STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

February 19, 2020

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-077-200116** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 239 Middle Turnpike East, Manchester, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 10, 2020 submitted in response to the Council's January 21, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Dandeneau, Kathleen <KDANDENEAU@RC.com>
Sent: Monday, February 10, 2020 3:48 PM
To: Bachman, Melanie; CSC-DL Siting Council
Cc: Baldwin, Kenneth; Mayo, Rachel
Subject: EM-VER-077-200116 - 239 Middle Turnpike East, Manchester, CT - Additional Information
Attachments: Manchester_001.pdf

The original has been mailed to the Siting Council.

Kathleen M. Dandeneau
Legal Administrative Assistant

Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103
Direct 860.541.2689 | Fax 860.275.8299
kdandeneau@rc.com | www.rc.com

Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

February 10, 2020

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

Re: **EM-VER-077-200116 – Cellco Partnership d/b/a Verizon Wireless Notice of Intent to Modify an Existing Telecommunications Facility Located at 239 Middle Turnpike East, Manchester, Connecticut**

Dear Ms. Bachman:

In response to your January 21, 2020 letter regarding the above-referenced filing, attached is a set of project plans stamped and signed by a Connecticut Licensed Professional Engineer and a full and complete copy of the stamped and signed Antenna Platform Structural Analysis dated January 23, 2020, prepared by All-Points Technology Corporation, referencing the correct 2018 CT State Building Code.

If you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Enclosures

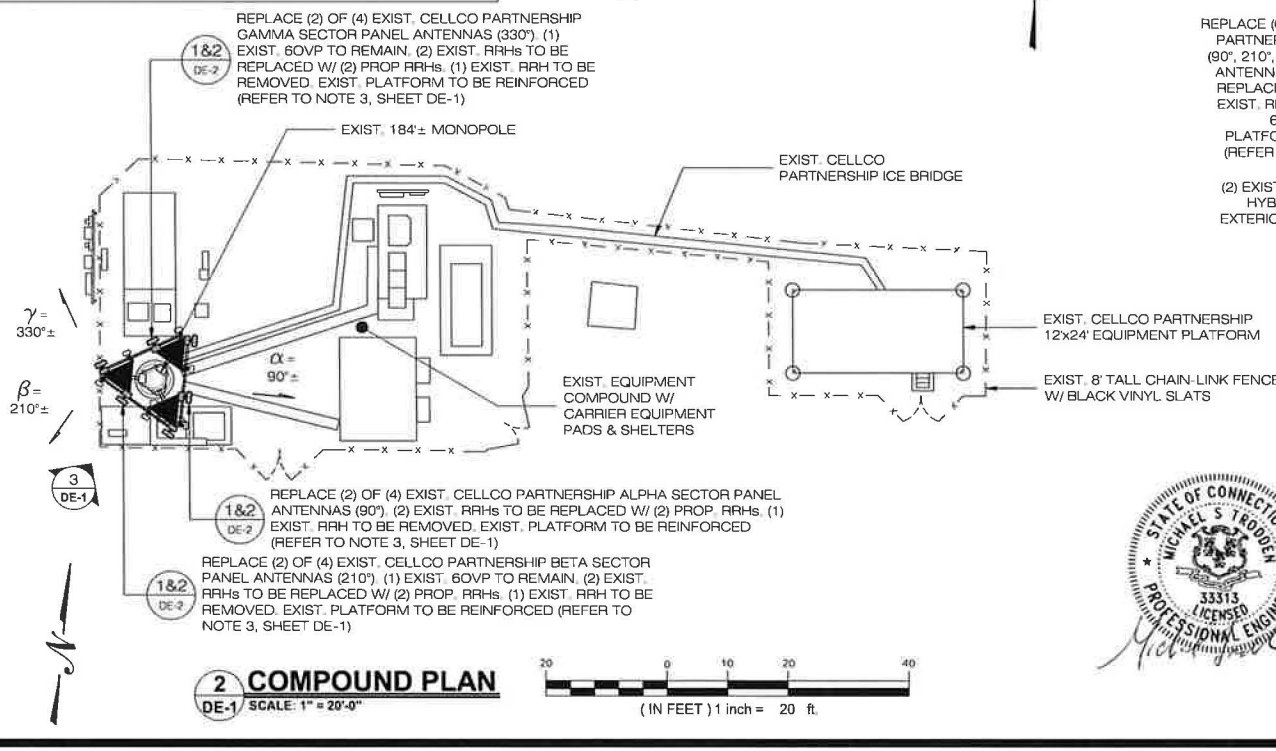
NOTES:

1. DESIGN EXHIBIT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CONVEY GENERAL INFORMATION PERTAINING TO THE SIZE AND LOCATION OF THE PROPOSED WIRELESS EQUIPMENT UPGRADE.
2. REFER TO TOWER STRUCTURAL ANALYSIS REPORT PREPARED BY HUDSON DESIGN GROUP, LLC DATED SEPTEMBER 07, 2018 AVAILABLE UNDER SEPARATE COVER.
3. EXISTING PLATFORM REQUIRES REINFORCEMENT PRIOR TO THE INSTALLATION OF THE PROP. EQUIPMENT UPGRADE. REFER TO MOUNT STRUCTURAL ANALYSIS REPORT PREPARED BY ALL POINTS TECHNOLOGY CORP., DATED JANUARY 23, 2020 AVAILABLE UNDER SEPARATE COVER.
4. BASE MAPPING FROM FIELD MEASUREMENTS TAKEN BY ALL-POINTS TECH. CORP., P.C. ON JULY 2, 2018
5. ALL EXPOSED STEEL AND HARDWARE TO BE HOT DIP GAL. (DG).
6. CAP & WEATHERPROOF ALL UN-USED CABLE ENTRY PORTS (WHERE APPLICABLE).
7. MOUNT & GROUND ALL NEW EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
8. ALL ANTENNAS, APPURTENANCES AND NEW STEEL SHALL BE PAINTED TO MATCH EXIST. (WHERE APPLICABLE) AND SHALL BE APPROVED BY OWNER.

2 DE-1 COMPOUND PLAN

APPROX. EXIST PROPERTY LINE

1 LOCATION PLAN
DE-1 SCALE: 1" = 500'-0"



2 COMPOUND PLAN
DE-1 SCALE: 1" = 20'-0"

20 0 10 20 40
(IN FEET) 1 inch = 20 ft.

℄ EXIST. MUNICIPAL ANTENNAS & PLATFORM @ 184'-0"± AGL
T/ EXIST. TOWER @ 184'-0"± AGL
℄ EXIST. CARRIER PANEL ANTENNAS @ 163'-0"± AGL
℄ EXIST. CARRIER PANEL ANTENNAS @ 153'-0"± AGL
℄ EXIST. CARRIER PANEL ANTENNAS @ 143'-0"± AGL
℄ EXIST. MUNICIPAL ANTENNAS & PLATFORM @ 123'-0"± AGL
℄ EXIST /PROP. CELLCO PARTNERSHIP PANEL ANTENNAS @ 113'-0"± AGL

REPLACE (6) OF (12) EXIST. CELLCO PARTNERSHIP PANEL ANTENNAS (90°, 210°, 330°) W/ (6) PROP. PANEL ANTENNAS. (6) EXIST. RRHs TO BE REPLACED W/ (6) PROP. RRHs. (3) EXIST. RRHs TO BE REMOVED. (2) 6OVPs TO REMAIN. EXIST. PLATFORM TO BE REINFORCED. (REFER TO NOTE 3, SHEET DE-1)
1&2 DE-2

(2) EXIST. CELLCO PARTNERSHIP HYBRID CABLES ROUTED ON EXTERIOR OF EXIST. TOWEER TO REMAIN

EXIST. 184'± MONOPOLE

APPROX. EXIST. GRADE

3 TOWER ELEVATION
DE-1 SCALE: 1" = 30'-0"

STATE OF CONNECTICUT
MICHAEL S TRODDEN
33313
LICENSED
PROFESSIONAL ENGINEER

REVISIONS:
-REV0. 07/20/18. FOR REVIEW. JRM
-REV1. 01/23/20. REVISED FOR FILING. JRM
-REV2.
-REV3.
-REV4.
-REV5.

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

SHEET NUMBER: DE-1

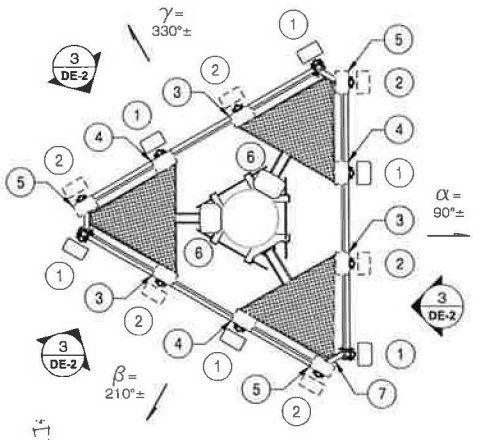
MANCHESTER GREEN CT
239 MIDDLE TURNPIKE EAST
MANCHESTER, CT 06040
VZW
VZW PROJECT CODE: 20181836978 LC: 488026 CM: JO
VZW FUZE ID: 15240525

