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

March 5, 2020

Carolyn Seeley
Site Acquisition Supervisor
Empire Telecom USA, LLC
16 Esquire Road
Billerica MA 01862

RE: **EM-CING-051-161007** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Ms. Seeley:

The Connecticut Siting Council (Council) received a notice of completion of construction for the above-referenced facility on February 10, 2020. On February 18, 2020, the Council issued a letter of non-compliance (enclosed) with conditions associated with the Council's November 1, 2016 decision for the above referenced exempt modification request. The Council recommended that Empire Telecom provide one copy of the Structural Analysis Report (SA) to the Council referencing Revision G of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the 2016 Connecticut State Building Code effective October 1, 2016.

On February 28, 2020, the Council received a response to the letter of non-compliance which included a Structural Analysis prepared by Centek Engineering and dated August 30, 2016. The SA provided references Revision F of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the 2005 Connecticut State Building Code.

Therefore, the completion notice is not in compliance with the conditions of approval at this time.

The Council recommends that Empire Telecom provide a SA that references Revision G of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the 2016 Connecticut State Building Code effective October 1, 2016, on or before April 10, 2020. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to April 10, 2020.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

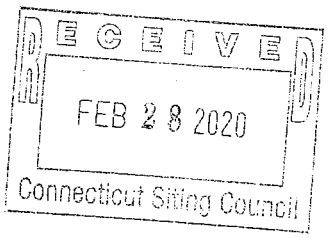
MAB/IN/emr

Enclosures: Response to Letter of non-compliance dated February 26, 2020
Council Letter of non-compliance dated February 18, 2020
Completion Letter dated February 3, 2020
Council Decision Letter dated November 1, 2016

EMPIRE telecom

February 26, 2020

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



RE: EM-CING-051-161007 – 3965 CONGRESS STREET, FAIRFIELD, CT

COMPLETION OF CONSTRUCTION ACTIVITY

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced decisions has been completed. Attached please find the passing Structural Analylsis.

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

Very truly yours,

Carolyn Seeley

Carolyn Seeley
Site Acquisition Supervisor

Carolyn Seeley, Site Acquisition Supervisor, Empire Telecom USA, LLC • 16 Esquire Rd, Billerica, MA 01862 • 978-760-5577 •
cseeley@empiretelecomm.com

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February 18, 2020

Carolyn Seeley
Site Acquisition Supervisor
Empire Telecom USA, LLC
16 Esquire Road
Billerica MA 01862

RE: **EM-CING-051-161007** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Ms. Seeley:

The Connecticut Siting Council (Council) received a notice of completion of construction for the above-referenced facility on February 10, 2020. Thank you for providing this information.

The Council approved the above referenced request for exempt modification in a Decision Letter dated November 1, 2016 (enclosed) with the following conditions:

1. Prior to commencement of installation, AT&T shall provide one copy of the Structural Analysis Report (SA) to the Council referencing Revision G of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the Connecticut State Building Code effective October 1, 2016;

The completion notice does not contain the SA referenced above.

Therefore, the completion notice is not in compliance with the condition of approval at this time.

The Council recommends that Empire Telecom provide the above referenced documentation on or before March 20, 2020. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to March 20, 2020.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

Enclosures: Completion Letter dated February 3, 2020
Council Decision Letter dated November 1, 2016

c: Mike Gentile, Centerline Communications, LLC

Member Point Loads (BLC 1 : Dead) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
25	MP-6	Y	-.039	5.5
26	MP-7	Y	-.039	5.5
27	MP-8	Y	-.02	5.5
28	MP-9	Y	-.02	5.5
29	MP-10	Y	-.02	5.5
30	MP-11	Y	-.039	5.5
31	MP-12	Y	-.039	5.5

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	X	-.163	.5
2	MP-1	X	-.072	2
3	MP-1	X	-.072	4
4	MP-2	X	-.163	.5
5	MP-3	X	-.157	.5
6	MP-4	X	-.157	.5
7	MP-5	X	-.117	.5
8	MP-5	X	-.047	2
9	MP-5	X	-.054	4
10	MP-6	X	-.089	.5
11	MP-7	X	-.089	.5
12	MP-8	X	-.117	.5
13	MP-9	X	-.117	.5
14	MP-9	X	-.047	2
15	MP-9	X	-.054	4
16	MP-10	X	-.117	.5
17	MP-13	X	-.104	2
18	MP-11	X	-.089	.5
19	MP-12	X	-.089	.5
20	MP-1	X	-.163	5.5
21	MP-2	X	-.163	5.5
22	MP-3	X	-.157	5.5
23	MP-4	X	-.157	5.5
24	MP-5	X	-.117	5.5
25	MP-6	X	-.089	5.5
26	MP-7	X	-.089	5.5
27	MP-8	X	-.117	5.5
28	MP-9	X	-.117	5.5
29	MP-10	X	-.117	5.5
30	MP-11	X	-.089	5.5
31	MP-12	X	-.089	5.5

Member Point Loads (BLC 3 : 30 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	X	-.12	.5
2	MP-1	X	-.055	2
3	MP-1	X	-.057	4
4	MP-2	X	-.12	.5
5	MP-3	X	-.125	.5
6	MP-4	X	-.125	.5
7	MP-5	X	-.09	.5

RISA A NEMETSCHEK COMPANY
Company : Tower Engineering Professionals, Inc.
Designer : DJB
Job Number : TEP No. 25651.275018
Model Name : Newington_1 (BU 826217)
July 10, 2019
10:34 AM
Checked By: PRS

Member Point Loads (BLC 3 : 30 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
8	MP-5	X	-.034	2
9	MP-5	X	-.042	4
10	MP-6	X	-.056	.5
11	MP-7	X	-.056	.5
12	MP-8	X	-.09	.5
13	MP-9	X	-.125	.5
14	MP-9	X	-.055	2
15	MP-9	X	-.057	4
16	MP-10	X	-.125	.5
17	MP-13	X	-.137	2
18	MP-11	X	-.12	.5
19	MP-12	X	-.12	.5
20	MP-1	X	-.12	5.5
21	MP-2	X	-.12	5.5
22	MP-3	X	-.125	5.5
23	MP-4	X	-.125	5.5
24	MP-5	X	-.09	5.5
25	MP-6	X	-.056	5.5
26	MP-7	X	-.056	5.5
27	MP-8	X	-.09	5.5
28	MP-9	X	-.125	5.5
29	MP-10	X	-.125	5.5
30	MP-11	X	-.12	5.5
31	MP-12	X	-.12	5.5
32	MP-1	Z	-.069	.5
33	MP-1	Z	-.032	2
34	MP-1	Z	-.033	4
35	MP-2	Z	-.069	.5
36	MP-3	Z	-.072	.5
37	MP-4	Z	-.072	.5
38	MP-5	Z	-.052	.5
39	MP-5	Z	-.019	2
40	MP-5	Z	-.024	4
41	MP-6	Z	-.032	.5
42	MP-7	Z	-.032	.5
43	MP-8	Z	-.052	.5
44	MP-9	Z	-.072	.5
45	MP-9	Z	-.032	2
46	MP-9	Z	-.033	4
47	MP-10	Z	-.072	.5
48	MP-13	Z	-.079	2
49	MP-11	Z	-.069	.5
50	MP-12	Z	-.069	.5
51	MP-1	Z	-.069	5.5
52	MP-2	Z	-.069	5.5
53	MP-3	Z	-.072	5.5
54	MP-4	Z	-.072	5.5
55	MP-5	Z	-.052	5.5
56	MP-6	Z	-.032	5.5
57	MP-7	Z	-.032	5.5
58	MP-8	Z	-.052	5.5
59	MP-9	Z	-.072	5.5

EMPIRE telecom

February 3, 2020

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

RE: EM-CING-051-161007 – 3965 CONGRESS STREET, FAIRFIELD, CT

COMPLETION OF CONSTRUCTION ACTIVITY

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced decisions has been completed.

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

Very truly yours,

Carolyn Seeley

Carolyn Seeley
Site Acquisition Supervisor

Carolyn Seeley, Site Acquisition Supervisor, Empire Telecom USA, LLC • 16 Esquire Rd, Billerica, MA 01862 • 978-760-5577 • cseeley@empiretelecomm.com

Member Point Loads (BLC 3 : 30 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
60	MP-10	Z	-.072	5.5
61	MP-11	Z	-.069	5.5
62	MP-12	Z	-.069	5.5

Member Point Loads (BLC 4 : 45 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	X	-.08	.5
2	MP-1	X	-.039	2
3	MP-1	X	-.043	4
4	MP-2	X	-.08	.5
5	MP-3	X	-.092	.5
6	MP-4	X	-.092	.5
7	MP-5	X	-.076	.5
8	MP-5	X	-.029	2
9	MP-5	X	-.035	4
10	MP-6	X	-.05	.5
11	MP-7	X	-.05	.5
12	MP-8	X	-.076	.5
13	MP-9	X	-.109	.5
14	MP-9	X	-.049	2
15	MP-9	X	-.05	4
16	MP-10	X	-.109	.5
17	MP-13	X	-.125	2
18	MP-11	X	-.11	.5
19	MP-12	X	-.11	.5
20	MP-1	X	-.08	5.5
21	MP-2	X	-.08	5.5
22	MP-3	X	-.092	5.5
23	MP-4	X	-.092	5.5
24	MP-5	X	-.076	5.5
25	MP-6	X	-.05	5.5
26	MP-7	X	-.05	5.5
27	MP-8	X	-.076	5.5
28	MP-9	X	-.109	5.5
29	MP-10	X	-.109	5.5
30	MP-11	X	-.11	5.5
31	MP-12	X	-.11	5.5
32	MP-1	Z	-.08	.5
33	MP-1	Z	-.039	2
34	MP-1	Z	-.043	4
35	MP-2	Z	-.08	.5
36	MP-3	Z	-.092	.5
37	MP-4	Z	-.092	.5
38	MP-5	Z	-.076	.5
39	MP-5	Z	-.029	2
40	MP-5	Z	-.035	4
41	MP-6	Z	-.05	.5
42	MP-7	Z	-.05	.5
43	MP-8	Z	-.076	.5
44	MP-9	Z	-.109	.5
45	MP-9	Z	-.049	2

