Robinson+Cole

KENNETH C. BALDWIN

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Direct (860) 275-8345

Also admitted in Massachusetts and New York

March 31, 2020

Via Electronic Mail

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**
48 Newtown Road, Danbury, Connecticut

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains nine (9) antennas at the 90-foot level on the existing 110-foot tower at 48 Newtown Road in Danbury, Connecticut (the "Property"). The Property and tower are owned by 48 Newtown Road Corporation. The tower is managed by Crown Castle. The original tower was approved by the City of Danbury in 1998. The Siting Council approved Cellco's shared use of the tower in 1999 (EM-BAM/SCLP-034-991124). A copy of the City's approvals are included in Attachment 1.

Cellco now intends to modify its facility by installing three (3) antenna/remote radio heads ("RRHs") integrated units; removing twelve (12) RRHs and installing six (6) newer model RRHs; and installing two (2) HYBRIFLEX™ fiber lines. The existing antenna mounts and platform will be reinforced as part of these proposed facility modifications. A set of project plans showing the proposed facility modifications and specifications for Cellco's antennas, RRHs and fiber lines 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 Danbury's Mayor, Mark D. Boughton; Sharon Calitro, Danbury's Director of Planning and Zoning; Crown Castle, the tower manager; and 48 Newtown Road Corporation, the tower and Property owner.

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. Cellco's replacement antennas and RRHs will be installed at the 90-foot level on the 110-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The installation of new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for the modified facility is included in Attachment 3.

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

6. The tower, its foundation and new antenna mounts, with certain reinforcements can support Cellco's proposed facility modifications. (*See* Structural Analysis Report included in Attachment 4 and Mount Analysis Report included in Attachment 5).

A copy of the parcel map and Property owner information is included in Attachment 6. A Certificate of Mailing verifying that this filing was sent to municipal officials and the owner of the Property is included in Attachment 7.

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:
Mark D. Boughton, Danbury Mayor
Sharon Calitro, Danbury Director of Planning and Zoning
Crown Castle
48 Newtown Road Corporation
Tim Parks

ATTACHMENT 1

CITY OF DANBURY

155 DEER HILL AVENUE

DANBURY, CONNECTICUT 06810

PLANNING & ZONING DEPARTMENT
(203) 797-4525
(203) 797-4586 (FAX)

Post-it® Fax Note 7671 | Date 12/29 | # of pages ▶ 1
To Paul McNamara | From Sharon Calitro
Co./Dept. | Co. c/o Danbury
Phone # | Phone # 797-4525
Fax # 438-1238 | Fax #

December 29, 1998

Mr. Paul S. McNamara
Donnelly, McNamara & Gustafson, P.C.
150 Danbury Road
PO Box 2006
Ridgefield, CT 06877

RE: Waiver No. 98-49
48 Newtown Road – Telephone Tower and Equipment Storage
Assessor's Lot Numbers K12265, K12266

Dear Mr. McNamara:

Your application for a Waiver to Site Plan Requirements for the construction of a Telephone Tower and Equipment Storage on the above-referenced site is approved as follows:

1. The existing telephone tower on the adjacent site identified as 50 Newtown Road will be removed in lieu of the construction of the tower and equipment storage facility to be located at 48 Newtown Road.
2. There shall be no exterior changes to the building façade other than the addition of the tower in the location as shown on the Site Plan prepared for 48 Newtown Road Corporation by New England Land Surveying, dated August 21, 1989 as revised to September 9, 1994 as submitted in support of this Waiver Application.
3. This approval does not waive any other departmental approvals, requirements or permits that may be necessary to complete this proposed project.

A Zoning Permit may now be required. Please contact the Zoning Department for further information regarding this process. Upon completion of construction, a Zoning Certificate of Compliance will be issued by this Office prior to the issuance if a Certificate of Occupancy by the Building Department, provided work was completed in accordance with the Waiver to Site Plan Requirements approved December 29, 1998.

Respectfully,

Sharon B. Calitro
Assistant Planning Director

C: Wayne Skelly, Zoning Enforcement Officer
Mario Ricozzi, P.E., Director of Dept. of Permit Coordination

N 010144

Telephone 797-4525 **CITY OF DANBURY PLANNING & ZONING DEPARTMENT**

ZONING PERMIT **DATE** Jan. 6, 1999

Property Owner's Name & Address 48 Newtown Road Corporation, 50 Newtown Rd. Danbury

Applicant's Name & Address Same

Property Located At 48 NEWTOWN RD.

Current Use of Property Commercial **Proposed Use of Property** Same

Zone CG-20 **Lot Area or Dimensions** 25,998 sq.ft. **Assessor's Lot No.** K-12265 K-12266

THIS PERMIT IS FOR THE FOLLOWING ACTIVITY:

____ New Construction ____ Change of Use ____ Interior Alterations
____ Addition ____ Exterior Alterations ____ Excavation
____ Sign (Give linear measure of exterior building wall_____ [Proposed Sign Area_____
[Maximum Sign Allowed_____

__x__ Other (Specify)_____

DESCRIPTION OF WORK PROPOSED: Construction of telephone tower

Dimensions of Proposed Structure: Width 5'± X Length 4'± X Height 90'±

Distance from Front Property Line 125' **Adjacent Property Lines** 38'-58' **Rear Line** 50'

NOTE: COMPLY WITH WAIVER AS APPROVED.

FOR OFFICE USE ONLY: Required Permits & Approvals:	Conditions Yes	Conditions No	Effective Date	Permit No. Or Expiration Date
____ Plot Plan	___	___		
__x__ Site Plan or Waiver	___	___	12/29/98	98-49
____ Special Exception	___	___		
____ Special Permit	___	___		
____ Variance	___	___		
____ Subdivision/Resubdivision	___	___		
____ E.I.C. Approval	___	___		
____ Sewer Permit (Engineering Dept.)	___	___		
____ Water Permit (Engineering Dept.)	___	___		
____ Septic Permit/Approval (Health Dept.)	___	___		
____ Well Permit/Approval (Health Dept.)	___	___		
____ Erosion & Sedimentation Permit (Health)	___	___		
____ Driveway Permit (Public Works Dept.)	___	___		
____ State Traffic Comm. Certification (D.O.T.)	___	___		
____ Flood Plain Zone Permit	___	___		
____ Airport Protection District	___	___		
____ Health Dept.	___	___		
____ Fire Marshal's Approval	___	___		
____ Other_____	___	___		

This Zoning Permit, if issued, is based upon the plot plan submitted. Falsification, by misrepresentation or omission, or failure to comply with conditions of approval of this permit, shall constitute a violation of the Zoning Regulations of the City of Danbury. CALL 797-4525 WHEN JOB IS COMPLETED TO ARRANGE ZONING COMPLIANCE INSPECTION.

ESTIMATED COST $75,000.00
FEE $200.00 + $10.00 = $210.00

Signature of Owner or Authorized Agent

Total includes $10 State Fee

POST THIS PERMIT CONSPICUOUSLY

DEPARTMENT OF BUILDINGS, DANBURY, CONNECTICUT

Phone 797-4581

BUILDING PERMIT

№ 029204

Issued 10/13/99 Expires 10/13/00

Owner 48 Newtown Rd Corp.

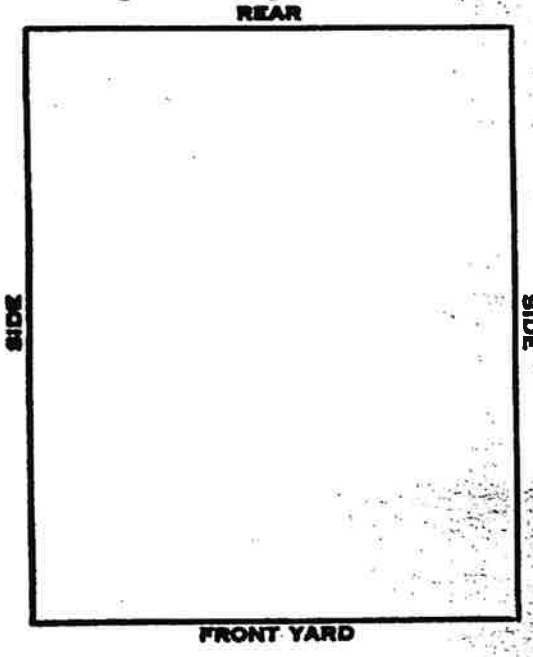
Building 100' monopole tower & equip. room; 47' retaining wall

Located 48 Newtown Rd Zone C6-20

Builder BRT General Corp.

Electrical Contractor take out own License No. ~

Plumbing & Heating Contractor take out own License No. ~



In accordance with application, plans and specifications on file, and subject to ordinances and Building Code of the City of Danbury, otherwise this permit is void. Occupancy of this new building or addition prior to issuance of a Certificate of Occupancy will be considered a violation of the Building Code Regulations.

Leo P Null(ras)
Building Inspector

NOTICE:

Changes, regardless of size, from stamped approved plans must be submitted to Building Inspector before they are made.

Prompt notification by the Plumbing, Electrical, and General contractors of completion of their respective portions of the work will avoid delay in issuance of the Certificate of Occupancy.

This Application is null and void if the building is not completed in one year from the date of issue, except by extension of application.

INSPECTIONS:
Normally there are nine or more required inspections of a new building, and as many as apply on alterations and additions:

1. ZONING
2. SOIL CONDITIONS—before foundation footings
3. FOOTING—drain inspection
4. ELECTRICAL—wiring roughing
5. PLUMBING—roughing
6. FRAMING—before insulation or lathing
7. INSULATION—inspection
8. GAS OR OIL BURNER—installation and wiring
9. ELECTRICAL—final when fixtures have been hung
10. PLUMBING—final when fixtures have been set
11. FINAL—fire divisions, exits, etc.

ATTACHMENT 2

VICINITY MAP
SCALE: N.T.S.

APPROXIMATE COORDINATES:	LATITUDE:	N41° 24' 12.31"
	LONGITUDE:	W73° 25' 27.97"

TOWER STRUCTURAL NOTE:

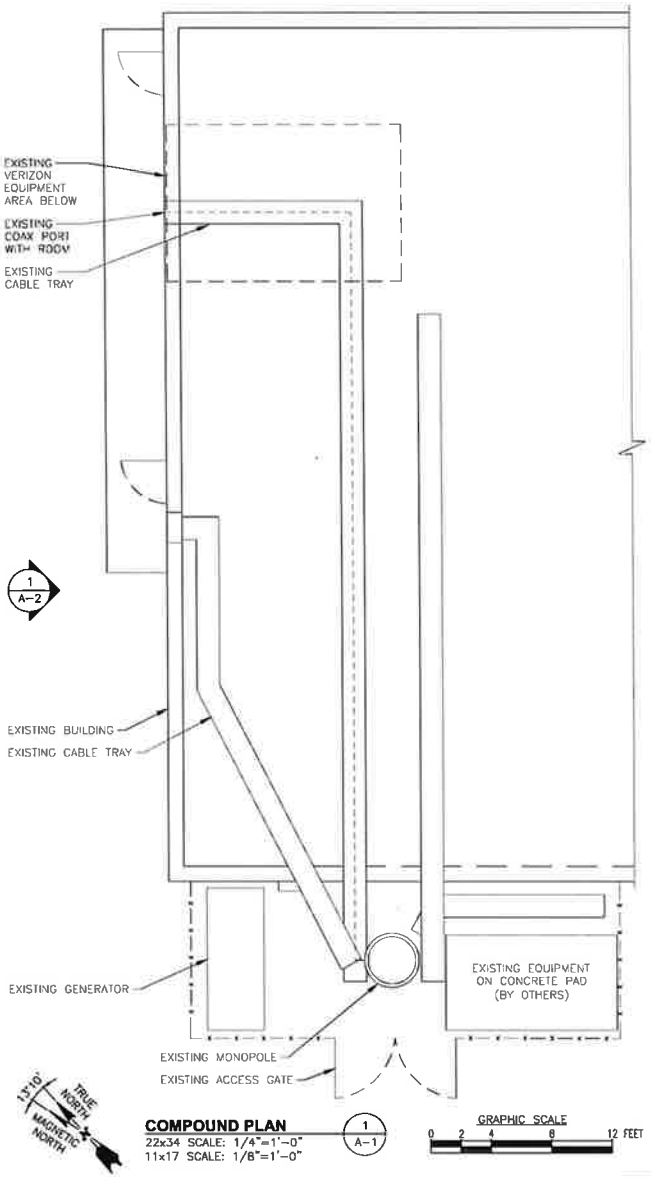
AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 20, 2020 (REV. 1)

ANTENNA FRAME NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 13, 2020 (REV. 1)

ANTENNA FRAME MODIFICATION DESIGN NOTES:

- INSTALL NEW 2" STD. (2.38" O.D.) HORIZONTAL PIPE 10'-0"± LONG SECURED TO EXISTING ANTENNA PIPES (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL NEW 2" STD. (2.38" O.D.) HORIZONTAL PIPE 4'-6"± LONG SECURED TO PROPOSED HORIZONTAL PIPES (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL NEW PLATFORM REINFORCEMENT KIT, P/N PRK-SFS.
- INSTALL NEW 2" STD. (2.38" O.D.) REPLACEMENT PIPE MAST (TYP. OF 2 PER SECTOR, TOTAL OF 6).



COMPOUND PLAN 1 A-1
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

GRAPHIC SCALE
0 2 4 8 12 FEET

FIELD INSPECTION DATE: 11-07-2019

SCOPE

1. EXISTING (9) ANTENNAS TO REMAIN.
   INSTALL (3) PROPOSED ANTENNAS PER 'RF'.
2. EXISTING (12) RRH'S TO BE REMOVED.
   INSTALL (9) PROPOSED RRH'S PER 'RF'.
3. EXISTING (2) JUNCTION BOXES (OVP) TO REMAIN.
4. EXISTING (6) COAX CABLES AND 2 HYBRID CABLES TO REMAIN.
   ALL EXISTING COAX JUMPER CABLES TO REMAIN
   INSTALL (9) PROPOSED SAMSUNG POWER JUMPER CABLES,
   INSTALL (9) PROPOSED SAMSUNG FIBER JUMPER CABLES
5. INSTALL (3) PROPOSED QUADPLEXERS.
6. ALL REPLACEMENT ANTENNAS TO MATCH EXISTING CONDITION & HEIGHTS.
7. RECONFIGURE/RELOCATE EXISTING ANTENNA MOUNTS AS NECESSARY TO ACCOMMODATE HORIZONTAL SEPARATION, PROPOSED AZIMUTHS, AND ANTENNAS CONFIGURATION.

NEW ANTENNA CONFIGURATION

NOTE TO GENERAL CONTRACTOR:

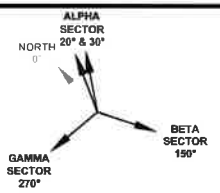
'RF' DESIGN AND EQUIPMENT IS BASED UPON **RFDS ISSUED BY VZW DATED: JANUARY 16, 2020 REVISION #1.**

THE CONTRACTOR OF RECORD SHALL CONTACT VZW PRIOR TO ANY AND ALL ORDERING/PURCHASING/INSTALLATION OF EQUIPMENT TO VERIFY THAT THE 'RF' USED IN THE DRAWING SET IS CURRENT AND UP TO DATE.

NOTES

1. NORTH SHOWN AS APPROXIMATE.
2. SOME EXISTING & PROPOSED INFORMATION NOT SHOWN FOR CLARITY.
3. ANTENNAS WILL BE CAMOUFLAGED WITH 3M WRAP, AS NEEDED, PER VERIZON WIRELESS AND BUILDING OWNER'S APPROVAL.
4. PRIOR TO COMMENCEMENT OF ANY WORK, PROPOSED ANTENNA INSTALLATION IS PURSUANT TO FINDINGS DICTATED IN STRUCTURAL ANALYSIS. STRUCTURAL ANALYSIS TO VERIFY CAPACITY OF EXISTING STRUCTURE TO ENSURE STRUCTURAL INTEGRITY FOLLOWING INSTALLATION OF PROPOSED ANTENNAS, COAX CABLES AND REQUIRED HARDWARE. COPY OF STRUCTURAL ANALYSIS TO BE SENT TO DESIGN ENGINEER.
5. CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, VERIZON WIRELESS ANTENNA MOUNT LOCATION AND ANTENNAS TO BE INSTALLED.
6. CONTRACTOR SHALL NOTIFY ENGINEERS IF FIELD CONDITIONS DIFFER FROM DESIGN.
7. RAD CENTERS MEASURED IN THE FIELD WITH LASER BY HDG. RAD CENTERS MAY NOT MATCH RF ANTENNA DESIGN SHEET.

ANTENNA ORIENTATION



PREPARED FOR: CELLCO PARTNERSHIP D.B.A.
verizon

HDG
HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557 5553
FAX: (978) 336 5586

Daniel P. Hamm
CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: JX
APPROVED BY: DPH

SUBMITTALS

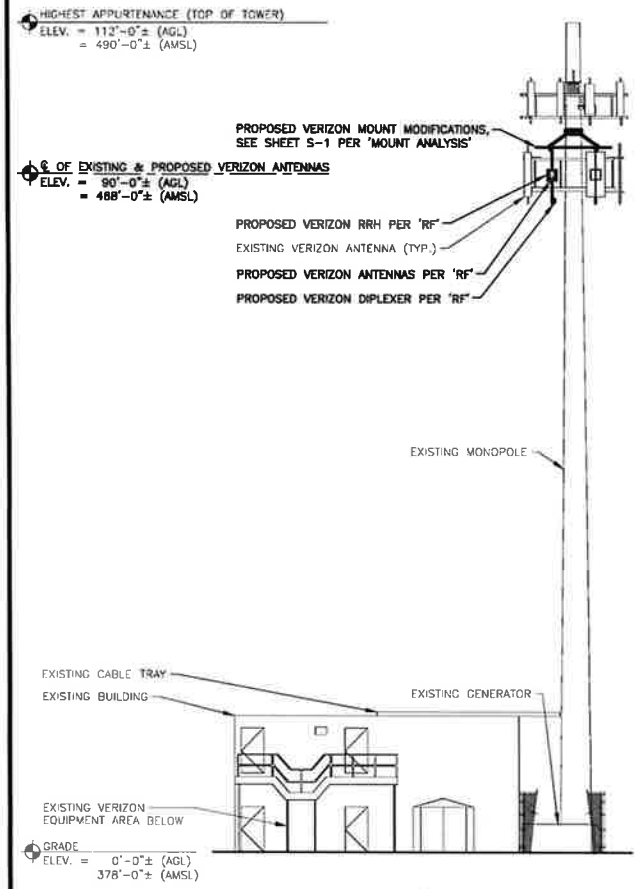
REV.	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	SLY
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

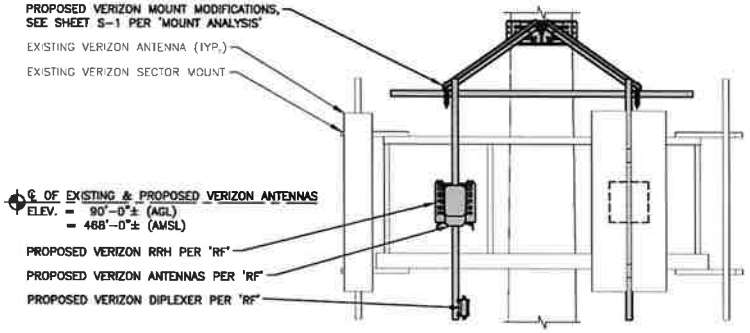
SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



WEST ELEVATION (1 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

GRAPHIC SCALE
0 4 8 16 24 FEET



ENLARGED ELEVATION (2 / A-2)
SCALE: N.T.S

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   INSTALL (9) PROPOSED SAMSUNG FIBER JUMPER CABLES
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NEW ANTENNA CONFIGURATION

NOTE TO GENERAL CONTRACTOR:

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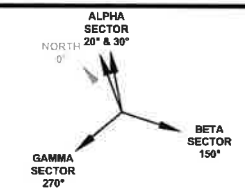
ANTENNA ORIENTATION



PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL (978) 557 5553
FAX (978) 336-5566

Daniel P. Hamm
CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	JLY
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

