Connection)

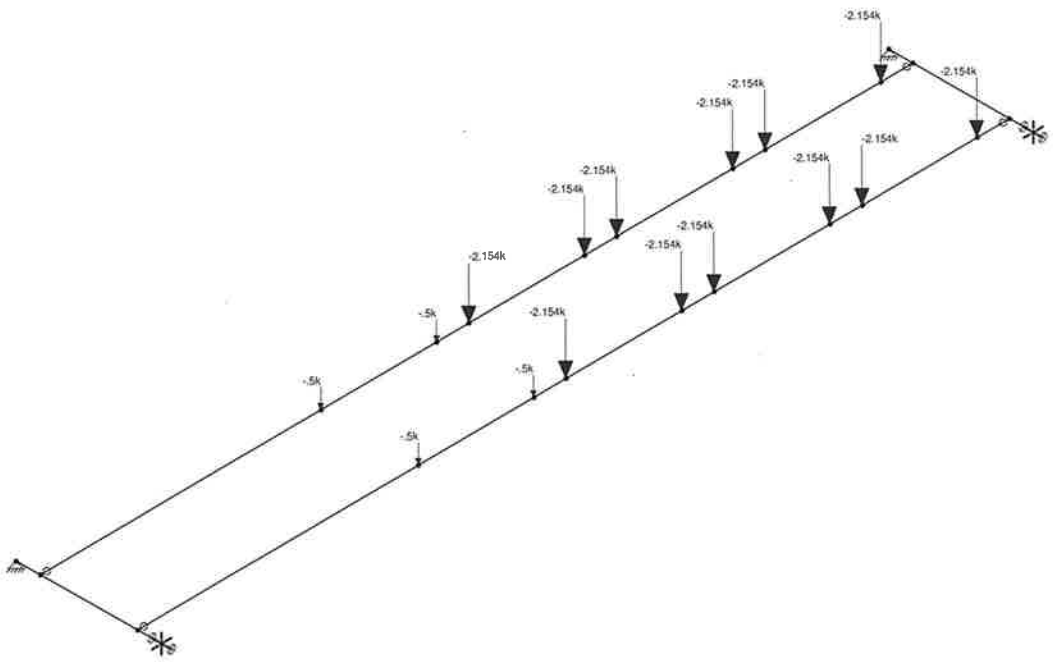
By inspection seismic loads govern over wind



NOTE: THE PROPOSED VERIZON WIRELESS BPB CABINET SHALL BE SUPPORTED WITH L4X4X3/8 ANGLES SPANNING BETWEEN THE PROPOSED W8 BEAMS

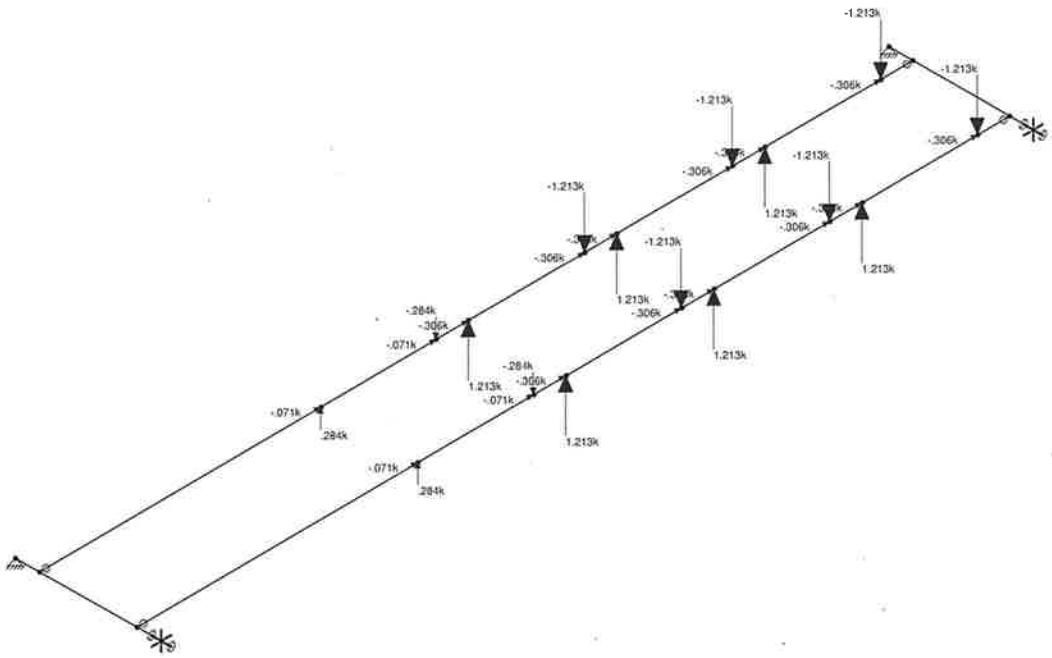
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB		
8814.27 Bristol		8814.27 - Battery Support Steel.r3d



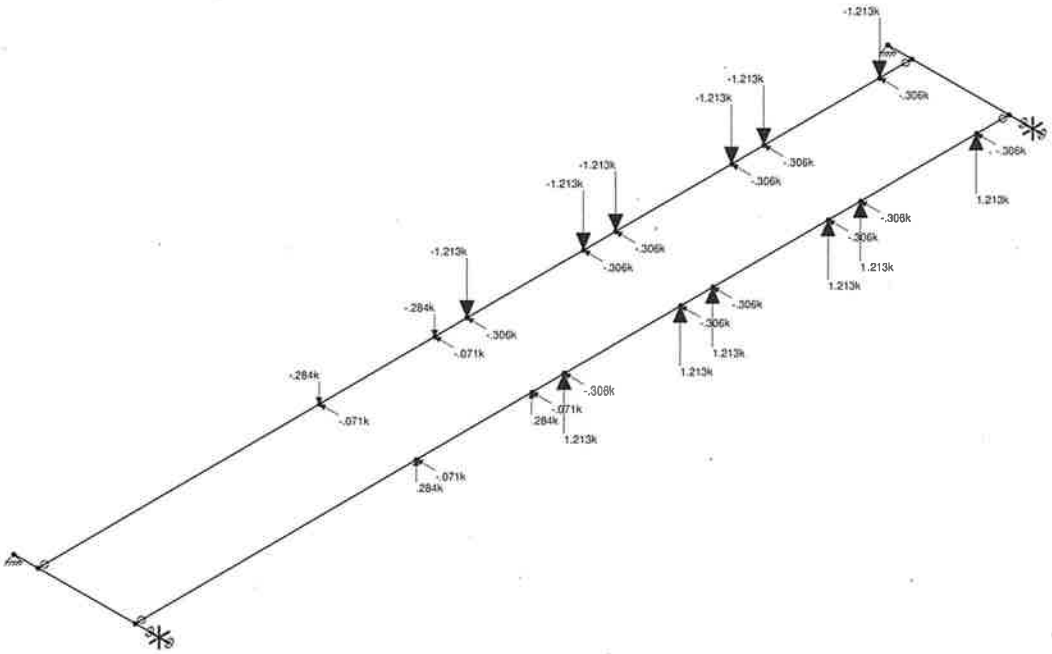
Loads: BLC 1, DL
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB	DEAD LOAD	
8814.27 Bristol		8814.27 - Battery Support Steel.r3d



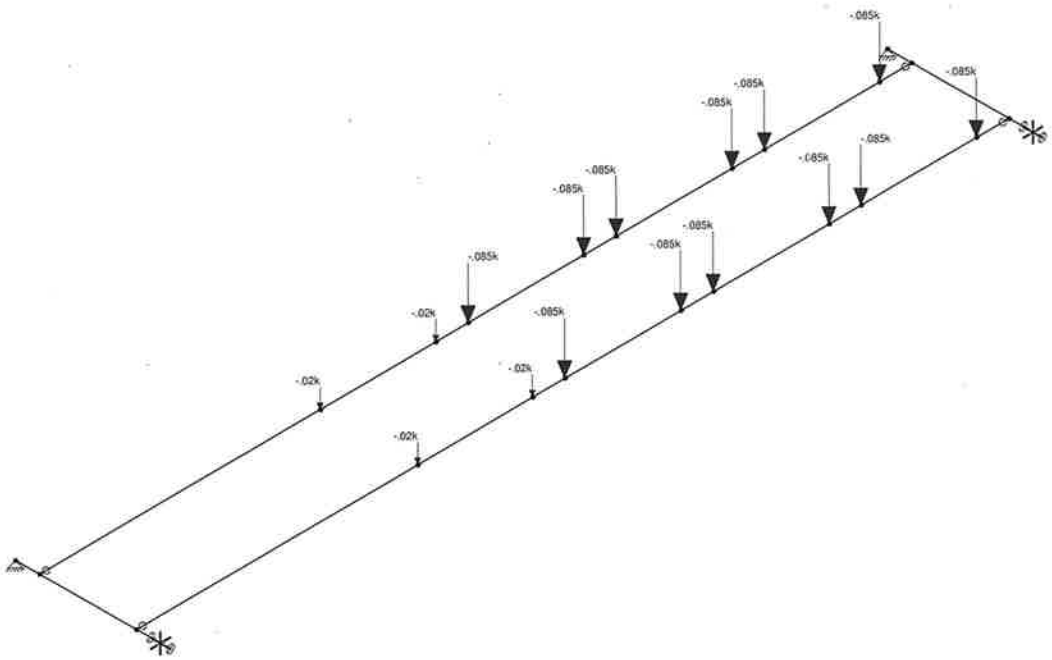
Loads: BLC 3, ELZ
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB	SEISMIC LOAD IN Z DIRECTION	
8814.27 Bristol		8814.27 - Battery Support Steel.r3d



Loads: BLC 2, ELX
Envelope Only Solution

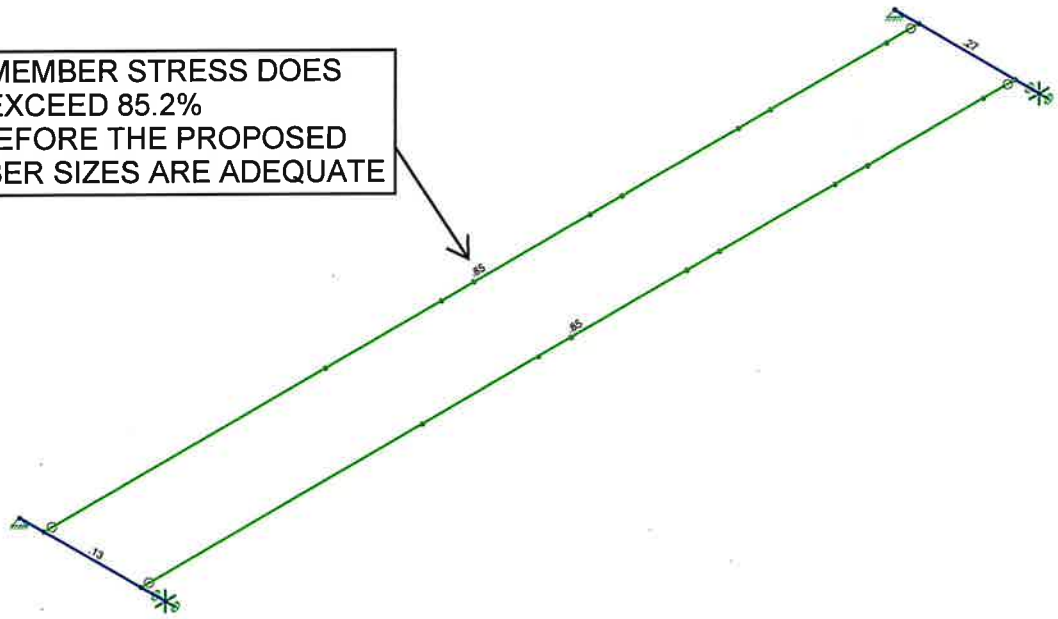
Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB	SEISMIC LOAD IN X DIRECTION	
8814.27 Bristol		8814.27 - Battery Support Steel.r3d