Company : Tower Engineering Professionals, Inc.
Designer : DJB
Job Number : TEP No. 25651.275018
Model Name : Newington_1 (BU 826217)

July 10, 2019
10:34 AM
Checked By: PRS

Member Point Loads (BLC 4 : 45 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
46	MP-9	Z	-.05	4
47	MP-10	Z	-.109	.5
48	MP-13	Z	-.125	2
49	MP-11	Z	-.11	.5
50	MP-12	Z	-.11	.5
51	MP-1	Z	-.08	5.5
52	MP-2	Z	-.08	5.5
53	MP-3	Z	-.092	5.5
54	MP-4	Z	-.092	5.5
55	MP-5	Z	-.076	5.5
56	MP-6	Z	-.05	5.5
57	MP-7	Z	-.05	5.5
58	MP-8	Z	-.076	5.5
59	MP-9	Z	-.109	5.5
60	MP-10	Z	-.109	5.5
61	MP-11	Z	-.11	5.5
62	MP-12	Z	-.11	5.5

Member Point Loads (BLC 5 : 60 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	X	-.044	.5
2	MP-1	X	-.024	2
3	MP-1	X	-.027	4
4	MP-2	X	-.044	.5
5	MP-3	X	-.059	.5
6	MP-4	X	-.059	.5
7	MP-5	X	-.059	.5
8	MP-5	X	-.024	2
9	MP-5	X	-.027	4
10	MP-6	X	-.044	.5
11	MP-7	X	-.044	.5
12	MP-8	X	-.059	.5
13	MP-9	X	-.079	.5
14	MP-9	X	-.036	2
15	MP-9	X	-.036	4
16	MP-10	X	-.079	.5
17	MP-13	X	-.092	2
18	MP-11	X	-.081	.5
19	MP-12	X	-.081	.5
20	MP-1	X	-.044	5.5
21	MP-2	X	-.044	5.5
22	MP-3	X	-.059	5.5
23	MP-4	X	-.059	5.5
24	MP-5	X	-.059	5.5
25	MP-6	X	-.044	5.5
26	MP-7	X	-.044	5.5
27	MP-8	X	-.059	5.5
28	MP-9	X	-.079	5.5
29	MP-10	X	-.079	5.5
30	MP-11	X	-.081	5.5
31	MP-12	X	-.081	5.5

STATE OF CONNECTICUT

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November 1, 2016

Mike Gentile, Site Acquisition
c/o New Cingular Wireless PCS, LLC
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

RE: **EM-CING-051-161007** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Mr. Gentile:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. Prior to commencement of installation, AT&T shall provide one copy of the Structural Analysis Report to the Council referencing Revision G of the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* as adopted by the Connecticut State Building Code effective October 1, 2016;

2. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;

3. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

4. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

5. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;

6. The validity of this action shall expire one year from the date of this letter; and

7. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated October 3, 2016. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured

Member Point Loads (BLC 5 : 60 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
32	MP-1	Z	-.077	.5
33	MP-1	Z	-.041	2
34	MP-1	Z	-.047	4
35	MP-2	Z	-.077	.5
36	MP-3	Z	-.102	.5
37	MP-4	Z	-.102	.5
38	MP-5	Z	-.102	.5
39	MP-5	Z	-.041	2
40	MP-5	Z	-.047	4
41	MP-6	Z	-.077	.5
42	MP-7	Z	-.077	.5
43	MP-8	Z	-.102	.5
44	MP-9	Z	-.136	.5
45	MP-9	Z	-.062	2
46	MP-9	Z	-.062	4
47	MP-10	Z	-.136	.5
48	MP-13	Z	-.16	2
49	MP-11	Z	-.141	.5
50	MP-12	Z	-.141	.5
51	MP-1	Z	-.077	5.5
52	MP-2	Z	-.077	5.5
53	MP-3	Z	-.102	5.5
54	MP-4	Z	-.102	5.5
55	MP-5	Z	-.102	5.5
56	MP-6	Z	-.077	5.5
57	MP-7	Z	-.077	5.5
58	MP-8	Z	-.102	5.5
59	MP-9	Z	-.136	5.5
60	MP-10	Z	-.136	5.5
61	MP-11	Z	-.141	5.5
62	MP-12	Z	-.141	5.5

Member Point Loads (BLC 6 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	Z	-.064	.5
2	MP-1	Z	-.039	2
3	MP-1	Z	-.048	4
4	MP-2	Z	-.064	.5
5	MP-3	Z	-.104	.5
6	MP-4	Z	-.104	.5
7	MP-5	Z	-.144	.5
8	MP-5	Z	-.064	2
9	MP-5	Z	-.066	4
10	MP-6	Z	-.138	.5
11	MP-7	Z	-.138	.5
12	MP-8	Z	-.144	.5
13	MP-9	Z	-.144	.5
14	MP-9	Z	-.064	2
15	MP-9	Z	-.066	4
16	MP-10	Z	-.144	.5
17	MP-13	Z	-.158	2

Member Point Loads (BLC 6 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
18	MP-11	Z	-.138	.5
19	MP-12	Z	-.138	.5
20	MP-1	Z	-.064	5.5
21	MP-2	Z	-.064	5.5
22	MP-3	Z	-.104	5.5
23	MP-4	Z	-.104	5.5
24	MP-5	Z	-.144	5.5
25	MP-6	Z	-.138	5.5
26	MP-7	Z	-.138	5.5
27	MP-8	Z	-.144	5.5
28	MP-9	Z	-.144	5.5
29	MP-10	Z	-.144	5.5
30	MP-11	Z	-.138	5.5
31	MP-12	Z	-.138	5.5

Member Point Loads (BLC 7 : 120 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-1	X	.044	.5
2	MP-1	X	.024	2
3	MP-1	X	.027	4
4	MP-2	X	.044	.5
5	MP-3	X	.059	.5
6	MP-4	X	.059	.5
7	MP-5	X	.079	.5
8	MP-5	X	.036	2
9	MP-5	X	.036	4
10	MP-6	X	.081	.5
11	MP-7	X	.081	.5
12	MP-8	X	.079	.5
13	MP-9	X	.059	.5
14	MP-9	X	.024	2
15	MP-9	X	.027	4
16	MP-10	X	.059	.5
17	MP-13	X	.052	2
18	MP-11	X	.044	.5
19	MP-12	X	.044	.5
20	MP-1	X	.044	5.5
21	MP-2	X	.044	5.5
22	MP-3	X	.059	5.5
23	MP-4	X	.059	5.5
24	MP-5	X	.079	5.5
25	MP-6	X	.081	5.5
26	MP-7	X	.081	5.5
27	MP-8	X	.079	5.5
28	MP-9	X	.059	5.5
29	MP-10	X	.059	5.5
30	MP-11	X	.044	5.5
31	MP-12	X	.044	5.5
32	MP-1	Z	-.077	.5
33	MP-1	Z	-.041	2
34	MP-1	Z	-.047	4

at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CMW/laf

c: The Honorable Michael C. Tetreau, First Selectman, Town of Fairfield
Joseph E. Devonshuk, Planning Director, Town of Fairfield

tnxTower	Job	Page
FDH Infrastructure Services, LLC 6521 Meridien Drive Raleigh, North Carolina 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	East Farmington, BU# 876335	40 of 125
	Project 19BOZR1400	Date 15:53:46 08/22/19
	Client Crown Castle	Designed by Eric Schaub

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	100.00	1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	1.98 2.34 1.65 1.81 1.98 2.34 1.65 1.81 1.98 2.34 13.40 16.44 19.70 25.86	1.60 1.92 1.30 1.44 1.60 1.92 1.30 1.44 1.60 1.92 13.40 16.44 19.70 25.86	0.11 0.16 0.08 0.09 0.11 0.16 0.08 0.09 0.11 0.16 0.77 1.00 1.29 2.05
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	100.00				
T-Arm Mount [TA 602-3]	C	None		0.0000	100.00				
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KS24019-L112A	B	From Leg	3.00 0.00 2.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.20 0.26 0.41 0.85 1.14 1.43 2.01 0.14 0.20 0.26 0.41 0.85 1.14 1.43 2.01	0.14 0.20 0.26 0.41 1.67 2.34 3.01 4.35 0.14 0.20 0.26 0.41 1.67 2.34 3.01 4.35	0.01 0.01 0.01 0.02 0.07 0.08 0.09 0.12 0.01 0.01 0.01 0.02 0.07 0.08 0.09 0.12
Side Arm Mount [SO 701-1]	B	From Leg	1.50 0.00 0.00	0.0000	70.00				
KS24019-L112A	C	From Leg	3.00 0.00 2.00	0.0000	70.00				
Side Arm Mount [SO 701-1]	C	From Leg	1.50 0.00 0.00	0.0000	70.00				
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***									
KS24019-L112A	A	From Leg	3.00 0.00 2.00	0.0000	49.00	No Ice 1/2" Ice 1" Ice 2" Ice No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.20 0.26 0.41 0.85 1.14 1.43 2.01	0.14 0.20 0.26 0.41 1.67 2.34 3.01 4.35	0.01 0.01 0.01 0.02 0.07 0.08 0.09 0.12
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	49.00				
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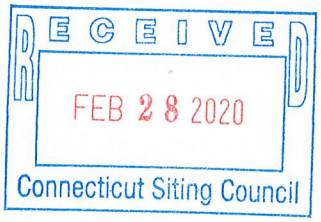
EMPIRE telecom

February 26, 2020



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

RE: EM-CING-051-161007 – 3965 CONGRESS STREET, FAIRFIELD, CT

COMPLETION OF CONSTRUCTION ACTIVITY

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced decisions has been completed. Attached please find the passing Structural Analylsis.

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

Very truly yours,

Carolyn Seeley

Carolyn Seeley
Site Acquisition Supervisor

Carolyn Seeley, Site Acquisition Supervisor, Empire Telecom USA, LLC • 16 Esquire Rd, Billerica, MA 01862 • 978-760-5577 • cseeley@empiretelecomm.com

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

CT2128

February 18, 2020

Carolyn Seeley
Site Acquisition Supervisor
Empire Telecom USA, LLC
16 Esquire Road
Billerica MA 01862

RE: **EM-CING-051-161007** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Ms. Seeley:

The Connecticut Siting Council (Council) received a notice of completion of construction for the above-referenced facility on February 10, 2020. Thank you for providing this information.