SHEET TITLE
ELEVATION

SHEET NUMBER
A-2

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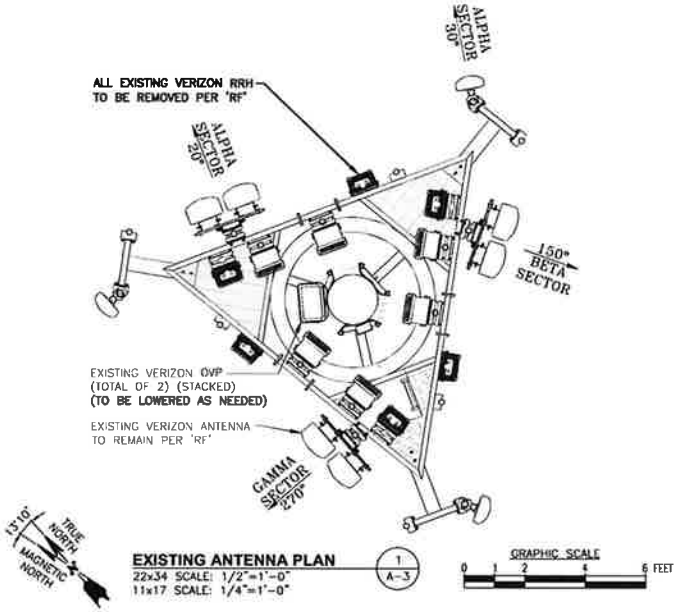
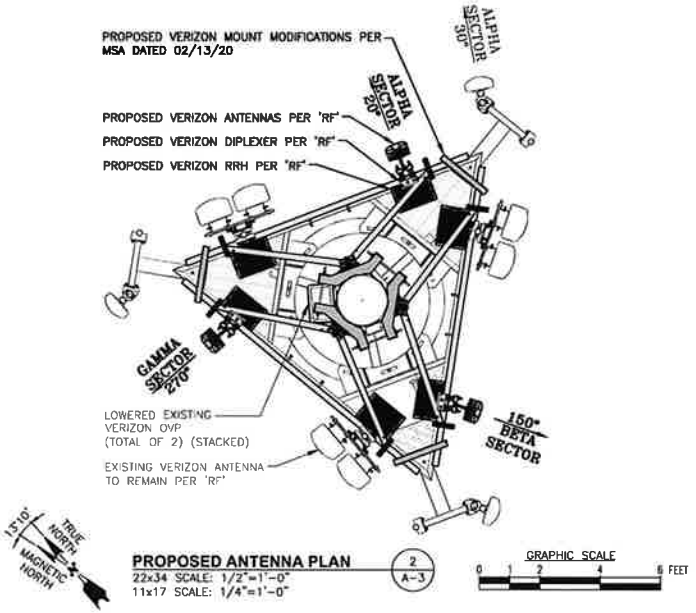


EXISTING ANTENNA PLAN (1 / A-3)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

GRAPHIC SCALE 0 1 2 4 6 FEET



PROPOSED ANTENNA PLAN (2 / A-3)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

GRAPHIC SCALE 0 1 2 4 6 FEET

PREPARED FOR: CELLCO PARTNERSHIP D/B/A

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CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	SLT
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

SHEET TITLE
ANTENNA PLAN

SHEET NUMBER
A-3

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS, AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS 1. HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.

verizon

HUDSON
Design Group LLC

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FAX: (978) 336-5586

Daniel P. Hamm

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE CITED HEREON

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	DLT
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

SHEET TITLE
STRUCTURAL NOTES
&
SPECIAL INSPECTIONS

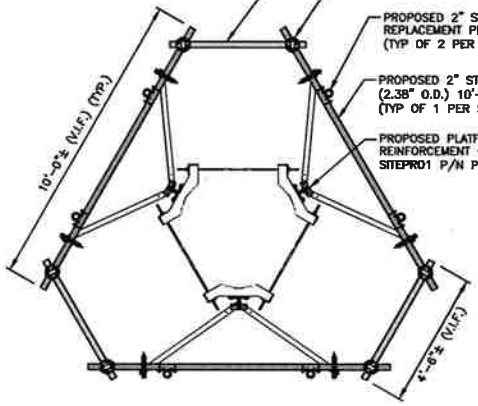
SHEET NUMBER
SN-1

TOWER STRUCTURAL NOTE:

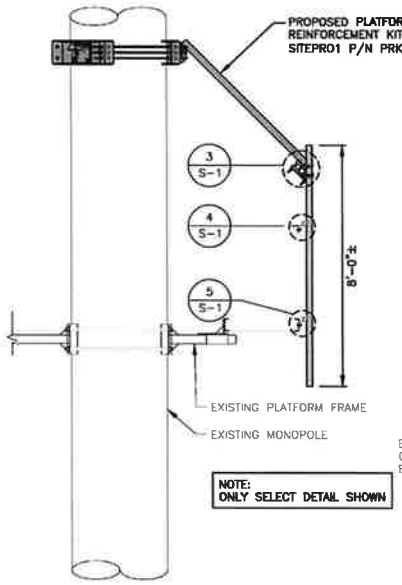
AN ANALYSIS OF THE CAPACITY OF THE EXISTING STRUCTURE TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 20, 2020 (REV. 1)

ANTENNA FRAME NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC.
DATED: FEBRUARY 13, 2020 (REV. 1)

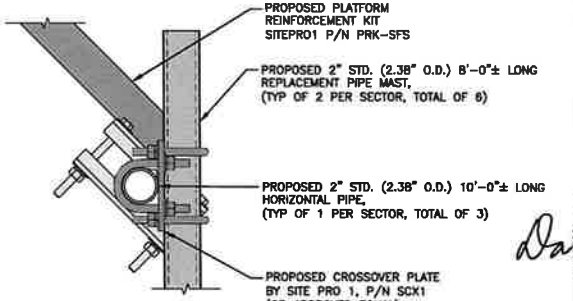


PROPOSED MOUNT MODIFICATION DETAIL 1/S-1
SCALE: N.T.S

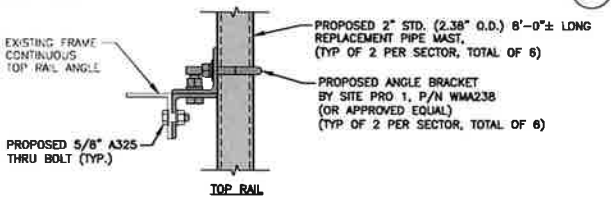


NOTE:
ONLY SELECT DETAIL SHOWN

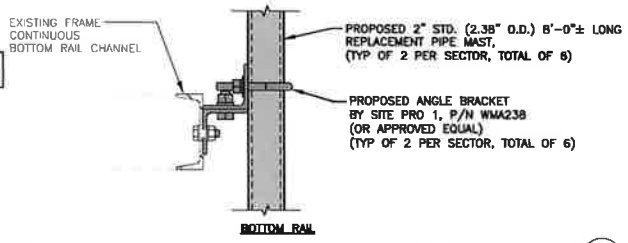
PLATFORM REINFORCEMENT SECTION 2/S-1
SCALE: N.T.S



PLATFORM REINFORCEMENT KIT TO PIPE MAST CONNECTION DETAIL 3/S-1
SCALE: N.T.S



REPLACEMENT PIPE TO FRAME CONNECTION DETAIL 4/S-1
SCALE: N.T.S



REPLACEMENT PIPE TO FRAME CONNECTION DETAIL 5/S-1
SCALE: N.T.S

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.
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Daniel P. Hamm

CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN

CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	SLY
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

SHEET TITLE
ELEVATION

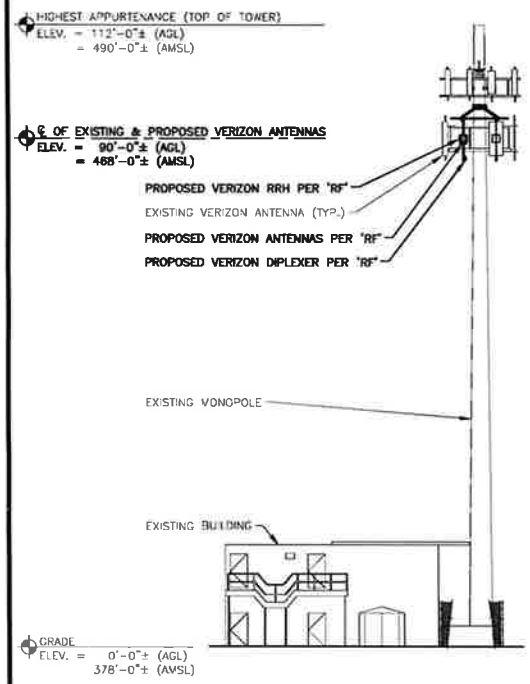
SHEET NUMBER
S-1

BILL OF MATERIALS

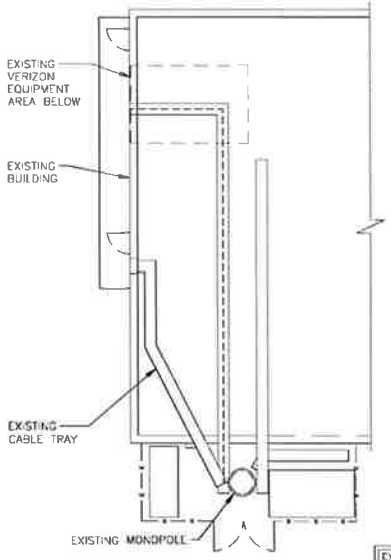
SITE NAME: GERMANTOWN CT

ITEM	DESCRIPTION	QTY	LENGTH	COMMENTS
(1)	ANTENNA–CDMA 850 (EXISTING) BXA–80080–6CF	2		MOUNTED TO SECTOR FRAME (EXISTING)
(1A)	ANTENNA–CDMA 850 (EXISTING) BXA–80063–6BF	1		MOUNTED TO SECTOR FRAME (EXISTING)
(2)	**ANTENNA – (PROPOSED) XXDWMM–12.5–65–8T– CBRS_PORT1_3550_80 T ANTENNA**	**3**		**MOUNTED TO SECTOR FRAME**
(3)	ANTENNA–LTE 700/850/1900 JAHH–65B–R3B	3		MOUNTED TO SECTOR FRAME
(4)	ANTENNA–LTE 700/850/2100 JAHH–65B–R3B	3		MOUNTED TO SECTOR FRAME
(5)	6x12 HYBRID CABLE (EXISTING)	2	160 FT.	ROUTE FROM INDOOR EQUIPMENT TO ANTENNA SECTOR FRAME
(6)	**POWER SAMSUNG JUMPER (PROPOSED)**	**9**	**15 FT.**	**ROUTE FROM UPPER OVP TO RRHs**
(6)	**FIBER SAMSUNG JUMPER (PROPOSED)**	**9**	**15 FT.**	**ROUTE FROM UPPER OVP TO RRHs**
(7)	**1/2" TOP COAX JUMPERS (PROPOSED)**	**12**	**6 FT.**	**ROUTE FROM RRH TO ANTENNA**
(7)	1/2" TOP COAX JUMPERS (EXISTING)	48	6 FT.	ROUTE FROM RRH TO DIPLEXER AND TO ANTENNA
(8)	**CBRS RRH (PROPOSED)**	**3**		**CBRS–RT4401–48A PIPE MOUNTED**
(8)	**700/850 LTE RRH (PROPOSED)**	**3**		**(B5/B13) SAMSUNG BR04C PIPE MOUNTED**
(8)	**1900/2100 LTE RRH (PROPOSED)**	**3**		**(B2/B66A) SAMSUNG BR049 PIPE MOUNTED**
(9)	**QUADPLEXER– CBC78T–DS–43–2X (PROPOSED)**	**3**		**MOUNTED TO SECTOR FRAME**
(10)	UPPER OVP (EXISTING)	2		MOUNTED TO SECTOR FRAME
(11)	LOWER OVP (EXISTING)	2		MOUNTED INSIDE EQUIPMENT CABINET

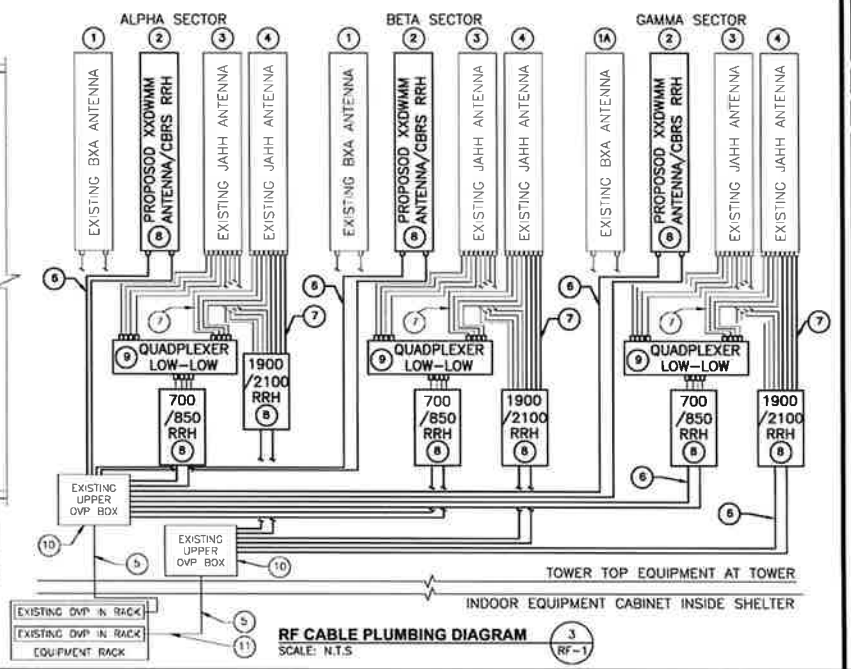
RF BOM IS COMPILED FROM ANTENNA RECOMMENDATION DATA SHEET DATED 01/16/2020 (REV. 1)



ELEVATION (1 / RF-1)
SCALE: N.T.S



SITE PLAN (2 / RF-1)
SCALE: N.T.S



RF CABLE PLUMBING DIAGRAM (3 / RF-1)
SCALE: N.T.S

PREPARED FOR: CELLCO PARTNERSHIP D.B.A.
verizon

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CHECKED BY: JX

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	02/21/20	REVISED PER NEW RFDS	SAY
0	12/13/19	ISSUED FOR CONSTRUCTION	SF

SITE NAME:
GERMANTOWN CT

SITE ADDRESS:
50 NEWTOWN ROAD
DANBURY, CT 06810

SHEET TITLE
RF PLUMBING DIAGRAM AND BILL OF MATERIALS

SHEET NUMBER
RF-1

Specifications

The table below outlines the main specifications of the RRH.

Table 1. Specifications

Item	RT4401-48A
Air Technology	LTE
Band	Band 48 (3.5 GHz)
Operating Frequency (MHz)	3550 to 3700
RF Chain	4TX/4RX
Input Power	-48 V DC (-38 to -57 V DC, 1 SKU), with clip-on AC-DC converter (Option)
Dimension (W × D × H) (mm)	8.55 in. (217.4) × 4.15 in. (105.5) × 13.91 in. (353.5) * RRH only 11.39 in. (289.4) × 5.45 in. (138.5) × 16.16 in. (410.5) * with Clip-on antenna, AC-DC power unit
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A
	[B48]: FCC 47 CFR 96.41 e)
Spectrum Analyzer	TX/RX Support
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
Operating Humidity	5 to 100 [%] (RH), condensing, not to exceed 30 g/m^3 absolute humidity
Altitude	-60 to 1,800 m
Earthquake	Telcordia Earthquake Risk Zone4 (Telcordia GR-63-CORE)
Vibration in Use Transportation Vibration	Office Vibration Transportation Vibration
Noise	Fanless (natural convection cooling)
Wind Resistance	Telcordia GR-487-CORE, Section 3.34
EMC	FCC Title 47, CFR Part 96
Safety	UL 60950-1 2nd ED

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Item	RT4401-48A
	UL 62368-1 UL 60950-22
RF	FCC Title 47, CFR Part 96

The table below outlines the AC/DC power unit specifications of the RRH system.

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[CBRS] Clip-on Antenna Specifications

VzW accepted IP45 in FLD, but IP55 is Samsung Spec.

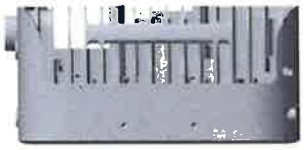
Items	Clip-on Antenna, BASTA**
Antenna Gain	12.5 ± 0.5 dBi (Max 13 dBi)
Horizontal BW (-3dB)	65° ± 5°
Vertical BW (-3dB)	17° ±3°
Electrical Tilt	8° (fixed) ±2°
Front-to-Back Ratio	> 25 dB
Port-to-Port Tracking	< 3 dB
VSWR	< 1.5
Isolation	> 25 dB
Ingress Protection	**IP55**
Size	220(W)×313(H)×34.3(D) mm (*) (8.7 x 12.3 x 1.4 inch.)
Weight	< **2.0** kg [Typ. 1.3 kg]
It is required that the radio should be weatherproofed properly with JMA WPS Boot with external antenna or with Weatherproof Boot for clip-on antennas.	

Antenna includes integrated cable with connector

* Design is subject to minor change

** Ant. spec. follows NGMN recommendations on Base Station Antenna Standards (BASTA). For example, 'mean ± tolerance of 86.6%' is applied to double-sided specification of statistical RF parameters.

[CBRS RRH] Spec.



Current Size: 216 x 307 x 105.5 mm (6.99L)
(8.5 x 12.1 x 4.1 inch., excluding Port Guard)
Design is subject to minor change

Item	Specification
Band	Band 48 (3.5 GHz)
Frequency	3550~3700 MHz
IBW	150 MHz
OBW	80 MHz
# of Carriers	5/10/15/20 MHz x 4 carriers
RF Chain	4TX / 4RX
RF Output Power & EIRP	4 path x 5 W (Total: 20 W = 43 dBm) (EIRP: 47 dBm / 10 MHz)
RX Sensitivity	Typical : -101.5 dBm @ 1 Rx (3GPP 36.104, Wide Area)
Modulation	256-QAM support (1024-QAM with 1~2dB power back-off)
Input Power	-48 VDC (-38 to -57 VDC, 1 SKU), with clip-on AC-DC converter (Option)
Power Consumption	About 160 Watt @ 100% RF load, typical conditions
Volume	Under 7L (w/o Antenna), Under 9.6L (with antenna)
Weight	Under 8.0 kg (18.64 lb) (w/o Antenna), Under 10.5 Kg (with ant.)
Operating Temperature	-40°C (-40°F) ~ 55°C (131°F) (W/o solar load)
Cooling	Natural convection
Unwanted Emission	3GPP 36.104 Category A [B48] : FCC 47 CFR 96.41 e)
Optic Interface	20km, 2 ports (9.8Gbps x 2), SFP, single mode, duplex or Bi-Di
CPRI Cascade	Not supported
# of Antenna Port	4
External Alarm (UDA)	4
RET	AISG 2.2
TMA & built-in Bias-T I//F and PIM cancellation	Not supported
Mounting Options	Pole, wall, tower, back to back, side by side (for external ant), 3 RRH with Clip-on Antenna on the pole
Antenna Type	Integrated (Clip-on) antenna (Option), External antenna (Option)
NB-IoT	Not Supported (HW Resource reserved for 1 Guard Band NB-IoT per LTE carrier)
Spectrum Analyzer	TX/RX Support
External Alarm (UDA)	4
5G NR	Support with S/W upgrade
XRAN	Support with S/W upgrade

SAMSUNG

Dual-Band Radio Unit
700/850MHz (B13/B5)

RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

Product Data Sheet* HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

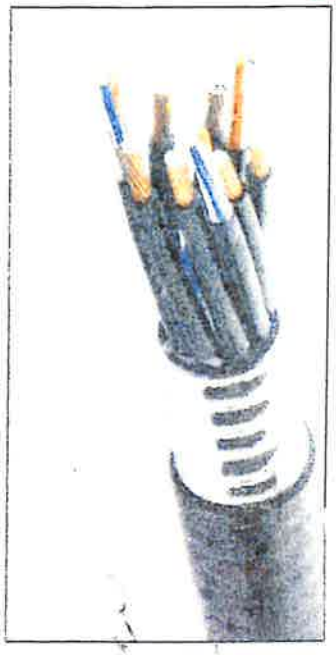


Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket:	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Mechanical Properties			
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Fiber Optic Cable Properties			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
DC Power Cable Properties			
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Environmental			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

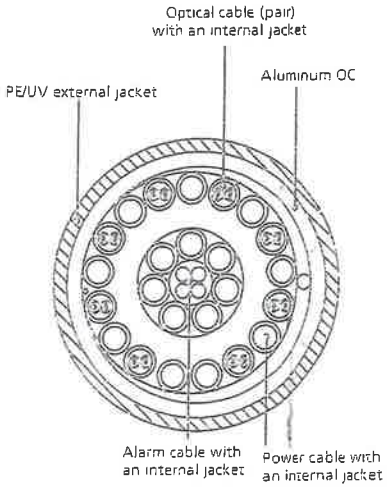


Figure 2: Construction Detail

* This data is provisional and subject to change

All information contained in the present datasheet is subject to confirmation at time of ordering.

ATTACHMENT 3

	General	Power	Density					
Site Name: Germantown (Danbury)								
Tower Height: 110Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	1	275	100	850	0.0112	0.5667	0.20%	
*AT&T	3	1476	100	700	0.1802	0.4667	3.86%	
*AT&T	1	659	100	850	0.0268	0.5667	0.47%	
*AT&T	2	3664	100	1900	0.2982	1.0000	2.98%	
*AT&T	1	3837	100	2100	0.1562	1.0000	1.56%	
*AT&T	1	1045	100	2300	0.0425	1.0000	0.43%	
*MetroPCS	3	444	108	2140	0.0460	1.0000	0.46%	
*Clearwire	2	153	78	2496	0.0212	1.0000	0.21%	
*Clearwire	1	211	78	11 GHz	0.0146	1.0000	0.15%	
*Nextel iDEN	12	100	78	851	0.0832	0.5673	1.47%	
*Sprint	3	562	78	2657	0.1170	1.0000	1.17%	
*Sprint	2	4	78	22500	0.0006	1.0000	0.01%	
VZW PCS	**1**	**1514**	**90**	**0.0672**	**1970**	**1.0000**	**6.72%**	
VZW Cellular CDMA	**1**	**500**	**90**	**0.0222**	**869**	**0.5793**	**3.83%**	
VZW Cellular LTE	**1**	**500**	**90**	**0.0222**	**880**	**0.5866**	**3.78%**	
VZW AWS	**1**	**1447**	**90**	**0.0642**	**2145**	**1.0000**	**6.42%**	
VZW 700	**1**	**642**	**90**	**0.0285**	**746**	**0.4973**	**5.73%**	
VZW CBRS	**1**	**50**	**90**	**0.0022**	**3550**	**2.3660**	**0.09%**	
								39.55%
* Source: Siting Council								

ATTACHMENT 4

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

GERMANTOWN CT

50 NEWTOWN ROAD
DANBURY, CT 06810

Antennas Mounted to the Monopole

Prepared for:

verizon

20 Alexander Drive
Wallingford, CT 06492

Dated: February 20, 2020 (Rev.1)
December 10, 2019

Prepared by:

HDG HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by VERIZON to conduct a structural evaluation of the 110' monopole supporting the existing and proposed VERIZON's antennas located at elevation 90' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of VERIZON's existing and proposed antennas listed below.