Loads: BLC 4, ELY
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM	
CB	VERTICAL SEISMIC LOAD	
8814.27 Bristol		8814.27 - Battery Support Steel.r3d

MAX MEMBER STRESS DOES NOT EXCEED 85.2% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tectonic Engineering	PROPOSED INDOOR PLATFORM BENDING STRESS	
CB		
8814.27 Bristol		8814.27 - Battery Support Steel.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W8x24	W8x31	Beam	Wide Flange	A992	Typical	9.13	37.1	110	.536
2	W6x15	W6x15	Beam	Wide Flange	A992	Typical	4.43	9.32	29.1	.101

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	DL	DL		-1.05		16				
2	ELX	ELX	-.142			32				
3	ELZ	ELZ			-.142	32				
4	ELY	ELY		-.039		16				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL	Yes	Y		1	1	2		3															
2	DL + 0.7ELX	Yes	Y		1	1	2	.7	3															
3	DL + 0.7ELZ	Yes	Y		1	1	2		3	.7														
4	DL + 0.7ELY	Yes	Y		1	1	2				4	.7												
5	DL + 0.5(ELX + ELZ+ELY)	Yes	Y		1	1	2	.5	3	.5	4	.5												
6	DL + 0.7EL-X	Yes	Y		1	1	2	-.7	3															
7	DL + 0.7EL-Z	Yes	Y		1	1	2		3	-.7														
8	DL + 0.7EL-Y	Yes	Y		1	1	2				4	-.7												
9	DL + 0.5(EL-X + EL-Z)	Yes	Y		1	1	2	-.5	3	-.5	4	-.5												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	21A	max	1.003	2	12.671	6	.77	3	0	1	0	1	0	1
2		min	-1.003	6	7.529	2	-.77	7	0	1	0	1	0	1
3	22A	max	.442	2	5.548	6	.675	3	0	1	0	1	0	1
4		min	-.442	6	3.369	2	-.675	7	0	1	0	1	0	1
5	N23A	max	.442	2	5.548	2	.675	3	0	1	0	1	0	1
6		min	-.442	6	3.369	6	-.675	7	0	1	0	1	0	1
7	N24A	max	1.003	2	12.671	2	.77	3	0	1	0	1	0	1
8		min	-1.003	6	7.529	6	-.77	7	0	1	0	1	0	1
9	Totals:	max	2.889	2	29.92	4	2.889	3						
10		min	-2.889	6	28.314	8	-2.889	7						

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	L...	Shea...	Loc.....	L...	Pnc/o...	Pnt/om...	Mnyy/o...	Mnzz/...	...	Eqn
1	M3	W8x31	.852	11.25	2	.306	18	y	2	118.068	273.353	35.124	71.152	1...	H1-1b
2	M4	W8x31	.852	11.25	6	.306	18	y	6	118.068	273.353	35.124	71.152	1...	H1-1b
3	M5	W6x15	.130	2.5	9	.201	3	y	6	126.793	132.635	10.834	25.364	1...	H1-1b
4	4	W6x15	.272	.5	5	.460	3	y	6	126.793	132.635	10.834	25.364	1...	H1-1b

MAX MEMBER STRESS DOES NOT EXCEED 85.2% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27
Sheet No. of
Calculated By CB Date : 3/13/2019

Check Existing Slab for Shear

Normal Shear

Max Reaction (From RISA) = 19.440 kips LC 2 & Max Positive Shear

$\Phi V_c = \Phi * 2 * \lambda * \sqrt{f'_c} * b_w * d$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
Slab Thickness =	8	in
b_w =	48	in (Consider 48 inch width for analysis based on RISA mesh size)
d =	7.00	in
ΦV_c =	**27.605**	**kips > Max Shear therefore OK**

Punching Shear

Max Reaction (From RISA) = 19.440 kips LC 2 & 6, Nodes 21A and N24A Govern

$$\Phi Vc = \text{Min} \begin{cases} \Phi*(2+4/\beta)*\lambda*\sqrt{f'_c}*b_o*d \\ \Phi*(\alpha_s d/b_o+2)*\lambda*\sqrt{f'_c}*b_o*d \\ \Phi*4*\lambda*\sqrt{f'_c}*b_o*d \end{cases}$$

Where:

Φ =	0.75	
f'c =	3000	psi
λ =	1.0	
α_s =	40.0	(interior)
β =	2.0	
Slab Thickness =	8	in
b_o =	84	in (Consider Perimeter of Steel Support)
d =	7.00	in
ΦV_c =	**96.618**	**kips > Max Shear therefore OK**

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 03/11/19
Checked By Date :

Design Loads for Generator Platform

1 - Dead Load

Number of Units	Cabinet Type	Length (in.)	Width (in.)	Height (in.)	Weight (lbs)	Total Weight	
1	SG100 Generator	111.8	40.5	68.6	3022	3022	lbs
						3022	lbs

Length on Loading Strip = 7.33 ft
Support Beam Spacing = 2.83 ft
Uniform Distributed Load = **207** **lbs/ft**

For Grating, use **10 psf**

2 - Live Load

Per the Connecticut 2018 supplement, the live load for elevated platforms is **60 psf.**

3- Snow Load

Per the Connecticut 2018 supplement and ASCE 7-10

$P_f=0.7C_eC_tIP_g$

P_f= 29.4 psf

But not less than (30 psf)

P_f= 30 psf **GOVERNS**

C_e = 1.0 [Table 7-2]
C_t = 1.2 [Table 7-3]
I = 1.0 [Table 7-4]
P_g = 35 psf [CBC 2018 Supplement] Appendix N

4- Wind Load

Per ASCE 7-10 Chapters 26 & 29

z= 80 FT (Approx. T/Generator)
V= 97 mph 3 Second Gust (Risk Category IV) [CBC 2018 Supplement Appendix N]
Exposure: C
α= 9.5 Table 26.91
Z_g= 900 ft Table 26.91
K_z= 1.208 Table 29.3-1
K_{zt}= 1.00 Section 26.8.2
K_d= 0.90 Section 26.6
q_z= 26.19 psf Section 29.3.2

Per on ASCE7-10 Section 29.5 (Other Structures)

G= 0.85 Section 26.9
C_f= 2.0 Figure 29.5-1 through 29.5-3
F= 45 psf

Wind Pressure= **45** psf

Uplift Force Per Support Beam= 520 lbs/ft
Wind Force Per Support Beam= 129 lbs/ft

Lateral force in other direction= 435 lbs

Wind Load on Members		
W6	23	lbs/ft
W8	30	lbs/ft
W12	45	lbs/ft

CONVERT TOWER WIND PRESSURE FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)

Tectonic
PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27 Bristol
Sheet No. of
Calculated By CB Date : 03/14/19
Checked By Date :

CALCULATION OF WIND LOAD ON ANTENNA - REV-F

Antenna Information:

Model No. =	REV F CONVERSION	
Height =	12.0	in
Width =	12.0	in
Depth =	12.0	in
Area, Aa =	1.00	ft2
Weight =	0.0	lbs
Antenna Centerline =	112.5	ft +/-

Geographic Information:

County: Hartford County, CT

Wind Speed =	80	mph	(Per Rev F)

Supporting Pipe Information:

Pipe Length =	0	ft
Pipe Size =	1/2 PIPE	in
Width =	0.84	in
Area =	0.25	in
Weight =	0.85	lb/ft

Design Parameters:

Per, TIA/EIA-222-F-1996:

Design Wind Load, $F = q_z G_H (C_A A_A)$

$q_z =$	23.26	psf
$K_z =$	1.42	ft
$G_H =$	1.15	*** Existing Mount**
Antenna $C_A =$	1.40	
Pipe $C_A =$	0.8	

Normal Force on Antenna, $F_N =$	**37**	**lbs**
Transverse Force on Antenna, $F_T =$	**37**	**lbs**
Force on Pipe $F_A =$	**1**	**lbs/ft**

CONVERT TOWER WIND PRESSURE FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)

DESIGN OF ANTENNA MOUNT

(PER ANSI/TIA-222-G-2005) Rev 1 6/12/2006

Job number 8814.27 Bristol Calculated by: CB Date: 3/14/2019
Sheet 1 Of 1 Checked by: Date:

(TYPICAL FOR ALL SECTORS)

Basic Wind (3 Second Gust) — Hartford County, CT

Without Ice	V	97	MPH
With Ice	Vi	50	MPH
Design Ice Thickness	ti	0.75	Inches
Height above ground level at base of the structure	z	112.50	Feet

Per CD's Conservative

Antenna Information — **REV F Conversion**

Weight	Wt	0	LBS	Type	Flat						
Height	h	12	Inches	No Ice		With Ice					
Width	w	12	Inches	Aa (Normal)	1.00	FT²	Aa (Normal)	1.83	FT²	A_{ANR} (Normal)	0.83 FT²
Depth	d	12	Inches	Aa (Trans)	1.00	FT²	Aa (Trans)	1.83	FT²	A_{ANR} (Trans)	0.83 FT²
Wind Area Normal Per Manuf.			FT²	Ca (Normal)	1.20		Canf (Normal)	1.20		Canr (Normal)	0.7
Wind Area Trans			FT²	Ca (Trans)	1.20		Canf (Trans)	1.20		Canr (Trans)	0.7

Mount Information

Pipe Dia	D	NONE	Inches	Ap	0.00	Ap	0.12
Pole Width		0.00	Inches	Cf	1.20	Cf	1.20
Length	L	0	Feet				
Pole Wt	W	0	LBS/FT				

Structure Class	3	High hazard or Essential facility
Exposure Category	C	Open terrain

Minimum value of Kz	Kzmin	0.85	
Power law exponent	α	9.5	
Nominal height of atmospheric boundary layer	Zg	900	Feet
	Ke	1	
	Gh	1	
	Kzt	1	For antennas on a Building
	Kd	0.95	Constant for antennas on roof

Importance Factor — Wind only		1.15
Wind with ice		1
Ice thickness		1.25
Kz Calculated		1.30
Use for Design		1.30
Kzi Calculated		1.13
Use for Design		1.13
Design Ice Thickness	t_z	2.12 Inch