The Council approved the above referenced request for exempt modification in a Decision Letter dated November 1, 2016 (enclosed) with the following conditions:

1. Prior to commencement of installation, AT&T shall provide one copy of the Structural Analysis Report (SA) to the Council referencing Revision G of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the Connecticut State Building Code effective October 1, 2016;

The completion notice does not contain the SA referenced above.

Therefore, the completion notice is not in compliance with the condition of approval at this time.

The Council recommends that Empire Telecom provide the above referenced documentation on or before March 20, 2020. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to March 20, 2020.

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Sincerely,

Melanie Bachman
Executive Director

MAB/IN/emr

Enclosures: Completion Letter dated February 3, 2020
Council Decision Letter dated November 1, 2016

c: Mike Gentile, Centerline Communications, LLC

EMPIRE telecom

February 3, 2020

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

RE: EM-CING-051-161007 – 3965 CONGRESS STREET, FAIRFIELD, CT

COMPLETION OF CONSTRUCTION ACTIVITY

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced decisions has been completed.

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

Very truly yours,

Carolyn Seeley

Carolyn Seeley
Site Acquisition Supervisor

Carolyn Seeley, Site Acquisition Supervisor, Empire Telecom USA, LLC • 16 Esquire Rd, Billerica, MA 01862 • 978-760-5577 • cseeley@empiretelecomm.com

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

November 1, 2016

Mike Gentile, Site Acquisition
c/o New Cingular Wireless PCS, LLC
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

RE: **EM-CING-051-161007** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 3965 Congress Street, Fairfield, Connecticut.

Dear Mr. Gentile:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

1. Prior to commencement of installation, AT&T shall provide one copy of the Structural Analysis Report to the Council referencing Revision G of the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures* as adopted by the Connecticut State Building Code effective October 1, 2016;

2. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;

3. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;

4. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;

5. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by AT&T shall be removed within 60 days of the date the antenna ceased to function;

6. The validity of this action shall expire one year from the date of this letter; and

7. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated October 3, 2016. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured

at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Melanie A. Bachman
Acting Executive Director

MAB/CMW/laf

c: The Honorable Michael C. Tetreau, First Selectman, Town of Fairfield
Joseph E. Devonshuk, Planning Director, Town of Fairfield

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

150-ft Existing Valmont Monopole

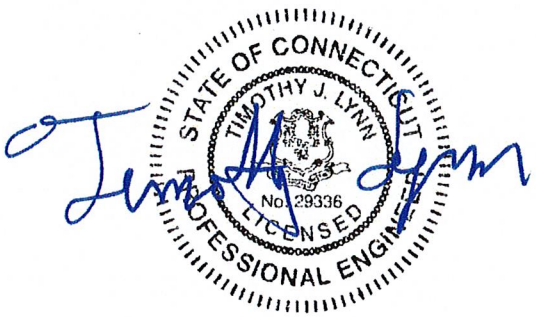
Proposed AT&T Mobility
Antenna Upgrade

AT&T Site Ref: CT2128

3965 Congress Street
Fairfield, CT

Centek Project No. 16071.42

Date: August 30, 2016



Prepared for:

AT&T Mobility
500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by AT&T Mobility on the existing monopole (tower) located in Fairfield, CT.

The host tower is a 150-ft tall, three-section, twelve sided, tapered monopole, originally designed and manufactured by Valmont Structures. The manufacturer's drawings and calculations were unavailable for use in this report. The tower geometry, structure member sizes and foundation system information were obtained from a previous structural analysis report prepared by Centek Engineering job no; 13001.101, dated December 5, 2013.

Antenna and appurtenance information were obtained from the aforementioned Centek structural report, visual verification from grade conducted by Centek personnel on August 18, 2016 and a AT&T RF data sheet.

The tower is made up of three (3) tapered vertical sections consisting of A572-65 pole sections. The vertical tower sections are slip joint connected. The diameter of the pole (flat-flat) is 23.61-in at the top and 49.6-in at the base.

AT&T proposes the replacement of three (3) panel antennas and the installation of three (3) three (3) remote radio heads and one (1) main distribution box mounted to the existing low profile platform. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- TOWN (Existing):
  Antennas: One (1) DB810K Omni-directional whip antenna and two (2) 10-ft Dipole antennas mounted on the Nextel T-Arms with respective RAD center elevations of 157-ft and 154-ft above grade.
  Coax Cables: Three (3) 1-5/8"∅ coax cables running on the inside of the existing tower.
- NEXTEL (Existing):
  Antennas: Twelve (12) Andrew DB844H90E-XY panel antennas mounted on three (3) 12-ft T-Arms with a RAD center elevation of 149-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" coax cables running on the inside of the existing tower.
- SPRINT (Existing):
  Antennas: Three (3) RFS APXVSPP18-C-A20 panel antennas mounted on a 13-ft platform with hand rails with a RAD center elevation of 138-ft above grade. Three (3) ALU 1900 MHz RRH's and three (3) ALU 800 MHz RRH's mounted on a universal tr-bracket above the existing platform.
  Coax Cables: Three (3) 1-5/8" ∅ Hybriflex cables running on the inside of the existing tower.

- T-MOBILE (Existing):
  Antennas: Three (3) RFS APX16DWV-16DWV-S panel antennas and six (6) 10" by 8" by 3" TMA's mounted on a 13-ft platform with rails with a RAD center elevation of 113-ft above grade.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables running on the exterior of the existing tower.
- TOWN (Existing):
  Antennas: Two (2) Andrew APSA685 Omni-directional whip antennas (inverted), one (1) DB-222 dipole antenna and one (1) PD1142-2B Omni-directional whip antenna mounted on two (2) standoffs with an elevation of 104-ft above grade.
  Coax Cables: Four (4) 1-5/8"∅ coax cables running on the inside of the existing tower.
- TOWN (Existing):
  Antennas: Two (2) empty standoffs with a RAD center elevation of 104-ft above grade.
- VERIZON (EXISTING TO REMAIN):
  Antennas: Three (3) Antel BXA-70063-6CF panel antennas, six (6) Andrew DB846F65ZAXY panel antennas, three (3) Antel BXA-171063-8BF panel antennas, three (3) BXA-171063-12CF panel antennas, three (3) Alcatel-Lucent RRH2x40-AWS Remote Radio Heads, six (6) RFS FD9R6004/2C-3L Diplexers and one (1) RFS DB-T1-6Z-8AB-0Z main distribution mounted on an existing low profile platform with a RAD center elevation of 80-ft above grade.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables and one (1) 1-5/8" ∅ fiber cable running on the exterior of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) GPS antenna on a GPS Stand-off mount with a RAD center elevation of 40-ft above grade.
  Coax Cables: One (1) 1/2"∅ coax cable running on the exterior of the existing tower.
- AT&T (Existing to Remain):
  Antennas: Six (6) Powerwave 7770 panel antennas and twelve (12) Powerwave LGP21401 TMA's mounted on an existing low profile platform with a RAD center elevation of 127-ft above grade.
  Appurtenances: Three (3) Ericsson RRUS-11 and one (1) Raycap DC6-48-60-18-8F surge arrestor mounted to one (1) universal ring mount with a RAD center elevation of 129-ft above grade.
  Coax Cables: Twelve (12) 1-1/4" ∅ coax cables, one (1) fiber cable and two (2) dc control cables running on the exterior of the existing tower.
- AT&T (Existing to Remove):
  Antennas: Three (3) Powerwave P65-16-XLH-RR panel antennas a mounted on an existing low profile platform with a RAD center elevation of 127-ft above grade.

- **AT&T (Proposed):**
  Antennas: Three (3) CCI HPA-65R-BUU-H6 panel antennas mounted on an existing low profile platform with a RAD center elevation of 127-ft above grade.
  Appurtenances: Three (3) Ericsson RRUS-12 and three (3) Ericsson A2s mounted to one (1) universal ring mount with a RAD center elevation of 129-ft above grade.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All existing coax cables to be installed as indicated in this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC[1] and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice on the tower structure and its components.

Basic Wind Speed:	New Haven; v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Fairfield; v = 110 mph (3 second gust) equivalent to v = 90 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA wind speed controls.	
Load Cases:	Load Case 1; 90 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 78 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 78 mph wind speed velocity represents 75% of the wind pressure generated by the 90 mph wind speed.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

[1] The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

- Calculated stresses were found to be within allowable limits. In Load Case 1, per tnxTower "Section Capacity Table", this tower was found to be at **99.6%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L3)	30.00'-47.83'	99.6%	**PASS**

Note 1: Equivalent thickness of 0.58" used for section L4 of pole shaft with reinforcement.

Foundation and Anchors

The existing foundation consists of a 6.6 ∅ x 26.6-ft long reinforced concrete caisson. The sub-grade conditions used in the analysis of the existing foundation were obtained from the design documents prepared by SAC, dated May 18, 1994. The base of the tower is connected to the foundation by means of (16) 2.25"∅, ASTM A615-75 anchor bolts embedded approximately 5-ft into the concrete foundation structure.

- The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

Location	Vector	Proposed Reactions
Base	Shear	42 kips
	Compression	44 kips
	Moment	3989 kip-ft

- The foundation was found to be within allowable limits.