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Centek Engineering, dated December 18, 2014, was available and obtained for our use.

The previous structural analysis report and modification drawings prepared by this office, dated July 22, 2016, were used for analysis.

The Mount Structural Analysis report prepared by this office, dated February 13, 2020, was used for this analysis.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **78.4%** - (Pole Section L4 from El.47' to El.72' Controlling).

HUDSON
Design Group LLC

APPURTENANCES CONFIGURATION: (VERIZON RFDS 1/16/2020)

Tenant	Appurtenances	Elev.	Mount
AT&T	(3) Powerwave 7770 Antennas	100'	T - Frame
AT&T	(1) OPA-65R-LCUU-H6 Antenna	100'	T - Frame
AT&T	(2) OPA-65R-LCUU-H4 Antennas	100'	T - Frame
AT&T	(1) HPA-65R-BUU-H6 Antenna	100'	T - Frame
AT&T	(2) SBNHH-1D65A Antennas	100'	T - Frame
AT&T	(1) 800 10965 Antenna	100'	T - Frame
AT&T	(2) 800 10964 Antennas	100'	T - Frame
AT&T	(6) LGP21401	100'	T - Frame
AT&T	(6) TPX-070821	100'	T - Frame
AT&T	(3) RRUS-11	100'	T - Frame
AT&T	(9) RRUS-32	100'	T - Frame
AT&T	(3) B14 4478	100'	T - Frame
AT&T	(2) DC6-48-60-18-8F	100'	T - Frame
AT&T	(1) DC6-48-60-18-8C	100'	T - Frame
VERIZON	(1) BXA-80063-6BF Antenna	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	(2) BXA-80080-6CF Antennas	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	(6) JAHH-65B-R3B Antennas	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	***(3 XXDWMM Antennas***	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	***(3) B5/B13 RRH-BR04C***	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	***(3) B2/B66A RRH-BR049***	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	***(3) CBRS RRH-RT4401***	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	***(3) CBC78T-DS-43-2X***	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**
VERIZON	(2) OVP Box	90'	Platform w/handrails **w/horiz. Pipe & Platform Reinforcement**

Proposed VERIZON Appurtenances shown in Bold.

VERIZON EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
VERIZON	(6) 1 5/8" Cables	90'	Inside Monopole
VERIZON	(2) Fiber Cable	90'	Inside Monopole

Proposed VERIZON Coax Cables shown in Bold.

HUDSON
Design Group LLC

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	10.9 %	97.5 – 111	PASS	
Pole Section-L2	10.9 %	97 – 97.5	PASS	
Pole Section-L3	68.7 %	72 – 97	PASS	
Pole Section-L4	**78.4 %**	47 – 72	PASS	**Controlling**
Pole Section-L5	74.6 %	21 – 47	PASS	
Pole Section-L6	74.3 %	1 – 21	PASS	

HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Fairfield
   Wind Load: 110 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Nominal Ice Thickness: 0.75 inch

2. Approximate height above grade to proposed antennas: 90'

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRUs and quadplexers be mounted on the existing steel platform supported by the monopole.

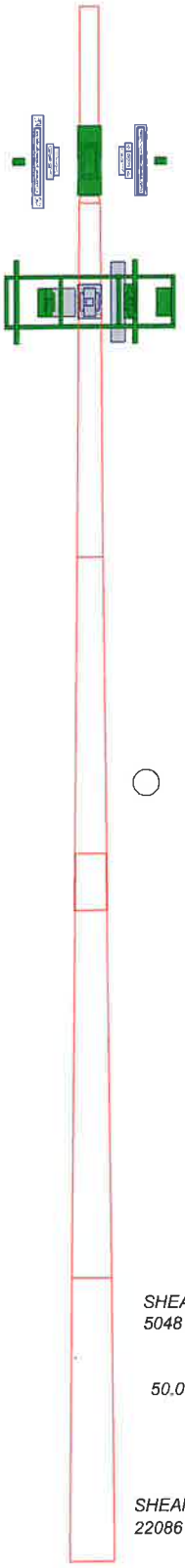
HUDSON
Design Group LLC

Photo 1: Photo illustrating the monopole with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS

Section	1	2	3	4	5	6
Length (ft)	13.50	0.50	25.00	25.00	30.00	20.00
Number of Sides	1	1	18	18	18	18
Thickness (in)	0.3750	0.3750	0.2500	0.3000	0.3650	0.3890
Socket Length (ft)				4.00		
Top Dia (in)	16.0000	16.0000	17.4900	22.7350	26.5408	33.3920
Bot Dia (in)	16.0000	17.4900	22.7350	27.9800	33.3920	37.0000
Grade	A36	A36	A36	A572-65	A572-65	A572-65
Weight (lb) 10674.5	845.6	32.8	1340.8	2029.7	3500.8	2924.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Powerwave 7770 w/mount pipe	100	B14 4478	100
Powerwave 7770 w/mount pipe	100	DC6-48-60-18-8C	100
Powerwave 7770 w/mount pipe	100	Sabre 12' V-B00M (3) (ATI)	99
OPA-65R-LCUU-H6 w/mount pipe	100	PiROD 13' Platform w/handrail (Verizon - existing)	90
OPA-65R-LCUU-H4 w/mount pipe	100		
OPA-65R-LCUU-H4 w/mount pipe	100	BXA-80063-6BF-EDIN w/mount pipe	90
HPA-65R-BUU-H6 w/mount pipe	100	BXA-80080-6CF-EDIN w/mount pipe	90
SBNHH-1D65A w/ Mount Pipe	100	BXA-80080-6CF-EDIN w/mount pipe	90
SBNHH-1D65A w/ Mount Pipe	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) Powerwave TMA LGP21401	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) TPX-070821 Triplexer	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) TPX-070821 Triplexer	100	JAHH-65B-R3B w/ Mount Pipe	90
(2) TPX-070821 Triplexer	100	RxxDC-3315-PF-48	90
Ericsson RRUS-11	100	RxxDC-3315-PF-48	90
Ericsson RRUS-11	100	XXDWMM (Verizon - proposed)	90
Ericsson RRUS-11	100	XXDWMM	90
(2) Ericsson RRUS-32	100	XXDWMM	90
(2) Ericsson RRUS-32	100	B5/B13 RRH-BR04C	90
(2) Ericsson RRUS-32	100	B5/B13 RRH-BR04C	90
DC6-48-60-18-8F	100	B5/B13 RRH-BR04C	90
DC6-48-60-18-8F	100	B2/B66A RRH-BR049	90
800 10965 w/ Mount Pipe (ATI)	100	B2/B66A RRH-BR049	90
800 10964 w/ Mount Pipe	100	B2/B66A RRH-BR049	90
800 10964 w/ Mount Pipe	100	CBRS RRH-RT4401	90
Ericsson RRUS-32	100	CBRS RRH-RT4401	90
Ericsson RRUS-32	100	CBRS RRH-RT4401	90
Ericsson RRUS-32	100	CBC78T-DS-43-2X	90
B14 4478	100	CBC78T-DS-43-2X	90
B14 4478	100	CBC78T-DS-43-2X	90

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi	A572-65	65 ksi	80 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 110.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 78.4%

ALL REACTIONS ARE FACTORED

AXIAL 45685 lb

SHEAR 5048 lb *MOMENT 433000 lb-ft*

TORQUE 173 lb-ft
50.0 mph WIND - 0.7500 in ICE

AXIAL 23579 lb

SHEAR 22086 lb *MOMENT 1855297 lb-ft*

TORQUE 991 lb-ft
REACTIONS - 110.0 mph WIND

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: GERMANTOWN CT		
Project: 110 ft Monopole		
Client: VERIZON	Drawn by: kw	App'd:
Code: TIA-222-G	Date: 12/10/19	Scale: NTS
Path:		Dwg No. E-1

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 110.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56.0 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 60.0 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	111.00-97.50	13.50	0.00	Round	16.0000	16.0000	0.3750		A36 (36 ksi)
L2	97.50-97.00	0.50	0.00	Round	16.0000	17.4900	0.3750		A36 (36 ksi)
L3	97.00-72.00	25.00	0.00	18	17.4900	22.7350	0.2500	1.0000	A572-65 (65 ksi)
L4	72.00-47.00	25.00	4.00	18	22.7350	27.9800	0.3000	1.2000	A572-65 (65 ksi)
L5	47.00-21.00	30.00	0.00	18	26.5408	33.3920	0.3650	1.4600	A572-65 (65 ksi)
L6	21.00-1.00	20.00		18	33.3920	37.0000	0.3890	1.5560	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (AT&T)	B	Yes	Surface Ar (CaAa)	100.00 - 16.00	6	6	0.000 0.000	1.9800		1.04
1 5/8	B	Yes	Surface Ar (CaAa)	100.00 - 16.00	6	6	0.000 0.000	1.9800		1.04

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
WR-VG122ST-BRD A	B	No	Yes	Inside Pole	100.00 - 16.00	4	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
FB-L98B-002	B	No	Yes	Inside Pole	100.00 - 16.00	2	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
WR-VG122ST-BRD A	B	No	Yes	Inside Pole	100.00 - 16.00	2	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
**********									
1 5/8 (Verizon - existing)	C	No	Yes	Inside Pole	90.00 - 16.00	6	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1 5/8 Fiber Cable	C	No	Yes	Inside Pole	90.00 - 16.00	2	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Sabre 12' V-B00M (3) (AT&T)	A	None		0.0000	99.00	No Ice	33.64	33.64	1692.00
						1/2" Ice	48.17	48.17	2256.00
						1" Ice	62.70	62.70	2820.00
Powerwave 7770 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	C	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	5.65	4.10	57.25
						1/2" Ice	6.03	4.75	103.17
						1" Ice	6.42	5.42	155.38
OPA-65R-LCUU-H6 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	9.95	7.53	112.53
						1/2" Ice	10.50	8.56	192.76
						1" Ice	11.04	9.45	282.09
OPA-65R-LCUU-H4 w/mount pipe	B	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.18	4.55	68.25
						1/2" Ice	6.57	5.16	120.98
						1" Ice	6.98	5.78	179.91
OPA-65R-LCUU-H4 w/mount pipe	C	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	6.18	4.55	68.25
						1/2" Ice	6.57	5.16	120.98
						1" Ice	6.98	5.78	179.91
HPA-65R-BUU-H6 w/mount pipe	A	From Face	3.50 0.00 0.00	0.0000	100.00	No Ice	9.72	7.15	68.55
						1/2" Ice	10.29	8.33	144.37
						1" Ice	10.83	9.23	228.36
SBNHH-1D65A w/ Mount	B	From Face	3.50	0.0000	100.00	No Ice	6.28	5.34	55.90

tnxTower	Job: GERMANTOWN CT	Page: 3 of 8
Hudson Design Group, LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX:	Project: 110 ft Monopole	Date: 16:08:45 02/20/20
	Client: VERIZON	Designed by: SO

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pipe			0.00				1/2" Ice	6.76	6.20	111.21
			0.00				1" Ice	7.22	6.93	173.23
SBNHH-1D65A w/ Mount Pipe	C	From Face	3.50	0.00	0.0000	100.00	No Ice	6.28	5.34	55.90
			0.00				1/2" Ice	6.76	6.20	111.21
			0.00				1" Ice	7.22	6.93	173.23
(2) Powerwave TMA LGP21401	A	From Face	2.50	0.00	0.0000	100.00	No Ice	1.05	0.38	14.10
			0.00				1/2" Ice	1.18	0.47	21.29
			0.00				1" Ice	1.32	0.57	30.37
(2) Powerwave TMA LGP21401	B	From Face	2.50	0.00	0.0000	100.00	No Ice	1.05	0.38	14.10
			0.00				1/2" Ice	1.18	0.47	21.29
			0.00				1" Ice	1.32	0.57	30.37
(2) Powerwave TMA LGP21401	C	From Face	2.50	0.00	0.0000	100.00	No Ice	1.05	0.38	14.10
			0.00				1/2" Ice	1.18	0.47	21.29
			0.00				1" Ice	1.32	0.57	30.37
(2) TPX-070821 Triplexer	A	From Face	2.50	0.00	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00				1/2" Ice	0.56	0.15	10.96
			0.00				1" Ice	0.66	0.20	15.74
(2) TPX-070821 Triplexer	B	From Face	2.50	0.00	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00				1/2" Ice	0.56	0.15	10.96
			0.00				1" Ice	0.66	0.20	15.74
(2) TPX-070821 Triplexer	C	From Face	2.50	0.00	0.0000	100.00	No Ice	0.47	0.10	7.50
			0.00				1/2" Ice	0.56	0.15	10.96
			0.00				1" Ice	0.66	0.20	15.74
Ericsson RRUS-11	A	From Face	2.50	0.00	0.0000	100.00	No Ice	2.79	1.19	50.70
			0.00				1/2" Ice	3.00	1.34	71.57
			0.00				1" Ice	3.21	1.50	95.48
Ericsson RRUS-11	B	From Face	2.50	0.00	0.0000	100.00	No Ice	2.79	1.19	50.70
			0.00				1/2" Ice	3.00	1.34	71.57
			0.00				1" Ice	3.21	1.50	95.48
Ericsson RRUS-11	C	From Face	2.50	0.00	0.0000	100.00	No Ice	2.79	1.19	50.70
			0.00				1/2" Ice	3.00	1.34	71.57
			0.00				1" Ice	3.21	1.50	95.48
(2) Ericsson RRUS-32	A	From Face	2.50	0.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
(2) Ericsson RRUS-32	B	From Face	2.50	0.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
(2) Ericsson RRUS-32	C	From Face	2.50	0.00	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
DC6-48-60-18-8F	A	From Face	2.00	0.00	0.0000	100.00	No Ice	0.79	0.79	20.00
			0.00				1/2" Ice	1.27	1.27	35.12
			0.00				1" Ice	1.45	1.45	52.57
DC6-48-60-18-8F	B	From Face	2.00	0.00	0.0000	100.00	No Ice	0.79	0.79	20.00
			0.00				1/2" Ice	1.27	1.27	35.12
			0.00				1" Ice	1.45	1.45	52.57
**********										
800 10965 w/ Mount Pipe (AT&T)	A	From Face	3.50	0.00	0.0000	100.00	No Ice	13.92	7.50	134.55
			0.00				1/2" Ice	14.50	8.71	229.58
			0.00				1" Ice	15.07	9.65	333.52
800 10964 w/ Mount Pipe	B	From Face	3.50	0.00	0.0000	100.00	No Ice	10.25	5.53	112.90
			0.00				1/2" Ice	10.77	6.41	187.51
			0.00				1" Ice	11.27	7.16	269.56
800 10964 w/ Mount Pipe	C	From Face	3.50	0.00	0.0000	100.00	No Ice	10.25	5.53	112.90
			0.00				1/2" Ice	10.77	6.41	187.51
			0.00				1" Ice	11.27	7.16	269.56

tnxTower	Job: GERMANTOWN CT	Page: 4 of 8
Hudson Design Group, LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX:	Project: 110 ft Monopole	Date: 16:08:45 02/20/20
	Client: VERIZON	Designed by: SO

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Ericsson RRUS-32	A	From Face	2.50	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
Ericsson RRUS-32	B	From Face	2.50	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
Ericsson RRUS-32	C	From Face	2.50	0.0000	100.00	No Ice	3.31	2.42	77.00
			0.00			1/2" Ice	3.56	2.64	104.93
			0.00			1" Ice	3.81	2.86	136.47
B14 4478	A	From Face	2.50	0.0000	100.00	No Ice	1.65	0.93	60.00
			0.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
B14 4478	B	From Face	2.50	0.0000	100.00	No Ice	1.65	0.93	60.00
			0.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
B14 4478	C	From Face	2.50	0.0000	100.00	No Ice	1.65	0.93	60.00
			0.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
DC6-48-60-18-8C	C	From Face	2.00	0.0000	100.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
**********									
PiROD 13' Platform w/handrail (Verizon - existing)	A	None		0.0000	90.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
						1" Ice	49.10	49.10	3082.00
BXA-80063-6BF-EDIN w/mount pipe	A	From Leg	4.00	0.0000	90.00	No Ice	7.33	5.46	41.10
			2.00			1/2" Ice	7.79	6.38	98.38
			0.00			1" Ice	8.25	7.18	163.05
BXA-80080-6CF-EDIN w/mount pipe	B	From Leg	4.00	0.0000	90.00	No Ice	6.26	6.46	47.20
			2.00			1/2" Ice	6.93	7.73	104.60
			0.00			1" Ice	7.57	8.85	169.77
BXA-80080-6CF-EDIN w/mount pipe	C	From Leg	4.00	0.0000	90.00	No Ice	6.26	6.46	47.20
			2.00			1/2" Ice	6.93	7.73	104.60
			0.00			1" Ice	7.57	8.85	169.77
JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			-6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			-6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	0.0000	90.00	No Ice	9.90	7.65	88.85
			-6.00			1/2" Ice	10.56	8.83	165.42
			0.00			1" Ice	11.19	9.73	250.16
RxxDC-3315-PF-48	A	From Leg	2.50	0.0000	90.00	No Ice	4.59	2.52	32.00
			0.00			1/2" Ice	4.86	2.73	67.82
			0.00			1" Ice	5.14	2.95	107.61
RxxDC-3315-PF-48	B	From Leg	2.50	0.0000	90.00	No Ice	4.59	2.52	32.00
			0.00			1/2" Ice	4.86	2.73	67.82

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	5.14	2.95	107.61
**********									
XXDWMM	A	From Leg	4.00	0.0000	90.00	No Ice	4.80	2.40	20.00
(Verizon - proposed)			-2.00			1/2" Ice	5.07	2.60	59.31
			0.00			1" Ice	5.35	2.81	102.70
XXDWMM	B	From Leg	4.00	0.0000	90.00	No Ice	4.80	2.40	20.00
			-2.00			1/2" Ice	5.07	2.60	59.31
			0.00			1" Ice	5.35	2.81	102.70
XXDWMM	C	From Leg	4.00	0.0000	90.00	No Ice	4.80	2.40	20.00
			-2.00			1/2" Ice	5.07	2.60	59.31
			0.00			1" Ice	5.35	2.81	102.70
B5/B13 RRH-BR04C	A	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C	B	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B5/B13 RRH-BR04C	C	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.01	82.00
			0.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
B2/B66A RRH-BR049	A	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BR049	B	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
B2/B66A RRH-BR049	C	From Leg	2.50	0.0000	90.00	No Ice	1.88	1.25	97.50
			0.00			1/2" Ice	2.05	1.39	115.84
			0.00			1" Ice	2.22	1.54	136.97
CBRS RRH-RT4401	A	From Leg	2.50	0.0000	90.00	No Ice	2.16	1.42	44.00
			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
CBRS RRH-RT4401	B	From Leg	2.50	0.0000	90.00	No Ice	2.16	1.42	44.00
			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
CBRS RRH-RT4401	C	From Leg	2.50	0.0000	90.00	No Ice	2.16	1.42	44.00
			0.00			1/2" Ice	2.36	1.59	61.40
			0.00			1" Ice	2.57	1.77	81.69
CBC78T-DS-43-2X	A	From Leg	2.50	0.0000	90.00	No Ice	0.37	0.51	22.00
			0.00			1/2" Ice	0.45	0.60	28.34
			0.00			1" Ice	0.53	0.70	36.37
CBC78T-DS-43-2X	B	From Leg	2.50	0.0000	90.00	No Ice	0.37	0.51	22.00
			0.00			1/2" Ice	0.45	0.60	28.34
			0.00			1" Ice	0.53	0.70	36.37
CBC78T-DS-43-2X	C	From Leg	2.50	0.0000	90.00	No Ice	0.37	0.51	22.00
			0.00			1/2" Ice	0.45	0.60	28.34
			0.00			1" Ice	0.53	0.70	36.37

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Hudson Design Group, LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX:	**Project** 110 ft Monopole	**Date** 16:08:45 02/20/20
	Client VERIZON	**Designed by** SO