APT FILING NUMBER: CT141EB10570

LOCATION PLAN, COMPOUND PLAN & TOWER ELEVATION

DATE OF DV: 07/02/18 | DRAWN BY: DRA
DATE: 07/20/18 | CHECKED BY: JRM

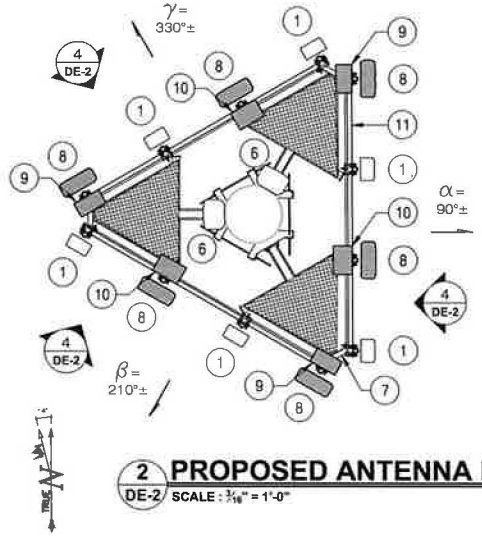
Cellco Partnership d/b/a verizon



1. EXIST. ANTENNA (TO REMAIN) MODEL: ANDREW LNX-6514DS-A1M
2. EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW HBXX-6517-DS-A2M
3. EXIST. RRH (TO BE REPLACED) MODEL: ALU 2x60W 700U RRH
4. EXIST. RRH (TO BE REPLACED) MODEL: ALU 4x30W PCS RRH
5. EXIST. RRH (TO BE REPLACED) MODEL: ALU 2x60W AWS RRH
6. EXIST. 6OVP (TO REMAIN) MODEL: RAYCAP RxxDC3315-PF-48 (V.I.F.)
7. EXIST. LOW PROFILE PLATFORM (TO BE REINFORCED) (REFER TO NOTE 3, SHEET DE-1)

1 DE-2 EXISTING ANTENNA PLAN

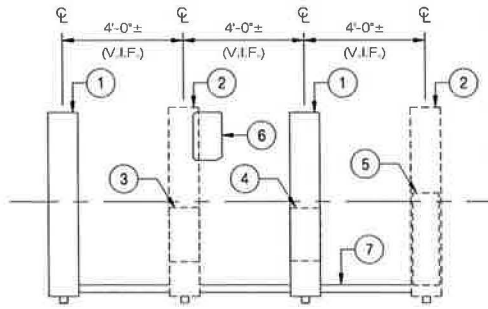
SCALE : 3/16" = 1'-0"



1. EXIST. ANTENNA (TO REMAIN) MODEL: ANDREW LNX-6514DS-A1M
6. EXIST. 6OVP (TO REMAIN) MODEL: RAYCAP RxxDC3315-PF-48 (V.I.F.)
7. EXIST. LOW PROFILE PLATFORM (TO BE REINFORCED) (REFER TO NOTE 3, SHEET DE-1)
8. PROP. ANTENNA MODEL: COMMSCOPE NNHH-65B-R4
9. PROP. RRH MODEL: SAMSUNG B5/B13 4x40W (2x60W) 700/850 RRH
10. PROP. RRH MODEL: SAMSUNG B2/B66 4x60W (2x90W) PCS/AWS RRH
11. SITEPRO1 UNIVERSAL HANDRAIL KIT FOR 12' PLATFORM (P/N HRK12-U)

2 DE-2 PROPOSED ANTENNA PLAN

SCALE : 3/16" = 1'-0"

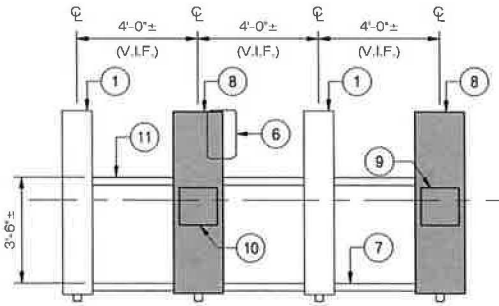


1. EXIST. ANTENNA (TO REMAIN) MODEL: ANDREW LNX-6514DS-A1M
2. EXIST. ANTENNA (TO BE REPLACED) MODEL: ANDREW HBXX-6517-DS-A2M
3. EXIST. RRH (TO BE REPLACED) MODEL: ALU 2x60W 700U RRH
4. EXIST. RRH (TO BE REPLACED) MODEL: ALU 4x30W PCS RRH
5. EXIST. RRH (TO BE REPLACED) MODEL: ALU 2x60W AWS RRH
6. EXIST. 6OVP (TO REMAIN) (x2PL) MODEL: RAYCAP RxxDC3315-PF-48 (V.I.F.)
7. EXIST. LOW PROFILE PLATFORM (TO BE REINFORCED) (REFER TO NOTE 3, SHEET DE-1)

℄ EXIST. ANTENNAS @ 113'-0"± AGL

3 DE-2 TYPICAL MOUNTING CONFIGURATION - EXIST.

SCALE : 1/4" = 1'-0"



1. EXIST. ANTENNA (TO REMAIN) (x6PL) MODEL: ANDREW LNX-6514DS-A1M
6. EXIST. 6OVP (TO REMAIN) (x2PL) MODEL: RAYCAP RxxDC3315-PF-48 (V.I.F.)
7. EXIST. LOW PROFILE PLATFORM (TO BE REINFORCED) (REFER TO NOTE 3, SHEET DE-1)
8. PROP. ANTENNA (x6PL) MODEL: COMMSCOPE NNHH-65B-R4

℄ EXIST./PROP. ANTENNAS @ 113'-0"± AGL

9. PROP. RRH (x3PL) MODEL: SAMSUNG B5/B13 4x40W (2x60W) 700/850 RRH
10. PROP. RRH (x3PL) MODEL: SAMSUNG B2/B66 4x60W (2x90W) PCS/AWS RRH
11. SITEPRO1 UNIVERSAL HANDRAIL KIT FOR 12' PLATFORM (P/N HRK12-U)

4 DE-2 TYPICAL MOUNTING CONFIGURATION - PROP.

SCALE : 1/4" = 1'-0"

REVISIONS:
-REV0. 07/20/18. FOR REVIEW. JRM
-REV1. 01/23/20. REVISED FOR FILING. JRM
-REV2.
-REV3.
-REV4.
-REV5.

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

SHEET NUMBER: DE-2

MANCHESTER GREEN CT
239 MIDDLE TURNPIKE EAST
MANCHESTER, CT 06040
VZW
VZW
PROJECT CODE: 20181836978 LC: 488026 CM: JO
VZW FUZE ID: 15240525

APT FILING NUMBER: CT141EB10570

ANTENNA MOUNT PLANS & CONFIGURATION DETAILS

DATE OF DV: 07/02/18 | DRAWN BY: DRA
DATE: 07/20/18 | CHECKED BY: JRM

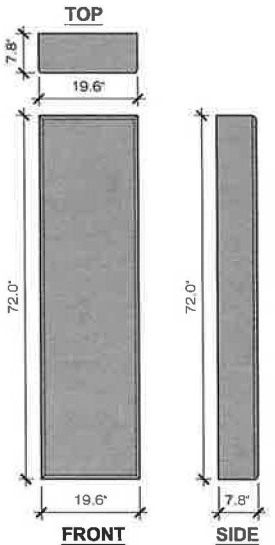
Cellco Partnership d/b/a verizon

EQUIPMENT DATA

EQUIPMENT SPECIFICATIONS

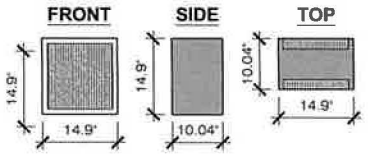
SECTOR	ANTENNA MAKE/MODEL	QTY	AZIMUTH	EQUIPMENT STATUS	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
ALPHA	SPARE ANDREW LNX-6514DS-A1M	1	90°	ETR	72.9	11.9	7.1	31.3 (2)
	700/850: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
	SPARE ANDREW LNX-6514DS-A1M	1		ETR	72.9	11.9	7.1	31.3 (2)
	2100: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
BETA	SPARE ANDREW LNX-6514DS-A1M	1	210°	ETR	72.9	11.9	7.1	31.3 (2)
	700/850: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
	SPARE ANDREW LNX-6514DS-A1M	1		ETR	72.9	11.9	7.1	31.3 (2)
	2100: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
GAMMA	SPARE ANDREW LNX-6514DS-A1M	1	330°	ETR	72.9	11.9	7.1	31.3 (2)
	700/850: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
	SPARE ANDREW LNX-6514DS-A1M	1		ETR	72.9	11.9	7.1	31.3 (2)
	2100: COMMSCOPE NNHH-65B-R4	1		PROP.	72.0	19.6	7.8	78.5 (2)
	APPURTENANCE MAKE/MODEL							
	SAMSUNG B5/B13 850/700 RRH	3	-	PROP.	14.9	14.9	8.14	82.0
	SAMSUNG B2/B66 PCS/AWS RRH	3	-	PROP.	14.9	14.9	10.04	97.5
	RAYCAP RxxDC3315-PF-48 (6OVP)	2	-	ETR	28.9	15.7	10.3	32

(1) 'ETR' DENOTES EXIST. TO REMAIN
(2) WEIGHT WITHOUT MOUNTING BRACKET.
(3) ANTENNA DATA BASED ON RFDS DATED 06/15/18

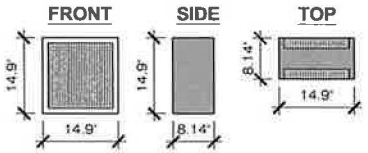


COMMSCOPE NNHH-65B-R4
HxWxD=72.0"x19.6"x7.8" (78.5 Lbs)

1 DE-3 PROP. ANTENNA DETAIL
SCALE : ½" = 1'-0"



SAMSUNG DUAL HIGH BAND B2/B66a RRH
RRH PCS/AWS
REMOTE RADIO HEAD (RRH)
WxDxH=14.9"x14.9"x10.04" (97.5 Lbs)