Eff. Projected Area of the Antenna	$(EPA)_N$	1.20	FT²	$(EPA)_T$	1.20	FT²
Eff. Projected Area of the Antenna (with ice)		1.78	FT²		1.78	FT²
Eff. Projected Area of the Mounting Pipe	$(EPA)_{FN}$	0.00	FT²	$(EPA)_{FT}$	0.00	FT²
Eff. Projected Area of the Mounting Pipe (with ice)		0.15	FT²		0.15	FT²

Weight of ice around the Antenna	W_N	12.38	LBS
Weight of ice around the pipe	W_{FN}	1.94	LBS

Wind Pressure $q_z = 0.00256.Kz.Kzt.Kd.V^2$

No Ice	34.14	PSF
With Ice	6.87	PSF

Design Wind Force on Appurtenances

Wind Normal to the Antenna

On Antenna	$F_A = q_z G_h (EPA)_N$	F_A	41	LBS
On Mounting pipe	$F_A = q_z G_h (EPA)_{FN}$	F_A	0	LBS
On Antenna (with Ice)		F_{Ai}	12	LBS
On Mounting pipe (with Ice)		F_{Ai}	1	LBS

Wind Transverse to the Antenna

On Antenna	$F_A = q_z G_h (EPA)_T$	F_A	41	LBS
On Mounting pipe	$F_A = q_z G_h (EPA)_{FT}$	F_A	0	LBS
On Antenna (with Ice)		F_{Ai}	12	LBS
On Mounting pipe (with Ice)		F_{Ai}	1	LBS

CONVERSION FACTOR:
41PSF/37PSF = 1.108

USED FOR DESIGN:

	Wind (Lateral) LBS	Weight LBS	
On Antenna	41	0	
On Mounting Pipe	0	0	lb/ft
On Antenna (with ice)	12	40	
On Mounting pipe (with ice)	1	0	lb/ft

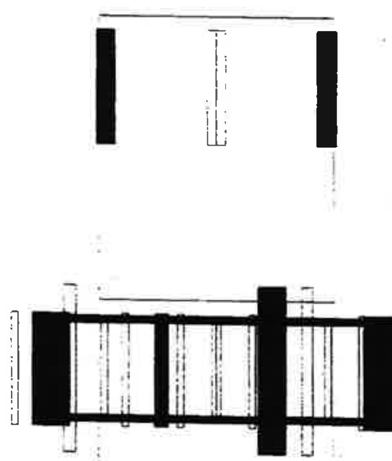
Section	T1	T2	T3	
Legs	P2.5x.203			
Leg Grade	A572-50			
Diagonals	L1 1/2x1 1/2x1/8	L1 1/2x1 1/2x1/8	L2x2x3/16	
Diagonal Grade	A36			
Top Girts	L1 1/2x1 1/2x1/8			
Face Width (ft)	8.5625			
# Panels @ (ft)	8 @ 5			
Weight (K)	0.4	0.4	1.0	1.7

112.5 ft

102.5 ft

92.5 ft

72.5 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80080-4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80063/4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	48"x6"x8" Panel (Verizon - Existing)	100
LPA-171063-8CF (Verizon - Proposed)	110	BXA-70063/6CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80063-4CF (Verizon - Proposed)	100
LPA-171063-8CF (Verizon - Proposed)	110	LPA-80080/4CF (Verizon - Proposed)	100
LPA-80080/4CF (Verizon - Proposed)	100	48"x6"x8" Panel (Verizon - Existing)	100
48"x6"x8" Panel (Verizon - Existing)	100	13-ft Wireless Frame (Verizon - Proposed)	100
BXA-70063/6CF (Verizon - Proposed)	100	13-ft Wireless Frame (Verizon - Proposed)	100
LPA-80080-4CF (Verizon - Proposed)	100	13-ft Wireless Frame (Verizon - Proposed)	100
BXA-70063/6CF (Verizon - Proposed)	100		

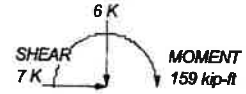
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

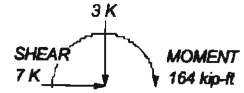
TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. Weld together tower sections have flange connections.
5. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
6. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
7. Welds are fabricated with ER-70S-6 electrodes.
8. TOWER RATING: 95.3%

MAX. CORNER REACTIONS AT BASE:
DOWN: 23 K
UPLIFT: -20 K
SHEAR: 4 K



TORQUE 2 kip-ft
69 mph WIND - 0.5000 in ICE



TORQUE 2 kip-ft
REACTIONS - 80 mph WIND

TOWER REACTIONS TAKEN FROM STRUCTURAL ANALYSIS BY CENTEK ENGINEERING DATED 6/7/12

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: 12001.CO41 - Bristol			
Project: 40' Lattice Tower - 32 Valley St. Bristol, CT			
Client: Verizon Wireless	Drawn by: TJL	App'd:	
Code: TIA/EIA-222-F	Date: 06/07/12	Scale: NTS	
Path: [illegible]		Dwg No. E-1	

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	13	22.23	2.93	-1.82
	Max. H_x	13	22.23	2.93	-1.82
	Max. H_z	20	-15.35	-2.93	2.25
	Min. Vert	5	-19.45	-2.73	1.70
	Min. H_x	22	-17.48	-3.42	2.08
	Min. H_z	11	18.99	2.26	-1.89
Leg B	Max. Vert	7	22.32	-2.91	-1.85
	Max. H_x	32	-17.23	3.40	2.10
	Max. H_z	34	-15.10	2.90	2.30
	Min. Vert	15	-19.37	2.72	1.73
	Min. H_x	7	22.32	-2.91	-1.85
	Min. H_z	9	19.08	-2.23	-1.95
Leg A	Max. Vert	19	23.38	0.04	2.60
	Max. H_x	14	1.21	1.03	0.03
	Max. H_z	2	23.17	0.04	3.54
	Min. Vert	10	-19.87	-0.04	-3.31
	Min. H_x	6	1.21	-1.03	0.03
	Min. H_z	27	-17.18	-0.03	-4.07

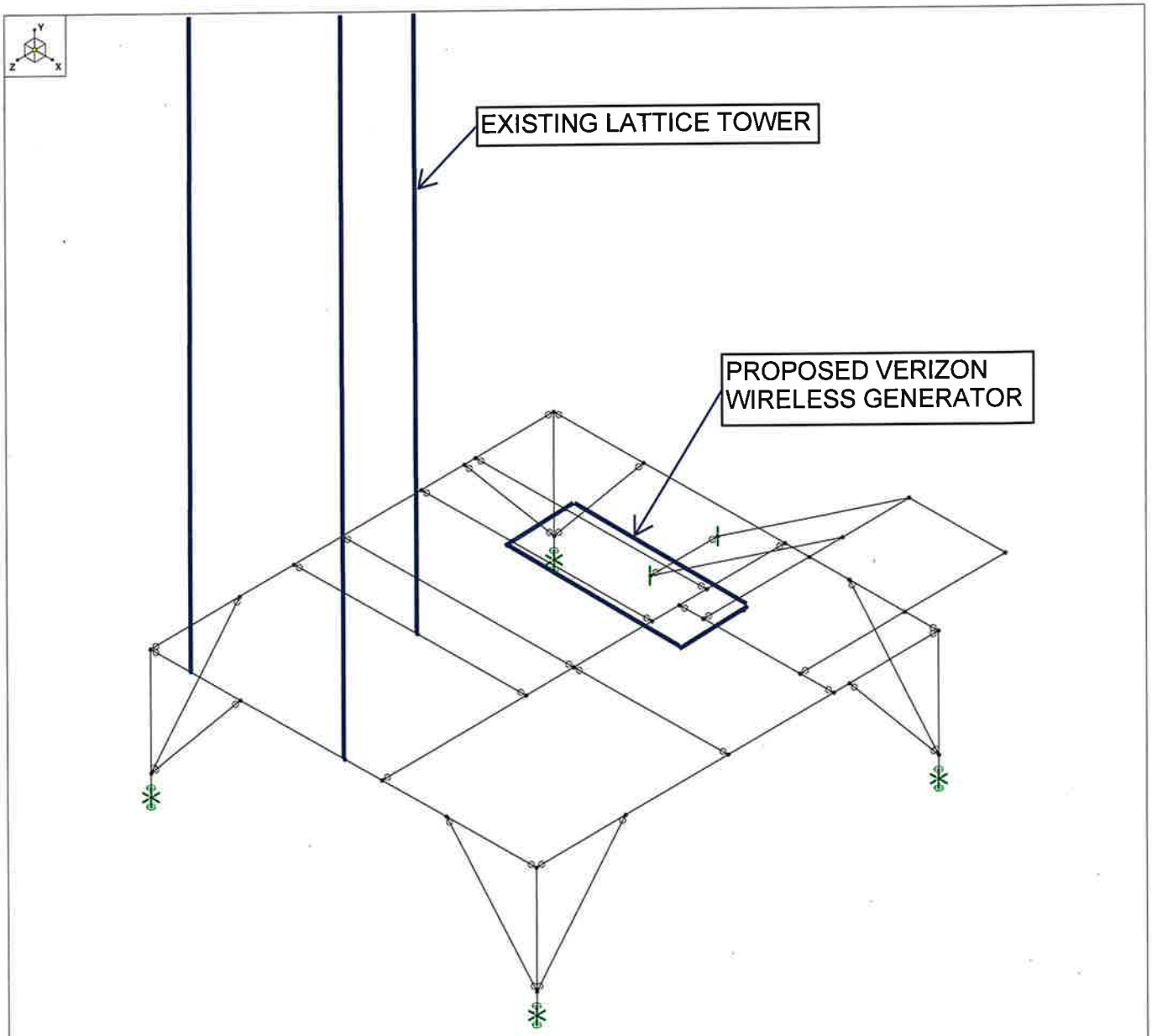
Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	3.17	0.00	0.00	-1.10	-0.35	0.00
Dead+Wind 0 deg - No Ice	3.17	0.00	-6.74	-164.01	-0.35	0.57
Dead+Wind 30 deg - No Ice	3.17	3.12	-5.62	-137.87	-75.96	-0.46
Dead+Wind 45 deg - No Ice	3.17	4.39	-4.56	-112.18	-106.70	-0.91
Dead+Wind 60 deg - No Ice	3.17	5.34	-3.20	-79.23	-129.88	-1.30
Dead+Wind 90 deg - No Ice	3.17	6.25	-0.00	-1.10	-151.58	-1.84
Dead+Wind 120 deg - No Ice	3.17	5.63	3.37	80.35	-135.64	-1.98
Dead+Wind 135 deg - No Ice	3.17	4.39	4.56	109.98	-106.70	-1.66
Dead+Wind 150 deg - No Ice	3.17	3.12	5.62	135.66	-75.96	-1.38
Dead+Wind 180 deg - No Ice	3.17	0.00	6.41	155.16	-0.35	-0.52
Dead+Wind 210 deg - No Ice	3.17	-3.12	5.62	135.66	75.27	0.46
Dead+Wind 225 deg - No Ice	3.17	-4.39	4.56	109.98	106.00	0.91
Dead+Wind 240 deg - No Ice	3.17	-5.63	3.37	80.35	134.94	1.41
Dead+Wind 270 deg - No Ice	3.17	-6.25	-0.00	-1.10	150.88	1.84
Dead+Wind 300 deg - No Ice	3.17	-5.34	-3.20	-79.23	129.18	1.82
Dead+Wind 315 deg - No Ice	3.17	-4.39	-4.56	-112.18	106.00	1.66
Dead+Wind 330 deg - No Ice	3.17	-3.12	-5.62	-137.87	75.27	1.38
Dead+Ice+Temp	5.97	-0.00	0.00	-3.44	-1.08	0.00
Dead+Wind 0 deg+Ice+Temp	5.97	0.00	-6.66	-158.64	-1.08	0.56
Dead+Wind 30 deg+Ice+Temp	5.97	3.04	-5.43	-131.60	-72.50	-0.43
Dead+Wind 45 deg+Ice+Temp	5.97	4.25	-4.38	-107.24	-101.24	-0.85
Dead+Wind 60 deg+Ice+Temp	5.97	5.15	-3.07	-76.23	-122.71	-1.20