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	19725.78	0.00	0.00	-187.13	204.58	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	23670.94	-135.69	-21179.50	-1789077.91	13849.86	-755.47
0.9 Dead+1.6 Wind 0 deg - No Ice	17753.20	-135.69	-21179.50	-1768358.17	13614.81	-759.60
1.2 Dead+1.6 Wind 30 deg - No Ice	23670.94	10447.83	-18274.14	-1542675.15	-880728.23	-985.42
0.9 Dead+1.6 Wind 30 deg - No Ice	17753.20	10447.83	-18274.14	-1524804.21	-870624.01	-990.84
1.2 Dead+1.6 Wind 60 deg - No Ice	23670.94	18231.85	-10472.24	-882911.94	-1539247.39	-951.02
0.9 Dead+1.6 Wind 60 deg - No Ice	17753.20	18231.85	-10472.24	-872665.14	-1521530.63	-956.27
1.2 Dead+1.6 Wind 90 deg - No Ice	23670.94	21130.67	135.69	13362.90	-1785190.11	-661.68
0.9 Dead+1.6 Wind 90 deg - No Ice	17753.20	21130.67	135.69	13257.76	-1764630.69	-665.35
1.2 Dead+1.6 Wind 120 deg - No Ice	23670.94	18367.54	10707.26	905925.09	-1552722.90	-195.47
0.9 Dead+1.6 Wind 120 deg - No Ice	17753.20	18367.54	10707.26	895517.39	-1534846.75	-196.58
1.2 Dead+1.6 Wind 150 deg - No Ice	23670.94	11083.48	19103.75	1603711.58	-931935.10	322.35
0.9 Dead+1.6 Wind 150 deg - No Ice	17753.20	11083.48	19103.75	1585357.65	-921287.14	324.16
1.2 Dead+1.6 Wind 180 deg - No Ice	23670.94	135.69	21179.50	1788597.49	-13341.59	754.92
0.9 Dead+1.6 Wind 180 deg - No Ice	17753.20	135.69	21179.50	1768005.75	-13242.17	759.07
1.2 Dead+1.6 Wind 210 deg - No Ice	23670.94	-10447.83	18274.14	1542205.61	881234.77	985.15
0.9 Dead+1.6 Wind 210 deg - No Ice	17753.20	-10447.83	18274.14	1524459.83	870995.38	990.56
1.2 Dead+1.6 Wind 240 deg - No Ice	23670.94	-18231.85	10472.24	882449.72	1539762.59	951.27
0.9 Dead+1.6 Wind 240 deg - No Ice	17753.20	-18231.85	10472.24	872326.16	1521908.38	956.51
1.2 Dead+1.6 Wind 270 deg - No Ice	23670.94	-21130.67	-135.69	-13828.69	1785715.68	662.23
0.9 Dead+1.6 Wind 270 deg - No Ice	17753.20	-21130.67	-135.69	-13599.37	1765016.09	665.89
1.2 Dead+1.6 Wind 300 deg - No Ice	23670.94	-18367.54	-10707.26	-906401.76	1553250.17	195.75
0.9 Dead+1.6 Wind 300 deg - No Ice	17753.20	-18367.54	-10707.26	-895867.03	1535233.42	196.86
1.2 Dead+1.6 Wind 330 deg - No Ice	23670.94	-11083.48	-19103.75	-1604195.14	932453.10	-322.71
0.9 Dead+1.6 Wind 330 deg - No Ice	17753.20	-11083.48	-19103.75	-1585712.40	921666.99	-324.49
1.2 Dead+1.0 Ice+1.0 Temp	45777.68	-0.00	-0.01	-1115.99	899.93	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	45777.68	-13.48	-4655.14	-406752.78	2375.67	-145.33
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	45777.68	2308.90	-4024.73	-351705.84	-199959.54	-172.70
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	45777.68	4012.62	-2315.89	-202736.45	-348460.19	-153.79
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	45777.68	4641.16	13.48	238.90	-403335.36	-93.67

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	45777.68	4026.10	2339.24	202832.80	-349881.67	-8.44
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	45777.68	2333.75	4040.80	351040.13	-202583.66	79.03
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	45777.68	13.48	4655.14	404386.23	-468.63	145.33
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	45777.68	-2308.90	4024.73	349339.82	201866.89	172.69
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	45777.68	-4012.62	2315.89	200370.46	350368.16	153.78
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	45777.68	-4641.16	-13.48	-2605.41	405243.65	93.67
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	45777.68	-4026.10	-2339.24	-205199.83	351789.65	8.46
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	45777.68	-2333.75	-4040.80	-353407.18	204491.02	-79.02
Dead+Wind 0 deg - Service	19725.78	-22.58	-3523.78	-296245.45	2469.90	-128.68
Dead+Wind 30 deg - Service	19725.78	1738.28	-3040.39	-255458.50	-145572.48	-167.82
Dead+Wind 60 deg - Service	19725.78	3033.36	-1742.34	-146275.39	-254549.67	-161.99
Dead+Wind 90 deg - Service	19725.78	3515.65	22.58	2048.03	-295261.08	-112.75
Dead+Wind 120 deg - Service	19725.78	3055.93	1781.44	149768.33	-256798.48	-33.30
Dead+Wind 150 deg - Service	19725.78	1844.03	3178.42	265290.85	-154079.25	55.05
Dead+Wind 180 deg - Service	19725.78	22.58	3523.78	295842.25	-2029.02	128.68
Dead+Wind 210 deg - Service	19725.78	-1738.28	3040.39	255055.56	146013.33	167.81
Dead+Wind 240 deg - Service	19725.78	-3033.36	1742.34	145872.61	254990.72	161.98
Dead+Wind 270 deg - Service	19725.78	-3515.65	-22.58	-2450.89	295702.36	112.75
Dead+Wind 300 deg - Service	19725.78	-3055.93	-1781.44	-150171.44	257239.80	33.31
Dead+Wind 330 deg - Service	19725.78	-1844.03	-3178.42	-265695.82	154521.34	-55.04

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	111 - 97.5	16.1309	50	1.2279	0.0041
L2	97.5 - 97	12.6613	50	1.2238	0.0037
L3	97 - 72	12.5332	50	1.2229	0.0037
L4	72 - 47	6.6782	50	0.9505	0.0014
L5	51 - 21	3.2119	50	0.6190	0.0006
L6	21 - 1	0.4869	50	0.2342	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
100.00	Powerwave 7770 w/mount pipe	50	13.3025	1.2271	0.0040	59396
99.00	Sabre 12' V-B00M (3)	50	13.0459	1.2260	0.0039	40609
90.00	PiROD 13' Platform w/handrail	50	10.7665	1.1859	0.0029	7539

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Hudson Design Group, LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX:	Project: 110 ft Monopole	Date: 16:08:45 02/20/20
	Client: VERIZON	Designed by: SO

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	111 - 97.5	Pole	TP16x16x0.375	1	-4551.29	596412.00	10.9	Pass
L2	97.5 - 97	Pole	TP17.49x16x0.375	2	-4552.64	596412.00	10.9	Pass
L3	97 - 72	Pole	TP22.735x17.49x0.25	3	-10197.70	1325560.00	68.7Pass	
L4	72 - 47	Pole	TP27.98x22.735x0.3	4	-13315.30	1898820.00	78.4	Pass
L5	47 - 21	Pole	TP33.392x26.5408x0.365	5	-19488.20	2842680.00	74.6	Pass
L6	21 - 1	Pole	TP37x33.392x0.389	6	-23657.60	3358360.00	74.3	Pass
							Summary	
						Pole (L4)	78.4	Pass
						RATING =	**78.4**	**Pass**

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *GERMANTOWN CT*
Site Name: *0*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	45	in

Plate Data		
Diam:	51	in
Thick:	1.5	in
Grade:	60	ksi
Single-Rod B-eff:	14.68	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	1200	ft-kips
Axial, Pu:	20	kips
Shear, Vu:	20	kips
Eta Factor, η	0.55	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ŕ):	167.0 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	64.2% **Pass**	

Base Plate Results Flexural Check

		Non-Rigid
Base Plate Stress:	47.7 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	88.4% **Pass**	Y.L. Length: 25.61

n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a

* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *GERMANTOWN CT*
Site Name: *0*
App #: *0*

Pole Manufacturer:	*Other*

Anchor Rod Data		
Qty:	6	
Diam:	2.25	in
Rod Material:	Other	
Strength (Fu):	105	ksi
Yield (Fy):	125	ksi
Bolt Circle:	55	in

Plate Data		
Diam:	61	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	19.57	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	37	in
Thick:	0.389	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Reactions		
Mu:	660	ft-kips
Axial, Pu:	5	kips
Shear, Vu:	5	kips
Eta Factor, η	0.55	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Non-Rigid
Max Rod (Cu+ Vu/ń):	98.3 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	273.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	36.0% **Pass**	

Base Plate Results

	Flexural Check	Non-Rigid
Base Plate Stress:	28.7 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	53.1% **Pass**	Y.L. Length: 40.69

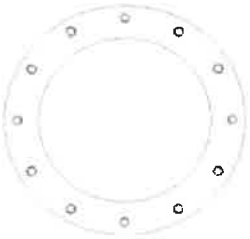
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

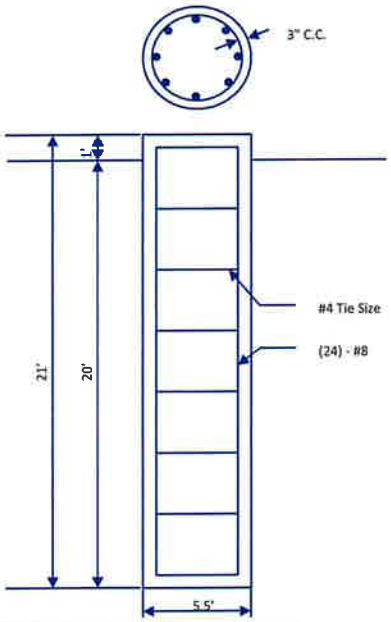
** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.1.103.14128 - Phase 1 Date: 12/10/2019

BU:	GERMANTOWN CT
Site Name:	
App Number:	N/A
Work Order:	

Monopole Drilled Pier



Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2008
Seismic Category:	B

Forces

Compression	24 kips
Shear	22 kips
Moment	1855 k-ft
Swelling Force	0 kips

Foundation Dimensions

Pier Diameter:	5.5 ft
Ext. above grade:	1 ft
Depth below grade:	20 ft

Material Properties

Number of Rebar:	24
Rebar Size:	8
Tie Size	4
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	3 in

Soil Profile: Profile 1

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3	0	3	120	0	28				
2	10	3	13	78	0	38				
3	16	13	29	43	0	38				

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	3.37 ft
Max Moment, Mu:	1904.42 k-ft
Soil Safety Factor:	2.33
Safety Factor Req'd:	1.33
RATING:	57.1%

Soil Axial Capacity

Skin Friction (k):	119.78 kips
End Bearing (k):	0.00 kips
Comp. Capacity (k), ϕCn:	119.78 kips
Comp. (k), Cu:	24.00 kips
RATING:	20.0%

Concrete/Steel Check

Mu (from soil analysis)	1904.42	k-ft
ϕMn	2360.22	k-ft
RATING:	80.7%	

rho provided	0.55	
rho required	0.33	OK
Rebar Spacing	6.59	
Spacing required	16.00	OK
Dev. Length required	16.38	
Dev. Length provided	43.82	OK

Overall Foundation Rating: 80.7%

ATTACHMENT 5

HUDSON Design Group LLC

November 13, 2019
February 13, 2020 (Rev. 1)

verizon

20 Alexander Drive
Wallingford, CT 06492

RE: Site Name: GERMANTOWN CT
Site Address: 50 Newtown Rd.
Danbury, CT 06810

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Verizon to perform a mount analysis on the existing Verizon antenna mounts to determine their capability of supporting the following equipment loading:

- (6) JAHH-65B-R3B Antennas (72"x13.8"x8.2" – Wt. = 64 lbs. /each)
- (1) BXA-80063-6BF Antenna (68.6"x11.2"x5.3" – Wt. = 20 lbs. /each)
- (2) BXA-80080-6CF Antennas (72.6"x11.2"x4.6" – Wt. = 22 lbs. /each)
- (2) Junction Box (23.0"x15.7"x10.3" – Wt. = 27 lbs. /each) (Tower Mount)
- **(3) XXDWMM-12.5 Antennas w/ CBRS RRH Clip on (16.2"x11.4"x5.5"– Wt. = 24 lbs. /each)**
- **(3) B2/B66A RRH-BR049 RRH's (15.0"x15.0"x10.0" – Wt. = 98 lbs. /each)**
- **(3) B5/B13 RRH-BR04C RRH's (15.0"x15.0"x8.1" – Wt. = 82 lbs. /each)**
- **(3) CBC78T-DS-43-2X Diplexers (6.4"x6.9"x9.6" – Wt. = 21 lbs. /each)**

**Proposed equipment shown in bold.*

No original structural design documents or fabrication drawings were available for the existing mount. HDG's subconsultant, ProVertic LLC, conducted a survey climb of the existing Verizon antenna mounts on November 7, 2019.

Based on our analysis, we have determined that the existing antenna mount **IS CAPABLE** of supporting the proposed installation with the following modifications:

- **Install new 2" std. (2.38" O.D.) horizontal pipe secured to existing antenna pipes (typ. of 1 per sector, total of 3).**
- **Install new platform reinforcement kit, P/N PRK-SFS (or approved equal) (typ. of 1 per sector, total of 3).**

	Member	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	23	LC1	149%	**FAIL**
Modified Mount Rating	23	LC2	65%	**PASS**

This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2015. (See the attached analysis).

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mounts have been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to Verizon's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting structure.

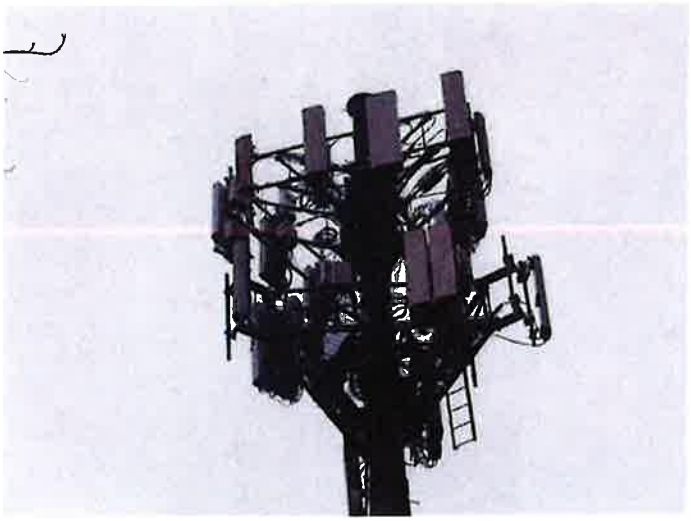
Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:



HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 2/13/2020
Project Name: GERMANTOWN CT
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\,(z/z_g)^{2/\alpha}$

K_z= **0.959**

z= 90 (ft)
z_g= 1200 (ft)
α= 7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_e\,K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}= #DIV/0!

(If Category 1 then K_{zt} =1.0)

Category=	1

K_h= #DIV/0!
K_e= 0.9 (from Table 2-4)
K_t= 0 (from Table 2-5)
f= 0 (from Table 2-5)
z= 90
H= 0 (Ht. of the crest above surrounding terrain)
K_{zt}= 1.00
K_{iz} = 1.11 (from Sec. 2.6.8)

2.6.8 Design Ice Thickness

Max Ice Thickness = t_i = 0.75 in

Importance Factor, I_{ice} = I_{ice}= 1.00 (from Table 2-3)

$t_{iz} = 2.0*t_i*I_{ice}*K_{iz}*(Kzt)^{0.35}$

t_{iz} = **1.66** in

Date: 2/13/2020
Project Name: GERMANTOWN CT
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h= 110 **Gh= 0.85**

2.6.7.2 Guyed Masts **Gh= 0.85**

2.6.7.3 Pole Structures **Gh= 1.1**

2.6.9 Appurtenances **Gh= 1.0**

2.6.7.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh= 1.35 **Gh= 1.00**

2.6.9.2 Design Wind Force on Appurtenances

$F = q_z * Gh * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_d * V_{max}^2 * I$

K_z= 0.959
K_{zt}= 1.0
K_d= 0.95 (from Table 2-2)
V_{max}= 110
$V_{max\ (ice)}$= 50
I= 1.0 (from Table 2-3)
I_{wice}= 1.0 (from Table 2-3)

q_z= 28.22
$q_{z\ (ice)}$= 5.83

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Date: 2/13/2020
Project Name: GERMANTOWN CT
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance, and the section length considered to have uniform wind load).

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.66 in

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/Ice)
JAHH-65B-R3B Antenna	72.0	13.8	8.2	6.90	5.22	1.32	**257**	**69**
BXA-80063-6BF Antenna	68.6	11.2	5.3	5.34	6.13	1.36	**205**	**58**
BXA-80080-6CF Antenna	72.6	11.2	5.3	5.65	6.48	1.38	**219**	**61**
XXDWMM-12.5 Antennas w/ CBRS RRG Clip	16.2	11.4	5.5	1.28	1.42	1.20	**43**	**14**
B2/B66A RRH-BR049 RRH	15.0	15.0	10.0	1.56	1.00	1.20	**53**	**16**
B5/B13 RRH-BR04C RRH	15.0	15.0	8.1	1.56	1.00	1.20	**53**	**16**
B5/B13 RRH-BR04C RRH (Shielded)	15.0	3.8	8.1	0.40	3.95	1.26	**14**	**7**
CBC78T-DS-43-2X Diplexer	6.4	6.9	9.6	0.31	0.93	1.20	**10**	**5**
Junction Box	28.9	15.7	10.3	3.15	1.84	1.20	**107**	**30**
2" Pipe	2.4	12.0		0.20	0.20	1.20	**7**	**4**
6x8.2 Channel	6.0	12.0		0.50	0.50	2.00	**28**	**12**
2x2 HSS	2.0	12.0		0.17	0.17	1.25	**6**	**4**
3x3 HSS	3.0	12.0		0.25	0.25	1.25	**9**	**5**
5x2 Channel	5.0	12.0		0.42	0.42	2.00	**24**	**10**
1-3/4x1-3/4 Angle	1.8	12.0		0.15	0.15	2.00	**8**	**6**
3x3 Angle	3.0	12.0		0.25	0.25	2.00	**14**	**8**

Date: 2/13/2020
Project Name: GERMANTOWN CT
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.66 in.

WIND LOADS WITH NO ICE: Appurtenances	Height	Width	Depth	Flat Area	Flat Area	Ratio	Ratio	Ca	Ca	Force (lbs)	Force (lbs)	Force (lbs)
JAHH-65B-R3B Antenna	72.0	13.8	8.2	6.90	4.10	5.22	8.78	1.32	1.46	257	169	191
BXA-80063-6BF Antenna	68.6	11.2	5.3	5.34	2.52	6.13	12.94	1.36	1.60	205	114	137
BXA-80080-6CF Antenna	72.6	11.2	5.3	5.65	2.67	6.48	13.70	1.38	1.62	219	122	147
XXDWMM-12.5 Antennas w/ CBRS RRG	16.2	11.4	5.5	1.28	0.62	1.42	2.95	1.20	1.22	43	21	27
B2/B66A RRH-BR049 RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	59	35	40
B5/B13 RRH-BR04C RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	53	29	35
B5/B13 RRH-BR04C RRH (Shielded)	15.0	7.5	8.1	0.78	0.84	2.00	1.85	1.20	1.20	26	29	28
CBC78T-DS-43-2X Diplexer	6.4	6.9	9.6	0.31	0.43	0.93	0.67	1.20	1.20	10	14	13
Junction Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	107	71	80
WIND LOADS WITH ICE:												
JAHH-65B-R3B Antenna	75.3	17.1	11.5	8.95	6.02	4.40	6.54	1.28	1.38	67	48	53
BXA-80063-6BF Antenna	71.9	14.5	8.6	7.25	4.30	4.95	8.35	1.31	1.44	55	36	41
BXA-80080-6CF Antenna	75.9	14.5	8.6	7.65	4.54	5.23	8.81	1.32	1.46	59	39	44
XXDWMM-12.5 Antennas w/ CBRS RRG	19.5	14.7	8.8	1.99	1.19	1.33	2.21	1.20	1.20	14	8	10
B2/B66A RRH-BR049 RRH	18.3	18.3	13.3	2.33	1.69	1.00	1.38	1.20	1.20	16	12	13
B5/B13 RRH-BR04C RRH	18.3	18.3	11.4	2.33	1.45	1.00	1.60	1.20	1.20	16	10	12
B5/B13 RRH-BR04C RRH (Shielded)	18.3	9.2	11.4	1.16	1.45	2.00	1.60	1.20	1.20	8	10	10
CBC78T-DS-43-2X Diplexer	9.7	10.2	12.9	0.69	0.87	0.95	0.75	1.20	1.20	5	6	6
Junction Box	32.2	19.0	13.6	4.25	3.05	1.69	2.37	1.20	1.20	30	21	23

Date: 2/13/2020
Project Name: GERMANTOWN C1
Designed By: LBW Checked By: MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.66 in.
Density of ice: 56 pcf

JAHH-65B-R3B Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	13.8	
Depth (in):	8.2	
Total weight of ice on object:		216 lbs
Weight of object:	64.0 lbs	
Combined weight of ice and object:		280 lbs

BXA-80080-6CF Antenna

Weight of ice based on total radial SF area:		
Height (in):	72.0	
Width (in):	11.2	
Depth (in):	5.3	
Total weight of ice on object:		171 lbs
Weight of object:	22.0 lbs	
Combined weight of ice and object:		193 lbs

B2/B66A RRH-BR049 RRH

Weight of ice based on total radial SF area:		
Height (in):	15.0	
Width (in):	15.0	
Depth (in):	10.0	
Total weight of ice on object:		50 lbs
Weight of object:	98.0 lbs	
Combined weight of ice and object:		148 lbs