Foundation	Design Limit	Proposed Loading	Result
Reinforced Concrete Caisson	Moment Capacity	61.9%	**PASS**
	Lateral Deflection	0.37 in.(1)	**PASS**

(1) Lateral deflection typically limited to 1.0 in. for monopole tower structures. Based on service loads (V = 50 mph)

- The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	90.8%	**PASS**
Base Plate	Bending	93.8%	**PASS**

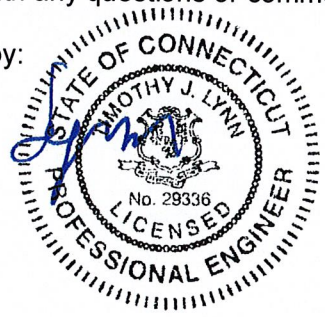
Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

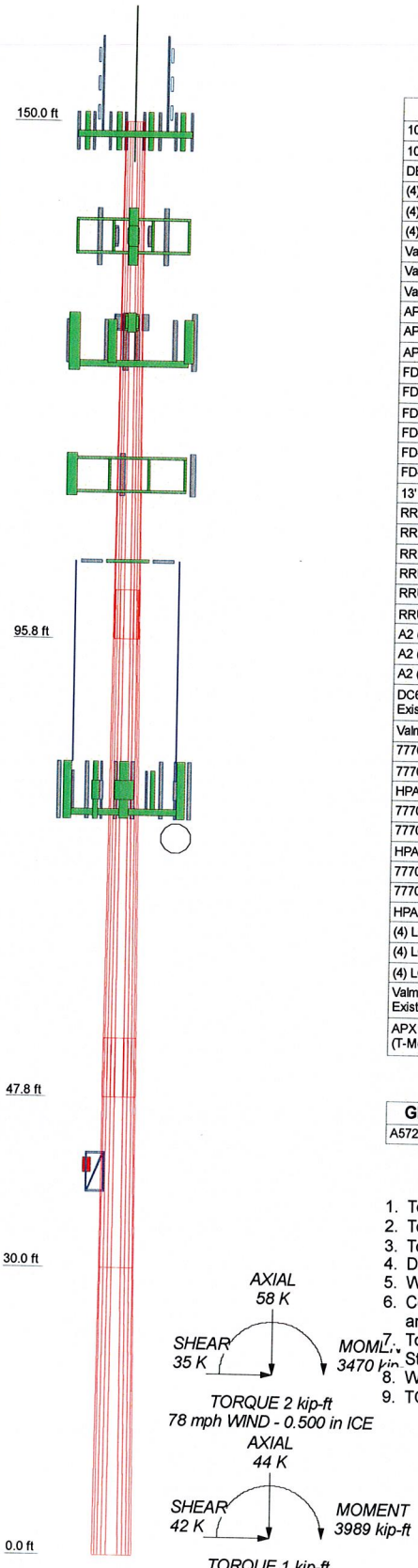
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

General Description of Structural Analysis Program

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.



Section	1	2	3	4
Length (ft)	54.170	53.170	24.000	30.000
Number of Sides	12	12	12	12
Thickness (in)	0.281	0.375	0.438	0.580
Socket Length (ft)				
Top Dia (in)	5.170	6.170	39.771	44.139
Bot Dia (in)	23.610	31.965	44.139	49.600
Grade	33.469	41.644	A572-65	9.7
Weight (K)	4.7	8.0	4.8	27.2

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10-ft Dipole (Town)	149	APX16DWV-16DWV-S-E-ACU (T-Mobile Existing)	113
10-ft Dipole (Town)	149	APX16DWV-16DWV-S-E-ACU (T-Mobile Existing)	113
DB810K (Town)	149	(2) 10"x8"x3" TMA (T-Mobile Existing)	113
(4) DB844H90E-XY (Nextel Existing)	149	(2) 10"x8"x3" TMA (T-Mobile Existing)	113
(4) DB844H90E-XY (Nextel Existing)	149	(2) 10"x8"x3" TMA (T-Mobile Existing)	113
(4) DB844H90E-XY (Nextel Existing)	149	13' Platform w/Rails (T-Mobile Existing)	113
Valmont T-Arm (1) (Nextel Existing)	149	4'-6" Standoff (Town - Existing)	104
Valmont T-Arm (1) (Nextel Existing)	149	4'-6" Standoff (Town - Existing)	104
Valmont T-Arm (1) (Nextel Existing)	149	4'-6" Standoff (Town - Existing)	104
APXVSPP18-C-A20 (Sprint Existing)	138	4'-6" Standoff (Town - Existing)	104
APXVSPP18-C-A20 (Sprint Existing)	138	1142-2B (Town - Existing)	104
APXVSPP18-C-A20 (Sprint Existing)	138	ASPA685 (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	DB222 (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	ASPA685 (Town - Existing)	104
FD-RRH 4x45 1900 (Sprint Existing)	138	DB846F65ZAXY (Verizon - Existing)	80
FD-RRH 2x50 800 (Sprint Existing)	138	BXA-171063/8BF (Verizon - Existing)	80
FD-RRH 2x50 800 (Sprint Existing)	138	BXA-70063/6CF (Verizon - Existing)	80
FD-RRH 2x50 800 (Sprint Existing)	138	DB846F65ZAXY (Verizon - Existing)	80
13' Platform w/Rails (Sprint Existing)	138	DB846F65ZAXY (Verizon - Existing)	80
RRUS-11 (ATI Existing)	129	BXA-171063/8BF (Verizon - Existing)	80
RRUS-11 (ATI Existing)	129	BXA-70063/6CF (Verizon - Existing)	80
RRUS-11 (ATI Existing)	129	DB846F65ZAXY (Verizon - Existing)	80
RRUS-12 (ATI Proposed)	129	DB846F65ZAXY (Verizon - Existing)	80
RRUS-12 (ATI Proposed)	129	BXA-171063/8BF (Verizon - Existing)	80
RRUS-12 (ATI Proposed)	129	BXA-70063/6CF (Verizon - Existing)	80
A2 (ATI Proposed)	129	DB846F65ZAXY (Verizon - Existing)	80
A2 (ATI Proposed)	129	(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	80
A2 (ATI Proposed)	129	(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	80
DC6-48-60-18-8F Surge Arrestor (ATI Existing)	129	(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	80
Valmont Uni-Tri Bracket (ATI Existing)	129	BXA-171063-12CF (Verizon - Existing)	80
7770.00 (ATI Existing)	127	BXA-171063-12CF (Verizon - Existing)	80
7770.00 (ATI Existing)	127	BXA-171063-12CF (Verizon - Existing)	80
HPA-65R-BUU-H6 (ATI Proposed)	127	RRH2x40-AWS (Verizon - Existing)	80
7770.00 (ATI Existing)	127	RRH2x40-AWS (Verizon - Existing)	80
7770.00 (ATI Existing)	127	RRH2x40-AWS (Verizon - Existing)	80
HPA-65R-BUU-H6 (ATI Proposed)	127	DB-T1-6Z-8AB-0Z (Verizon - Existing)	80
(4) LGP214nn TMA (ATI Existing)	127	Valmont 13' Low Profile Platform (Verizon - Existing)	78
(4) LGP214nn TMA (ATI Existing)	127	Stand-off	40
(4) LGP214nn TMA (ATI Existing)	127	GPS (Existing)	40
Valmont 13' Low Profile Platform (ATI Existing)	125		
APX16DWV-16DWV-S-E-ACU (T-Mobile Existing)	113		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. Weld together tower sections have flange connections.
6. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
7. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
8. Welds are fabricated with ER-70S-6 electrodes.
9. TOWER RATING: 99.6%

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

Job: **16071.42 - CT2128**			
Project: **150-ft Valmont Monopole - Fairfield, CT**			
Client: AT&T Mobility	Drawn by: TJL	App'd:	
Code: TIA/EIA-222-F	Date: 08/30/16	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.500 in.
Ice density of 56 pcf.
A wind speed of 78 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification		Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks		Consider Feed Line Torque
	Always Use Max Kz		Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

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	150.000-95.830	54.170	5.170	12	23.610	33.469	0.281	1.125	A572-65 (65 ksi)
L2	95.830-47.830	53.170	6.170	12	31.965	41.644	0.375	1.500	A572-65 (65 ksi)

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
L3	47.830-30.000	24.000	0.000	12	39.771	44.139	0.438	1.750	A572-65 (65 ksi)
L4	30.000-0.000	30.000		12	44.139	49.600	0.580	2.320	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.443	21.131	1467.855	8.352	12.230	120.021	2974.272	10.400	5.574	19.814
	34.650	30.061	4226.132	11.881	17.337	243.765	8563.288	14.795	8.216	29.207
L2	34.067	38.145	4858.931	11.309	16.558	293.447	9845.511	18.774	7.562	20.165
	43.113	49.832	10832.905	14.774	21.572	502.184	21950.402	24.526	10.156	27.082
L3	42.336	55.411	10942.170	14.081	20.601	531.139	22171.804	27.272	9.486	21.683
	45.696	61.564	15007.519	15.645	22.864	656.382	30409.303	30.300	10.657	24.358
L4	45.696	81.351	19701.692	15.594	22.864	861.690	39920.969	40.038	10.275	17.715
	51.350	91.550	28079.524	17.549	25.693	1092.895	56896.728	45.058	11.738	20.239

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.000-95.830				1	1	1			
L2 95.830-47.830				1	1	1			
L3 47.830-30.000				1	1	1			
L4 30.000-0.000				1.2	1	1.1			

Monopole Base Plate Data

Base Plate Data	
Base plate is square	
Base plate is grouted	√
Anchor bolt grade	A615-75
Anchor bolt size	2.250 in
Number of bolts	16
Embedment length	60.000 in
f'_c	4.000 ksi
Grout space	3.000 in
Base plate grade	A633-60
Base plate thickness	2.750 in
Bolt circle diameter	57.850 in
Outer diameter	63.850 in
Inner diameter	40.000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 5/8 (Town - Existing)	A	No	Inside Pole	149.000 - 3.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1 5/8 (Nextel - Existing)	B	No	Inside Pole	149.000 - 3.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1 1/4 (AT&T - Existing)	A	No	CaAa (Out Of Face)	125.000 - 3.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
1 1/4 (T-Mobile - Existing)	A	No	CaAa (Out Of Face)	110.000 - 3.000	2	No Ice	0.155	0.001
						1/2" Ice	0.255	0.002
1 1/4 (T-Mobile - Existing)	A	No	CaAa (Out Of Face)	110.000 - 3.000	10	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
1 5/8 (Verizon - Existing)	C	No	CaAa (Out Of Face)	77.000 - 3.000	2	No Ice	0.198	0.001
						1/2" Ice	0.298	0.003
1 5/8 (Verizon - Existing)	C	No	CaAa (Out Of Face)	77.000 - 3.000	10	No Ice	0.000	0.001
						1/2" Ice	0.000	0.003
7/8 (Town - Existing)	B	No	Inside Pole	104.000 - 3.000	4	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
1/2 (GPS - Existing)	B	No	CaAa (Out Of Face)	40.000 - 3.000	1	No Ice	0.058	0.000
						1/2" Ice	0.158	0.001
RG6-Fiber (AT&T - Existing)	C	No	CaAa (Out Of Face)	129.000 - 3.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
#8 AWG Copper WIre (AT&T - Existing)	C	No	CaAa (Out Of Face)	129.000 - 3.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
HYBRIFLEX 1-5/8" (Sprint - Existing)	C	No	Inside Pole	138.000 - 3.000	3	No Ice	0.000	0.002
						1/2" Ice	0.000	0.002
HYBRIFLEX 1-5/8" (Verizon - Existing)	C	No	CaAa (Out Of Face)	77.000 - 3.000	1	No Ice	0.000	0.002
						1/2" Ice	0.000	0.003