SAMSUNG DUAL HIGH BAND B5/B13 RRH
RRH 850/700
REMOTE RADIO HEAD (RRH)
WxDxH=14.9"x14.9"x8.14" (82.0 Lbs)

NOTE: WEIGHTS INCLUDE SOLAR SHEILD & MOUNTING BRACKET

2 DE-3 PROP. RRH EQUIPMENT
SCALE : ½" = 1'-0"

REVISIONS:
-REV0: 07/20/18: FOR REVIEW: JRM
-REV1: 01/23/20: REVISED FOR FILING: JRM
-REV2:
-REV3:
-REV4:
-REV5:

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SHEET NUMBER: DE-3

MANCHESTER GREEN CT
239 MIDDLE TURNPIKE EAST
MANCHESTER, CT 06040
VZW
VZW PROJECT CODE: 20181836878 LC: 468028 CM: JO
VZW FUZE ID: 15240525

APT FILING NUMBER: CT141EB10570
EQUIPMENT DETAILS
DATE OF DV: 07/02/18 | DRAWN BY: DRA
DATE: 07/20/18 | CHECKED BY: JRM

Cellco Partnership d/b/a verizon

ALL-POINTS
TECHNOLOGY CORPORATION

January 23, 2020

Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Attn: Mr. AndrewLeone

Re: Antenna Platform Structural Analysis
Verizon Wireless Site I.D.: Manchester Green CT
239 Middle Turnpike East
Manchester, CT 06045

Project/Location Code:	201815240525/268181
VZW FUZE Project I.D.:	15240525
APT Filing No.	CT141EB10570

Dear Mr. O'Donnell,

All-Points Technology Corp. (APT), a professional engineering corporation licensed in the State of Connecticut, has been retained by Verizon Wireless (VZW) to assess the structural adequacy of the existing VZW antenna mount assembly to support the proposed antenna and appurtenance modification on the above noted tower structure. This review was limited to a structural evaluation of the existing antenna mounting assembly and its connection to the host tower structure.

The proposed VZW antenna and appurtenance modification consists of the replacement of six (6) existing panel antennas with six (6) proposed panel antennas and nine (9) existing Remote Radios Heads (RRHs) with six (6) proposed RRHs. Additionally, the modification includes the installation of one (1) proposed SitePRO1 HRK12-U Universal Handrail Kit. Reference is made to Design Exhibit Drawings prepared by this office, marked Rev 1, dated 01/23/20.

The structural review has been prepared in accordance with the following design standards:

ANSI/TIA-222-G-2009 - Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

ASCE/SEI 7-10 – Minimum Design Loads for Buildings and Other Structures

AISC - American Institute of Steel Construction Manual of Steel Construction, 14th Ed.

IBC 2015 - as amended by the 2018 Connecticut State Building Code.

Antenna, appurtenance and mount assembly loads were evaluated utilizing the ANSI TIA-222-G standard.

- Load Case 1: 105 mph (3-second gust,), 0in ice (Nominal Survival Wind)
- Load Case 2: 50 mph (3-second gust) with 1.00in ice thickness
- Load Case 3: 60 mph (3-second gust) (Service Load)
- Structure Class III
- Exposure Category B
- Topographic Category 1.

Note:

1. Based upon IBC 2015/2018 Connecticut State Building Code maximum ultimate wind speed for site location of 135 mph (3-sec gust), equivalent to a nominal design speed of 105 mph (3-sec gust) per Appendix N and exception #5, Section 1609.1.1.

The existing and proposed VZW antenna/appurtenance and mount assembly loading consists of the following equipment (proposed equipment shown in **bold** text):

Antenna and Appurtenance Make/Model	Quantity	Status	Mount Type	Elevation
Commscope NNHH-65B-R4 panel antennas	**6**	**P**	One (1) Existing SitePRO1 RMQP-4xx Antenna Mounting Platform Assembly **Reinforced w/ one (1) proposed SitePRO1 Universal Handrail Kit (P/N HRK12-U)**	113 ft± AGL
Andrew LNX-6514DS-A1M panel antennas	6	ETR		
Samsung B5/B13 RRH 4x40W(2x60W) Remote Radio Heads (RRHs)	**3**	**P**		
Samsung B2/B66a RRH 4x60W(2x90W) Remote Radio Heads (RRHs)	**3**	**P**		
Raycap RxxDC-3315-PF-48 Main Distribution Boxes (MDBs)	2	ETR	Strapped to Monopole	115 ft± AGL
Hybrid Fiber Cables (Exterior)	2	ETR	n/a	n/a

Notes:
1. ETR = Existing to Remain/to be Relocated; P = Proposed.
2. Antennas and appurtenances shall be centered on mount assembly at the above specified elevation with no vertical eccentricity.

In conclusion, we find that the existing VZW antenna mount assembly is structurally adequate to support the proposed antenna/appurtenance modification **with the proposed reinforcement**. Under the proposed loading as referenced above, the maximum usage of the reinforced platform is 69.0%, with the end plate connection to collar usage of 54.0%.

This letter assumes that the mounting assembly structural components and connections are in good condition and have been properly maintained since erection. The contractor shall inspect the condition of the existing mount assembly in its entirety prior to the installation of the proposed antenna and appurtenance modification.

If there are any further questions regarding this project or if we may of further assistance, please do not hesitate to call.

Sincerely,
All-Points Technology Corp. P.C.

Michael S. Trodden, P.E.
Sr. Structural Engineer

Appendix A

Design Criteria

Hazards by Location

Search Information

Address: 239 Middle Turnpike E, Manchester, CT 06040, USA

Coordinates: 41.7841207, -72.5111931

Elevation: 284 ft

Timestamp: 2020-01-23T03:00:39.191Z

Hazard Type: Wind

ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	98 mph
Risk Category I	109 mph
Risk Category II	118 mph
Risk Category III	128 mph
Risk Category IV	⚠ 132 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

ASCE 7-10

MRI 10-Year	77 mph
MRI 25-Year	87 mph
MRI 50-Year	94 mph
MRI 100-Year	101 mph
Risk Category I	114 mph
Risk Category II	125 mph
Risk Category III-IV	⚠ 134 mph

If the structure under consideration is a healthcare facility and you are also within 1 mile of the coastal mean high water line, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

ASCE 7-05

ASCE 7-05 Wind Speed	101 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

(APPENDIX N) MUNICIPALITY - SPECIFIC STRUCTURAL DESIGN PARAMETERS												
				Wind Design Parameters								
Municipality	**Ground Snow Load**	**MCE Spectral Accelerations (%g)**		**Ultimate Design Wind Speeds, V_{ult} (mph)**			**Nominal Design Wind Speeds, V_{asd} (mph)**			**Wind-Borne Debris Regions[1]**		**Hurricane-Prone Regions**
		S_s	S_1	Risk Cat.I	Risk Cat.II	Risk Cat III-IV	Risk Cat. I	Risk Cat. II	Risk Cat. III-IV	Risk Cat. II & III except Occup I-2	Risk Cat III Occup I-2 & Risk Cat. IV	
Enfield	35	0.176	0.065	110	125	130	85	97	101			Yes
Essex	30	0.168	0.059	120	135	145	93	105	112		Type A	Yes
Fairfield	30	0.215	0.065	115	125	135	89	97	105		Type B	Yes
Farmington	35	0.183	0.064	115	125	135	89	97	105			Yes
Franklin	30	0.171	0.061	120	130	140	93	101	108		Type A	Yes
Glastonbury	30	0.180	0.063	115	125	135	89	97	105			Yes
Goshen	40	0.181	0.065	105	115	125	81	89	97			
Granby	35	0.176	0.065	110	120	130	85	93	101			Yes
Greenwich	30	0.259	0.070	110	120	130	85	93	101			Yes
Griswold	30	0.168	0.060	125	135	145	97	105	112		Type A	Yes
Groton	30	0.160	0.058	125	135	145	97	105	112	Type B	Type A	Yes
Guilford	30	0.176	0.061	120	130	140	93	101	108		Type B	Yes
Haddam	30	0.175	0.061	120	130	140	93	101	108			Yes
Hamden	30	0.185	0.063	115	125	135	89	97	105			Yes
Hampton	35	0.172	0.062	120	130	140	93	101	108			Yes
Hartford	30	0.181	0.064	115	125	135	89	97	105			Yes
Hartland	40	0.175	0.065	110	120	125	85	93	97			Yes
Harwinton	35	0.183	0.065	110	120	130	85	93	101			Yes
Hebron	30	0.177	0.063	120	130	140	93	101	108			Yes
Kent	40	0.188	0.065	105	115	120	81	89	93			
Killingly	40	0.171	0.062	120	130	140	93	101	108			Yes
Killingworth	30	0.173	0.061	120	130	140	93	101	108			Yes
Lebanon	30	0.173	0.062	120	130	140	93	101	108			Yes
Ledyard	30	0.163	0.059	125	135	145	97	105	112		Type A	Yes
Lisbon	30	0.169	0.061	125	135	145	97	105	112		Type A	Yes
Litchfield	40	0.184	0.065	110	120	125	85	93	97			Yes
Lyme	30	0.164	0.059	125	135	145	97	105	112		Type A	Yes
Madison	30	0.173	0.060	120	130	140	93	101	108		Type B	Yes
Manchester	30	0.178	0.064	115	125	135	89	97	105			Yes
Mansfield	35	0.173	0.062	120	130	140	93	101	108			Yes
Marlborough	30	0.177	0.062	120	130	140	93	101	108			Yes
Meriden	30	0.183	0.063	115	125	135	89	97	105			Yes
Middlebury	35	0.191	0.064	110	120	130	85	93	101			Yes
Middlefield	30	0.181	0.063	115	125	135	89	97	105			Yes
Middletown	30	0.180	0.063	115	130	135	89	101	105			Yes
Milford	30	0.194	0.063	115	125	135	89	97	105		Type B	Yes
Monroe	30	0.205	0.065	110	120	130	85	93	101			Yes
Montville	30	0.165	0.059	125	135	145	97	105	112		Type A	Yes
Morris	35	0.187	0.065	110	120	125	85	93	97			Yes
Naugatuck	30	0.190	0.064	110	125	135	85	97	105			Yes
New Britain	30	0.183	0.064	115	125	135	89	97	105			Yes
New Canaan	30	0.240	0.068	110	120	130	85	93	101			Yes
New Fairfield	35	0.212	0.067	105	115	125	81	89	97			
New Hartford	40	0.180	0.065	110	120	130	85	93	101			Yes