CBC78T-DS-43-2X Diplexer

Weight of ice based on total radial SF area:		
Height (in):	6.4	
Width (in):	6.9	
Depth (in):	9.6	
Total weight of ice on object:		15 lbs
Weight of object:	21.0 lbs	
Combined weight of ice and object:		36 lbs

L 3x3 Angles

Weight of ice based on total radial SF area:		
Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		12 plf

C 6x8.2

Weight of ice based on total radial SF area:		
Height (in):	6	
Width (in):	1.92	
Per foot weight of ice on object:		16 plf

HSS 3x3

Weight of ice based on total radial SF area:		
Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		12 plf

BXA-80063-6BF Antenna

Weight of ice based on total radial SF area:		
Height (in):	69.6	
Width (in):	11.2	
Depth (in):	5.3	
Total weight of ice on object:		165 lbs
Weight of object:	20.0 lbs	
Combined weight of ice and object:		185 lbs

XXDWMM-12.5 Antennas w/ CBRS RRG Clip On

Weight of ice based on total radial SF area:		
Height (in):	16.2	
Width (in):	11.4	
Depth (in):	5.5	
Total weight of ice on object:		39 lbs
Weight of object:	24.0 lbs	
Combined weight of ice and object:		63 lbs

B5/B13 RRH-BR04C RRH

Weight of ice based on total radial SF area:		
Height (in):	15.0	
Width (in):	15.0	
Depth (in):	8.1	
Total weight of ice on object:		47 lbs
Weight of object:	82.0 lbs	
Combined weight of ice and object:		129 lbs

Junction Box

Weight of ice based on total radial SF area:		
Height (in):	28.9	
Width (in):	15.7	
Depth (in):	10.3	
Total weight of ice on object:		100 lbs
Weight of object:	32.0 lbs	
Combined weight of ice and object:		132 lbs

2" pipe

Per foot weight of ice:		
diameter (in):	2.38	
Per foot weight of ice on object:		8 plf

L 1-3/4x1-3/4 Angles

Weight of ice based on total radial SF area:		
Height (in):	1.75	
Width (in):	1.75	
Per foot weight of ice on object:		8 plf

C 5x2

Weight of ice based on total radial SF area:		
Height (in):	5	
Width (in):	2	
Per foot weight of ice on object:		14 plf

HSS 2x2

Weight of ice based on total radial SF area:		
Height (in):	2	
Width (in):	2	
Per foot weight of ice on object:		9 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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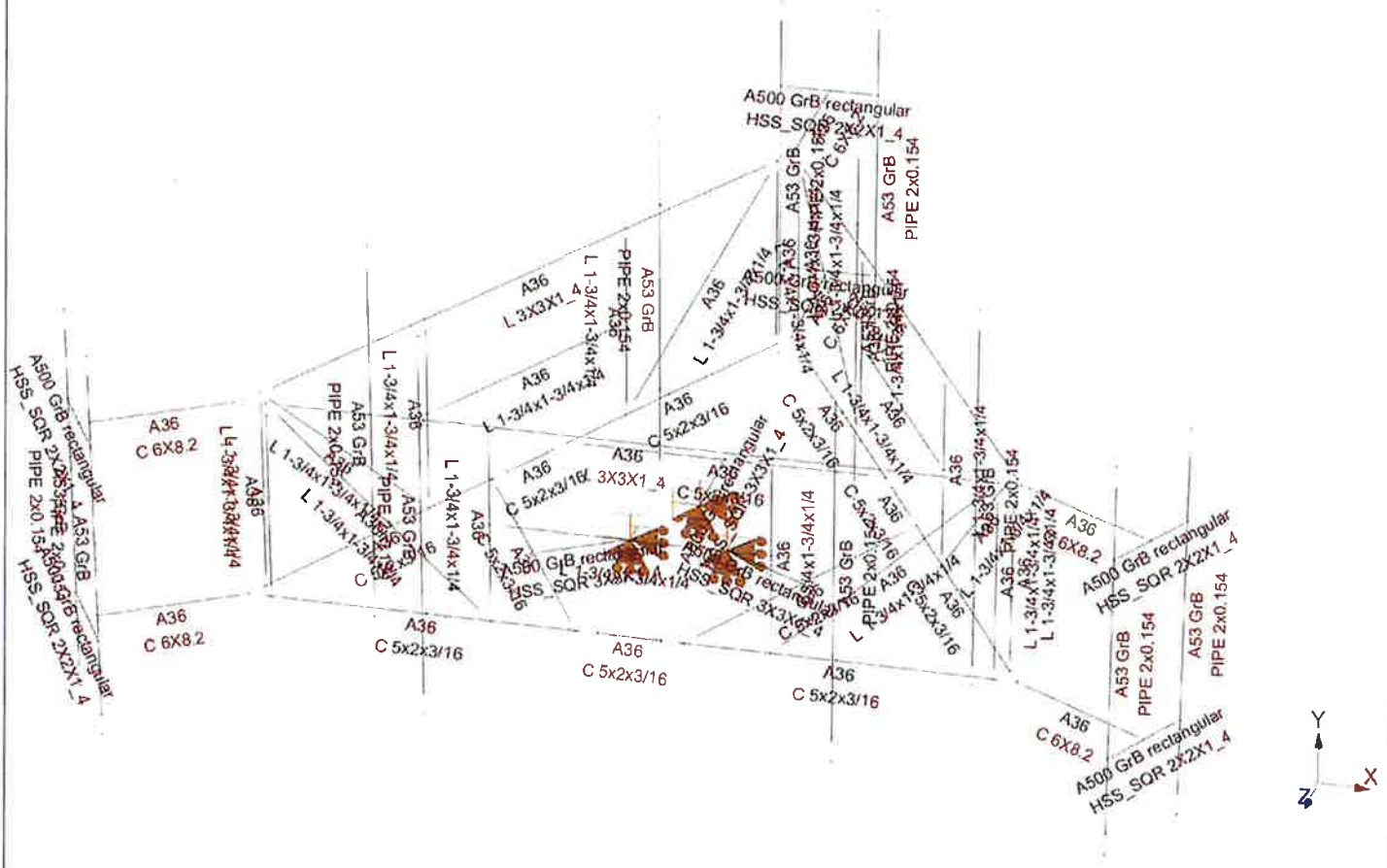

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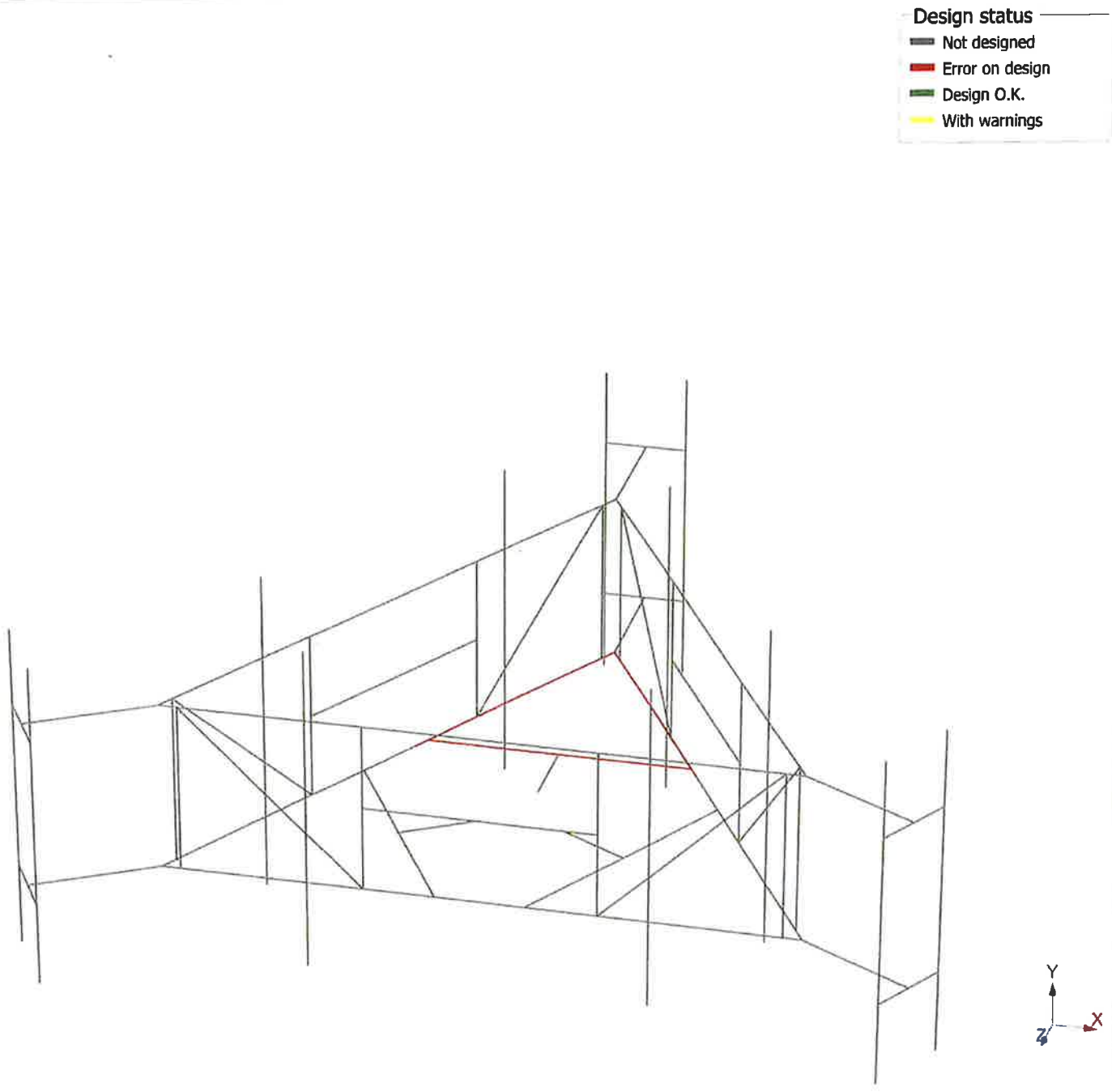

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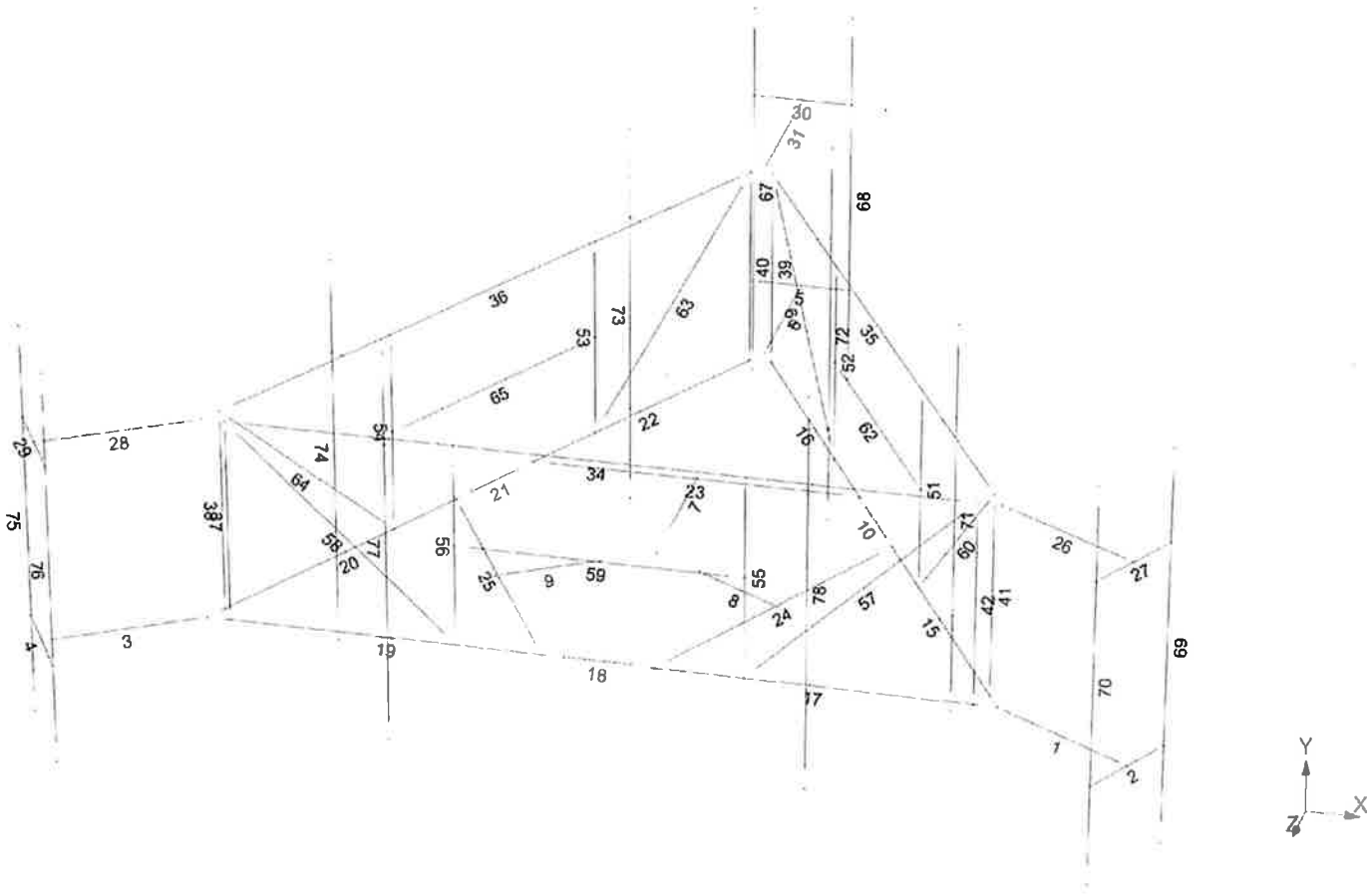

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Load data

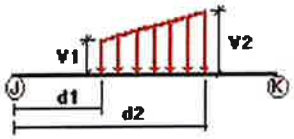
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

Distributed force on members

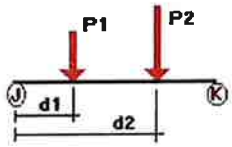


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	19	y	-0.01	0.00	0.00	No	0.00	No
	20	y	-0.01	0.00	0.00	No	0.00	No
	22	y	-0.01	0.00	0.00	No	0.00	No
	23	y	-0.01	0.00	0.00	No	0.00	No
	24	y	-0.01	0.00	0.00	No	0.00	No
	25	y	-0.01	0.00	0.00	No	0.00	No
Wo	1	z	-0.028	0.00	0.00	No	0.00	No
	2	z	-0.006	0.00	0.00	No	0.00	No
	3	z	-0.028	0.00	0.00	No	0.00	No
	4	z	-0.006	0.00	0.00	No	0.00	No
	5	z	-0.006	0.00	0.00	No	0.00	No
	6	z	-0.028	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	10	z	-0.024	0.00	0.00	No	0.00	No
	15	z	-0.024	0.00	0.00	No	0.00	No
	16	z	-0.024	0.00	0.00	No	0.00	No
	17	z	-0.024	0.00	0.00	No	0.00	No
	18	z	-0.024	0.00	0.00	No	0.00	No
	19	z	-0.024	0.00	0.00	No	0.00	No

	20	z	-0.024	0.00	0.00	No	0.00	No
	21	z	-0.024	0.00	0.00	No	0.00	No
	22	z	-0.024	0.00	0.00	No	0.00	No
	23	z	-0.024	0.00	0.00	No	0.00	No
	24	z	-0.024	0.00	0.00	No	0.00	No
	25	z	-0.024	0.00	0.00	No	0.00	No
	26	z	-0.028	0.00	0.00	No	0.00	No
	27	z	-0.006	0.00	0.00	No	0.00	No
	28	z	-0.028	0.00	0.00	No	0.00	No
	29	z	-0.006	0.00	0.00	No	0.00	No
	30	z	-0.006	0.00	0.00	No	0.00	No
	31	z	-0.028	0.00	0.00	No	0.00	No
	34	z	-0.014	0.00	0.00	No	0.00	No
	35	z	-0.014	0.00	0.00	No	0.00	No
	36	z	-0.014	0.00	0.00	No	0.00	No
	37	z	-0.008	0.00	0.00	No	0.00	No
	38	z	-0.008	0.00	0.00	No	0.00	No
	39	z	-0.008	0.00	0.00	No	0.00	No
	40	z	-0.008	0.00	0.00	No	0.00	No
	41	z	-0.008	0.00	0.00	No	0.00	No
	42	z	-0.008	0.00	0.00	No	0.00	No
	51	z	-0.008	0.00	0.00	No	0.00	No
	52	z	-0.008	0.00	0.00	No	0.00	No
	53	z	-0.008	0.00	0.00	No	0.00	No
	54	z	-0.008	0.00	0.00	No	0.00	No
	55	z	-0.008	0.00	0.00	No	0.00	No
	56	z	-0.008	0.00	0.00	No	0.00	No
	57	z	-0.008	0.00	0.00	No	0.00	No
	58	z	-0.008	0.00	0.00	No	0.00	No
	59	z	-0.008	0.00	0.00	No	0.00	No
	60	z	-0.008	0.00	0.00	No	0.00	No
	61	z	-0.008	0.00	0.00	No	0.00	No
	62	z	-0.008	0.00	0.00	No	0.00	No
	63	z	-0.008	0.00	0.00	No	0.00	No
	64	z	-0.008	0.00	0.00	No	0.00	No
	65	z	-0.008	0.00	0.00	No	0.00	No
	67	z	-0.007	0.00	0.00	No	0.00	No
	68	z	-0.007	0.00	0.00	No	0.00	No
	69	z	-0.007	0.00	0.00	No	0.00	No
	71	z	-0.007	0.00	0.00	No	0.00	No
	72	z	-0.007	0.00	0.00	No	0.00	No
	73	z	-0.007	0.00	0.00	No	0.00	No
	74	z	-0.007	0.00	0.00	No	0.00	No
	75	z	-0.007	0.00	0.00	No	0.00	No
Di	1	y	-0.016	0.00	0.00	No	0.00	No
	2	y	-0.009	0.00	0.00	No	0.00	No
	3	y	-0.016	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.016	0.00	0.00	No	0.00	No
	7	y	-0.012	0.00	0.00	No	0.00	No
	8	y	-0.012	0.00	0.00	No	0.00	No
	9	y	-0.012	0.00	0.00	No	0.00	No
	10	y	-0.014	0.00	0.00	No	0.00	No
	15	y	-0.014	0.00	0.00	No	0.00	No
	16	y	-0.014	0.00	0.00	No	0.00	No
	17	y	-0.014	0.00	0.00	No	0.00	No
	18	y	-0.014	0.00	0.00	No	0.00	No
	19	y	-0.014	0.00	0.00	No	0.00	No
	20	y	-0.014	0.00	0.00	No	0.00	No