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 90 deg+Ice+Temp	5.97	6.08	0.00	-3.44	-143.93	-1.73
Dead+Wind 120 deg+Ice+Temp	5.97	5.61	3.33	74.16	-131.04	-1.96
Dead+Wind 135 deg+Ice+Temp	5.97	4.25	4.38	100.36	-101.24	-1.55
Dead+Wind 150 deg+Ice+Temp	5.97	3.04	5.43	124.73	-72.50	-1.30
Dead+Wind 180 deg+Ice+Temp	5.97	0.00	6.13	142.15	-1.08	-0.48
Dead+Wind 210 deg+Ice+Temp	5.97	-3.04	5.43	124.73	70.35	0.43
Dead+Wind 225 deg+Ice+Temp	5.97	-4.25	4.38	100.36	99.08	0.85
Dead+Wind 240 deg+Ice+Temp	5.97	-5.61	3.33	74.16	128.89	1.40
Dead+Wind 270 deg+Ice+Temp	5.97	-6.08	0.00	-3.44	141.77	1.73
Dead+Wind 300 deg+Ice+Temp	5.97	-5.15	-3.07	-76.23	120.55	1.68
Dead+Wind 315 deg+Ice+Temp	5.97	-4.25	-4.38	-107.24	99.08	1.55
Dead+Wind 330 deg+Ice+Temp	5.97	-3.04	-5.43	-131.60	70.35	1.30
Dead+Wind 0 deg - Service	3.17	0.00	-2.63	-64.74	-0.35	0.22
Dead+Wind 30 deg - Service	3.17	1.22	-2.20	-54.53	-29.89	-0.18
Dead+Wind 45 deg - Service	3.17	1.71	-1.78	-44.49	-41.89	-0.36
Dead+Wind 60 deg - Service	3.17	2.09	-1.25	-31.62	-50.95	-0.51
Dead+Wind 90 deg - Service	3.17	2.44	0.00	-1.10	-59.42	-0.72
Dead+Wind 120 deg - Service	3.17	2.20	1.32	30.72	-53.19	-0.77
Dead+Wind 135 deg - Service	3.17	1.71	1.78	42.29	-41.89	-0.65
Dead+Wind 150 deg - Service	3.17	1.22	2.20	52.32	-29.89	-0.54
Dead+Wind 180 deg - Service	3.17	0.00	2.50	59.94	-0.35	-0.20
Dead+Wind 210 deg - Service	3.17	-1.22	2.20	52.32	29.19	0.18
Dead+Wind 225 deg - Service	3.17	-1.71	1.78	42.29	41.19	0.36
Dead+Wind 240 deg - Service	3.17	-2.20	1.32	30.72	52.50	0.55
Dead+Wind 270 deg - Service	3.17	-2.44	0.00	-1.10	58.73	0.72
Dead+Wind 300 deg - Service	3.17	-2.09	-1.25	-31.62	50.25	0.71
Dead+Wind 315 deg - Service	3.17	-1.71	-1.78	-44.49	41.19	0.65
Dead+Wind 330 deg - Service	3.17	-1.22	-2.20	-54.53	29.19	0.54

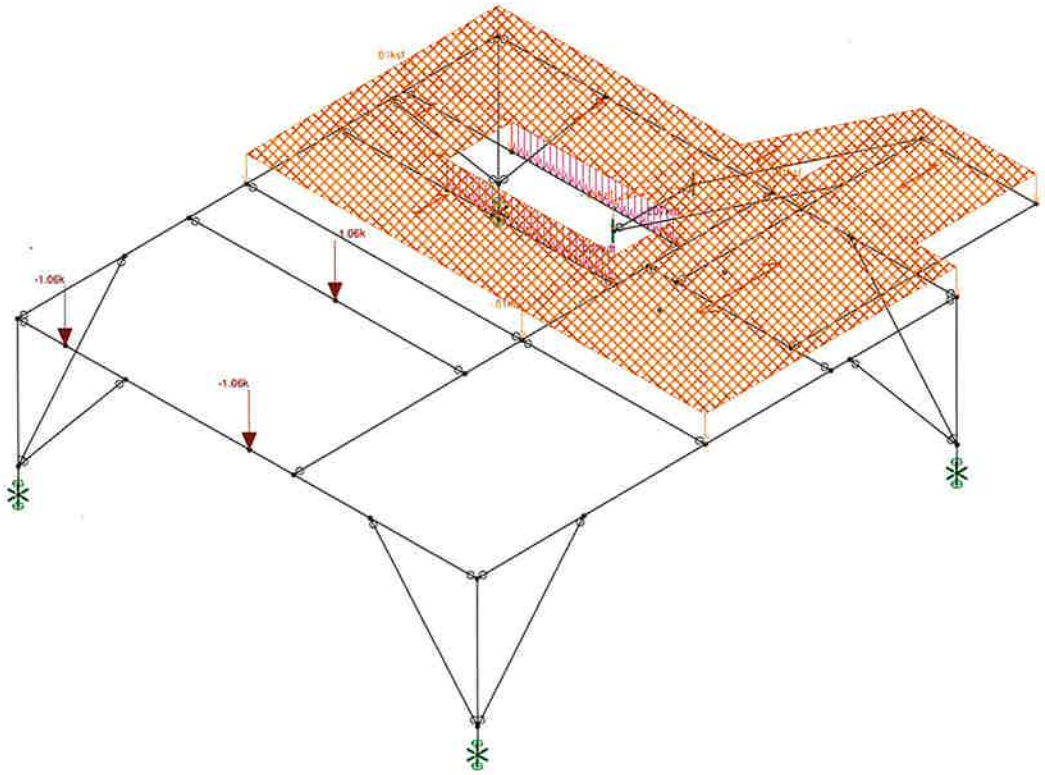
Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-3.17	0.00	0.00	3.17	0.00	0.000%
2	0.00	-3.17	-6.74	-0.00	3.17	6.74	0.000%
3	3.12	-3.17	-5.62	-3.12	3.17	5.62	0.000%
4	4.39	-3.17	-4.56	-4.39	3.17	4.56	0.000%
5	5.34	-3.17	-3.20	-5.34	3.17	3.20	0.000%
6	6.25	-3.17	0.00	-6.25	3.17	0.00	0.000%
7	5.63	-3.17	3.37	-5.63	3.17	-3.37	0.000%
8	4.39	-3.17	4.56	-4.39	3.17	-4.56	0.000%
9	3.12	-3.17	5.62	-3.12	3.17	-5.62	0.000%
10	0.00	-3.17	6.41	-0.00	3.17	-6.41	0.000%
11	-3.12	-3.17	5.62	3.12	3.17	-5.62	0.000%
12	-4.39	-3.17	4.56	4.39	3.17	-4.56	0.000%
13	-5.63	-3.17	3.37	5.63	3.17	-3.37	0.000%
14	-6.25	-3.17	0.00	6.25	3.17	0.00	0.000%
15	-5.34	-3.17	-3.20	5.34	3.17	3.20	0.000%
16	-4.39	-3.17	-4.56	4.39	3.17	4.56	0.000%
17	-3.12	-3.17	-5.62	3.12	3.17	5.62	0.000%
18	0.00	-5.97	0.00	0.00	5.97	-0.00	0.000%
19	0.00	-5.97	-6.66	-0.00	5.97	6.66	0.000%
20	3.04	-5.97	-5.43	-3.04	5.97	5.43	0.000%
21	4.25	-5.97	-4.38	-4.25	5.97	4.38	0.000%
22	5.15	-5.97	-3.07	-5.15	5.97	3.07	0.000%
23	6.08	-5.97	0.00	-6.08	5.97	-0.00	0.000%
24	5.61	-5.97	3.33	-5.61	5.97	-3.33	0.000%



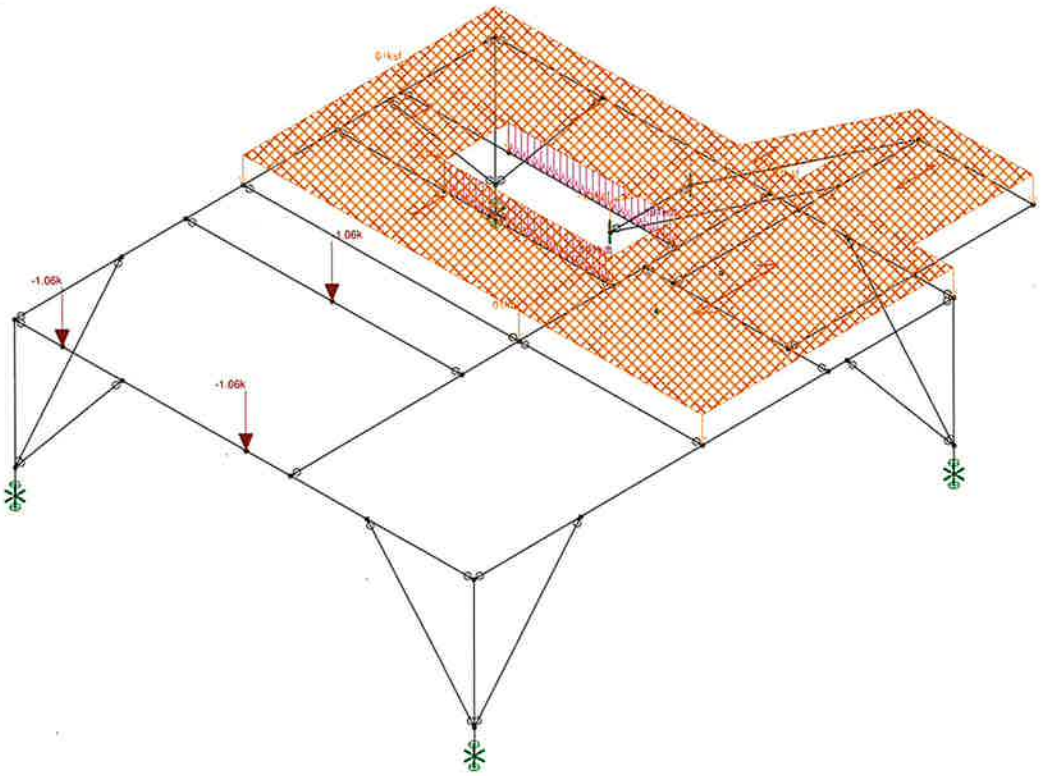
TECTONIC	GENERATOR PLATFORM	
CB		
8814.27		8814.27 - Generator Platform.r3d