State	County	Min. Basic Wind Speed V (mph)	Max. Basic Wind Speed V (mph)	Min. Basic Wind Speed with Ice V_i (mph)	Max. Basic Wind Speed with Ice V_i (mph)	Min. Design Ice Thickness t_i (in.)	Max. Design Ice Thickness t_i (in.)	Design Frost Depth (in.)	Min. S_S	Max. S_S	Notes
CO	LINCOLN	90	90	50	50	0.00	0.25	50	0.12	0.16	2
CO	LOGAN	90	90	50	60	0.25	0.25	50	0.09	0.11	-
CO	MESA	90	90	40	50	0.00	0.25	50	0.27	0.54	2
CO	MINERAL	90	90	40	40	0.00	0.00	40	0.37	0.49	2
CO	MOFFAT	90	90	50	50	0.00	0.25	50	0.26	0.37	2
CO	MONTEZUMA	90	90	40	40	0.00	0.25	30	0.19	0.37	2
CO	MONTROSE	90	90	40	40	0.00	0.25	40	0.26	0.55	2
CO	MORGAN	90	90	50	50	0.00	0.25	50	0.11	0.15	2
CO	OTERO	90	90	50	50	0.00	0.25	40	0.14	0.18	2
CO	OURAY	90	90	40	40	0.00	0.25	40	0.43	0.56	2
CO	PARK	90	90	50	50	0.00	0.00	50	0.22	0.35	2
CO	PHILLIPS	90	90	50	60	0.25	0.50	50	0.08	0.09	-
CO	PITKIN	90	90	50	50	0.00	0.00	50	0.37	0.54	2
CO	PROWERS	90	90	50	50	0.25	0.50	40	0.11	0.12	-
CO	PUEBLO	90	90	50	50	0.00	0.00	40	0.16	0.23	1, 2
CO	RIO BLANCO	90	90	40	50	0.00	0.25	50	0.27	0.40	2
CO	RIO GRANDE	90	90	40	40	0.00	0.00	40	0.34	0.39	2
CO	ROUTT	90	90	50	50	0.00	0.00	50	0.25	0.31	2
CO	SAGUACHE	90	90	40	50	0.00	0.00	40	0.35	0.49	1, 2
CO	SAN JUAN	90	90	40	40	0.00	0.00	40	0.37	0.54	2
CO	SAN MIGUEL	90	90	40	40	0.00	0.25	40	0.24	0.51	2
CO	SEDGWICK	90	90	60	60	0.25	0.50	50	0.08	0.09	-
CO	SUMMIT	90	90	50	50	0.00	0.00	50	0.27	0.33	2
CO	TELLER	90	90	50	50	0.00	0.00	40	0.18	0.22	1, 2
CO	WASHINGTON	90	90	50	50	0.00	0.25	50	0.09	0.13	-
CO	WELD	90	90	50	50	0.00	0.25	50	0.11	0.21	1, 2
CO	YUMA	90	90	50	50	0.25	0.50	50	0.08	0.11	-
CT	FAIRFIELD	90	110	40	50	0.75	0.75	40	0.30	0.41	1, 2
CT	HARTFORD	90	105	40	50	1.00	1.00	40	0.26	0.28	-
CT	LITCHFIELD	90	100	40	40	0.75	1.00	40	0.26	0.33	1, 2
CT	MIDDLESEX	100	120	50	50	0.75	0.75	40	0.25	0.28	-
CT	NEW HAVEN	95	115	50	50	0.75	0.75	40	0.26	0.32	-
CT	NEW LONDON	105	120	50	50	0.75	0.75	40	0.24	0.27	-
CT	TOLLAND	95	105	40	50	0.75	1.00	40	0.26	0.27	-
CT	WINDHAM	100	110	40	50	0.75	1.00	40	0.26	0.27	-
DE	KENT	90	105	30	40	0.50	0.75	30	0.17	0.25	-
DE	NEW CASTLE	90	90	40	40	0.75	0.75	30	0.24	0.33	-
DE	SUSSEX	95	120	40	40	0.50	0.50	20	0.13	0.18	-
FL	ALACHUA	100	105	30	30	0.00	0.00	0	0.11	0.13	-
FL	BAKER	100	105	30	30	0.00	0.00	0	0.13	0.15	-
FL	BAY	115	130	30	30	0.00	0.25	0	0.08	0.11	-
FL	BRADFORD	100	105	30	30	0.00	0.00	0	0.12	0.14	-
FL	BREVARD	115	135	30	30	0.00	0.00	0	0.08	0.11	-
FL	BROWARD	120	140	30	30	0.00	0.00	0	0.06	0.08	-
FL	CALHOUN	110	120	30	30	0.00	0.00	0	0.09	0.11	-
FL	CHARLOTTE	110	130	30	30	0.00	0.00	0	0.08	0.09	-
FL	CITRUS	100	115	30	30	0.00	0.00	0	0.09	0.11	-

Appendix B

Antenna Mount Analysis

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141EB10570
Site Name:	Manchester Green
Date:	1/22/2020

(Based on ANSI/TIA-222-G-2005)

Site Name:	Manchester Green
Site Address:	239 Middle Turnpike East Manchester, CT 06045
Site County:	Hartford

Design Criteria

Ultimate Wind Speed, V_{ult} =	135	mph	*2012 CSBC, Appendix N*
Basic Wind Speed, V_{asd} =	105	mph	*2012 CSBC, Appendix N*
Basic Wind Speed with ice, V_i =	50	mph	
Basic Wind Speed, V_w =	15	mph	*For access/man combinations*
Design Ice Thickness, t_i =	1.00	in	
Type of Structure =	Monopole		
Structure Height =	184	ft	
Structure Class =	III		Table 2-1
Exposure Category =	B		Section 2.6.5
Importance Factor, I =	1.15		Table 2-3
Importance Factor with Ice, I_{wi} =	1.00		Table 2-3
Ice Thickness Importance Factor, I_{it} =	1.25		Table 2-3
z_g =	1200		Table 2-4
α =	7		Table 2-4
K_{zmin} =	0.7		Table 2-4
K_{zt} =	1.0		Section 2.6.6.4
K_d =	0.95		Table 2-2
G_h =	1.10		Section 2.6.7
q_z' =	**30.83**	**psf**	
q_{zi}' =	**6.08**	**psf**	*Excluding Kz*
q_{zw}' =	**0.63**	**psf**	

ALL-POINTS TECHNOLOGY CORPORATION

(Based on ANSI/TIA-222-G-2005)

Project ID: CT141EB10570
Site Name: Manchester Green
Date: 1/22/2020
Sheet: of

Design Criteria: *(From Previous Sheet)*

$q_z' =$ 30.83 psf
$q_{zi}' =$ 6.08 psf
$q_{rw}' =$ 0.63 psf
$t_i =$ 1.00 in

$G_h =$ 1.00 Section 2.6.7
$K_a =$ 1.00 Section 2.6.9.2.2- Section 2.6.9.2.4

Description	#/Sector	Elev. z, ft	K_z	q_z, psf	Dimensions Height, in	Width, in	Depth, in	Wght., lbs	Flat Panel Front Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Flat Panel Side Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Front Wind Force, lbs	Side Wind Force, lbs	Weight, lbs
NNHH-65B-R4	2.0	113	1.023	31.55	72.0	19.6	7.8	91.1	9.80	3.673	1.24	12.18	3.900	9.231	1.47	5.750	385.0	182.0	91.1
LNX-6514DS-A1M	2.0	113	1.023	31.55	72.9	11.9	7.1	44.6	6.02	6.126	1.33	8.02	3.594	10.268	1.51	5.424	254.0	172.0	44.6
B5/B13 RRH- BR04C	1.0	113	1.023	31.55	15.0	15.0	8.1	70.3	1.56	1.000	1.20	1.88	0.844	1.852	1.20	1.013	60.0	32.0	70.3
B2/B66A RRH- BR049	1.0	113	1.023	31.55	15.0	15.0	10.0	84.4	1.56	1.000	1.20	1.88	1.042	1.500	1.20	1.250	60.0	40.0	84.4
RxxDC-3315-PF-48 **	1.0	113	1.023	31.55	21.6	15.7	10.3	32.0	2.35	1.370	1.20	2.82	1.543	2.090	1.20	1.852	90.0	59.0	32.0