21	y	-0.014	0.00	0.00	No	0.00	No
22	y	-0.014	0.00	0.00	No	0.00	No
23	y	-0.014	0.00	0.00	No	0.00	No
24	y	-0.014	0.00	0.00	No	0.00	No
25	y	-0.014	0.00	0.00	No	0.00	No
26	y	-0.016	0.00	0.00	No	0.00	No
27	y	-0.009	0.00	0.00	No	0.00	No
28	y	-0.016	0.00	0.00	No	0.00	No
29	y	-0.009	0.00	0.00	No	0.00	No
30	y	-0.009	0.00	0.00	No	0.00	No
31	y	-0.016	0.00	0.00	No	0.00	No
34	y	-0.012	0.00	0.00	No	0.00	No
35	y	-0.012	0.00	0.00	No	0.00	No
36	y	-0.012	0.00	0.00	No	0.00	No
37	y	-0.008	0.00	0.00	No	0.00	No
38	y	-0.008	0.00	0.00	No	0.00	No
39	y	-0.008	0.00	0.00	No	0.00	No
40	y	-0.008	0.00	0.00	No	0.00	No
41	y	-0.008	0.00	0.00	No	0.00	No
42	y	-0.008	0.00	0.00	No	0.00	No
51	y	-0.008	0.00	0.00	No	0.00	No
52	y	-0.008	0.00	0.00	No	0.00	No
53	y	-0.008	0.00	0.00	No	0.00	No
54	y	-0.008	0.00	0.00	No	0.00	No
55	y	-0.008	0.00	0.00	No	0.00	No
56	y	-0.008	0.00	0.00	No	0.00	No
57	y	-0.008	0.00	0.00	No	0.00	No
58	y	-0.008	0.00	0.00	No	0.00	No
59	y	-0.008	0.00	0.00	No	0.00	No
60	y	-0.008	0.00	0.00	No	0.00	No
61	y	-0.008	0.00	0.00	No	0.00	No
62	y	-0.008	0.00	0.00	No	0.00	No
63	y	-0.008	0.00	0.00	No	0.00	No
64	y	-0.008	0.00	0.00	No	0.00	No
65	y	-0.008	0.00	0.00	No	0.00	No
67	y	-0.008	0.00	0.00	No	0.00	No
68	y	-0.008	0.00	0.00	No	0.00	No
69	y	-0.008	0.00	0.00	No	0.00	No
70	y	-0.008	0.00	0.00	No	0.00	No
71	y	-0.008	0.00	0.00	No	0.00	No
72	y	-0.008	0.00	0.00	No	0.00	No
73	y	-0.008	0.00	0.00	No	0.00	No
74	y	-0.008	0.00	0.00	No	0.00	No
75	y	-0.008	0.00	0.00	No	0.00	No
76	y	-0.008	0.00	0.00	No	0.00	No
77	y	-0.008	0.00	0.00	No	0.00	No
78	y	-0.008	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	67	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	68	y	-0.098	0.50	No
	69	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	70	y	-0.098	0.50	No
	71	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	72	y	-0.064	0.50	No
		y	-0.064	5.50	No
	73	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	74	y	-0.064	0.50	No
		y	-0.064	5.50	No
	75	y	-0.098	0.50	No
	76	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	77	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	78	y	-0.064	0.50	No
		y	-0.064	5.50	No
Wo	67	z	-0.074	0.50	No
		z	-0.074	5.50	No
		z	-0.028	2.50	No
	68	z	-0.04	0.50	No
	69	z	-0.074	0.50	No
		z	-0.074	5.50	No
		z	-0.028	2.50	No
	70	z	-0.053	0.50	No
	71	z	-0.014	2.50	No
		z	-0.014	3.50	No
		z	-0.013	2.50	No
	72	z	-0.191	0.50	No
		z	-0.191	5.50	No
	73	z	-0.014	2.50	No
		z	-0.014	3.50	No
		z	-0.013	2.50	No
	74	z	-0.191	0.50	No
		z	-0.191	5.50	No
	75	z	-0.04	0.50	No
	76	z	-0.11	0.50	No
		z	-0.11	5.50	No
		z	-0.014	2.50	No
	77	z	-0.022	2.50	No
		z	-0.022	3.50	No
		z	-0.01	2.50	No
	78	z	-0.257	0.50	No
		z	-0.257	5.50	No
Wi	67	z	-0.022	0.50	No
		z	-0.022	5.50	No
		z	-0.01	2.50	No
	68	z	-0.013	0.50	No
	69	z	-0.022	0.50	No
		z	-0.022	5.50	No

		z	-0.01	2.50	No
	70	z	-0.016	0.50	No
	71	z	-0.005	2.50	No
		z	-0.005	3.50	No
		z	-0.006	2.50	No
	72	z	-0.053	0.50	No
		z	-0.053	5.50	No
	73	z	-0.005	2.50	No
		z	-0.005	3.50	No
		z	-0.006	2.50	No
	74	z	-0.053	0.50	No
		z	-0.053	5.50	No
	75	z	-0.013	0.50	No
	76	z	-0.031	0.50	No
		z	-0.031	5.50	No
		z	-0.007	2.50	No
	77	z	-0.007	2.50	No
		z	-0.007	3.50	No
		z	-0.005	2.50	No
	78	z	-0.069	0.50	No
		z	-0.069	5.50	No
Di	67	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	68	y	-0.05	0.50	No
	69	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	70	y	-0.05	0.50	No
	71	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	72	y	-0.216	0.50	No
		y	-0.216	5.50	No
	73	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	74	y	-0.216	0.50	No
		y	-0.216	5.50	No
	75	y	-0.05	0.50	No
	76	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	77	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	78	y	-0.216	0.50	No
		y	-0.216	5.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

Bentley

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 5x2x3/16	10	LC1 at 0.00%	0.66	OK	Eq. H1-1b
		15	LC2 at 93.75%	0.77	OK	Eq. H1-1b
		16	LC1 at 6.25%	1.02	N.G.	Eq. H1-1b
		17	LC2 at 92.50%	0.40	OK	Eq. H1-1b
		18	LC2 at 0.00%	0.14	OK	Eq. H1-1b
		19	LC2 at 7.50%	0.24	OK	Eq. H1-1b
		20	LC2 at 93.75%	0.77	OK	Eq. H1-1b
		21	LC1 at 100.00%	0.67	OK	Eq. H1-1b
		22	LC1 at 6.25%	1.03	N.G.	Eq. H1-1b
		23	LC1 at 50.00%	1.50	N.G.	Eq. H1-1b
		24	LC2 at 46.88%	0.73	OK	Eq. H1-1b
		25	LC2 at 46.88%	0.64	OK	Eq. H1-1b
	C 6X8.2	1	LC3 at 0.00%	0.40	OK	Eq. H1-1b
		3	LC3 at 100.00%	0.41	OK	Eq. H1-1b
		6	LC3 at 0.00%	0.40	OK	Eq. H1-1b
		26	LC3 at 0.00%	0.29	OK	Eq. H1-1b
		28	LC3 at 100.00%	0.27	OK	Eq. H1-1b
		31	LC3 at 0.00%	0.28	OK	Eq. H1-1b
	HSS_SQR 2X2X1_4	2	LC3 at 50.00%	0.09	OK	Eq. H3-1
		4	LC1 at 46.88%	0.11	OK	Eq. H1-1b
		5	LC3 at 0.00%	0.09	OK	Eq. H3-1
		27	LC3 at 50.00%	0.08	OK	Eq. H3-1
		29	LC3 at 0.00%	0.08	OK	Eq. H3-1
		30	LC1 at 46.88%	0.09	OK	Eq. H1-1b
	HSS_SQR 3X3X1_4	7	LC1 at 0.00%	0.94	OK	Eq. H1-1b
		8	LC3 at 0.00%	0.62	OK	Eq. H1-1b
		9	LC3 at 0.00%	0.62	OK	Eq. H1-1b
	L 1-3/4x1-3/4x1/4	37	LC3 at 0.00%	0.13	OK	Eq. H2-1
		38	LC1 at 12.50%	0.13	OK	Eq. H2-1
		39	LC3 at 0.00%	0.07	OK	Eq. H2-1
		40	LC3 at 0.00%	0.13	OK	Eq. H2-1
		41	LC3 at 100.00%	0.15	OK	Eq. H2-1
		42	LC3 at 0.00%	0.08	OK	Eq. H2-1
		51	LC1 at 100.00%	0.30	OK	Eq. H2-1
		52	LC2 at 0.00%	0.18	OK	Eq. H2-1
		53	LC1 at 0.00%	0.18	OK	Eq. H2-1
		54	LC1 at 100.00%	0.31	OK	Eq. H2-1
		55	LC1 at 100.00%	0.23	OK	Eq. H2-1
		56	LC2 at 100.00%	0.14	OK	Sec. F1

	57	LC3 at 0.00%	0.28	OK	Eq. H2-1
	58	LC3 at 0.00%	0.31	OK	Eq. H2-1
	59	LC1 at 50.00%	0.08	OK	Eq. H2-1
	60	LC1 at 100.00%	0.60	OK	Eq. H2-1
	61	LC3 at 0.00%	0.30	OK	Eq. H2-1
	62	LC2 at 0.00%	0.19	OK	Eq. H2-1
	63	LC3 at 0.00%	0.32	OK	Eq. H2-1
	64	LC1 at 100.00%	**0.61**	**OK**	Eq. H2-1
	65	LC1 at 0.00%	0.19	OK	Eq. H2-1
L 3X3X1_4	**34**	LC2 at 0.00%	**0.74**	**OK**	Eq. H2-1
	35	LC1 at 2.68%	0.39	OK	Eq. H2-1
	36	LC1 at 2.68%	0.44	OK	Eq. H3-8
PIPE 2x0.154	**67**	LC3 at 25.00%	0.17	OK	Eq. H1-1b
	68	LC3 at 25.00%	0.12	OK	Eq. H1-1b
	69	LC3 at 72.92%	0.17	OK	Eq. H1-1b
	70	LC3 at 72.92%	0.16	OK	Eq. H1-1b
	71	LC1 at 25.00%	0.05	OK	Eq. H1-1b
	72	LC1 at 75.00%	0.26	OK	Eq. H1-1b
	73	LC3 at 25.00%	0.04	OK	Eq. H1-1b
	74	LC1 at 75.00%	0.26	OK	Eq. H1-1b
	75	LC3 at 72.92%	0.16	OK	Eq. H1-1b
	76	LC3 at 72.92%	0.21	OK	Eq. H1-1b
	77	LC1 at 25.00%	0.06	OK	Eq. H3-1
	78	LC1 at 75.00%	**0.33**	**OK**	Eq. H1-1b

Bentley

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Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	5.5859	0.00	3.225	0
3	0.7188	0.00	0.415	0
4	7.6063	0.00	4.3915	0
5	7.2313	0.00	5.041	0
6	7.9813	0.00	3.742	0
7	2.0178	0.00	1.165	0
8	-5.5859	0.00	3.225	0
9	-0.7188	0.00	0.415	0
10	-7.6063	0.00	4.3915	0
11	-7.9813	0.00	3.742	0
12	-7.2313	0.00	5.041	0
13	-2.0178	0.00	1.165	0
14	0.00	0.00	-6.45	0
15	0.00	0.00	-0.83	0
16	0.00	0.00	-8.783	0
17	0.75	0.00	-8.783	0
18	-0.75	0.00	-8.783	0
19	0.00	0.00	-2.33	0
21	2.5625	0.00	-2.0116	0
23	3.0234	0.00	-1.2134	0

27	-3.0234	0.00	-1.2134	0
29	-2.5625	0.00	-2.0116	0
33	0.4609	0.00	3.225	0
35	-0.4609	0.00	3.225	0
38	2.396	0.00	-2.30	0
39	3.1899	0.00	-0.925	0
40	-3.1899	0.00	-0.925	0
41	-2.396	0.00	-2.30	0
42	0.7939	0.00	3.225	0
43	-0.7939	0.00	3.225	0
44	-5.4194	0.00	2.9366	0
45	-0.1665	0.00	-6.1616	0
46	0.1665	0.00	-6.1616	0
47	5.4194	0.00	2.9366	0
48	5.2529	0.00	3.225	0
49	-5.2529	0.00	3.225	0
50	5.5859	3.083	3.225	0
51	7.6063	3.083	4.3915	0
52	7.2313	3.083	5.041	0
53	7.9813	3.083	3.742	0
54	5.4194	3.083	2.9366	0
55	5.2529	3.083	3.225	0
56	-5.5859	3.083	3.225	0
57	-7.6063	3.083	4.3915	0
58	-7.9813	3.083	3.742	0
59	-7.2313	3.083	5.041	0
60	-5.4194	3.083	2.9366	0
61	-5.2529	3.083	3.225	0
62	0.00	3.083	-6.45	0
63	0.00	3.083	-8.783	0
64	0.75	3.083	-8.783	0
65	-0.75	3.083	-8.783	0
66	-0.1665	3.083	-6.1616	0
67	0.1665	3.083	-6.1616	0
80	1.7725	0.00	-3.3799	0
81	3.8134	0.00	0.1549	0
82	3.8134	3.083	0.1549	0
83	1.7725	3.083	-3.3799	0
84	-3.8134	0.00	0.1549	0
85	-3.8134	3.083	0.1549	0
86	-1.7725	3.083	-3.3799	0
87	-1.7725	0.00	-3.3799	0
88	-2.0409	3.083	3.225	0
89	-2.0409	0.00	3.225	0
91	2.0409	0.00	3.225	0
92	-2.0409	1.5415	3.225	0
93	2.0409	1.5415	3.225	0
94	3.8134	1.5415	0.1549	0
95	1.7725	1.5415	-3.3799	0
96	-1.7725	1.5415	-3.3799	0
97	-3.8134	1.5415	0.1549	0
99	-0.75	4.50	-8.783	0
101	0.75	4.50	-8.783	0
102	1.4857	4.50	-4.2767	0
103	4.4466	4.50	0.8517	0
104	7.9813	4.50	3.742	0
105	7.2313	4.50	5.041	0
106	2.9609	4.50	3.425	0
107	-2.9609	4.50	3.425	0
108	-7.2313	4.50	5.041	0

109	-7.9813	4.50	3.742	0
110	-4.4466	4.50	0.8517	0
111	-1.4857	4.50	-4.2767	0
112	-0.75	-1.50	-8.783	0
113	0.75	-1.50	-8.783	0
114	1.4857	-1.50	-4.2767	0
115	4.4466	-1.50	0.8517	0
116	7.9813	-1.50	3.742	0
117	7.2313	-1.50	5.041	0
118	2.9609	-1.50	3.425	0
119	-2.9609	-1.50	3.425	0
120	-7.2313	-1.50	5.041	0
121	-7.9813	-1.50	3.742	0
122	-4.4466	-1.50	0.8517	0
123	-1.4857	-1.50	-4.2767	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
3	1	1	1	1	1	1
9	1	1	1	1	1	1
15	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	4		C 6X8.2	A36	0.00	0.00	0.00
2	5	6		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
3	10	8		C 6X8.2	A36	0.00	0.00	0.00
4	12	11		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	18	17		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	14	16		C 6X8.2	A36	0.00	0.00	0.00
7	15	19		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	3	7		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	9	13		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	21	23		C 5x2x3/16	A36	0.00	0.00	0.00
15	2	23		C 5x2x3/16	A36	0.00	0.00	0.00
16	21	14		C 5x2x3/16	A36	0.00	0.00	0.00
17	2	33		C 5x2x3/16	A36	0.00	0.00	0.00
18	33	35		C 5x2x3/16	A36	0.00	0.00	0.00
19	35	8		C 5x2x3/16	A36	0.00	0.00	0.00
20	8	27		C 5x2x3/16	A36	0.00	0.00	0.00
21	27	29		C 5x2x3/16	A36	0.00	0.00	0.00
22	29	14		C 5x2x3/16	A36	0.00	0.00	0.00
23	38	41		C 5x2x3/16	A36	0.00	0.00	0.00
24	42	39		C 5x2x3/16	A36	0.00	0.00	0.00
25	43	40		C 5x2x3/16	A36	0.00	0.00	0.00
26	50	51		C 6X8.2	A36	0.00	0.00	0.00
27	52	53		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
28	57	56		C 6X8.2	A36	0.00	0.00	0.00

29	59	58	HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
30	65	64	HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
31	62	63	C 6X8.2	A36	0.00	0.00	0.00
34	50	56	L 3X3X1_4	A36	0.00	0.00	0.00
35	50	62	L 3X3X1_4	A36	0.00	0.00	0.00
36	56	62	L 3X3X1_4	A36	0.00	0.00	0.00
37	61	49	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
38	60	44	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
39	67	46	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
40	66	45	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
41	47	54	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
42	55	48	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
51	82	81	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
52	83	80	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
53	86	87	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
54	85	84	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
55	90	91	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
56	88	89	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
57	55	91	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
58	61	89	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
59	92	93	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
60	54	81	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
61	67	80	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
62	94	95	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
63	66	87	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
64	60	84	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
65	96	97	L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
67	99	112	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	101	113	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	104	116	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
70	105	117	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
71	103	115	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
72	102	114	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	111	123	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
74	110	122	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
75	109	121	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
76	108	120	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
77	107	119	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
78	106	118	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	270.00	0	0.00	0.00	0.00
3	270.00	0	0.00	0.00	0.00
6	270.00	0	0.00	0.00	0.00
15	180.00	0	0.00	0.00	0.00
16	180.00	0	0.00	0.00	0.00
25	180.00	0	0.00	0.00	0.00
26	270.00	0	0.00	0.00	0.00
28	270.00	0	0.00	0.00	0.00
31	270.00	0	0.00	0.00	0.00
34	90.00	0	0.00	0.00	0.00
35	180.00	0	0.00	0.00	0.00
36	90.00	0	0.00	0.00	0.00

37	0.00	2	-1.00	0.00	0.00
38	0.00	2	-1.00	0.00	0.00
39	0.00	2	-1.00	0.00	0.00
40	0.00	2	-1.00	0.00	0.00
41	0.00	2	1.00	0.00	0.00
42	0.00	2	-1.00	0.00	0.00
51	0.00	2	0.50	0.00	0.866
52	0.00	2	0.50	0.00	0.866
53	0.00	2	0.50	0.00	-0.866
54	0.00	2	0.50	0.00	-0.866
55	0.00	2	-1.00	0.00	0.00
56	0.00	2	0.00	0.00	-1.00
57	90.00	0	0.00	0.00	0.00
58	180.00	0	0.00	0.00	0.00
59	180.00	0	0.00	0.00	0.00
60	180.00	0	0.00	0.00	0.00
61	90.00	0	0.00	0.00	0.00
62	180.00	0	0.00	0.00	0.00
64	90.00	0	0.00	0.00	0.00
65	180.00	0	0.00	0.00	0.00
67	0.00	2	1.00	0.00	0.00
68	0.00	2	-1.00	0.00	0.00
69	0.00	2	1.00	0.00	0.00
70	0.00	2	-1.00	0.00	0.00
71	0.00	2	-1.00	0.00	0.00
72	0.00	2	1.00	0.00	0.00
73	0.00	2	-1.00	0.00	0.00
74	0.00	2	1.00	0.00	0.00
75	0.00	2	-1.00	0.00	0.00
76	0.00	2	1.00	0.00	0.00
77	0.00	2	-1.00	0.00	0.00
78	0.00	2	1.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

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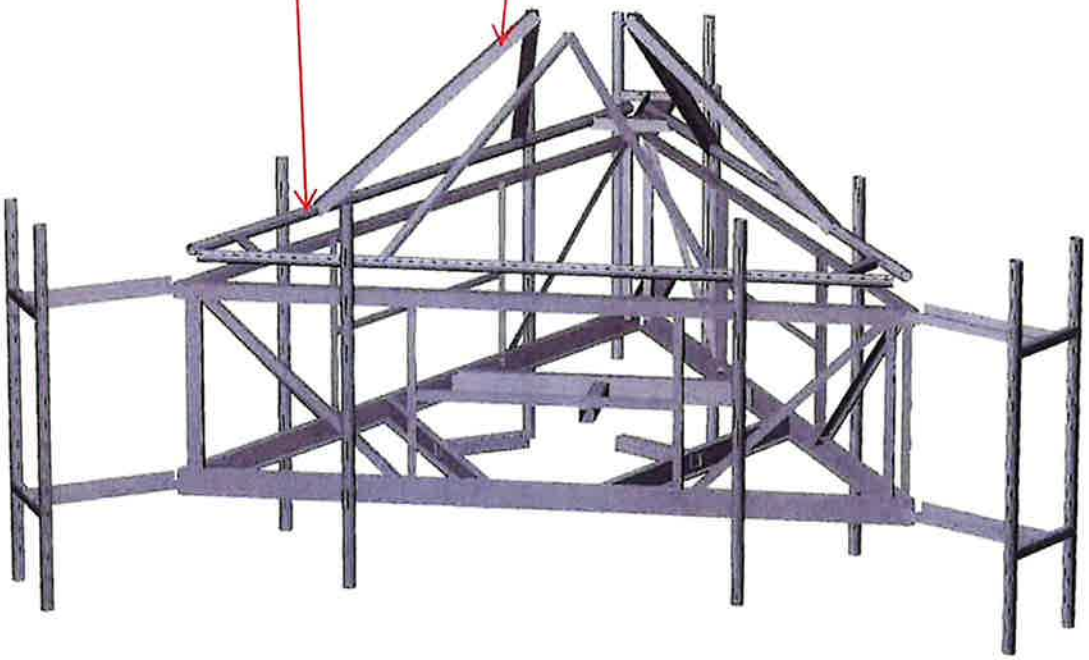
Install new platform reinforcement kit, P/N PRK-SFS (or approved equal) (typ. of 1 per sector, total of 3).

Install new 2"std. (2.38" O.D.) horizontal pipe secured to existing antenna pipes (typ. of 1 per sector, total of 3).