TOWER REACTIONS TAKEN FROM STRUCTURAL ANALYSIS BY CENTEK ENGINEERING DATED 6/7/12 AND HAVE BEEN CONVERTED FROM REV F (FASTEST MILE) TO REV G (3 SECOND GUST)



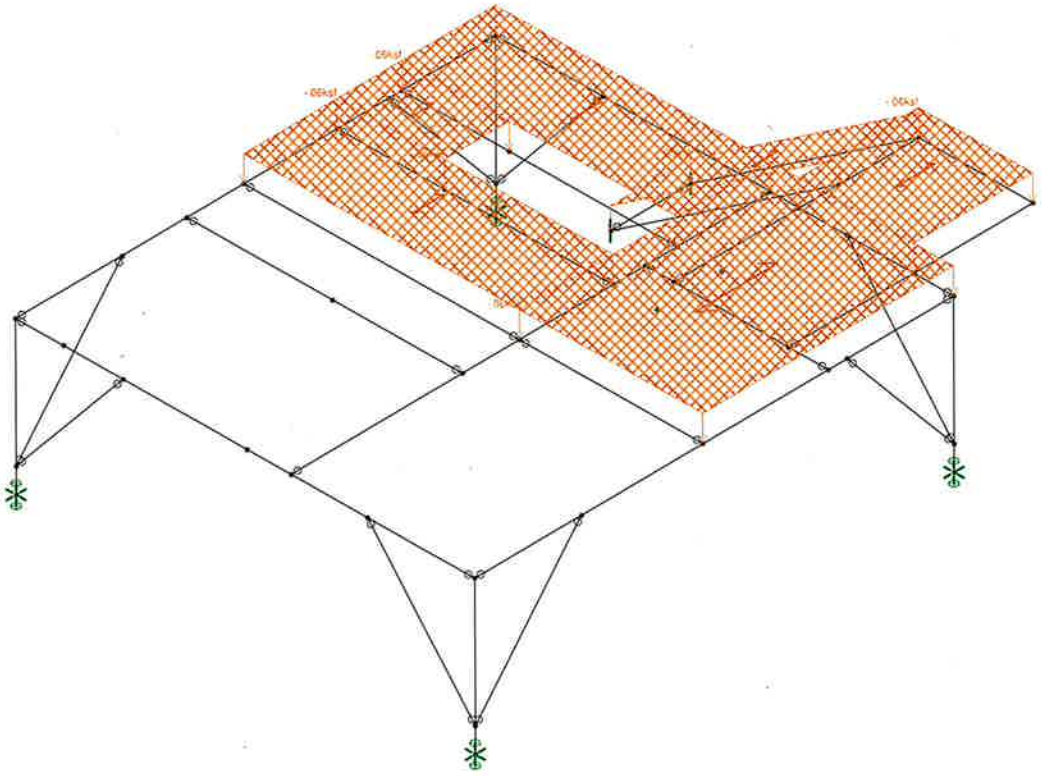
Loads: BLC 1, DL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	DEAD LOAD	8814.27 - Generator Platform.r3d



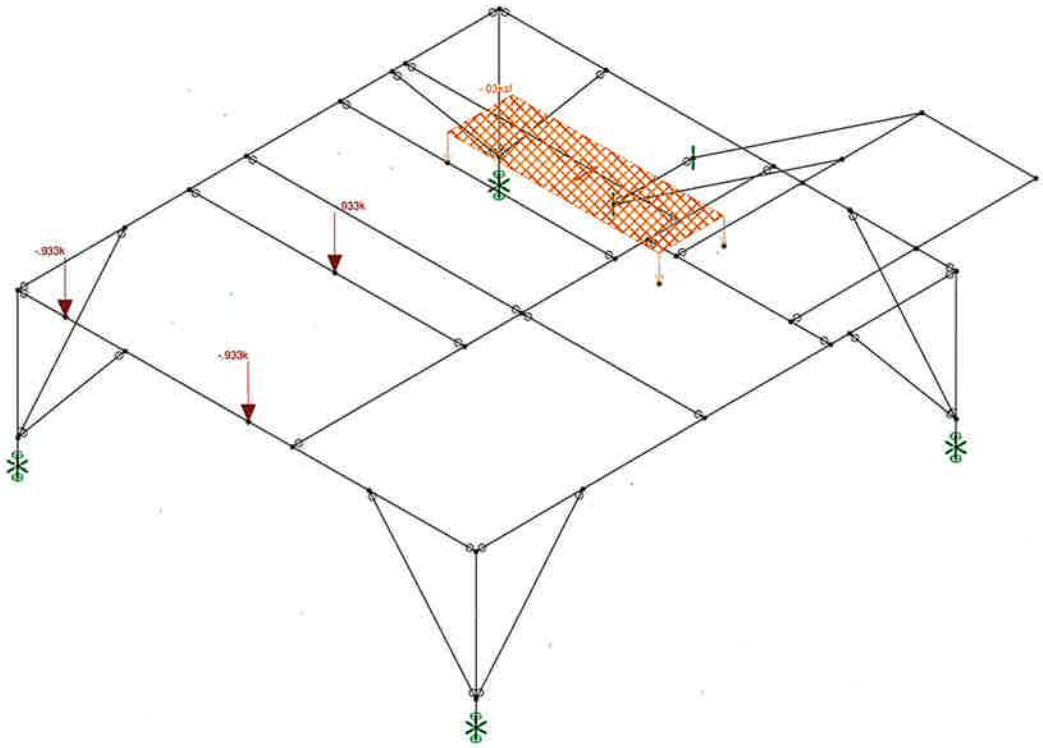
Loads BLC 1, DL

TECTONIC	GENERATOR PLATFORM EXISTING GENERATOR LOAD	
CB		
8814.27		8814.27 - Generator Platform EXIS...



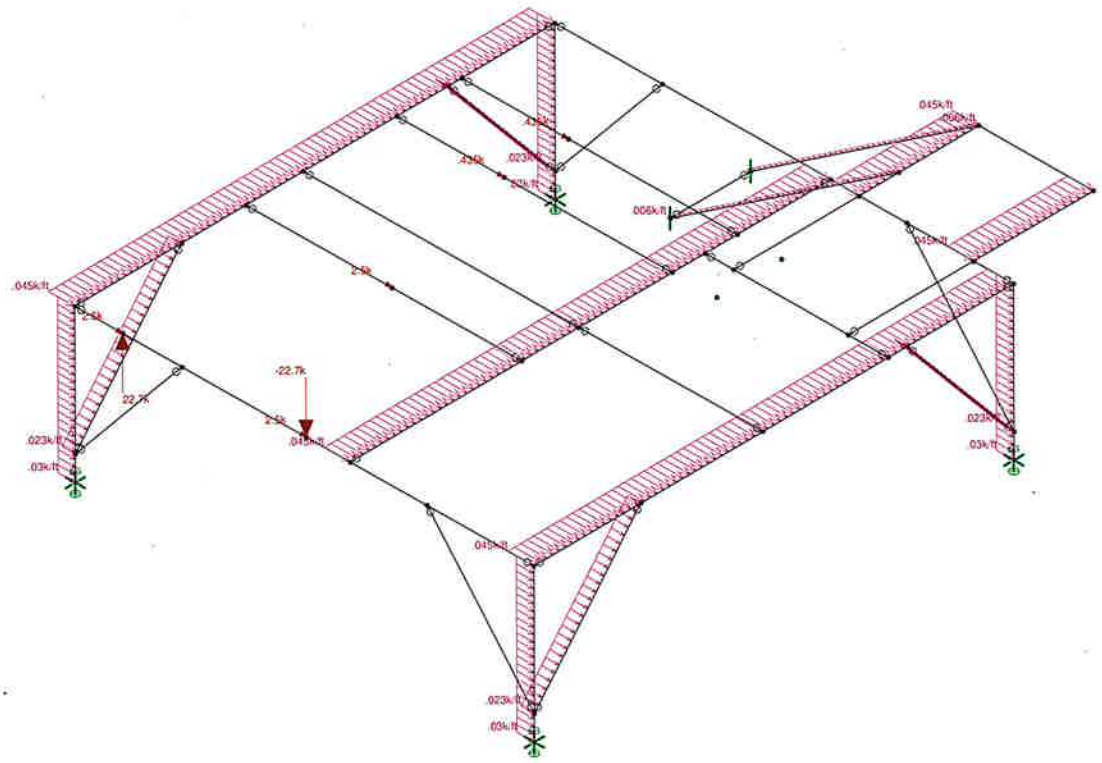
Loads: BLC 2, LL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	LIVE LOAD	8814.27 - Generator Platform.r3d



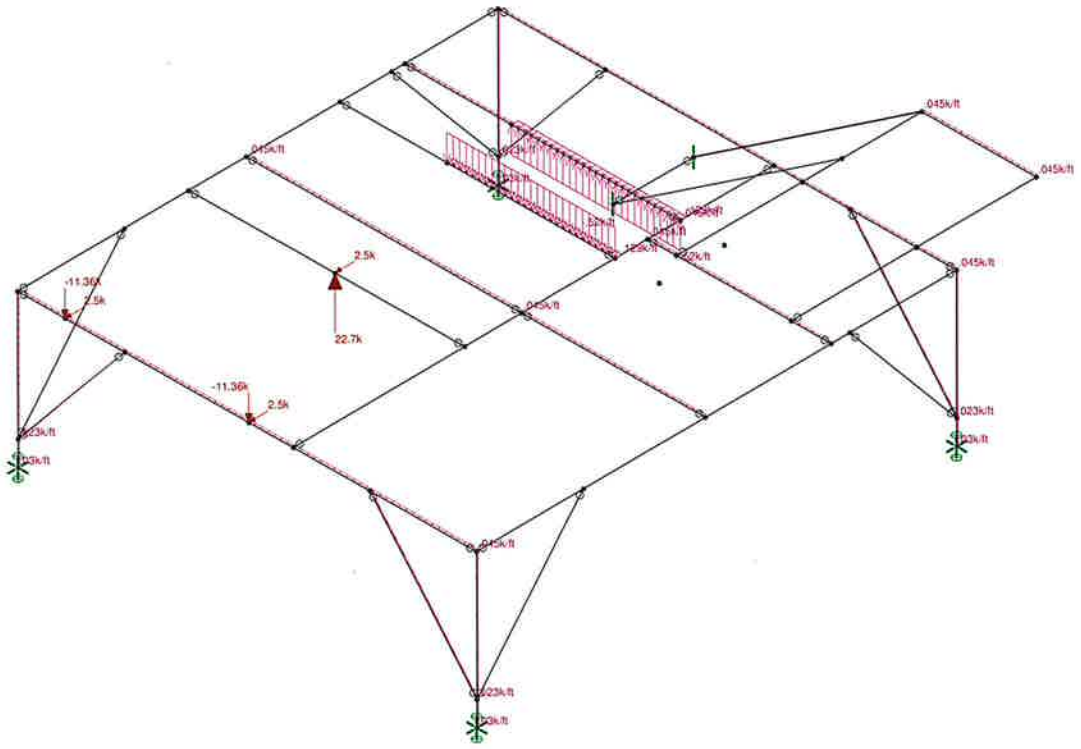
Loads: BLC 3, SL

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	SNOW LOAD	8814.27 - Generator Platform.r3d