Description	#/Sector	Elev. z, ft	K_z	q_{zi}, psf	Dimensions with Ice Ice Thick., t_{iz}, in	Height, in	Dc, in	Wght., lbs	Flat Panel Front Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Flat Panel Side Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Front Wind Force, lbs	Side Wind Force, lbs	Weight, lbs
NNHH-65B-R4	2.0	113	1.023	6.222	2.60	77.20	21.10	484.5	13.30	3.66	1.24	16.518	6.971	3.66	1.24	8.659	103.0	54.0	575.6
LNX-6514DS-A1M	2.0	113	1.023	6.222	2.60	78.10	13.86	340.4	9.28	5.64	1.31	12.189	6.673	5.64	1.31	8.768	76.0	55.0	385.0
B5/B13 RRH- BR04C	1.0	113	1.023	6.222	2.60	20.20	17.05	105.1	2.83	1.19	1.20	3.401	1.866	1.19	1.20	2.240	22.0	14.0	175.4
B2/B66A RRH- BR049	1.0	113	1.023	6.222	2.60	20.20	18.03	110.4	2.83	1.12	1.20	3.401	2.133	1.12	1.20	2.559	22.0	16.0	194.8
RxxDC-3315-PF-48 **	1.0	113	1.023	6.222	2.60	26.75	18.81	151.7	3.89	1.42	1.20	4.667	2.882	1.42	1.20	3.458	30.0	22.0	183.7

Description	#/Sector	Elev. z_z ft	K_z	q_{rw}, psf	Dimensions Height, in	Width, in	Depth, in	Wght., lbs	Flat Panel Front Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Flat Panel Side Coefficient Area, ft^2	Aspect Ratio	Ca	C_aA_a	Front Wind Force, lbs	Side Wind Force, lbs	Weight, lbs
NNHH-65B-R4	2.0	113	1.023	0.64	72.0	19.6	7.8	91.1	9.80	3.673	1.24	12.18	3.900	9.231	1.47	5.750	8.0	4.0	91.1
LNX-6514DS-A1M	2.0	113	1.023	0.64	72.9	11.9	7.1	44.6	6.02	6.126	1.33	8.02	3.594	10.268	1.51	5.424	6.0	4.0	44.6
B5/B13 RRH- BR04C	1.0	113	1.023	0.64	15.0	15.0	8.1	70.3	1.56	1.000	1.20	1.88	0.844	1.852	1.20	1.013	2.0	1.0	70.3
B2/B66A RRH- BR049	1.0	113	1.023	0.64	15.0	15.0	10.0	84.4	1.56	1.000	1.20	1.88	1.042	1.500	1.20	1.250	2.0	1.0	84.4
RxxDC-3315-PF-48 **	1.0	113	1.023	0.64	21.6	15.7	10.3	32.0	2.35	1.370	1.20	2.82	1.543	2.090	1.20	1.852	2.0	2.0	32

**- Mounted directly to monopole.

ALL-POINTS TECHNOLOGY CORPORATION

(Based on ANSI/TIA-222-G-2005)

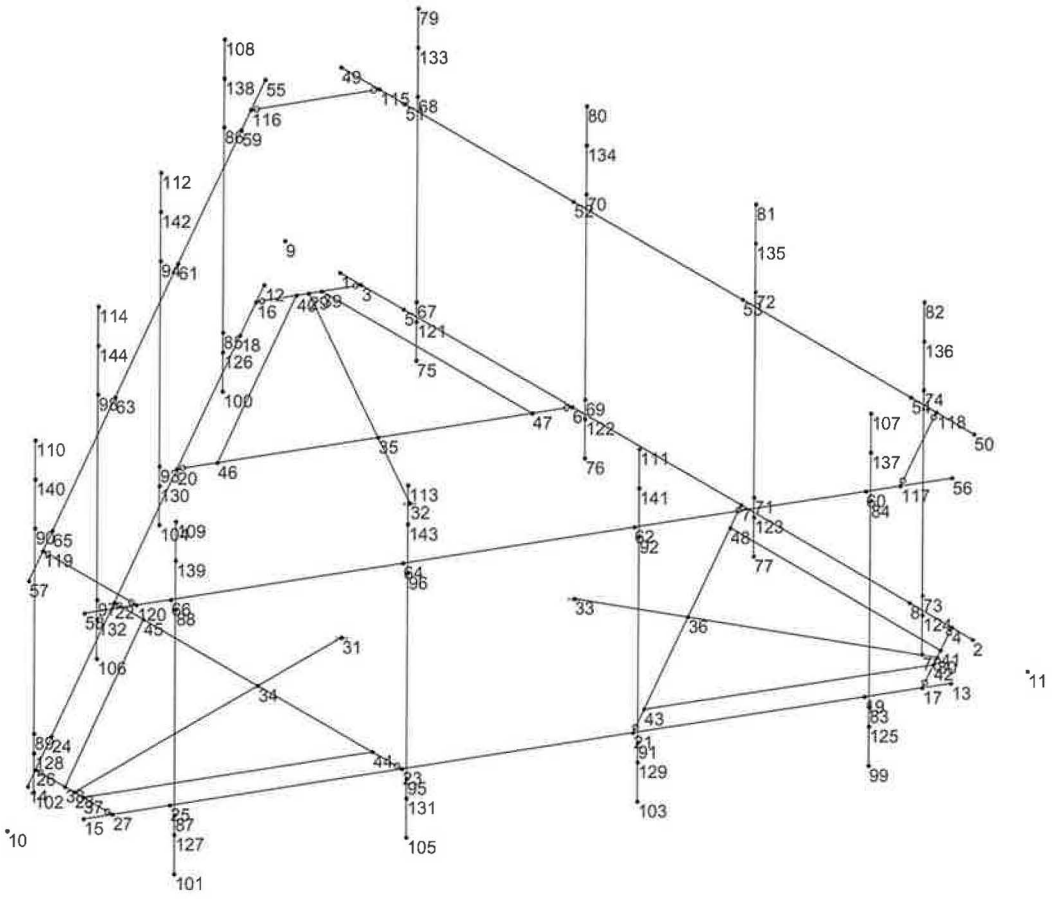
Project ID: CT141EB10570
Site Name: Manchester Green
Date: 1/22/2020
Sheet: of

Design Criteria: *(From Previous Sheet)*

$q_z' =$ **30.83** psf
$q_{zi}' =$ **6.08** psf
$q_{zw}' =$ **0.63** psf
$t_i =$ **1.00** in

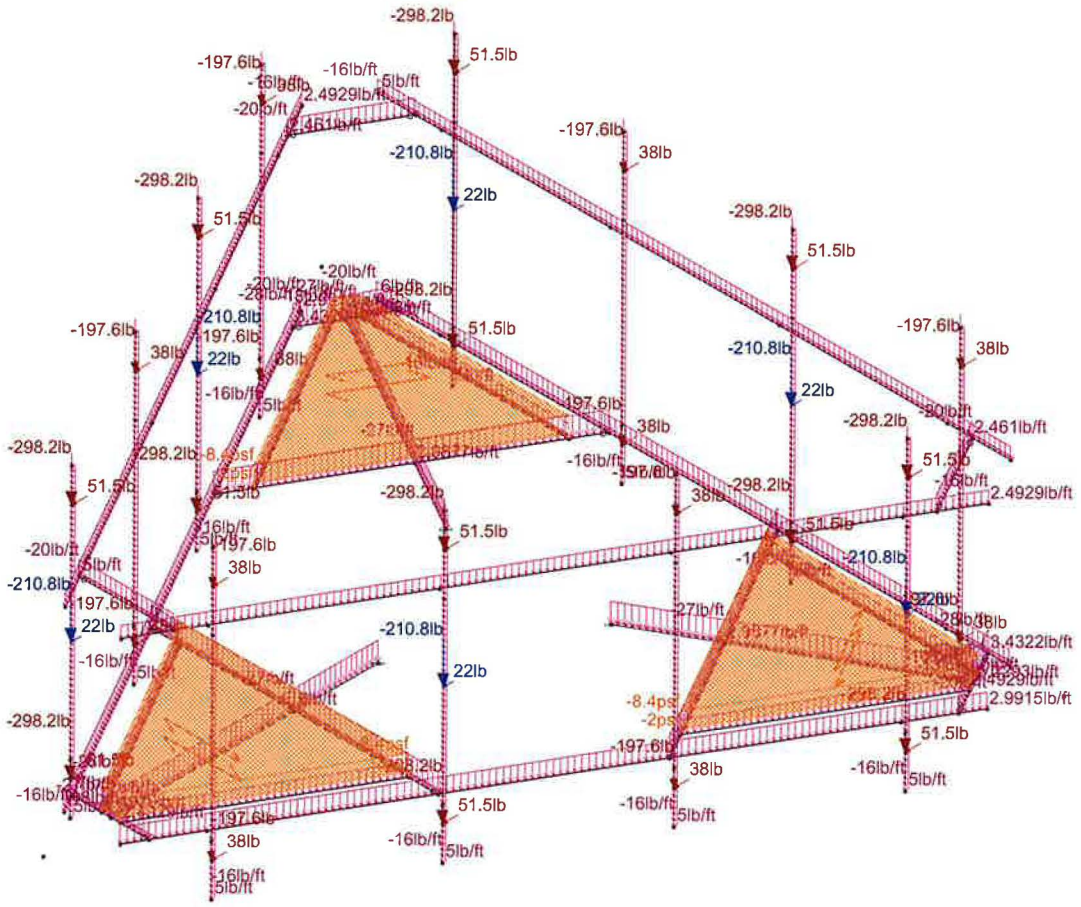
$G_h =$ 1.00 Section 2.6.9
$K_a =$ 1.00 Section 2.6.9.2.2- Section 2.6.9.2.4