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.000-95.830	A	0.000	0.000	0.000	4.393	0.509
		B	0.000	0.000	0.000	0.000	0.681
		C	0.000	0.000	0.000	0.000	0.277
L2	95.830-47.830	A	0.000	0.000	0.000	14.880	0.910
		B	0.000	0.000	0.000	0.000	0.703
		C	0.000	0.000	0.000	11.551	0.746
L3	47.830-30.000	A	0.000	0.000	0.000	5.527	0.338
		B	0.000	0.000	0.000	0.580	0.264
		C	0.000	0.000	0.000	7.061	0.378
L4	30.000-0.000	A	0.000	0.000	0.000	8.370	0.512
		B	0.000	0.000	0.000	1.566	0.402
		C	0.000	0.000	0.000	10.692	0.572

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.000-95.830	A	0.500	0.000	0.000	0.000	7.227	1.159

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.681
		C		0.000	0.000	0.000	0.000	0.323
L2	95.830-47.830	A	0.500	0.000	0.000	0.000	24.480	2.350
		B		0.000	0.000	0.000	0.000	0.703
		C		0.000	0.000	0.000	17.385	1.385
L3	47.830-30.000	A	0.500	0.000	0.000	0.000	9.093	0.873
		B		0.000	0.000	0.000	1.580	0.270
		C		0.000	0.000	0.000	10.627	0.752
L4	30.000-0.000	A	0.500	0.000	0.000	0.000	13.770	1.322
		B		0.000	0.000	0.000	4.266	0.420
		C		0.000	0.000	0.000	16.092	1.139

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 K
10-ft Dipole (Town)	A	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice	3.150 5.670	3.150 5.670	0.032 0.042
10-ft Dipole (Town)	B	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice	3.150 5.670	3.150 5.670	0.032 0.042
DB810K (Town)	C	From Face	3.000 0.000 5.000	0.000	149.000	No Ice 1/2" Ice	4.075 5.734	4.075 5.734	0.035 0.065
(4) DB844H90E-XY (Nextel Existing)	A	From Face	3.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice	2.867 3.177	3.733 4.101	0.010 0.035
(4) DB844H90E-XY (Nextel Existing)	B	From Face	3.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice	2.867 3.177	3.733 4.101	0.010 0.035
(4) DB844H90E-XY (Nextel Existing)	C	From Face	3.000 0.000 0.000	0.000	149.000	No Ice 1/2" Ice	2.867 3.177	3.733 4.101	0.010 0.035
Valmont T-Arm (1) (Nextel Existing)	A	None		0.000	149.000	No Ice 1/2" Ice	10.540 14.450	10.540 14.450	0.336 0.412
Valmont T-Arm (1) (Nextel Existing)	B	None		0.000	149.000	No Ice 1/2" Ice	10.540 14.450	10.540 14.450	0.336 0.412
Valmont T-Arm (1) (Nextel Existing)	C	None		0.000	149.000	No Ice 1/2" Ice	10.540 14.450	10.540 14.450	0.336 0.412
APXVSPP18-C-A20 (Sprint Existing)	A	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	8.260 8.807	5.283 5.736	0.057 0.107
APXVSPP18-C-A20 (Sprint Existing)	B	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	8.260 8.807	5.283 5.736	0.057 0.107
APXVSPP18-C-A20 (Sprint Existing)	C	From Face	3.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	8.260 8.807	5.283 5.736	0.057 0.107
FD-RRH 4x45 1900 (Sprint Existing)	A	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.705 2.944	2.781 3.022	0.060 0.084

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
FD-RRH 4x45 1900 (Sprint Existing)	B	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.705 2.944	2.781 3.022	0.060 0.084
FD-RRH 4x45 1900 (Sprint Existing)	C	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.705 2.944	2.781 3.022	0.060 0.084
FD-RRH 2x50 800 (Sprint Existing)	A	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
FD-RRH 2x50 800 (Sprint Existing)	B	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
FD-RRH 2x50 800 (Sprint Existing)	C	From Face	1.000 0.000 0.000	0.000	138.000	No Ice 1/2" Ice	2.401 2.613	2.254 2.460	0.064 0.086
13' Platform w/Rails (Sprint Existing)	C	None		0.000	138.000	No Ice 1/2" Ice	17.200 22.300	17.200 22.300	2.000 3.000
RRUS-11 (AT&T Existing)	A	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.994 3.226	1.246 1.412	0.050 0.070
RRUS-11 (AT&T Existing)	B	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.994 3.226	1.246 1.412	0.050 0.070
RRUS-11 (AT&T Existing)	C	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.994 3.226	1.246 1.412	0.050 0.070
RRUS-12 (AT&T Proposed)	A	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	3.669 3.926	1.488 1.673	0.058 0.081
RRUS-12 (AT&T Proposed)	B	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	3.669 3.926	1.488 1.673	0.058 0.081
RRUS-12 (AT&T Proposed)	C	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	3.669 3.926	1.488 1.673	0.058 0.081
A2 (AT&T Proposed)	A	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.424 2.633	0.542 0.675	0.022 0.035
A2 (AT&T Proposed)	B	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.424 2.633	0.542 0.675	0.022 0.035
A2 (AT&T Proposed)	C	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.424 2.633	0.542 0.675	0.022 0.035
DC6-48-60-18-8F Surge Arrestor (AT&T Existing)	C	From Face	0.500 0.000 0.000	0.000	129.000	No Ice 1/2" Ice	2.228 2.447	2.228 2.447	0.020 0.039
Valmont Uni-Tri Bracket (AT&T Existing)	C	None		0.000	129.000	No Ice 1/2" Ice	1.750 1.940	1.750 1.940	0.290 0.306
7770.00 (AT&T Existing)	A	From Face	3.000 -6.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
7770.00 (AT&T Existing)	A	From Face	3.000 2.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
HPA-65R-BUU-H6 (AT&T Proposed)	A	From Face	3.000 6.000	0.000	127.000	No Ice 1/2" Ice	10.360 10.927	6.450 6.913	0.051 0.114

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 (AT&T Existing)	B	From Face	0.000 3.000 -6.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
7770.00 (AT&T Existing)	B	From Face	3.000 2.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
HPA-65R-BUU-H6 (AT&T Proposed)	B	From Face	3.000 6.000 0.000	0.000	127.000	No Ice 1/2" Ice	10.360 10.927	6.450 6.913	0.051 0.114
7770.00 (AT&T Existing)	C	From Face	3.000 -6.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
7770.00 (AT&T Existing)	C	From Face	3.000 2.000 0.000	0.000	127.000	No Ice 1/2" Ice	5.882 6.314	2.928 3.273	0.035 0.068
HPA-65R-BUU-H6 (AT&T Proposed)	C	From Face	3.000 6.000 0.000	0.000	127.000	No Ice 1/2" Ice	10.360 10.927	6.450 6.913	0.051 0.114
(4) LGP214nn TMA (AT&T Existing)	A	From Face	3.000 0.000 0.000	0.000	127.000	No Ice 1/2" Ice	0.000 0.000	0.233 0.313	0.014 0.021
(4) LGP214nn TMA (AT&T Existing)	B	From Face	3.000 0.000 0.000	0.000	127.000	No Ice 1/2" Ice	0.000 0.000	0.233 0.313	0.014 0.021
(4) LGP214nn TMA (AT&T Existing)	C	From Face	3.000 0.000 0.000	0.000	127.000	No Ice 1/2" Ice	0.000 0.000	0.233 0.313	0.014 0.021
Valmont 13' Low Profile Platform (AT&T Existing)	C	None		0.000	125.000	No Ice 1/2" Ice	15.700 20.100	15.700 20.100	1.300 1.765
APX16DWV-16DWV-S-E-A CU (T-Mobile Existing)	A	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	6.699 7.131	2.003 2.326	0.040 0.071
APX16DWV-16DWV-S-E-A CU (T-Mobile Existing)	B	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	6.699 7.131	2.003 2.326	0.040 0.071
APX16DWV-16DWV-S-E-A CU (T-Mobile Existing)	C	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	6.699 7.131	2.003 2.326	0.040 0.071
(2) 10"x8"x3" TMA (T-Mobile Existing)	A	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	0.000 0.000	0.292 0.380	0.015 0.020
(2) 10"x8"x3" TMA (T-Mobile Existing)	B	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	0.000 0.000	0.292 0.380	0.015 0.020
(2) 10"x8"x3" TMA (T-Mobile Existing)	C	From Face	3.000 6.000 0.000	0.000	113.000	No Ice 1/2" Ice	0.000 0.000	0.292 0.380	0.015 0.020
13' Platform w/Rails (T-Mobile Existing)	C	None		0.000	113.000	No Ice 1/2" Ice	17.200 22.300	17.200 22.300	2.000 3.000
4'-6" Standoff (Town - Existing)	A	From Face	3.000 0.000 0.000	0.000	104.000	No Ice 1/2" Ice	2.100 2.480	0.156 0.212	0.040 0.057
4'-6" Standoff (Town - Existing)	A	From Face	3.000 0.000 0.000	0.000	104.000	No Ice 1/2" Ice	2.100 2.480	0.156 0.212	0.040 0.057