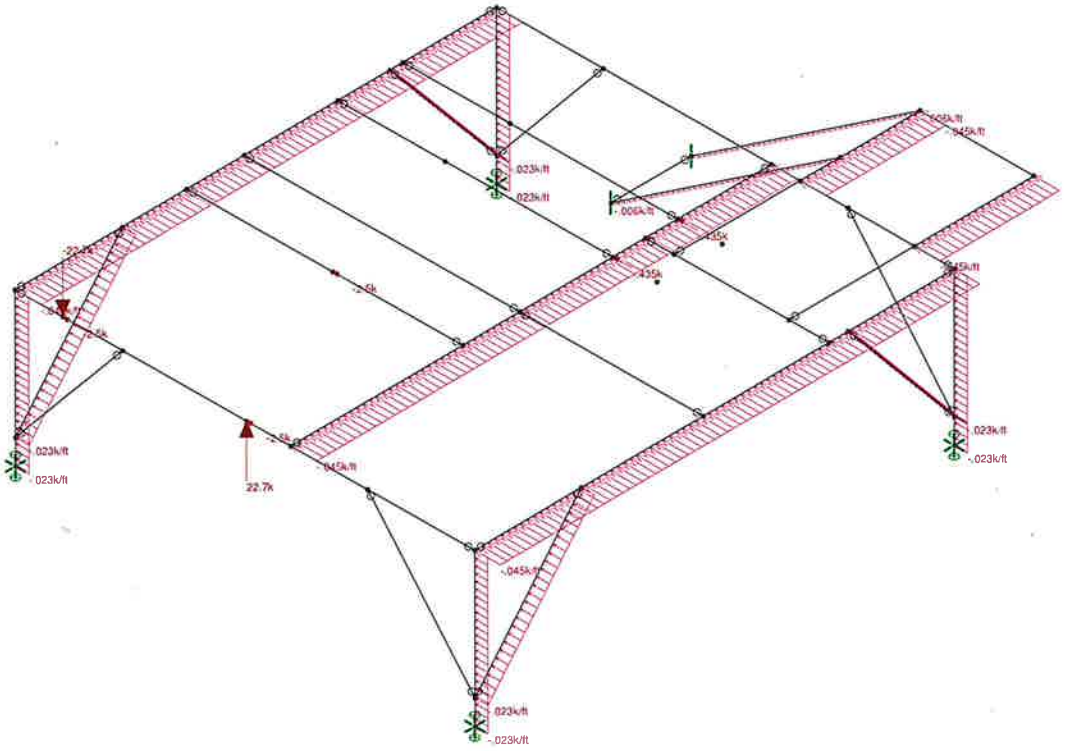
Loads: BLC 4, WLX

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN X DIRECTION	8814.27 - Generator Platform.r3d



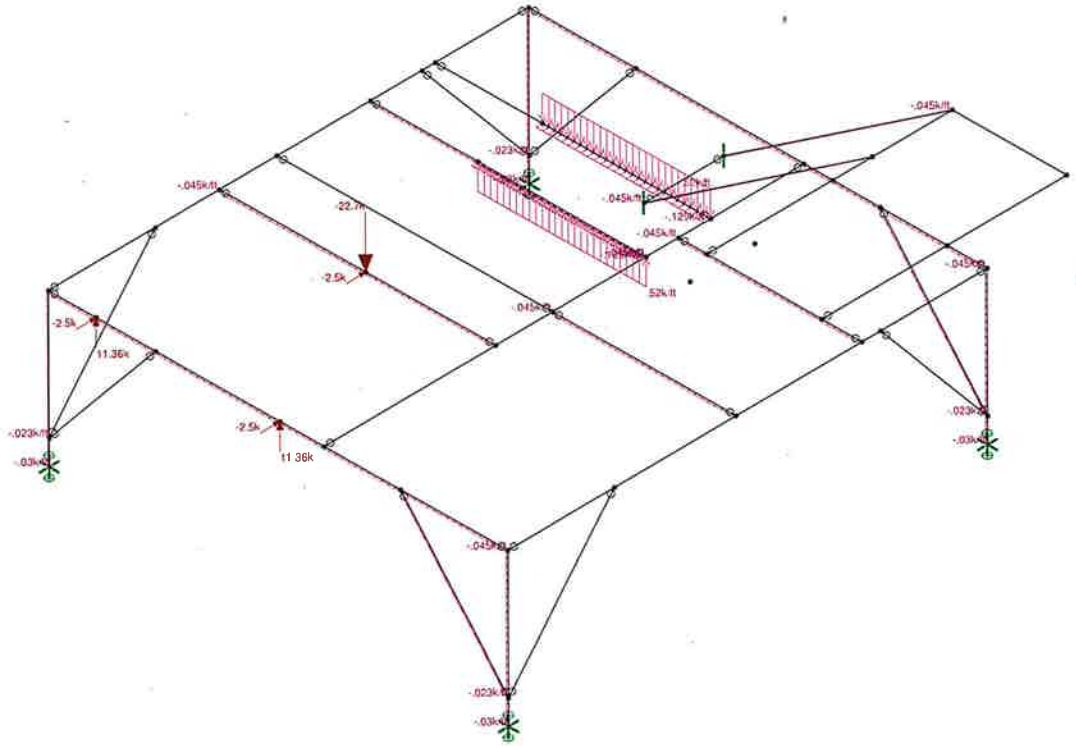
Loads: BLC 5, WLZ

TECTONIC	GENERATOR PLATFORM	
CB		
8814.27	WIND LOAD IN Z DIRECTION	8814.27 - Generator Platform.r3d



Loads: BLC 6, WL-X

TECTONIC	GENERATOR PLATFORM	
CB	WIND LOAD IN -X DIRECTION	
8814.27		8814.27 - Generator Platform.r3d

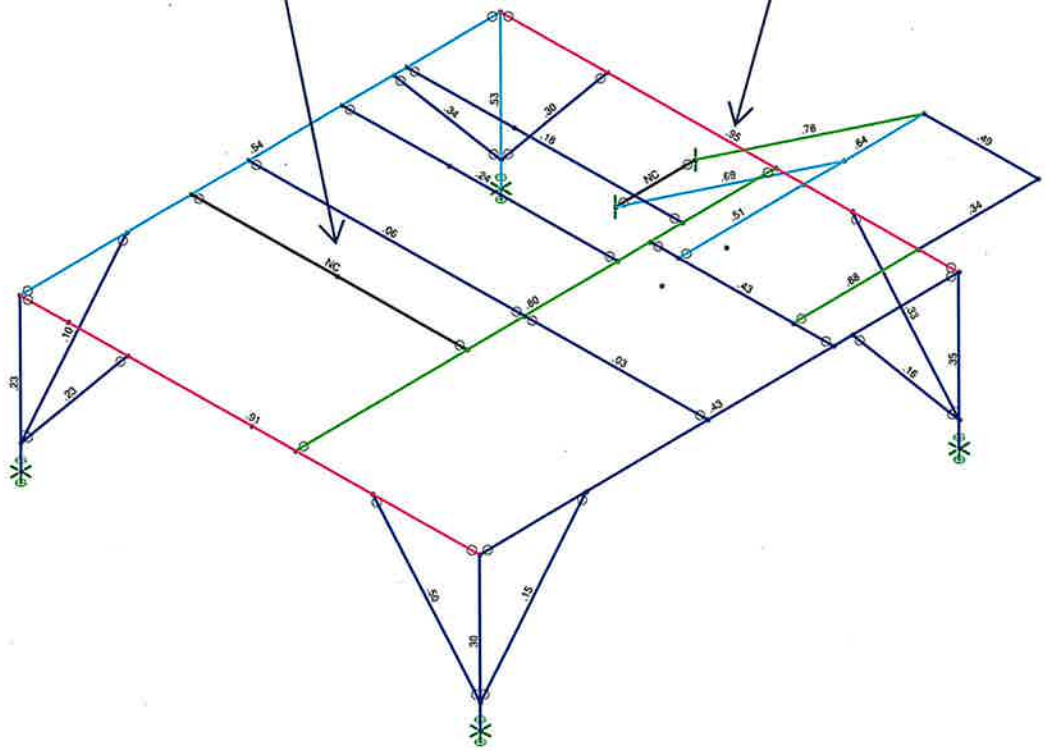


Loads: BLC 7, WL-Z

TECTONIC	GENERATOR PLATFORM	
CB	WIND LOAD IN -Z DIRECTION	
8814.27		8814.27 - Generator Platform.r3d

MEMBER NOT AFFECTED BY THE PROPOSED SCOPE OF WORK AND THEREFORE HAS NOT BE INCLUDED IN THE ANALYSIS

MAX MEMBER STRESS DOES NOT EXCEED 95.4% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

TECTONIC	GENERATOR PLATFORM	
CB	BENDING STRESS	
8814.27		8814.27 - Generator Platform.r3d

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572Grade50	29000	11154	.3	.65	.49	50	1.5	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.5	58	1.2
4	A500_42	29000	11154	.3	.65	.49	42	1.5	58	1.2
5	A500_46	29000	11154	.3	.65	.49	46	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	W12x35	W12x35	Beam	Wide Flange	A36	Typical	10.3	24.5	285	.741
2	W8x31	W8x31	Beam	Wide Flange	A36	Typical	9.13	37.1	110	.536
3	W6x12	W6x12	Beam	Wide Flange	A36	Typical	3.55	2.99	22.1	.09
4	C12x20.7	C12x20.7	Beam	Channel	A36	Typical	6.08	3.86	129	.369