Description	Elev. z, ft	K_z	q_z, psf	Ice Thick., t_{zi}, in	q_{zi}, psf	q_{zw}, psf	Dimensions: Width or Dia, in	Depth, in	Weight, lbs/ft	Loading, No Ice: Flat or Round	Ca	Wind, lbs/ft	With Ice: Width or Dia, in	Depth, in	Weight, lbs/ft	Ca	Wind, lbs/ft	Loading, Working: Flat or Round	Ca	Wind, lbs/ft
HSS4x4x1/4	113	1.023	31.55	2.60	6.22	0.64	4.000	4.000	12.21	FLAT	2.00	22.0	9.20	9.20	27.00	1.2	6.00	FLAT	2.00	1.0
3.0 STD Pipe	113	1.023	31.55	2.60	6.22	0.64	3.500	3.500	7.59	ROUND	1.20	12.0	8.70	8.70	20.00	1.2	6.00	ROUND	1.20	1.0
2.0 STD Pipe	113	1.023	31.55	2.60	6.22	0.64	2.375	2.375	3.66	ROUND	1.20	8.0	7.58	7.58	16.00	1.2	5.00	ROUND	1.20	1.0
L2x2x3/16	113	1.023	31.55	2.60	6.22	0.64	2.000	2.000	2.44	FLAT	2.00	11.0	7.20	7.20	18.00	1.2	5.00	FLAT	2.00	1.0
PL 6 x 1/2	113	1.023	31.55	2.60	6.22	0.64	6.000	0.500	10.21	FLAT	2.00	32.0	11.20	5.70	28.00	1.2	7.00	FLAT	2.00	1.0
L2x2x3/16	113	1.023	31.55	2.60	6.22	0.64	2.500	2.500	4.10	FLAT	2.00	14.0	7.70	7.70	20.00	1.2	5.00	FLAT	2.00	1.0



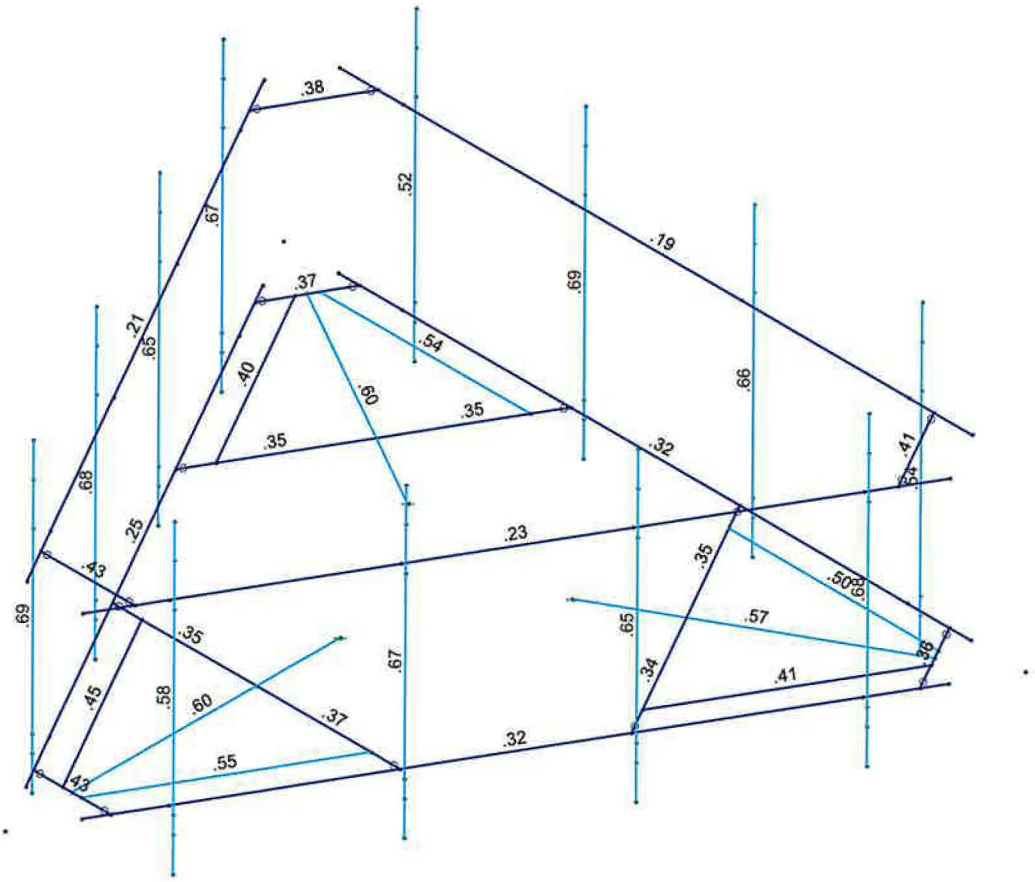
Envelope Only Solution

APT		1
MT	RMQP-4xx with HRK-12	Jan 22, 2020 at 10:42 PM
Manchester Green	NODE & MEMBER LABELS	RMQP-4xx with HRK-12.r3d



Loads: LC 11, 1.2DL + DLi + WLZi
Envelope Only Solution

APT		
MT	RMQP-4xx with HRK-12	Jan 22, 2020 at 10:43 PM
Manchester Green	WORST CASE LOAD COMBO - LC11	RMQP-4xx with HRK-12.r3d

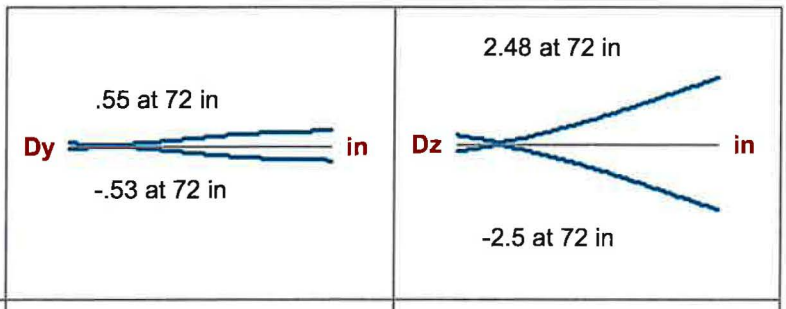


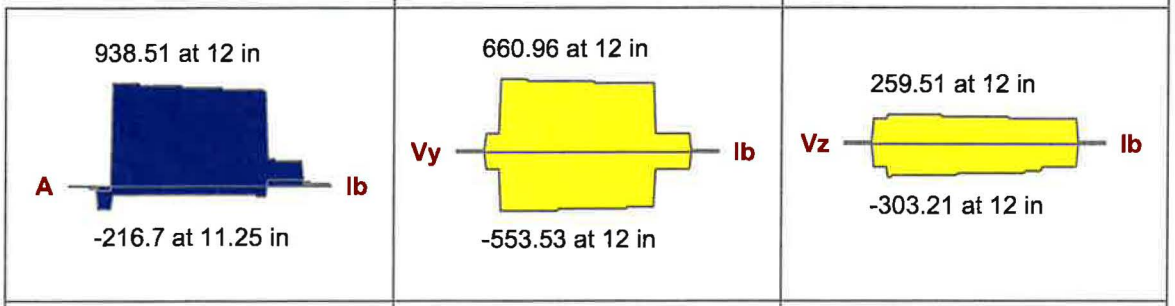
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

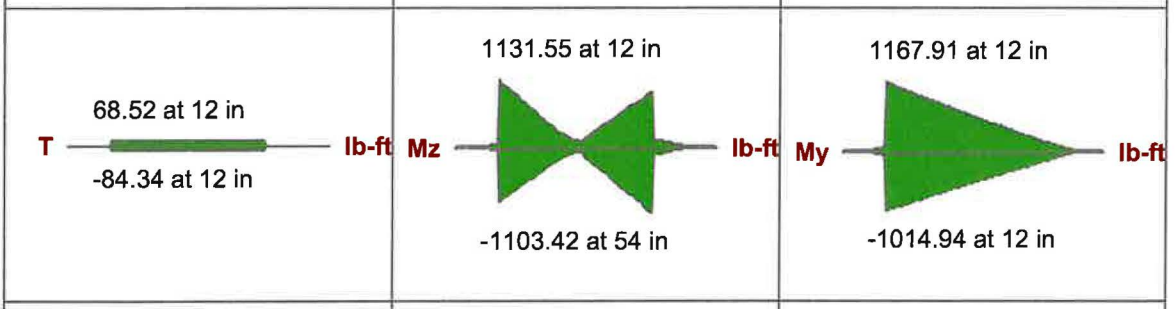
APT		
MT	RMQP-4xx with HRK-12	Jan 22, 2020 at 10:44 PM
Manchester Green	BENDING STRESSES	RMQP-4xx with HRK-12.r3d

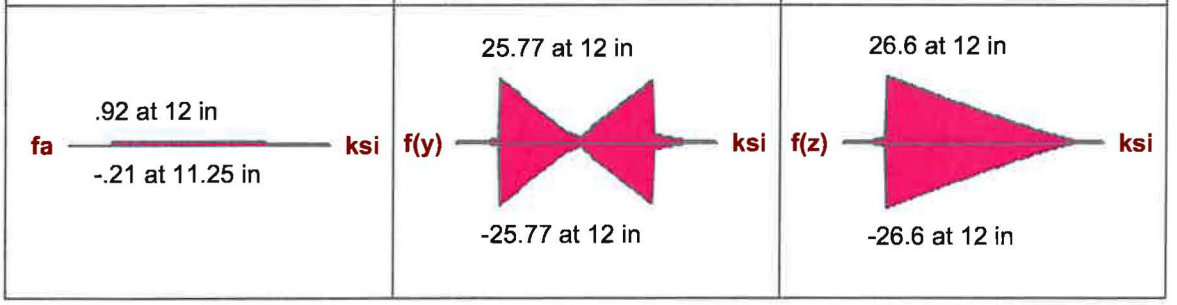
Column: ***M34***

Shape: **PIPE_2.0**
Material: **A53 Gr.B**
Length: **72 in**
I Joint: **76**
J Joint: **80**
Envelope
Code Check: **0.690 (LC 6)**
Report Based On 97 Sections