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4'-6" Standoff (Town - Existing)	B	From Face	3.000 0.000 0.000	0.000	104.000	No Ice 1/2" Ice	2.100 2.480	0.156 0.212	0.040 0.057
4'-6" Standoff (Town - Existing)	C	From Face	3.000 0.000 0.000	0.000	104.000	No Ice 1/2" Ice	2.100 2.480	0.156 0.212	0.040 0.057
1142-2B (Town - Existing)	B	From Face	5.000 0.000 4.000	0.000	104.000	No Ice 1/2" Ice	1.120 2.535	1.120 2.535	0.010 0.021
ASPA685 (Town - Existing)	B	From Face	5.000 0.000 -10.500	0.000	104.000	No Ice 1/2" Ice	5.250 7.379	5.250 7.379	0.022 0.060
DB222 (Town - Existing)	A	From Face	5.000 0.000 5.000	0.000	104.000	No Ice 1/2" Ice	1.600 2.880	1.600 2.880	0.016 0.021
ASPA685 (Town - Existing)	A	From Face	5.000 0.000 -10.500	0.000	104.000	No Ice 1/2" Ice	5.250 7.379	5.250 7.379	0.022 0.060
DB846F65ZAXY (Verizon - Existing)	A	From Face	3.000 -6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
BXA-171063/8BF (Verizon - Existing)	A	From Face	3.000 -3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.941 3.255	2.156 2.458	0.011 0.029
BXA-70063/6CF (Verizon - Existing)	A	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.731 8.268	4.158 4.595	0.012 0.054
DB846F65ZAXY (Verizon - Existing)	A	From Face	3.000 6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
DB846F65ZAXY (Verizon - Existing)	B	From Face	3.000 -6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
BXA-171063/8BF (Verizon - Existing)	B	From Face	3.000 -3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.941 3.255	2.156 2.458	0.011 0.029
BXA-70063/6CF (Verizon - Existing)	B	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.731 8.268	4.158 4.595	0.012 0.054
DB846F65ZAXY (Verizon - Existing)	B	From Face	3.000 6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
DB846F65ZAXY (Verizon - Existing)	C	From Face	3.000 -6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
BXA-171063/8BF (Verizon - Existing)	C	From Face	3.000 -3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.941 3.255	2.156 2.458	0.011 0.029
BXA-70063/6CF (Verizon - Existing)	C	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.731 8.268	4.158 4.595	0.012 0.054
DB846F65ZAXY (Verizon - Existing)	C	From Face	3.000 6.000 0.000	0.000	80.000	No Ice 1/2" Ice	7.033 7.536	6.158 6.619	0.021 0.070
(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	A	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	0.000 0.000	0.085 0.136	0.003 0.005

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 K
(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	B	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	0.000 0.000	0.085 0.136	0.003 0.005
(2) FD9R6004/2C-3L Diplexer (Verizon - Existing)	C	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	0.000 0.000	0.085 0.136	0.003 0.005
BXA-171063-12CF (Verizon - Existing)	A	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	4.791 5.242	3.618 4.058	0.015 0.042
BXA-171063-12CF (Verizon - Existing)	B	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	4.791 5.242	3.618 4.058	0.015 0.042
BXA-171063-12CF (Verizon - Existing)	C	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	4.791 5.242	3.618 4.058	0.015 0.042
RRH2x40-AWS (Verizon - Existing)	A	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
RRH2x40-AWS (Verizon - Existing)	B	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
RRH2x40-AWS (Verizon - Existing)	C	From Face	3.000 3.000 0.000	0.000	80.000	No Ice 1/2" Ice	2.522 2.753	1.589 1.795	0.044 0.061
DB-T1-6Z-8AB-0Z (Verizon - Existing)	C	From Face	3.000 0.000 0.000	0.000	80.000	No Ice 1/2" Ice	5.600 5.915	2.333 2.558	0.044 0.080
Valmont 13' Low Profile Platform (Verizon - Existing)	C	None		0.000	78.000	No Ice 1/2" Ice	15.700 20.100	15.700 20.100	1.300 1.765
Stand-off	A	From Face	1.000 0.000 0.000	0.000	40.000	No Ice 1/2" Ice	0.750 0.950	0.750 0.950	0.027 0.036
GPS (Existing)	A	From Face	2.000 0.000 0.000	0.000	40.000	No Ice 1/2" Ice	1.000 1.500	1.000 1.500	0.010 0.015

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1	121.781	1.452	0.030	128.832	A	0.000	128.832	128.832	100.00	0.000	4.393
150.000-95.83					B	0.000	128.832		100.00	0.000	0.000
0					C	0.000	128.832		100.00	0.000	0.000
L2	71.470	1.247	0.026	149.101	A	0.000	149.101	149.101	100.00	0.000	14.880
95.830-47.830					B	0.000	149.101		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	149.101		100.00	0.000	11.551
L3 47.830-30.000	38.802	1.047	0.022	63.172	A	0.000	63.172	63.172	100.00	0.000	5.527
					B	0.000	63.172		100.00	0.000	0.580
					C	0.000	63.172		100.00	0.000	7.061
L4 30.000-0.000	14.709	1	0.021	117.174	A	0.000	117.174	117.174	100.00	0.000	8.370
					B	0.000	117.174		100.00	0.000	1.566
					C	0.000	117.174		100.00	0.000	10.692

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.000-95.830	121.781	1.452	0.023	0.500	133.346	A	0.000	133.346	133.346	100.00	0.000	7.227
						B	0.000	133.346		100.00	0.000	0.000
						C	0.000	133.346		100.00	0.000	0.000
L2 95.830-47.830	71.470	1.247	0.019	0.500	153.101	A	0.000	153.101	153.101	100.00	0.000	24.480
						B	0.000	153.101		100.00	0.000	0.000
						C	0.000	153.101		100.00	0.000	17.385
L3 47.830-30.000	38.802	1.047	0.016	0.500	64.658	A	0.000	64.658	64.658	100.00	0.000	9.093
						B	0.000	64.658		100.00	0.000	1.580
						C	0.000	64.658		100.00	0.000	10.627
L4 30.000-0.000	14.709	1	0.016	0.500	119.674	A	0.000	119.674	119.674	100.00	0.000	13.770
						B	0.000	119.674		100.00	0.000	4.266
						C	0.000	119.674		100.00	0.000	16.092

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z ksf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.000-95.83 0	121.781	1.452	0.009	128.832	A	0.000	128.832	128.832	100.00	0.000	4.393
					B	0.000	128.832		100.00	0.000	0.000
					C	0.000	128.832		100.00	0.000	0.000
L2 95.830-47.830	71.470	1.247	0.008	149.101	A	0.000	149.101	149.101	100.00	0.000	14.880
					B	0.000	149.101		100.00	0.000	0.000
					C	0.000	149.101		100.00	0.000	11.551
L3 47.830-30.000	38.802	1.047	0.007	63.172	A	0.000	63.172	63.172	100.00	0.000	5.527
					B	0.000	63.172		100.00	0.000	0.580
					C	0.000	63.172		100.00	0.000	7.061
L4 30.000-0.000	14.709	1	0.006	117.174	A	0.000	117.174	117.174	100.00	0.000	8.370
					B	0.000	117.174		100.00	0.000	1.566
					C	0.000	117.174		100.00	0.000	10.692

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	6.961	0.128	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	7.826	0.163	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	2.872	0.161	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	4.952	0.165	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	1591.247 kip-ft	22.610		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	6.961	0.128	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	7.826	0.163	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	2.872	0.161	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	4.952	0.165	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	1591.247 kip-ft	22.610		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	6.961	0.128	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	7.826	0.163	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	2.872	0.161	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	4.952	0.165	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	1591.247 kip-ft	22.610		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	6.961	0.128	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	7.826	0.163	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	2.872	0.161	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	4.952	0.165	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	1591.247 kip-ft	22.610		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	2.163	5.703	A	1	1.03	1	1	1	133.346	5.506	0.102	C
150.000-95.83			B	1	1.03	1	1	1	133.346			
0			C	1	1.03	1	1	1	133.346			
L2	4.438	9.094	A	1	1.03	1	1	1	153.101	6.507	0.136	C
95.830-47.830			B	1	1.03	1	1	1	153.101			
			C	1	1.03	1	1	1	153.101			
L3	1.895	5.257	A	1	1.03	1	1	1	64.658	2.420	0.136	C
47.830-30.000			B	1	1.03	1	1	1	64.658			
			C	1	1.03	1	1	1	64.658			
L4	2.881	10.597	A	1	1.03	1	1	1	119.674	4.137	0.138	C
30.000-0.000			B	1	1.03	1	1	1	119.674			
			C	1	1.03	1	1	1	119.674			
Sum Weight:	11.377	30.651						OTM	1290.244 kip-ft	18.569		

tnxTower	Job	Page
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	16071.42 - CT2128	12 of 23
	Project 150-ft Valmont Monopole - Fairfield, CT	Date 10:42:33 08/30/16
	Client AT&T Mobility	Designed by TJL