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Current Date: 2/13/2020 11:09 AM
Units system: English
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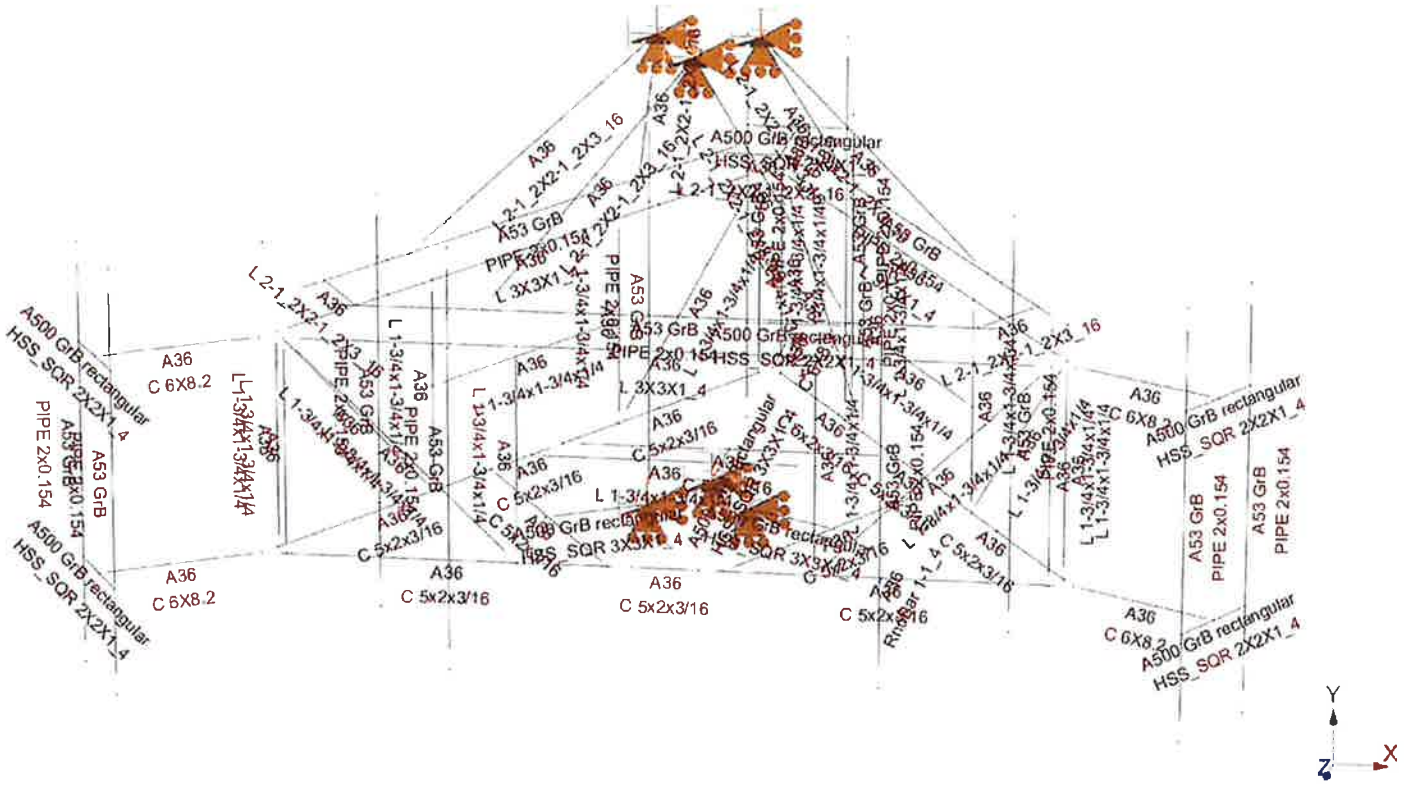

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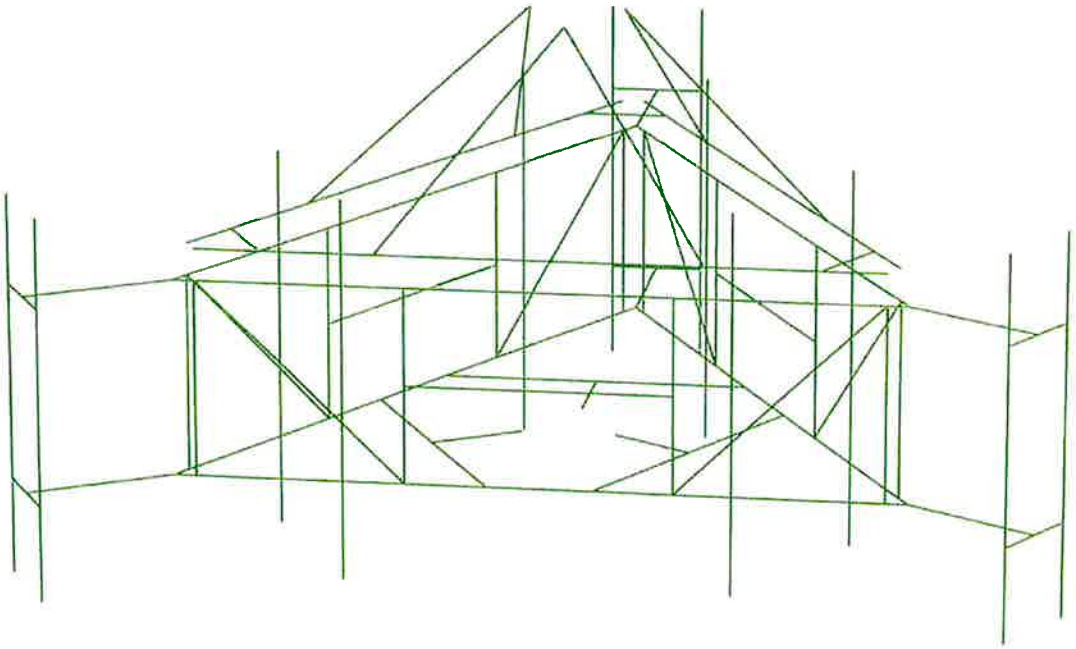
Design status
- Not designed
- Error on design
- Design O.K.
- With warnings



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Units system: English
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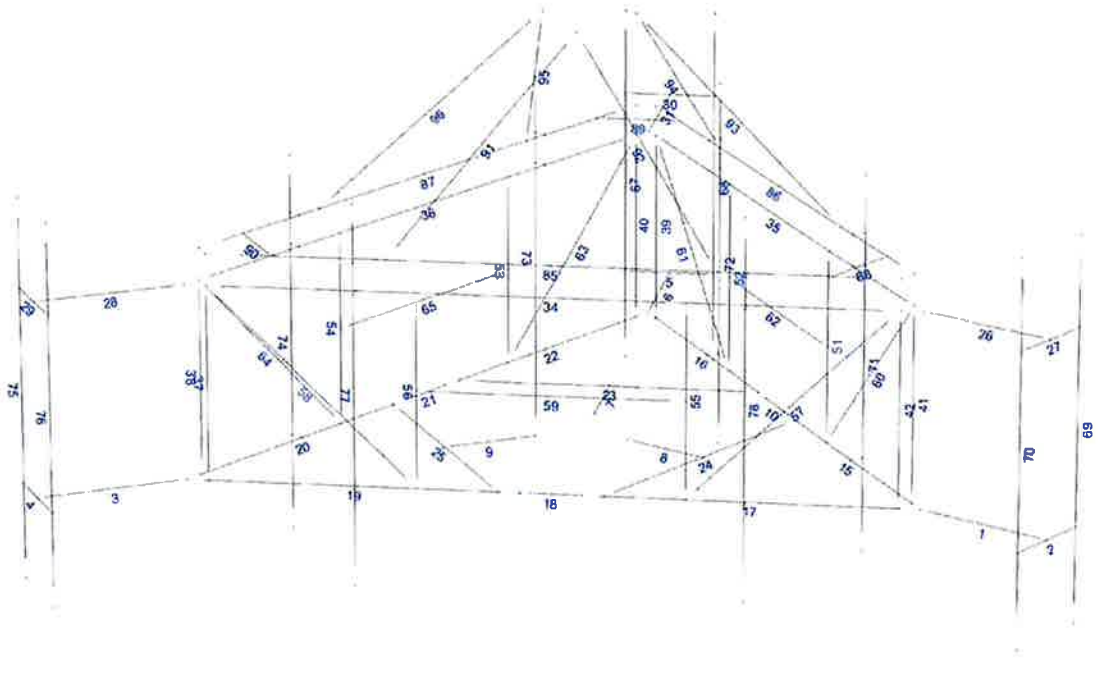

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Current Date: 2/13/2020 11:09 AM
Units system: English
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Load data

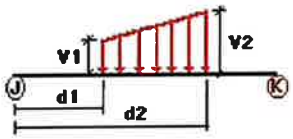
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
Wo	Wind Load (No Ice)	No	WIND
Wi	Wind Load (With Ice)	No	WIND
Di	Ice Load	No	LL

Distributed force on members

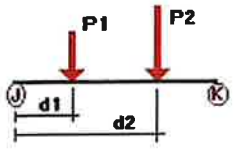


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	19	y	-0.01	0.00	0.00	No	0.00	No
	20	y	-0.01	0.00	0.00	No	0.00	No
	22	y	-0.01	0.00	0.00	No	0.00	No
	23	y	-0.01	0.00	0.00	No	0.00	No
	24	y	-0.01	0.00	0.00	No	0.00	No
	25	y	-0.01	0.00	0.00	No	0.00	No
Wo	1	z	-0.028	0.00	0.00	No	0.00	No
	2	z	-0.006	0.00	0.00	No	0.00	No
	3	z	-0.028	0.00	0.00	No	0.00	No
	4	z	-0.006	0.00	0.00	No	0.00	No
	5	z	-0.006	0.00	0.00	No	0.00	No
	6	z	-0.028	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	10	z	-0.024	0.00	0.00	No	0.00	No
	15	z	-0.024	0.00	0.00	No	0.00	No
	16	z	-0.024	0.00	0.00	No	0.00	No
	17	z	-0.024	0.00	0.00	No	0.00	No
	18	z	-0.024	0.00	0.00	No	0.00	No
	19	z	-0.024	0.00	0.00	No	0.00	No

	20	z	-0.024	0.00	0.00	No	0.00	No
	21	z	-0.024	0.00	0.00	No	0.00	No
	22	z	-0.024	0.00	0.00	No	0.00	No
	23	z	-0.024	0.00	0.00	No	0.00	No
	24	z	-0.024	0.00	0.00	No	0.00	No
	25	z	-0.024	0.00	0.00	No	0.00	No
	26	z	-0.028	0.00	0.00	No	0.00	No
	27	z	-0.006	0.00	0.00	No	0.00	No
	28	z	-0.028	0.00	0.00	No	0.00	No
	29	z	-0.006	0.00	0.00	No	0.00	No
	30	z	-0.006	0.00	0.00	No	0.00	No
	31	z	-0.028	0.00	0.00	No	0.00	No
	34	z	-0.014	0.00	0.00	No	0.00	No
	35	z	-0.014	0.00	0.00	No	0.00	No
	36	z	-0.014	0.00	0.00	No	0.00	No
	37	z	-0.008	0.00	0.00	No	0.00	No
	38	z	-0.008	0.00	0.00	No	0.00	No
	39	z	-0.008	0.00	0.00	No	0.00	No
	40	z	-0.008	0.00	0.00	No	0.00	No
	41	z	-0.008	0.00	0.00	No	0.00	No
	42	z	-0.008	0.00	0.00	No	0.00	No
	51	z	-0.008	0.00	0.00	No	0.00	No
	52	z	-0.008	0.00	0.00	No	0.00	No
	53	z	-0.008	0.00	0.00	No	0.00	No
	54	z	-0.008	0.00	0.00	No	0.00	No
	55	z	-0.008	0.00	0.00	No	0.00	No
	56	z	-0.008	0.00	0.00	No	0.00	No
	57	z	-0.008	0.00	0.00	No	0.00	No
	58	z	-0.008	0.00	0.00	No	0.00	No
	59	z	-0.008	0.00	0.00	No	0.00	No
	60	z	-0.008	0.00	0.00	No	0.00	No
	61	z	-0.008	0.00	0.00	No	0.00	No
	62	z	-0.008	0.00	0.00	No	0.00	No
	63	z	-0.008	0.00	0.00	No	0.00	No
	64	z	-0.008	0.00	0.00	No	0.00	No
	65	z	-0.008	0.00	0.00	No	0.00	No
	67	z	-0.007	0.00	0.00	No	0.00	No
	68	z	-0.007	0.00	0.00	No	0.00	No
	69	z	-0.007	0.00	0.00	No	0.00	No
	71	z	-0.007	0.00	0.00	No	0.00	No
	72	z	-0.007	0.00	0.00	No	0.00	No
	73	z	-0.007	0.00	0.00	No	0.00	No
	74	z	-0.007	0.00	0.00	No	0.00	No
	75	z	-0.007	0.00	0.00	No	0.00	No
Di	1	y	-0.016	0.00	0.00	No	0.00	No
	2	y	-0.009	0.00	0.00	No	0.00	No
	3	y	-0.016	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.016	0.00	0.00	No	0.00	No
	7	y	-0.012	0.00	0.00	No	0.00	No
	8	y	-0.012	0.00	0.00	No	0.00	No
	9	y	-0.012	0.00	0.00	No	0.00	No
	10	y	-0.014	0.00	0.00	No	0.00	No
	15	y	-0.014	0.00	0.00	No	0.00	No
	16	y	-0.014	0.00	0.00	No	0.00	No
	17	y	-0.014	0.00	0.00	No	0.00	No
	18	y	-0.014	0.00	0.00	No	0.00	No
	19	y	-0.014	0.00	0.00	No	0.00	No
	20	y	-0.014	0.00	0.00	No	0.00	No

21	y	-0.014	0.00	0.00	No	0.00	No
22	y	-0.014	0.00	0.00	No	0.00	No
23	y	-0.014	0.00	0.00	No	0.00	No
24	y	-0.014	0.00	0.00	No	0.00	No
25	y	-0.014	0.00	0.00	No	0.00	No
26	y	-0.016	0.00	0.00	No	0.00	No
27	y	-0.009	0.00	0.00	No	0.00	No
28	y	-0.016	0.00	0.00	No	0.00	No
29	y	-0.009	0.00	0.00	No	0.00	No
30	y	-0.009	0.00	0.00	No	0.00	No
31	y	-0.016	0.00	0.00	No	0.00	No
34	y	-0.012	0.00	0.00	No	0.00	No
35	y	-0.012	0.00	0.00	No	0.00	No
36	y	-0.012	0.00	0.00	No	0.00	No
37	y	-0.008	0.00	0.00	No	0.00	No
38	y	-0.008	0.00	0.00	No	0.00	No
39	y	-0.008	0.00	0.00	No	0.00	No
40	y	-0.008	0.00	0.00	No	0.00	No
41	y	-0.008	0.00	0.00	No	0.00	No
42	y	-0.008	0.00	0.00	No	0.00	No
51	y	-0.008	0.00	0.00	No	0.00	No
52	y	-0.008	0.00	0.00	No	0.00	No
53	y	-0.008	0.00	0.00	No	0.00	No
54	y	-0.008	0.00	0.00	No	0.00	No
55	y	-0.008	0.00	0.00	No	0.00	No
56	y	-0.008	0.00	0.00	No	0.00	No
57	y	-0.008	0.00	0.00	No	0.00	No
58	y	-0.008	0.00	0.00	No	0.00	No
59	y	-0.008	0.00	0.00	No	0.00	No
60	y	-0.008	0.00	0.00	No	0.00	No
61	y	-0.008	0.00	0.00	No	0.00	No
62	y	-0.008	0.00	0.00	No	0.00	No
63	y	-0.008	0.00	0.00	No	0.00	No
64	y	-0.008	0.00	0.00	No	0.00	No
65	y	-0.008	0.00	0.00	No	0.00	No
67	y	-0.008	0.00	0.00	No	0.00	No
68	y	-0.008	0.00	0.00	No	0.00	No
69	y	-0.008	0.00	0.00	No	0.00	No
70	y	-0.008	0.00	0.00	No	0.00	No
71	y	-0.008	0.00	0.00	No	0.00	No
72	y	-0.008	0.00	0.00	No	0.00	No
73	y	-0.008	0.00	0.00	No	0.00	No
74	y	-0.008	0.00	0.00	No	0.00	No
75	y	-0.008	0.00	0.00	No	0.00	No
76	y	-0.008	0.00	0.00	No	0.00	No
77	y	-0.008	0.00	0.00	No	0.00	No
78	y	-0.008	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	67	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	68	y	-0.098	0.50	No
	69	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	70	y	-0.098	0.50	No
	71	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	72	y	-0.064	0.50	No
		y	-0.064	5.50	No
	73	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	74	y	-0.064	0.50	No
		y	-0.064	5.50	No
	75	y	-0.098	0.50	No
	76	y	-0.011	0.50	No
		y	-0.011	5.50	No
		y	-0.082	2.50	No
	77	y	-0.012	2.50	No
		y	-0.012	3.50	No
		y	-0.021	2.50	No
	78	y	-0.064	0.50	No
		y	-0.064	5.50	No
Wo	67	z	-0.074	0.50	No
		z	-0.074	5.50	No
		z	-0.028	2.50	No
	68	z	-0.04	0.50	No
	69	z	-0.074	0.50	No
		z	-0.074	5.50	No
		z	-0.028	2.50	No
	70	z	-0.053	0.50	No
	71	z	-0.014	2.50	No
		z	-0.014	3.50	No
		z	-0.013	2.50	No
	72	z	-0.191	0.50	No
		z	-0.191	5.50	No
	73	z	-0.014	2.50	No
		z	-0.014	3.50	No
		z	-0.013	2.50	No
	74	z	-0.191	0.50	No
		z	-0.191	5.50	No
	75	z	-0.04	0.50	No
	76	z	-0.11	0.50	No
		z	-0.11	5.50	No
		z	-0.014	2.50	No
	77	z	-0.022	2.50	No
		z	-0.022	3.50	No
		z	-0.01	2.50	No
	78	z	-0.257	0.50	No
		z	-0.257	5.50	No
Wi	67	z	-0.022	0.50	No
		z	-0.022	5.50	No
		z	-0.01	2.50	No
	68	z	-0.013	0.50	No
	69	z	-0.022	0.50	No
		z	-0.022	5.50	No

		z	-0.01	2.50	No
	70	z	-0.016	0.50	No
	71	z	-0.005	2.50	No
		z	-0.005	3.50	No
		z	-0.006	2.50	No
	72	z	-0.053	0.50	No
		z	-0.053	5.50	No
	73	z	-0.005	2.50	No
		z	-0.005	3.50	No
		z	-0.006	2.50	No
	74	z	-0.053	0.50	No
		z	-0.053	5.50	No
	75	z	-0.013	0.50	No
	76	z	-0.031	0.50	No
		z	-0.031	5.50	No
		z	-0.007	2.50	No
	77	z	-0.007	2.50	No
		z	-0.007	3.50	No
		z	-0.005	2.50	No
	78	z	-0.069	0.50	No
		z	-0.069	5.50	No
Di	67	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	68	y	-0.05	0.50	No
	69	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	70	y	-0.05	0.50	No
	71	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	72	y	-0.216	0.50	No
		y	-0.216	5.50	No
	73	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	74	y	-0.216	0.50	No
		y	-0.216	5.50	No
	75	y	-0.05	0.50	No
	76	y	-0.086	0.50	No
		y	-0.086	5.50	No
		y	-0.047	0.50	No
	77	y	-0.02	2.50	No
		y	-0.02	3.50	No
		y	-0.015	2.50	No
	78	y	-0.216	0.50	No
		y	-0.216	5.50	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (No Ice)	No	0.00	0.00	0.00
Wi	Wind Load (With Ice)	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
Wo	0.00	0.00	0.00
Wi	0.00	0.00	0.00
Di	0.00	0.00	0.00

Bentley

Current Date: 2/13/2020 11:09 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Germantown CT\CAOLE\Rev. 1\Germantown CT (CAOLE)(Rev. 1)(MODS).retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6Wo
LC2=0.9DL+1.6Wo
LC3=1.2DL+Wi+Di
LC4=1.2DL
LC5=0.9DL

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	C 5x2x3/16	10	LC1 at 0.00%	0.35	OK	Eq. H1-1b
		15	LC2 at 93.75%	0.50	OK	Eq. H1-1b
		16	LC1 at 6.25%	0.57	OK	Eq. H1-1b
		17	LC1 at 92.50%	0.34	OK	Eq. H1-1b
		18	LC1 at 100.00%	0.08	OK	Eq. H1-1b
		19	LC1 at 7.50%	0.19	OK	Eq. H1-1b
		20	LC1 at 93.75%	0.51	OK	Eq. H1-1b
		21	LC1 at 100.00%	0.36	OK	Eq. H1-1b
		22	LC1 at 6.25%	0.59	OK	Eq. H1-1b
		23	LC2 at 0.00%	**0.65**	**OK**	Eq. H1-1b
		24	LC1 at 46.88%	0.60	OK	Eq. H1-1b
		25	LC1 at 46.88%	0.50	OK	Eq. H1-1b
	C 6X8.2	1	LC3 at 0.00%	0.43	OK	Eq. H1-1b
		3	LC3 at 100.00%	0.44	OK	Eq. H1-1b
		6	LC3 at 0.00%	**0.44**	**OK**	Eq. H1-1b
		26	LC3 at 0.00%	0.24	OK	Eq. H1-1b
		28	LC3 at 0.00%	0.22	OK	Eq. H1-1b
		31	LC3 at 0.00%	0.22	OK	Eq. H1-1b
	HSS_SQR 2X2X1_4	2	LC3 at 50.00%	0.09	OK	Eq. H3-1
		4	LC3 at 0.00%	0.09	OK	Eq. H3-1
		5	LC3 at 0.00%	**0.10**	**OK**	Eq. H3-1
		27	LC3 at 50.00%	0.08	OK	Eq. H3-1
		29	LC3 at 0.00%	0.08	OK	Eq. H3-1
		30	LC3 at 0.00%	0.08	OK	Eq. H3-1
	HSS_SQR 3X3X1_4	7	LC3 at 0.00%	0.34	OK	Eq. H1-1b
		8	LC1 at 0.00%	**0.59**	**OK**	Eq. H1-1b
		9	LC1 at 0.00%	0.56	OK	Eq. H1-1b
	L 1-3/4x1-3/4x1/4	37	LC3 at 0.00%	0.18	OK	Eq. H2-1
		38	LC3 at 0.00%	0.17	OK	Eq. H2-1
		39	LC3 at 0.00%	0.11	OK	Eq. H2-1
		40	LC3 at 0.00%	0.22	OK	Sec. F1
		41	LC3 at 100.00%	0.20	OK	Sec. F1
		42	LC3 at 0.00%	0.15	OK	Eq. H2-1
		51	LC1 at 100.00%	0.15	OK	Eq. H2-1
		52	LC2 at 100.00%	0.14	OK	Eq. H2-1
		53	LC2 at 100.00%	0.10	OK	Eq. H2-1
		54	LC1 at 100.00%	0.14	OK	Eq. H2-1
		55	LC1 at 100.00%	0.14	OK	Eq. H2-1
		56	LC3 at 0.00%	0.08	OK	Eq. H2-1