AISC 14th(360-10): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.690 (LC 6)**	Max Shear Check	**0.102 (s) (LC 6)**
Location	**12 in**	Location	**12 in**
Equation	**H1-1b**	Max Defl Ratio	**L/10000**

Bending	**Compact**	Compression	**Non-Slender**

			y-y	z-z
Fy	**35 ksi**	Lb	**72 in**	**72 in**
phi*Pnc	**20866.73 lb**	KL/r	**91.83**	**91.83**
phi*Pnt	**32130 lb**			
phi*Mny	**1871.62 lb-ft**	L Comp Flange	**72 in**	
phi*Mnz	**1871.62 lb-ft**	L-torque	**72 in**	
phi*Vny	**9639 lb**	Tau_b	**1**	
phi*Vnz	**9639 lb**			
phi*Tn	**1770.39 lb-ft**			
Cb	**1.67**			

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-12: ASD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: ASD
Aluminum Code	AA ADM1-15: ASD - Building
	AISC 14th(360-10): ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	1	2			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
2	M2	12	14			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
3	M3	13	15			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
4	M4	26	27			PL 1/2 x 6	Beam	RECT	A36 Gr.36	Typical
5	M5	16	3			PL 1/2 x 6	Beam	RECT	A36 Gr.36	Typical
6	M6	4	17			PL 1/2 x 6	Beam	RECT	A36 Gr.36	Typical
7	M7	28	31			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
8	M8	29	32			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
9	M9	30	33			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
10	M10	36	21			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
11	M11	34	23			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
12	M12	34	22			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
13	M13	35	20			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
14	M14	35	6			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
15	M15	36	7			HSS4x4x1/4	Beam	SquareTube	A500 Gr.B...	Typical
16	M16	38	45			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
17	M17	37	44			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
18	M18	42	43			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
19	M19	41	48			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
20	M20	40	46			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
21	M21	39	47			L2x2x3/16	Beam	Single Angle	A36 Gr.36	Typical
22	M22	49	50			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
23	M23	55	57			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
24	M24	56	58			3.0" STD	Beam	Pipe	A53 Gr.B	Typical
25	M25	102	110			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
26	M26	106	114			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
27	M27	104	112			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
28	M28	100	108			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
29	M29	99	107			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
30	M30	103	111			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
31	M31	105	113			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
32	M32	101	109			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
33	M33	75	79			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
34	M34	76	80			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
35	M35	77	81			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
36	M36	78	82			2.0" STD	Column	Wide Flange	A53 Gr.B	Typical
37	M37	5	67			RIGID	None	None	RIGID	Typical
38	M38	6	69			RIGID	None	None	RIGID	Typical
39	M39	7	71			RIGID	None	None	RIGID	Typical
40	M40	8	73			RIGID	None	None	RIGID	Typical
41	M41	54	74			RIGID	None	None	RIGID	Typical
42	M42	53	72			RIGID	None	None	RIGID	Typical
43	M43	52	70			RIGID	None	None	RIGID	Typical
44	M44	51	68			RIGID	None	None	RIGID	Typical
45	M45	25	87			RIGID	None	None	RIGID	Typical
46	M46	23	95			RIGID	None	None	RIGID	Typical
47	M47	21	91			RIGID	None	None	RIGID	Typical
48	M48	19	83			RIGID	None	None	RIGID	Typical
49	M49	18	85			RIGID	None	None	RIGID	Typical
50	M50	20	93			RIGID	None	None	RIGID	Typical
51	M51	22	97			RIGID	None	None	RIGID	Typical
52	M52	24	89			RIGID	None	None	RIGID	Typical
53	M53	65	90			RIGID	None	None	RIGID	Typical
54	M54	63	98			RIGID	None	None	RIGID	Typical
55	M55	61	94			RIGID	None	None	RIGID	Typical
56	M56	59	86			RIGID	None	None	RIGID	Typical
57	M57	60	84			RIGID	None	None	RIGID	Typical
58	M58	62	92			RIGID	None	None	RIGID	Typical
59	M59	64	96			RIGID	None	None	RIGID	Typical
60	M60	66	88			RIGID	None	None	RIGID	Typical
61	M61	116	115			L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
62	M62	118	117			L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical
63	M63	119	120			L2.5x2.5x1/4	Beam	Single Angle	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4	BenPIN	BenPIN				Yes				None
5	M5	BenPIN	BenPIN				Yes				None
6	M6	BenPIN	BenPIN				Yes				None
7	M7						Yes				None
8	M8						Yes				None
9	M9						Yes				None
10	M10		BenPIN				Yes	Default			None
11	M11		BenPIN				Yes	Default			None
12	M12		BenPIN				Yes	Default			None
13	M13		BenPIN				Yes	Default			None
14	M14		BenPIN				Yes	Default			None
15	M15		BenPIN				Yes	Default			None
16	M16						Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
20	M20						Yes				None
21	M21						Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28						Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41		OOOOOX				Yes	** NA **			None
42	M42		OOOOOX				Yes	** NA **			None
43	M43		OOOOOX				Yes	** NA **			None
44	M44		OOOOOX				Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53		OOOOOX				Yes	** NA **			None
54	M54		OOOOOX				Yes	** NA **			None
55	M55		OOOOOX				Yes	** NA **			None
56	M56		OOOOOX				Yes	** NA **			None
57	M57		OOOOOX				Yes	** NA **			None
58	M58		OOOOOX				Yes	** NA **			None
59	M59		OOOOOX				Yes	** NA **			None
60	M60		OOOOOX				Yes	** NA **			None
61	M61	OOOOXO	OOOOXO				Yes	Default			None
62	M62	OOOOXO	OOOOXO				Yes	Default			None
63	M63	OOOOXO	OOOOXO				Yes	Default			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	3.0" STD	150	50	50	50	50	50				Lateral
2	M2	3.0" STD	150	50	50	50	50	50				Lateral
3	M3	3.0" STD	150	50	50	50	50	50				Lateral
4	M4	PL 1/2 x 6	18.1992	Segment	Segment	Segment	Segment	Segm...				Lateral
5	M5	PL 1/2 x 6	18.1526	Segment	Segment	Segment	Segment	Segm...				Lateral
6	M6	PL 1/2 x 6	18.1526	Segment	Segment	Segment	Segment	Segm...				Lateral
7	M7	HSS4x4x1/4	63	Segment	Segment	Segment	Segment	Segm...				Lateral
8	M8	HSS4x4x1/4	63	Segment	Segment	Segment	Segment	Segm...				Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torq...	Kyy	Kzz	Cb	Function
9	M9	HSS4x4x1/4	63	Segment	Segment	Segment	Segment	Segm...				Lateral
10	M10	HSS4x4x1/4	34.6294	Segment		Segment		Segm...				Lateral
11	M11	HSS4x4x1/4	34.0285	Segment		Segment		Segm...				Lateral
12	M12	HSS4x4x1/4	34.0285	Segment		Segment		Segm...				Lateral
13	M13	HSS4x4x1/4	34.6294	Segment		Segment		Segm...				Lateral
14	M14	HSS4x4x1/4	33.5933	Segment		Segment		Segm...				Lateral
15	M15	HSS4x4x1/4	33.5933	Segment		Segment		Segm...				Lateral
16	M16	L2x2x3/16	50									Lateral
17	M17	L2x2x3/16	50									Lateral
18	M18	L2x2x3/16	50.071									Lateral
19	M19	L2x2x3/16	49.9303									Lateral
20	M20	L2x2x3/16	50.071									Lateral
21	M21	L2x2x3/16	49.9303									Lateral
22	M22	3.0" STD	150	132	48	132	48	48				Lateral
23	M23	3.0" STD	150	132	48	132	48	48				Lateral
24	M24	3.0" STD	150	132	48	132	48	48				Lateral
25	M25	2.0" STD	72	42	42	42	42	42				Lateral
26	M26	2.0" STD	72	42	42	42	42	42				Lateral
27	M27	2.0" STD	72	42	42	42	42	42				Lateral
28	M28	2.0" STD	72	42	42	42	42	42				Lateral
29	M29	2.0" STD	72	42	42	42	42	42				Lateral
30	M30	2.0" STD	72	42	42	42	42	42				Lateral
31	M31	2.0" STD	72	42	42	42	42	42				Lateral
32	M32	2.0" STD	72	42	42	42	42	42				Lateral
33	M33	2.0" STD	72	42	42	42	42	42				Lateral
34	M34	2.0" STD	72	42	42	42	42	42				Lateral
35	M35	2.0" STD	72	42	42	42	42	42				Lateral
36	M36	2.0" STD	72	42	42	42	42	42				Lateral
37	M61	L2.5x2.5x1/4	22.158									Lateral
38	M62	L2.5x2.5x1/4	22.158									Lateral
39	M63	L2.5x2.5x1/4	22.1878									Lateral