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1 150.000-95.83	2.163	5.703	A	1	1.03	1	1	1	133.346	5.506	0.102	C
0			B	1	1.03	1	1	1	133.346			
L2 95.830-47.830	4.438	9.094	C	1	1.03	1	1	1	133.346			
			A	1	1.03	1	1	1	153.101	6.507	0.136	C
			B	1	1.03	1	1	1	153.101			
L3 47.830-30.000	1.895	5.257	C	1	1.03	1	1	1	153.101			
			A	1	1.03	1	1	1	64.658	2.420	0.136	C
			B	1	1.03	1	1	1	64.658			
L4 30.000-0.000	2.881	10.597	C	1	1.03	1	1	1	64.658			
			A	1	1.03	1	1	1	119.674	4.137	0.138	C
			B	1	1.03	1	1	1	119.674			
Sum Weight:	11.377	30.651	C	1	1.03	1	1	1	119.674			
								OTM	1290.244 kip-ft	18.569		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1 150.000-95.83	2.163	5.703	A	1	1.03	1	1	1	133.346	5.506	0.102	C
0			B	1	1.03	1	1	1	133.346			
L2 95.830-47.830	4.438	9.094	C	1	1.03	1	1	1	133.346			
			A	1	1.03	1	1	1	153.101	6.507	0.136	C
			B	1	1.03	1	1	1	153.101			
L3 47.830-30.000	1.895	5.257	C	1	1.03	1	1	1	153.101			
			A	1	1.03	1	1	1	64.658	2.420	0.136	C
			B	1	1.03	1	1	1	64.658			
L4 30.000-0.000	2.881	10.597	C	1	1.03	1	1	1	64.658			
			A	1	1.03	1	1	1	119.674	4.137	0.138	C
			B	1	1.03	1	1	1	119.674			
Sum Weight:	11.377	30.651	C	1	1.03	1	1	1	119.674			
								OTM	1290.244 kip-ft	18.569		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1 150.000-95.83	2.163	5.703	A	1	1.03	1	1	1	133.346	5.506	0.102	C
0			B	1	1.03	1	1	1	133.346			
L2	4.438	9.094	C	1	1.03	1	1	1	133.346			
			A	1	1.03	1	1	1	153.101	6.507	0.136	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
95.830-47.830			B	1	1.03	1	1	1	153.101			
			C	1	1.03	1	1	1	153.101			
L3	1.895	5.257	A	1	1.03	1	1	1	64.658	2.420	0.136	C
47.830-30.000			B	1	1.03	1	1	1	64.658			
			C	1	1.03	1	1	1	64.658			
L4	2.881	10.597	A	1	1.03	1	1	1	119.674	4.137	0.138	C
30.000-0.000			B	1	1.03	1	1	1	119.674			
			C	1	1.03	1	1	1	119.674			
Sum Weight:	11.377	30.651						OTM	1290.244 kip-ft	18.569		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	2.148	0.040	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	2.415	0.050	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	0.886	0.050	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	1.528	0.051	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	491.126 kip-ft	6.978		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	2.148	0.040	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	2.415	0.050	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	0.886	0.050	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	1.528	0.051	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	491.126	6.978		

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
									kip-ft			

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	2.148	0.040	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	2.415	0.050	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	0.886	0.050	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	1.528	0.051	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	491.126 kip-ft	6.978		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w klf	Ctrl. Face
L1	1.467	4.718	A	1	1.03	1	1	1	128.832	2.148	0.040	C
150.000-95.83			B	1	1.03	1	1	1	128.832			
0			C	1	1.03	1	1	1	128.832			
L2	2.359	7.959	A	1	1.03	1	1	1	149.101	2.415	0.050	C
95.830-47.830			B	1	1.03	1	1	1	149.101			
			C	1	1.03	1	1	1	149.101			
L3	0.979	4.777	A	1	1.03	1	1	1	63.172	0.886	0.050	C
47.830-30.000			B	1	1.03	1	1	1	63.172			
			C	1	1.03	1	1	1	63.172			
L4	1.486	9.708	A	1	1.03	1	1	1	117.174	1.528	0.051	C
30.000-0.000			B	1	1.03	1	1	1	117.174			
			C	1	1.03	1	1	1	117.174			
Sum Weight:	6.291	27.161						OTM	491.126 kip-ft	6.978		

Force Totals

tnxTower	Job	Page
	16071.42 - CT2128	15 of 23
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	**Project** 150-ft Valmont Monopole - Fairfield, CT	**Date** 10:42:33 08/30/16
	Client AT&T Mobility	**Designed by** TJL

Load Case	*Vertical Forces* *K*	*Sum of Forces X* *K*	*Sum of Forces Z* *K*	*Sum of Overturning Moments, M_x* *kip-ft*	*Sum of Overturning Moments, M_z* *kip-ft*	*Sum of Torques* *kip-ft*
Leg Weight	27.161					
Bracing Weight	0.000					
Total Member Self-Weight	27.161			-0.122	0.280	
Total Weight	43.964			-0.122	0.280	
Wind 0 deg - No Ice		-0.041	-41.689	-3869.746	4.540	-0.346
Wind 30 deg - No Ice		20.759	-36.083	-3349.185	-1927.405	-0.927
Wind 45 deg - No Ice		29.379	-29.449	-2733.347	-2728.083	-1.132
Wind 60 deg - No Ice		35.996	-20.809	-1931.245	-3342.828	-1.259
Wind 90 deg - No Ice		41.589	0.041	4.138	-3862.468	-1.254
Wind 120 deg - No Ice		36.037	20.880	1938.379	-3347.088	-0.913
Wind 135 deg - No Ice		29.437	29.507	2739.128	-2734.107	-0.642
Wind 150 deg - No Ice		20.830	36.124	3353.201	-1934.783	-0.327
Wind 180 deg - No Ice		0.041	41.689	3869.502	-3.979	0.346
Wind 210 deg - No Ice		-20.759	36.083	3348.941	1927.965	0.927
Wind 225 deg - No Ice		-29.379	29.449	2733.104	2728.644	1.132
Wind 240 deg - No Ice		-35.996	20.809	1931.001	3343.388	1.259
Wind 270 deg - No Ice		-41.589	-0.041	-4.382	3863.028	1.254
Wind 300 deg - No Ice		-36.037	-20.880	-1938.623	3347.648	0.913
Wind 315 deg - No Ice		-29.437	-29.507	-2739.372	2734.668	0.642
Wind 330 deg - No Ice		-20.830	-36.124	-3353.445	1935.343	0.327
Member Ice	3.490					
Total Weight Ice	57.968			-0.197	0.345	
Wind 0 deg - Ice		-0.036	-35.477	-3321.914	4.072	-0.299
Wind 30 deg - Ice		17.672	-30.706	-2875.025	-1654.892	-1.191
Wind 45 deg - Ice		25.010	-25.061	-2346.370	-2342.443	-1.529
Wind 60 deg - Ice		30.644	-17.708	-1657.827	-2870.337	-1.763
Wind 90 deg - Ice		35.405	0.036	3.531	-3316.584	-1.863
Wind 120 deg - Ice		30.680	17.770	1663.890	-2874.064	-1.464
Wind 135 deg - Ice		25.061	25.112	2351.248	-2347.714	-1.106
Wind 150 deg - Ice		17.734	30.742	2878.359	-1661.348	-0.673
Wind 180 deg - Ice		0.036	35.477	3321.521	-3.382	0.299
Wind 210 deg - Ice		-17.672	30.706	2874.631	1655.582	1.191
Wind 225 deg - Ice		-25.010	25.061	2345.977	2343.133	1.529
Wind 240 deg - Ice		-30.644	17.708	1657.434	2871.027	1.763
Wind 270 deg - Ice		-35.405	-0.036	-3.924	3317.275	1.863
Wind 300 deg - Ice		-30.680	-17.770	-1664.283	2874.754	1.464
Wind 315 deg - Ice		-25.061	-25.112	-2351.641	2348.404	1.106
Wind 330 deg - Ice		-17.734	-30.742	-2878.752	1662.038	0.673
Total Weight	43.964			-0.122	0.280	
Wind 0 deg - Service		-0.013	-12.867	-1194.450	1.595	-0.107
Wind 30 deg - Service		6.407	-11.137	-1033.783	-594.684	-0.286
Wind 45 deg - Service		9.067	-9.089	-843.710	-841.807	-0.349
Wind 60 deg - Service		11.110	-6.423	-596.148	-1031.543	-0.389
Wind 90 deg - Service		12.836	0.013	1.193	-1191.926	-0.387
Wind 120 deg - Service		11.123	6.444	598.181	-1032.858	-0.282
Wind 135 deg - Service		9.085	9.107	845.325	-843.667	-0.198
Wind 150 deg - Service		6.429	11.149	1034.854	-596.961	-0.101
Wind 180 deg - Service		0.013	12.867	1194.206	-1.035	0.107
Wind 210 deg - Service		-6.407	11.137	1033.539	595.245	0.286
Wind 225 deg - Service		-9.067	9.089	843.466	842.368	0.349
Wind 240 deg - Service		-11.110	6.423	595.904	1032.104	0.389
Wind 270 deg - Service		-12.836	-0.013	-1.437	1192.486	0.387
Wind 300 deg - Service		-11.123	-6.444	-598.425	1033.418	0.282
Wind 315 deg - Service		-9.085	-9.107	-845.569	844.227	0.198
Wind 330 deg - Service		-6.429	-11.149	-1035.098	597.522	0.101

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 95.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-20.059	0.210	0.479
			Max. Mx	14	-12.603	633.997	0.338
			Max. My	2	-12.606	0.332	633.951
			Max. Vy	14	-21.591	633.997	0.338
			Max. Vx	2	-21.544	0.332	633.951
			Max. Torque	31			-2.142
L2	95.83 - 47.83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-35.523	0.210	0.119
			Max. Mx	14	-24.265	1943.395	2.196
			Max. My	2	-24.259	2.329	1944.808
			Max. Vy	14	-33.691	1943.395	2.196
			Max. Vx	2	-33.792	2.329	1944.808
			Max. Torque	31			-2.141
L3	47.83 - 30	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-44.489	0.345	0.197
			Max. Mx	14	-31.968	2796.863	3.264
			Max. My	2	-31.965	3.432	2800.668
			Max. Vy	14	-37.339	2796.863	3.264
			Max. Vx	2	-37.440	3.432	2800.668
			Max. Torque	31			-1.859
L4	30 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	18	-57.968	0.345	0.197
			Max. Mx	14	-43.942	3980.291	4.504
			Max. My	2	-43.942	4.674	3987.119
			Max. Vy	14	-41.612	3980.291	4.504
			Max. Vx	2	-41.712	4.674	3987.119
			Max. Torque	31			-1.858

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	19	57.968	0.036	35.477
	Max. H_x	14	43.964	41.589	0.041
	Max. H_z	2	43.964	0.041	41.689
	Max. M_x	2	3987.119	0.041	41.689
	Max. M_z	6	3979.709	-41.589	-0.041
	Max. Torsion	23	1.856	-35.405	-0.036
	Min. Vert	1	43.964	0.000	0.000
	Min. H_x	6	43.964	-41.589	-0.041
	Min. H_z	10	43.964	-0.041	-41.689
	Min. M_x	10	-3986.864	-0.041	-41.689
	Min. M_z	14	-3980.291	41.589	0.041
	Min. Torsion	31	-1.857	35.405	0.036

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	43.964	0.000	0.000	-0.122	0.280	0.000