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	DL	DL		-1.05		3		2	6	
2	LL	LL							6	
3	SL	SL				3			1	
4	WLX	WLX				7		15		
5	WLZ	WLZ				6		20		
6	WL-X	WL-X				7		15		
7	WL-Z	WL-Z				6		20		
8	BLC 1 Transient Area Loads	None						25		
9	BLC 2 Transient Area Loads	None						25		
10	BLC 3 Transient Area Loads	None						15		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL + LL	Yes	Y		DL	1	LL	1	SL		W...		W...													
2	DL + SL	Yes	Y		DL	1	LL		SL	1	W...		W...													
3	DL + WLX	Yes	Y		DL	1	LL		SL		W...	1	W...													
4	DL + WLZ	Yes	Y		DL	1	LL		SL		W...		W...	1												
5	DL + WL-X	Yes	Y		DL	1	LL		SL		W...	-1														
6	DL + WL-Z	Yes	Y		DL	1	LL		SL				W...	-1												
7	DL + 0.75(LL + SL + WLX)	Yes	Y		DL	1	LL	.75	SL	.75	W...	.75	W...													
8	DL + 0.75(LL + SL + WLZ)	Yes	Y		DL	1	LL	.75	SL	.75	W...		W...	.75												
9	DL + 0.75(LL + SL + WL-X)	Yes	Y		DL	1	LL	.75	SL	.75	W...	.75														
10	DL + 0.75(LL + SL + WL-Z)	Yes	Y		DL	1	LL	.75	SL	.75			W...	.75												
11	DL		Y		DL	1	LL		SL		W...		W...													
12	SL		Y		DL		LL		SL	1	W...		W...													
13	LL		Y		DL		LL	1	SL		W...		W...													
14	WLX		Y		DL		LL		SL		W...	1	W...													
15	WLZ		Y		DL		LL		SL		W...		W...	1												
16	WL-X		Y		DL		LL		SL		W...	1														
17	WL-Z		Y		DL		LL		SL				W...	1												

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N6	max	5.24	8	15.604	9	-.854	4	0	1	.011	6	0	1
2		min	.235	10	-7.15	3	-2.502	7	0	1	-.008	10	0	1
3	N5	max	6.919	9	15.824	10	8.618	10	0	1	.007	6	0	1
4		min	.247	3	-3.658	6	-7.262	6	0	1	-.006	10	0	1
5	N8	max	5.55	9	14.794	3	1.598	10	0	1	.004	10	0	1
6		min	-12.824	3	-3.904	9	-3.809	6	0	1	-.006	6	0	1
7	N7	max	.844	6	14.416	10	3.903	10	0	1	.012	10	0	1
8		min	-7.746	10	-.559	6	-3.529	6	0	1	-.014	6	0	1
9	N43	max	0	1	1.074	10	0	1	0	1	0	1	0	1
10		min	0	1	-.027	6	0	1	0	1	0	1	0	1
11	N42	max	0	1	1.011	6	0	1	0	1	0	1	0	1
12		min	0	1	-.527	10	0	1	0	1	0	1	0	1
13	Totals:	max	9.83	9	33.537	1	11.657	10						
14		min	-13.294	3	17.909	5	-15.543	6						

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	L...	Shea...	Loc.....	L...	Pnc/o...	Pnt/om...	Mnyy/o...	Mnzz/...	...	Eqn
1	M1	W12x35	.912	10	6	.293	17.... y	5	181.067	222.036	20.659	88.273	1	H1-1b
2	M2	W12x35	.954	8.125	10	.222	4.792 y	10	140.317	222.036	20.659	78.896	1	H1-1b
3	M3	W12x35	.541	16....	6	.132	7.656 y	6	185.595	222.036	20.659	89.445	1	H1-1b
4	M4	W12x35	.431	15....	6	.066	16.... y	10	161.44	222.036	20.659	83.584	1	H1-1b
5	M5	W8x31	.232	1.111	7	.161	1.042 y	8	181.154	196.814	25.329	54.611	1...	H1-1b
6	M6	W8x31	.302	1.111	6	.392	0 y	3	181.154	196.814	25.329	54.611	1...	H1-1b
7	M7	W8x31	.352	1.042	10	.238	1.042 y	10	181.154	196.814	25.329	54.611	1...	H1-1b
8	M8	W8x31	.535	1.042	10	.212	0 y	9	181.154	196.814	25.329	54.611	1...	H1-1b
9	M9	W12x35	.796	7.656	10	.157	0 y	10	196.766	222.036	20.659	91.976	1...	H1-1b
10	M10	W12x35	.432	1.25	6	.088	0 z	6	181.067	222.036	20.659	91.976	1...	H1-1b
11	M11	W12x35	.029	4	8	.020	8 y	1	181.067	222.036	20.659	91.976	1...	H1-1b
12	M13	W12x35	.060	6	8	.021	12 y	1	140.317	222.036	20.659	89.654	1...	H1-1b
13	M14	W12x35	.235	5.25	6	.078	0 y	8	140.317	222.036	20.659	91.976	1...	H1-1b
14	M15	W12x35	.184	5.25	10	.093	0 y	10	140.317	222.036	20.659	91.976	1...	H1-1b
15	M16	W6x12	.232	3.563	8	.035	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
16	M17	W6x12	.102	0	10	.015	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
17	M18	W6x12	.499	3.184	3	.038	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
18	M19	W6x12	.151	0	6	.019	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
19	M20	W6x12	.155	0	10	.017	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1b*
20	M21	W6x12	.329	3.563	10	.044	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
21	M22	W6x12	.343	3.184	10	.015	0 z	3	47.515	76.527	4.168	14.884	1...	H1-1a
22	M23	W6x12	.300	3.563	10	.042	0 z	6	47.515	76.527	4.168	14.884	1...	H1-1a
23	M24	C12x20.7	.693	12....	6	.020	0 y	10	27.894	131.066	4.949	36.303	1...	H1-1b
24	M25	C12x20.7	.775	0	6	.034	0 y	10	27.894	131.066	4.949	45.988	2...	H1-1b
25	M26	C12x20.7	.338	0	6	.033	5.25 y	10	94.31	131.066	4.949	45.988	1...	H1-1b
26	M27	C12x20.7	.494	5	6	.043	4.375 y	10	97.24	131.066	4.949	45.988	1...	H1-1b
27	M28	C12x20.7	.641	5.25	10	.106	5.25 y	10	94.31	131.066	4.949	45.988	1...	H1-1b
28	M30	W12x35	.508	5.5	10	.091	5.5 y	10	201.629	222.036	20.659	91.976	1...	H1-1b
29	M31	W12x35	.876	5.5	6	.058	0 z	10	201.629	222.036	20.659	91.976	1...	H1-1b

MAX MEMBER STRESS DOES NOT EXCEED 95.4% THEREFORE THE PROPOSED MEMBER SIZES ARE ADEQUATE

Tectonic

PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.

Job No. 8814.27

Calculated By CB Date : 03/14/19

Generator Platform Reaction Comparison

Existing Reactions

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	5.223	8.000	15.570
N6	0.217	10.000	-7.184
N5	6.857	9.000	15.715
N5	0.185	3.000	-3.765
N8	5.567	9.000	14.769
N8	-12.807	3.000	-3.928
N7	0.906	6.000	14.341
N7	-7.684	10.000	-0.632
N43	0.000	1.000	1.070
N43	0.000	1.000	-0.031
N42	0.000	1.000	1.023
N42	0.000	1.000	-0.516

Proposed Reactions

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	5.240	8.000	15.604
N6	0.235	10.000	-7.150
N5	6.919	9.000	15.824
N5	0.247	3.000	-3.658
N8	5.550	9.000	14.794
N8	-12.824	3.000	-3.904
N7	0.844	6.000	14.416
N7	-7.746	10.000	-0.559
N43	0.000	1.000	1.074
N43	0.000	1.000	-0.027
N42	0.000	1.000	1.011
N42	0.000	1.000	-0.527

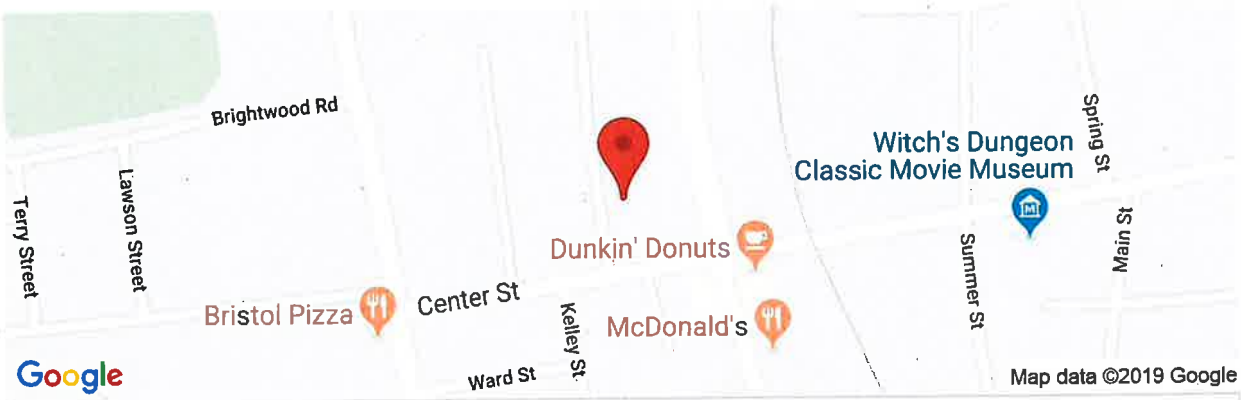
Increase in Load

Node (Label)	X (kips)	Y (kips)	Z (kips)
N6	0.017	0.000	0.034
N6	0.018	0.000	0.034
N5	0.062	0.000	**0.109**
N5	0.062	0.000	0.107
N8	0.017	0.000	0.025
N8	0.017	0.000	0.024
N7	0.062	0.000	0.075
N7	0.062	0.000	0.073
N43	0.000	0.000	0.004
N43	0.000	0.000	0.004
N42	0.000	0.000	0.012
N42	0.000	0.000	0.011

The maximum increase in load does not exceed 109 lbs which is relatively small in comparison to the existing reactions (15,824 lbs, which is less than a 1% increase in load). Therefore, we believe the existing platform connections and building supporting elements are adequate to support the proposed Verizon Wireless installation.