Load Combinations

	Description	So..	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2DL + 1.6WLX	Yes	Y		DL	1.2	WLX	1.6																
2	1.2DL + 1.6WLZ	Yes	Y		DL	1.2	WLZ	1.6																
3	1.2DL + 1.13(WLX + WLZ)	Yes	Y		DL	1.2	WLX	1.13	WLZ	1.13														
4	1.2DL + 1.6WL-X	Yes	Y		DL	1.2	WLX	-1.6																
5	1.2DL + 1.6WL-Z	Yes	Y		DL	1.2	WLZ	-1.6																
6	1.2DL + 1.13(WL-X + WL...	Yes	Y		DL	1.2	WLX	-1....	WLZ	-1....														
7	1.2DL + DLi + WLXi	Yes	Y		DL	1.2	OL1	1	OL2	1														
8	1.2DL + DLi + WLZi	Yes	Y		DL	1.2	OL1	1	OL3	1														
9	1.2DL + DLi + 0.707(WL...	Yes	Y		DL	1.2	OL1	1	OL2	.707	O...	.707												
10	1.2DL + DLi + WLXi	Yes	Y		DL	1.2	OL1	1	OL2	-1														
11	1.2DL + DLi + WLZi	Yes	Y		DL	1.2	OL1	1	OL3	-1														
12	1.2DL + DLi + 0.707(WL...	Yes	Y		DL	1.2	OL1	1	OL2	-.7...	O...	-.7...												
13	1.2DL + 1.6LL + 1.6WLXw	Yes	Y		DL	1.2	LL	1.6	OL4	1.6														
14	1.2DL + 1.6LL + 1.6WLZw	Yes	Y		DL	1.2	LL	1.6	OL5	1.6														
15	1.2DL + 1.6LL + 1.13(WL...	Yes	Y		DL	1.2	LL	1.6	OL4	1.13	O...	1.13												
16	1.2DL + 1.6LL + 1.6WL-Xw	Yes	Y		DL	1.2	LL	1.6	OL4	-1.6														
17	1.2DL + 1.6LL + 1.6WL-Zw	Yes	Y		DL	1.2	LL	1.6	OL5	-1.6														
18	1.2DL + 1.6LL + 1.13(WL...	Yes	Y		DL	1.2	LL	1.6	OL4	-1....	O...	-1....												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	31	max	2441.3	1	4907.66	11	4361.19	2	4577.72	2	3016.39	1	28	1
2		min	-2443.06	4	-828.58	2	-4290.92	5	-9621.66	11	-3011.82	4	-37.71	4
3	32	max	3075.66	1	4785.51	9	2778.67	3	4665.43	9	2036.38	2	3230.73	6
4		min	-3095.74	4	-652.76	6	-2813.91	6	-2104.43	6	-2061.98	5	-8107.62	9
5	33	max	3007.49	1	4732.7	10	2643.78	2	4422.37	10	2025.16	5	8083.22	10
6		min	-2985.65	4	-400.67	1	-2680.95	5	-1205.9	1	-1983.45	2	-3024.46	1
7	Totals:	max	8524.45	1	13218.95	8	9680.64	2						
8		min	-8524.45	4	3474.67	5	-9680.64	5						

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

	Member	Shape	Code Che...	Loc[in]	LC	Shear Check	Loc[i...	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y-y...	phi*Mn z-z...	Cb	Eqn
1	M1	PIPE_3.0	.314	54.69	2	.121	134....		6	59418.18	65205	5748.75	5748.75	1	H1-1b
2	M2	PIPE_3.0	.248	56.25	2	.153	15.63		2	59418.18	65205	5748.75	5748.75	1	H1-1b
3	M3	PIPE_3.0	.316	54.69	6	.146	54.69		5	59418.18	65205	5748.75	5748.75	1	H1-1b
4	M4	PL 1/2"x6"	.424	9.1	6	.443	6.82	y	4	96051.01	97200	1012.5	12150	1.12	H1-1b
5	M5	PL 1/2"x6"	.359	9.08	6	.460	11.35	y	5	96135.42	97200	1012.5	12150	1.11	H1-1b
6	M6	PL 1/2"x6"	.360	9.08	2	.433	6.81	y	5	96135.42	97200	1012.5	12150	1.1	H1-1b
7	M7	HSS4x4x4	.598	63	11	.129	63	y	11	137959....	139518	16180.5	16180.5	1.5	H1-1b
8	M8	HSS4x4x4	.599	63	9	.135	63	y	8	137950....	139518	16180.5	16180.5	1.52	H1-1b
9	M9	HSS4x4x4	.575	63	10	.132	63	y	10	137950....	139518	16180.5	16180.5	1.52	H1-1b
10	M10	HSS4x4x4	.340	0	10	.228	27.78	z	3	134739....	139518	16180.5	16180.5	1.7	H1-1b
11	M11	HSS4x4x4	.365	0	12	.210	27.29	z	3	134900....	139518	16180.5	16180.5	1.69	H1-1b
12	M12	HSS4x4x4	.354	0	11	.168	27.29	z	4	134900....	139518	16180.5	16180.5	1.7	H1-1b
13	M13	HSS4x4x4	.350	0	7	.177	27.78	y	2	134739....	139518	16180.5	16180.5	1.7	H1-1b
14	M14	HSS4x4x4	.346	0	9	.262	26.94	z	5	135016....	139518	16180.5	16180.5	1.7	H1-1b
15	M15	HSS4x4x4	.350	0	8	.260	26.94	z	5	135016....	139518	16180.5	16180.5	1.7	H1-1b
16	M16	L2x2x3	.448	0	1	.031	0	y	1	9802.92	23392.8	557.72	1233.53	2.2	H2-1
17	M17	L2x2x3	.549	0	6	.030	0	y	4	9802.92	23392.8	557.72	1239.29	2.53	H2-1
18	M18	L2x2x3	.415	50.07	3	.023	0	y	6	9778.73	23392.8	557.72	1239.29	2.36	H2-1
19	M19	L2x2x3	.501	0	2	.023	0	y	2	9826.72	23392.8	557.72	1214.44	1.98	H2-1
20	M20	L2x2x3	.404	50.07	2	.021	0	y	5	9778.73	23392.8	557.72	1234.96	2.23	H2-1
21	M21	L2x2x3	.542	0	2	.028	49.93	y	5	9826.72	23392.8	557.72	1239.29	2.32	H2-1
22	M22	PIPE_3.0	.194	54.69	8	.108	140....		4	34117.49	65205	5748.75	5748.75	1	H1-1b
23	M23	PIPE_3.0	.210	134.38	1	.142	140....		5	34117.49	65205	5748.75	5748.75	1	H1-1b
24	M24	PIPE_3.0	.230	95.31	6	.168	95.31		6	34117.49	65205	5748.75	5748.75	1	H1-1b
25	M25	PIPE_2.0	.688	12	3	.275	12		5	27741.09	32130	1871.62	1871.62	1	H1-1b
26	M26	PIPE_2.0	.675	12	2	.221	12		5	27741.09	32130	1871.62	1871.62	1	H1-1b
27	M27	PIPE_2.0	.650	12	2	.231	12		6	27741.09	32130	1871.62	1871.62	1	H1-1b
28	M28	PIPE_2.0	.666	12	5	.240	54		1	27741.09	32130	1871.62	1871.62	1	H1-1b
29	M29	PIPE_2.0	.683	12	5	.237	54		4	27741.09	32130	1871.62	1871.62	1	H1-1b
30	M30	PIPE_2.0	.644	12	3	.184	12		1	27741.09	32130	1871.62	1871.62	1	H1-1b
31	M31	PIPE_2.0	.673	12	3	.226	12		5	27741.09	32130	1871.62	1871.62	1	H1-1b
32	M32	PIPE_2.0	.581	12	4	.275	12		5	27741.09	32130	1871.62	1871.62	1	H1-1b
33	M33	PIPE_2.0	.516	12	4	.103	54		2	27741.09	32130	1871.62	1871.62	1	H1-1b
34	M34	PIPE_2.0	.690	12	6	.102	12		6	27741.09	32130	1871.62	1871.62	1	H1-1b
35	M35	PIPE_2.0	.662	12	5	.100	12		4	27741.09	32130	1871.62	1871.62	1	H1-1b
36	M36	PIPE_2.0	.535	12	3	.103	12		2	27741.09	32130	1871.62	1871.62	1	H1-1b
37	M61	L2.5x2.5x4	.382	0	2	.227	0	z	5	34496.46	38556	1113.55	2537.39	1.56	H2-1
38	M62	L2.5x2.5x4	.409	22.16	3	.227	22.16	z	5	34496.46	38556	1113.55	2537.39	2.14	H2-1
39	M63	L2.5x2.5x4	.427	22.19	3	.150	22.19	y	1	34486.12	38556	1113.55	2537.39	1.39	H2-1

ALL-POINTS TECHNOLOGY CORPORATION

Project ID:	CT141EB10570
Site Name:	Manchester Green
Date:	1/27/2020
Sheet:	of

EXISTING CONNECTION CHECK

>> Max Reactions per RISA Output: N31, LC11

(Axial)	Fx =	852 lbs	Mx =	14 lbs-ft
	Fy =	4908 lbs	My =	10 lbs-ft
	Fz =	0.52 lbs	Mz =	9622 lbs-ft

>> Existing Connection:

	L, in		W, in		t, in	
Member Size =	4	x	4			
Plate =	8	x	8	x	0.75	
Bolt Spac. =	6 in			Fy =	36	ksi
Bolt Dia =	0.75 in			Grade =	A325	
# of Bolts =	4					

>> Check Existing Bolts: 3/4" DIA A325 Bolts

Tall =	29800 lbs	Vall =	17900 lbs
T_{My} =	10.0 lbs	Vmax =	1241.13 lbs
T_{Mz} =	9622 lbs		
T_{Fa} =	213.00 lbs		
Ft =	9845.0 lbs		

>> Bolt Interaction:

0.330369 + 0.069 = 0.400 **< 1.0, OK**

>> Check Existing Plate:

Zx = 1.125 in^3

Flange Arm = 1.0 in *(Face of Member to Centerline of Bolt)*

$f_{act.}$ = 17.50 ksi f_{all} = 32.40 ksi

>> Plate Interaction: 0.540 **< 1.0, OK**