	57	LC3 at 0.00%	0.28	OK	Eq. H2-1
	58	LC3 at 0.00%	**0.31**	**OK**	Eq. H2-1
	59	LC1 at 50.00%	0.07	OK	Eq. H2-1
	60	LC3 at 0.00%	0.30	OK	Eq. H2-1
	61	LC3 at 0.00%	0.28	OK	Eq. H2-1
	62	LC1 at 100.00%	0.08	OK	Eq. H2-1
	63	LC3 at 0.00%	0.29	OK	Eq. H2-1
	64	LC3 at 0.00%	0.28	OK	Eq. H2-1
	65	LC1 at 0.00%	0.09	OK	Eq. H2-1
L 2-1_2X2-1_2X3_16	**88**	LC3 at 100.00%	0.34	OK	Sec. F1
	89	LC3 at 100.00%	**0.35**	**OK**	Sec. F1
	90	LC3 at 100.00%	0.32	OK	Sec. F1
	91	LC3 at 0.00%	0.28	OK	Eq. H2-1
	92	LC1 at 0.00%	0.32	OK	Sec. F1
	93	LC3 at 0.00%	0.27	OK	Eq. H2-1
	94	LC3 at 100.00%	0.30	OK	Eq. H2-1
	95	LC3 at 0.00%	0.30	OK	Eq. H2-1
	96	LC3 at 100.00%	0.27	OK	Eq. H2-1
L 3X3X1_4	**34**	LC1 at 0.00%	0.38	OK	Eq. H2-1
	35	LC2 at 0.00%	0.43	OK	Eq. H2-1
	36	LC2 at 0.00%	**0.44**	**OK**	Eq. H2-1
PIPE 2x0.154	**67**	LC3 at 72.92%	0.18	OK	Eq. H1-1b
	68	LC3 at 72.92%	0.13	OK	Eq. H1-1b
	69	LC3 at 72.92%	0.18	OK	Eq. H1-1b
	70	LC3 at 72.92%	0.17	OK	Eq. H1-1b
	71	LC3 at 15.63%	0.21	OK	Eq. H1-1b
	72	LC1 at 15.63%	0.28	OK	Eq. H1-1b
	73	LC3 at 15.63%	0.22	OK	Eq. H1-1b
	74	LC1 at 75.00%	0.26	OK	Eq. H1-1b
	75	LC3 at 72.92%	0.18	OK	Eq. H1-1b
	76	LC3 at 72.92%	0.22	OK	Eq. H1-1b
	77	LC3 at 15.63%	0.24	OK	Eq. H1-1b
	78	LC1 at 75.00%	0.33	OK	Eq. H1-1b
	85	LC3 at 74.22%	0.25	OK	Eq. H1-1b
	86	LC1 at 74.22%	**0.34**	**OK**	Eq. H1-1b
	87	LC1 at 25.78%	0.33	OK	Eq. H1-1b
RndBar 1-1_4	**44**	LC1 at 100.00%	**0.19**	**OK**	Eq. H1-1b

Bentley

Current Date: 11/13/2019 8:48 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\VERIZON\CT\Germantown CT\CAOLE\Germanto
CT (CAOLE)(MODS).retx

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	5.5859	0.00	3.225	0
3	0.7188	0.00	0.415	0
4	7.6063	0.00	4.3915	0
5	7.2313	0.00	5.041	0
6	7.9813	0.00	3.742	0
7	2.0178	0.00	1.165	0
8	-5.5859	0.00	3.225	0
9	-0.7188	0.00	0.415	0
10	-7.6063	0.00	4.3915	0
11	-7.9813	0.00	3.742	0
12	-7.2313	0.00	5.041	0
13	-2.0178	0.00	1.165	0
14	0.00	0.00	-6.45	0
15	0.00	0.00	-0.83	0
16	0.00	0.00	-8.783	0
17	0.75	0.00	-8.783	0
18	-0.75	0.00	-8.783	0
19	0.00	0.00	-2.33	0
21	2.5625	0.00	-2.0116	0
23	3.0234	0.00	-1.2134	0
27	-3.0234	0.00	-1.2134	0

29	-2.5625	0.00	-2.0116	0
33	0.4609	0.00	3.225	0
35	-0.4609	0.00	3.225	0
38	2.396	0.00	-2.30	0
39	3.1899	0.00	-0.925	0
40	-3.1899	0.00	-0.925	0
41	-2.396	0.00	-2.30	0
42	0.7939	0.00	3.225	0
43	-0.7939	0.00	3.225	0
44	-5.4194	0.00	2.9366	0
45	-0.1665	0.00	-6.1616	0
46	0.1665	0.00	-6.1616	0
47	5.4194	0.00	2.9366	0
48	5.2529	0.00	3.225	0
49	-5.2529	0.00	3.225	0
50	5.5859	3.083	3.225	0
51	7.6063	3.083	4.3915	0
52	7.2313	3.083	5.041	0
53	7.9813	3.083	3.742	0
54	5.4194	3.083	2.9366	0
55	5.2529	3.083	3.225	0
56	-5.5859	3.083	3.225	0
57	-7.6063	3.083	4.3915	0
58	-7.9813	3.083	3.742	0
59	-7.2313	3.083	5.041	0
60	-5.4194	3.083	2.9366	0
61	-5.2529	3.083	3.225	0
62	0.00	3.083	-6.45	0
63	0.00	3.083	-8.783	0
64	0.75	3.083	-8.783	0
65	-0.75	3.083	-8.783	0
66	-0.1665	3.083	-6.1616	0
67	0.1665	3.083	-6.1616	0
80	1.7725	0.00	-3.3799	0
81	3.8134	0.00	0.1549	0
82	3.8134	3.083	0.1549	0
83	1.7725	3.083	-3.3799	0
84	-3.8134	0.00	0.1549	0
85	-3.8134	3.083	0.1549	0
86	-1.7725	3.083	-3.3799	0
87	-1.7725	0.00	-3.3799	0
88	-2.0409	3.083	3.225	0
89	-2.0409	0.00	3.225	0
90	2.0409	3.083	3.225	0
91	2.0409	0.00	3.225	0
92	-2.0409	1.5415	3.225	0
93	2.0409	1.5415	3.225	0
94	3.8134	1.5415	0.1549	0
95	1.7725	1.5415	-3.3799	0
96	-1.7725	1.5415	-3.3799	0
97	-3.8134	1.5415	0.1549	0
99	-0.75	4.50	-8.783	0
101	0.75	4.50	-8.783	0
102	1.4857	4.50	-4.2767	0
103	4.4466	4.50	0.8517	0
104	7.9813	4.50	3.742	0
105	7.2313	4.50	5.041	0
106	2.9609	4.50	3.425	0
107	-2.9609	4.50	3.425	0
108	-7.2313	4.50	5.041	0

109	-7.9813	4.50	3.742	0
110	-4.4466	4.50	0.8517	0
111	-1.4857	4.50	-4.2767	0
112	-0.75	-1.50	-8.783	0
113	0.75	-1.50	-8.783	0
114	1.4857	-1.50	-4.2767	0
115	4.4466	-1.50	0.8517	0
116	7.9813	-1.50	3.742	0
117	7.2313	-1.50	5.041	0
118	2.9609	-1.50	3.425	0
119	-2.9609	-1.50	3.425	0
120	-7.2313	-1.50	5.041	0
121	-7.9813	-1.50	3.742	0
122	-4.4466	-1.50	0.8517	0
123	-1.4857	-1.50	-4.2767	0
136	-5.2529	3.583	3.225	0
137	-0.1665	3.583	-6.1616	0
138	0.1665	3.583	-6.1616	0
139	5.4194	3.583	2.9366	0
140	5.2529	3.583	3.225	0
141	-5.4194	3.583	2.9366	0
142	-4.2529	3.583	3.225	0
143	4.2529	3.583	3.225	0
144	-0.6665	3.583	-5.2956	0
145	-4.9194	3.583	2.0706	0
146	4.9194	3.583	2.0706	0
147	0.6665	3.583	-5.2956	0
148	0.00	3.583	3.225	0
149	-2.7929	3.583	-1.6125	0
150	2.7929	3.583	-1.6125	0
151	2.50	3.583	3.225	0
152	-2.50	3.583	3.225	0
153	-4.0429	3.583	0.5526	0
154	-1.5429	3.583	-3.7776	0
155	1.5429	3.583	-3.7776	0
156	4.0429	3.583	0.5526	0
161	0.00	6.583	0.835	0
162	0.7231	6.583	-0.4175	0
163	-0.7231	6.583	-0.4175	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
3	1	1	1	1	1	1
9	1	1	1	1	1	1
15	1	1	1	1	1	1
161	1	1	1	1	1	1
162	1	1	1	1	1	1
163	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	4		C 6X8.2	A36	0.00	0.00	0.00
2	5	6		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
3	10	8		C 6X8.2	A36	0.00	0.00	0.00
4	12	11		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	18	17		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	14	16		C 6X8.2	A36	0.00	0.00	0.00
7	15	19		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	3	7		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	9	13		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	21	23		C 5x2x3/16	A36	0.00	0.00	0.00
15	2	23		C 5x2x3/16	A36	0.00	0.00	0.00
16	21	14		C 5x2x3/16	A36	0.00	0.00	0.00
17	2	33		C 5x2x3/16	A36	0.00	0.00	0.00
18	33	35		C 5x2x3/16	A36	0.00	0.00	0.00
19	35	8		C 5x2x3/16	A36	0.00	0.00	0.00
20	8	27		C 5x2x3/16	A36	0.00	0.00	0.00
21	27	29		C 5x2x3/16	A36	0.00	0.00	0.00
22	29	14		C 5x2x3/16	A36	0.00	0.00	0.00
23	38	41		C 5x2x3/16	A36	0.00	0.00	0.00
24	42	39		C 5x2x3/16	A36	0.00	0.00	0.00
25	43	40		C 5x2x3/16	A36	0.00	0.00	0.00
26	50	51		C 6X8.2	A36	0.00	0.00	0.00
27	52	53		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
28	57	56		C 6X8.2	A36	0.00	0.00	0.00
29	59	58		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
30	65	64		HSS_SQR 2X2X1_4	A500 GrB rectangular	0.00	0.00	0.00
31	62	63		C 6X8.2	A36	0.00	0.00	0.00
34	50	56		L 3X3X1_4	A36	0.00	0.00	0.00
35	50	62		L 3X3X1_4	A36	0.00	0.00	0.00
36	56	62		L 3X3X1_4	A36	0.00	0.00	0.00
37	61	49		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
38	60	44		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
39	67	46		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
40	66	45		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
41	47	54		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
42	55	48		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
51	82	81		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
52	83	80		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
53	86	87		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
54	85	84		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
55	90	91		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
56	88	89		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
57	55	91		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
58	61	89		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
59	92	93		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
60	54	81		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
61	67	80		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
62	94	95		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
63	66	87		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
64	60	84		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
65	96	97		L 1-3/4x1-3/4x1/4	A36	0.00	0.00	0.00
67	99	112		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	101	113		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
69	104	116		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
70	105	117		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
71	103	115		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
72	102	114		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
73	111	123		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
74	110	122		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
75	109	121		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

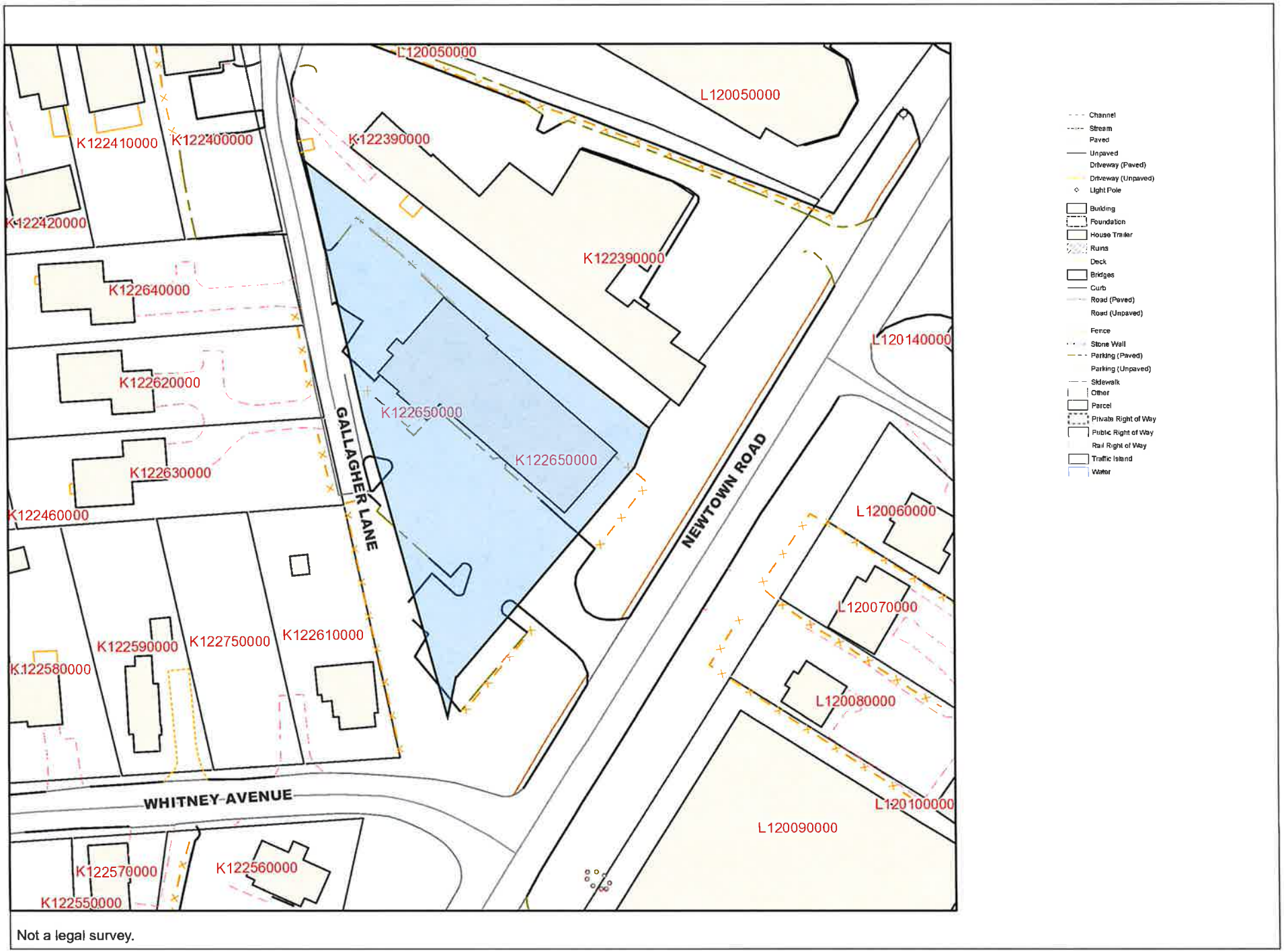
76	108	120	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
77	107	119	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
78	106	118	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
85	136	140	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
86	139	138	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
87	137	141	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
88	143	146	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
89	147	144	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
90	145	142	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
91	152	161	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
92	161	151	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
93	156	162	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
94	162	155	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
95	154	163	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
96	163	153	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	270.00	0	0.00	0.00	0.00
3	270.00	0	0.00	0.00	0.00
6	270.00	0	0.00	0.00	0.00
15	180.00	0	0.00	0.00	0.00
16	180.00	0	0.00	0.00	0.00
25	180.00	0	0.00	0.00	0.00
26	270.00	0	0.00	0.00	0.00
28	270.00	0	0.00	0.00	0.00
31	270.00	0	0.00	0.00	0.00
34	90.00	0	0.00	0.00	0.00
35	180.00	0	0.00	0.00	0.00
36	90.00	0	0.00	0.00	0.00
37	0.00	2	-1.00	0.00	0.00
38	0.00	2	-1.00	0.00	0.00
39	0.00	2	-1.00	0.00	0.00
40	0.00	2	-1.00	0.00	0.00
41	0.00	2	1.00	0.00	0.00
42	0.00	2	-1.00	0.00	0.00
51	0.00	2	0.50	0.00	0.866
52	0.00	2	0.50	0.00	0.866
53	0.00	2	0.50	0.00	-0.866
54	0.00	2	0.50	0.00	-0.866
55	0.00	2	-1.00	0.00	0.00
56	0.00	2	0.00	0.00	-1.00
57	90.00	0	0.00	0.00	0.00
58	180.00	0	0.00	0.00	0.00
59	180.00	0	0.00	0.00	0.00
60	180.00	0	0.00	0.00	0.00
61	90.00	0	0.00	0.00	0.00
62	180.00	0	0.00	0.00	0.00
64	90.00	0	0.00	0.00	0.00
65	180.00	0	0.00	0.00	0.00
67	0.00	2	1.00	0.00	0.00
68	0.00	2	-1.00	0.00	0.00
69	0.00	2	1.00	0.00	0.00
70	0.00	2	-1.00	0.00	0.00

71	0.00	2	-1.00	0.00	0.00
72	0.00	2	1.00	0.00	0.00
73	0.00	2	-1.00	0.00	0.00
74	0.00	2	1.00	0.00	0.00
75	0.00	2	-1.00	0.00	0.00
76	0.00	2	1.00	0.00	0.00
77	0.00	2	-1.00	0.00	0.00
78	0.00	2	1.00	0.00	0.00
88	90.00	0	0.00	0.00	0.00
89	90.00	0	0.00	0.00	0.00
90	90.00	0	0.00	0.00	0.00
91	90.00	0	0.00	0.00	0.00
92	90.00	0	0.00	0.00	0.00
93	90.00	0	0.00	0.00	0.00
94	90.00	0	0.00	0.00	0.00
95	90.00	0	0.00	0.00	0.00
96	90.00	0	0.00	0.00	0.00

ATTACHMENT 6



Not a legal survey.

48 NEWTOWN

Location	48 NEWTOWN	**Mblu**	K12/ / 265/ /
Acct#		**Owner**	48 NEWTOWN ROAD CORPORATION
Assessment	$909,000	**Appraisal**	$1,298,500
PID	7333	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$904,400	$394,100	$1,298,500
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$633,100	$275,900	$909,000

Owner of Record

Owner	48 NEWTOWN ROAD CORPORATION	**Sale Price**	$0
Co-Owner		**Book & Page**	1706/ 908
Address	50 NEWTOWN RD DANBURY, CT 06810	**Sale Date**	11/08/2004
		Instrument	29

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
48 NEWTOWN ROAD CORPORATION	$0	1706/ 908	29	11/08/2004
MORRIS JULIA B NOMINEE	$0	1706/ 906	29	11/08/2004
FORTY EIGHT NEWTOWN ROAD	$0	1041/0377		03/04/1993

Building Information

Building 1 : Section 1

Year Built:	1988
Living Area:	5,680
Replacement Cost:	$725,793

Building Percent Good: 81
Replacement Cost Less Depreciation: $587,900

Building Attributes	
Field	**Description**
STYLE	Restaurant
MODEL	Commercial
Grade	Average
Stories:	2
Occupancy	4
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	Glass/Thermo.
Roof Structure	Gable/Hip
Roof Cover	Metal/Tin
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Ceram Clay Til
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Comm/Res MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	201
Heat/AC	HEAT/AC SPLIT
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	SUS-CEIL & WL
Rooms/Prtns	AVERAGE
Wall Height	12
% Comn Wall	0

Building 1 : Section 1

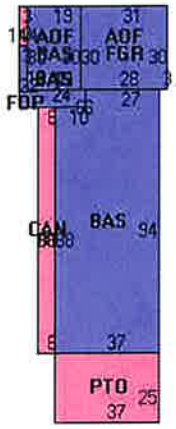
Year Built: 1988
Living Area: 0
Replacement Cost: $725,793
Building Percent Good: 81
Replacement Cost Less Depreciation: $587,900

Building Attributes

Building Photo

Building Photo
(http://images.vgsi.com/photos2/DanburyCTPhotos/\00\03\05/58.jpg)

Building Layout



(http://images.vgsi.com/photos2/DanburyCTPhotos//Sketches/7333_7333.j

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	4,180	4,180
AOF	Office, (Average)	1,500	1,500
CAN	Canopy	528	0
FGR	Garage	930	0
FOP	Open Porch	42	0
PTO	Patio	925	0
		8,105	5,680

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplaces	
Whirlpool	
Addn'l Kitchen	
Bsm Gar	
Fin Bsm Area	
Fin Bsm Qual	
Nhbd	
MH Park	

Building Photo

(http://images.vgsi.com/photos2/DanburyCTPhotos/\00\02\70/15.jpg)

Building Layout

Building Layout

(http://images.vgsi.com/photos2/DanburyCTPhotos//Sketches/7333_10498

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	201
Description	Comm/Res MDL-94
Zone	CG20
Neighborhood	6000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.6
Frontage	0
Depth	0
Assessed Value	$275,900
Appraised Value	$394,100

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CEL	Cell Tower			1 UNITS	$300,000	1
PAV1	Paving-Asphalt			10500 S.F.	$16,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$900,700	$394,100	$1,294,800
2017	$900,700	$394,100	$1,294,800
2016	$764,800	$375,300	$1,140,100

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$630,500	$275,900	$906,400
2017	$630,500	$275,900	$906,400
2016	$535,400	$262,700	$798,100

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ATTACHMENT 7

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 03/31/2020 US POSTAGE $002.90 ZIP 06103 041L12203937
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Mark D. Boughton, Mayor City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
2.	Sharon Calitro, Director of Planning and Zoning City of Danbury 155 Deer Hill Avenue Danbury, CT 06810				
3.	48 Newtown Road Corporation 50 Newtown Road Danbury, CT 06810				
4.					
5.					
6.					

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