225 N Main St, Bristol, CT 06010, USA

Latitude, Longitude: 41.6763822, -72.94782609999998



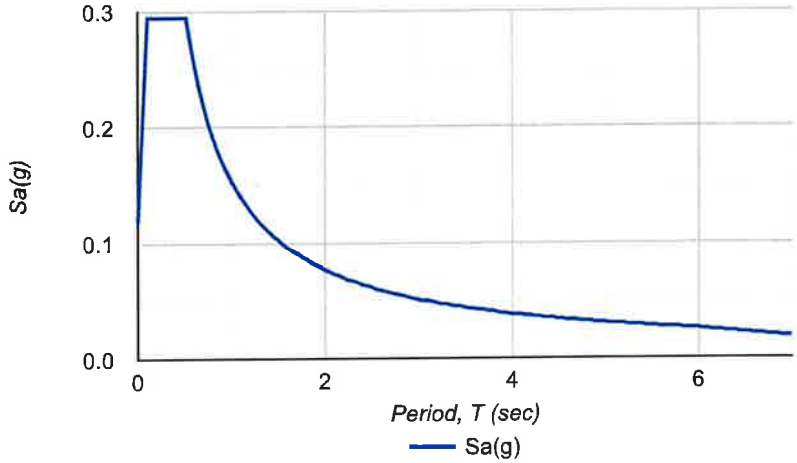
Date	3/8/2019, 10:27:48 AM
Design Code Reference Document	ASCE7-10
Risk Category	IV
Site Class	D - Stiff Soil

Type	Value	Description
S_S	0.185	MCE_R ground motion. (for 0.2 second period)
S_1	0.064	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.295	Site-modified spectral acceleration value
S_{M1}	0.154	Site-modified spectral acceleration value
S_{DS}	0.197	Numeric seismic design value at 0.2 second SA
S_{D1}	0.103	Numeric seismic design value at 1.0 second SA

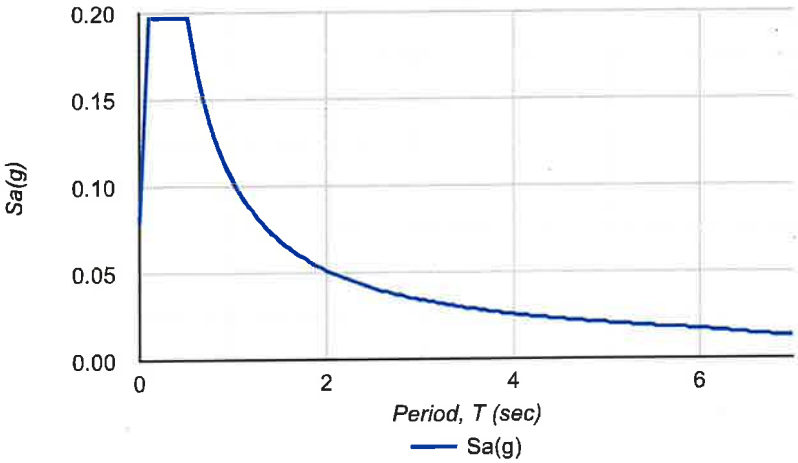
Type	Value	Description
SDC	C	Seismic design category
F_a	1.6	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.094	MCE_G peak ground acceleration
F_{PGA}	1.6	Site amplification factor at PGA
PGA_M	0.15	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.185	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.206	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.064	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.071	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.897	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.898	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



DISCLAIMER

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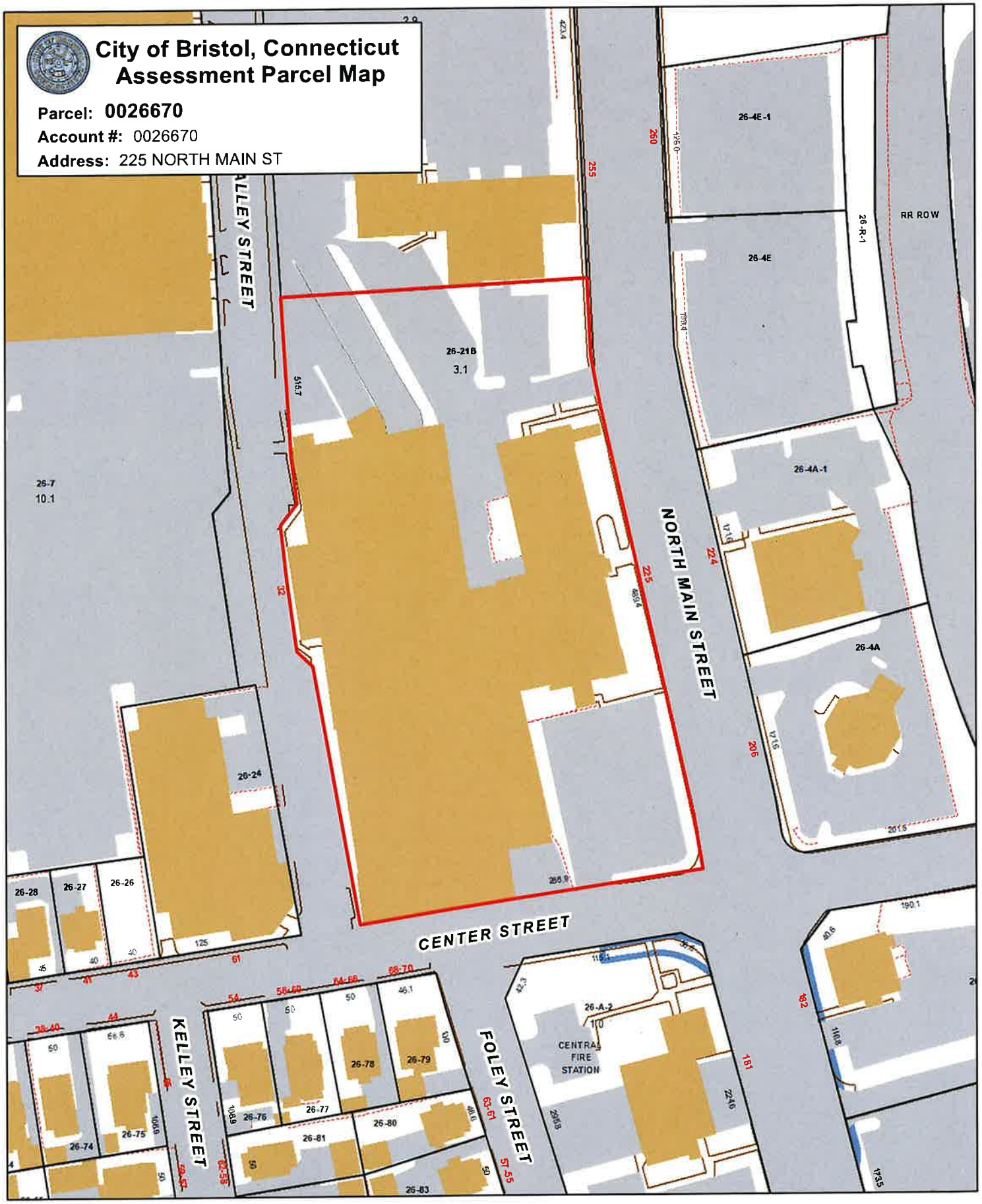
ATTACHMENT 4


City of Bristol, Connecticut
Assessment Parcel Map
Parcel: 0026670
Account #: 0026670
Address: 225 NORTH MAIN ST
26-21B
3.1
26-7
10.1
26-4E-1
26-4E
26-4A-1
26-4A
26-R-1
RR ROW
NORTH MAIN STREET
CENTER STREET
KELLEY STREET
FOLEY STREET
ALLEY STREET
26-24
26-28
26-27
26-26
26-74
26-75
26-76
26-77
26-78
26-79
26-80
26-81
26-83
26-A-2
CENTRAL FIRE STATION
Approximate Scale: 1 inch = 100 feet
Map Produced March 2018
Disclaimer: This map is for informational purposes only. All information is subject to verification by any user.
The City of Bristol and its mapping contractors assume no legal responsibility for the information contained herein.

City of Bristol, CT

Property Listing Report

Map Block Lot	26-21B	Building #	1	PID	1588	Account	0026670

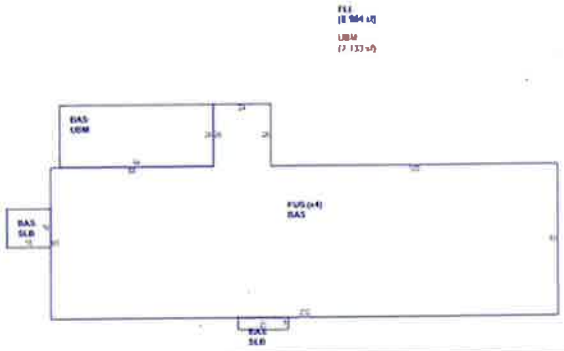
Property Information

Property Location	225 NORTH MAIN ST
Owner	CARPENTER REALTY COMPANY
Co-Owner	
Mailing Address	PO BOX 176 BRISTOL CT 06011
Land Use	340 Off Bldg
Land Class	C
Zoning Code	BD-1
Census Tract	04061

Neighborhood	
Acreage	3.19
Utilities	All Public
Lot Setting/Desc	Level
Book / Page	0692/0054
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1912
Building Desc.	Off Bldg
Building Style	Office Bldg
Building Grade	NA
Stories	5
Occupancy	28.00
Exterior Walls	Brick/Masonry
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Drywall/Sheetr
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Comm/Ind
Building Condition	A
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	Sus-Ceil & WL
Rooms / Prtns	Average
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Report Created On 12/11/2019

City of Bristol, CT

Property Listing Report | Map Block Lot 26-21B | Building # 1 | PID 1588 | Account 0026670

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	4991600	3494120
Extras	52100	36470
Improvements		
Outbuildings	324500	227150
Land	263700	184590
Total	5631900	3942330

Outbuilding and Extra Features

Type	Description
Elevator	6 Units
Elevator	6 Units
Paving Asph.	9000 S.F.
Sprinklers	87601 S.F.
Cell Tower/Site	3 UNITS
Elevator	5 Units
Elevator	5 Units
Elevator	5 Units
Elevator	5 Units
Elevator	5 Units

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	16037	16037
Finished Lower Level	8904	8904
Upper Story, Finished	55920	55920
Slab	393	0
Basement, Unfinished	8797	0
Total Area	90051	80861

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
CARPENTER REALTY COMPANY	0692/0054	1978-10-04	0

Report Created On 12/11/2019

City of Bristol, CT

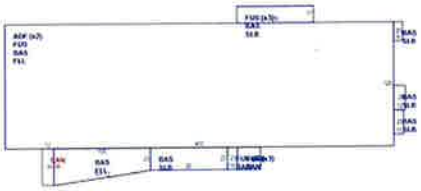
Property Listing Report

Map Block Lot 26-21B | Building # 2 | PID 1588 | Account 0026670

Photo

0026670 03/15/2016

Sketch



Primary Construction Details

Year Built	1930
Building Desc.	Comm/Ind
Building Style	Mill Building
Building Grade	NA
Stories	4
Occupancy	7.00
Exterior Walls	Brick/Masonry
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Drywall/Sheetr
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Off Bldg
Building Condition	A
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	Sus-Ceil & WL
Rooms / Prtns	Average
Wall Height	12.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Office	102912	102912
First Floor	58649	58649
Canopy	1008	0
Finished Lower Level	54506	54506
Upper Story, Finished	57831	57831
Slab	3913	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	278819	273898

Report Created On 12/11/2019

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here ***Postmark with Date of Receipt.***
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 12/18/2019 US POSTAGE $002.79⁰ ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)* Y.P		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Ellen Zoppo-Sassu, Mayor City of Bristol 111 North Main Street Bristol, CT 06010				
2.	Robert Flanagan, City Planner City of Bristol 111 North Main Street Bristol, CT 06010				
3.	Carpenter Realty P.O. Box 176 Bristol, CT 06011				
4.					
5.					
6.					

OLD STATE HOUSE STATION 06103
DEC 18 2019
USPS