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 0 deg - No Ice	43.964	-0.041	-41.689	-3987.119	4.674	-0.346
Dead+Wind 30 deg - No Ice	43.964	20.759	-36.083	-3450.786	-1985.921	-0.922
Dead+Wind 45 deg - No Ice	43.964	29.379	-29.449	-2816.269	-2810.908	-1.125
Dead+Wind 60 deg - No Ice	43.964	35.996	-20.809	-1989.834	-3444.314	-1.251
Dead+Wind 90 deg - No Ice	43.964	41.589	0.041	4.262	-3979.709	-1.244
Dead+Wind 120 deg - No Ice	43.964	36.037	20.880	1997.170	-3448.674	-0.905
Dead+Wind 135 deg - No Ice	43.964	29.437	29.507	2822.203	-2817.083	-0.636
Dead+Wind 150 deg - No Ice	43.964	20.830	36.124	3454.900	-1993.497	-0.324
Dead+Wind 180 deg - No Ice	43.964	0.041	41.689	3986.864	-4.092	0.344
Dead+Wind 210 deg - No Ice	43.964	-20.759	36.083	3450.534	1986.497	0.921
Dead+Wind 225 deg - No Ice	43.964	-29.379	29.449	2816.021	2811.483	1.124
Dead+Wind 240 deg - No Ice	43.964	-35.996	20.809	1989.589	3444.890	1.251
Dead+Wind 270 deg - No Ice	43.964	-41.589	-0.041	-4.503	3980.291	1.246
Dead+Wind 300 deg - No Ice	43.964	-36.037	-20.880	-1997.415	3449.262	0.906
Dead+Wind 315 deg - No Ice	43.964	-29.437	-29.507	-2822.452	2817.673	0.637
Dead+Wind 330 deg - No Ice	43.964	-20.830	-36.124	-3455.152	1994.085	0.324
Dead+Ice+Temp	57.968	0.000	0.000	-0.197	0.345	0.000
Dead+Wind 0 deg+Ice+Temp	57.968	-0.036	-35.477	-3467.791	4.246	-0.299
Dead+Wind 30 deg+Ice+Temp	57.968	17.672	-30.706	-3001.286	-1727.623	-1.188
Dead+Wind 45 deg+Ice+Temp	57.968	25.010	-25.061	-2449.416	-2445.389	-1.525
Dead+Wind 60 deg+Ice+Temp	57.968	30.644	-17.708	-1730.634	-2996.477	-1.757
Dead+Wind 90 deg+Ice+Temp	57.968	35.405	0.036	3.684	-3462.318	-1.856
Dead+Wind 120 deg+Ice+Temp	57.968	30.680	17.770	1736.949	-3000.334	-1.458
Dead+Wind 135 deg+Ice+Temp	57.968	25.061	25.112	2454.487	-2450.853	-1.101
Dead+Wind 150 deg+Ice+Temp	57.968	17.734	30.742	3004.740	-1734.327	-0.670
Dead+Wind 180 deg+Ice+Temp	57.968	0.036	35.477	3467.369	-3.517	0.298
Dead+Wind 210 deg+Ice+Temp	57.968	-17.672	30.706	3000.871	1728.340	1.187
Dead+Wind 225 deg+Ice+Temp	57.968	-25.010	25.061	2449.008	2446.104	1.524
Dead+Wind 240 deg+Ice+Temp	57.968	-30.644	17.708	1730.233	2997.194	1.757
Dead+Wind 270 deg+Ice+Temp	57.968	-35.405	-0.036	-4.079	3463.048	1.857
Dead+Wind 300 deg+Ice+Temp	57.968	-30.680	-17.770	-1737.351	3001.077	1.459
Dead+Wind 315 deg+Ice+Temp	57.968	-25.061	-25.112	-2454.895	2451.597	1.102
Dead+Wind 330 deg+Ice+Temp	57.968	-17.734	-30.742	-3005.156	1735.069	0.669
Dead+Wind 0 deg - Service	43.964	-0.013	-12.867	-1232.234	1.647	-0.107
Dead+Wind 30 deg - Service	43.964	6.407	-11.137	-1066.486	-613.507	-0.287
Dead+Wind 45 deg - Service	43.964	9.067	-9.089	-870.401	-868.452	-0.350
Dead+Wind 60 deg - Service	43.964	11.110	-6.423	-615.008	-1064.193	-0.389
Dead+Wind 90 deg - Service	43.964	12.836	0.013	1.226	-1229.651	-0.387
Dead+Wind 120 deg - Service	43.964	11.123	6.444	617.097	-1065.546	-0.282
Dead+Wind 135 deg - Service	43.964	9.085	9.107	872.059	-870.366	-0.198
Dead+Wind 150 deg - Service	43.964	6.429	11.149	1067.582	-615.851	-0.101
Dead+Wind 180 deg - Service	43.964	0.013	12.867	1231.976	-1.061	0.107
Dead+Wind 210 deg - Service	43.964	-6.407	11.137	1066.229	614.092	0.286
Dead+Wind 225 deg - Service	43.964	-9.067	9.089	870.144	869.037	0.350
Dead+Wind 240 deg - Service	43.964	-11.110	6.423	614.752	1064.779	0.389
Dead+Wind 270 deg - Service	43.964	-12.836	-0.013	-1.482	1230.237	0.388
Dead+Wind 300 deg - Service	43.964	-11.123	-6.444	-617.353	1066.133	0.282
Dead+Wind 315 deg - Service	43.964	-9.085	-9.107	-872.316	870.952	0.198
Dead+Wind 330 deg - Service	43.964	-6.429	-11.149	-1067.840	616.438	0.101

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.000	-43.964	0.000	0.000	43.964	0.000	0.000%
2	-0.041	-43.964	-41.689	0.041	43.964	41.689	0.000%
3	20.759	-43.964	-36.083	-20.759	43.964	36.083	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
4	29.379	-43.964	-29.449	-29.379	43.964	29.449	0.000%
5	35.996	-43.964	-20.809	-35.996	43.964	20.809	0.000%
6	41.589	-43.964	0.041	-41.589	43.964	-0.041	0.000%
7	36.037	-43.964	20.880	-36.037	43.964	-20.880	0.000%
8	29.437	-43.964	29.507	-29.437	43.964	-29.507	0.000%
9	20.830	-43.964	36.124	-20.830	43.964	-36.124	0.000%
10	0.041	-43.964	41.689	-0.041	43.964	-41.689	0.000%
11	-20.759	-43.964	36.083	20.759	43.964	-36.083	0.000%
12	-29.379	-43.964	29.449	29.379	43.964	-29.449	0.000%
13	-35.996	-43.964	20.809	35.996	43.964	-20.809	0.000%
14	-41.589	-43.964	-0.041	41.589	43.964	0.041	0.000%
15	-36.037	-43.964	-20.880	36.037	43.964	20.880	0.000%
16	-29.437	-43.964	-29.507	29.437	43.964	29.507	0.000%
17	-20.830	-43.964	-36.124	20.830	43.964	36.124	0.000%
18	0.000	-57.968	0.000	0.000	57.968	0.000	0.000%
19	-0.036	-57.968	-35.477	0.036	57.968	35.477	0.000%
20	17.672	-57.968	-30.706	-17.672	57.968	30.706	0.000%
21	25.010	-57.968	-25.061	-25.010	57.968	25.061	0.000%
22	30.644	-57.968	-17.708	-30.644	57.968	17.708	0.000%
23	35.405	-57.968	0.036	-35.405	57.968	-0.036	0.000%
24	30.680	-57.968	17.770	-30.680	57.968	-17.770	0.000%
25	25.061	-57.968	25.112	-25.061	57.968	-25.112	0.000%
26	17.734	-57.968	30.742	-17.734	57.968	-30.742	0.000%
27	0.036	-57.968	35.477	-0.036	57.968	-35.477	0.000%
28	-17.672	-57.968	30.706	17.672	57.968	-30.706	0.000%
29	-25.010	-57.968	25.061	25.010	57.968	-25.061	0.000%
30	-30.644	-57.968	17.708	30.644	57.968	-17.708	0.000%
31	-35.405	-57.968	-0.036	35.405	57.968	0.036	0.000%
32	-30.680	-57.968	-17.770	30.680	57.968	17.770	0.000%
33	-25.061	-57.968	-25.112	25.061	57.968	25.112	0.000%
34	-17.734	-57.968	-30.742	17.734	57.968	30.742	0.000%
35	-0.013	-43.964	-12.867	0.013	43.964	12.867	0.000%
36	6.407	-43.964	-11.137	-6.407	43.964	11.137	0.000%
37	9.067	-43.964	-9.089	-9.067	43.964	9.089	0.000%
38	11.110	-43.964	-6.423	-11.110	43.964	6.423	0.000%
39	12.836	-43.964	0.013	-12.836	43.964	-0.013	0.000%
40	11.123	-43.964	6.444	-11.123	43.964	-6.444	0.000%
41	9.085	-43.964	9.107	-9.085	43.964	-9.107	0.000%
42	6.429	-43.964	11.149	-6.429	43.964	-11.149	0.000%
43	0.013	-43.964	12.867	-0.013	43.964	-12.867	0.000%
44	-6.407	-43.964	11.137	6.407	43.964	-11.137	0.000%
45	-9.067	-43.964	9.089	9.067	43.964	-9.089	0.000%
46	-11.110	-43.964	6.423	11.110	43.964	-6.423	0.000%
47	-12.836	-43.964	-0.013	12.836	43.964	0.013	0.000%
48	-11.123	-43.964	-6.444	11.123	43.964	6.444	0.000%
49	-9.085	-43.964	-9.107	9.085	43.964	9.107	0.000%
50	-6.429	-43.964	-11.149	6.429	43.964	11.149	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00024531
3	Yes	5	0.00000001	0.00032979
4	Yes	5	0.00000001	0.00037148

5	Yes	5	0.00000001	0.00033948
6	Yes	4	0.00000001	0.00034531
7	Yes	5	0.00000001	0.00033095
8	Yes	5	0.00000001	0.00037261
9	Yes	5	0.00000001	0.00033671
10	Yes	4	0.00000001	0.00023299
11	Yes	5	0.00000001	0.00033763
12	Yes	5	0.00000001	0.00037155
13	Yes	5	0.00000001	0.00032851
14	Yes	4	0.00000001	0.00038182
15	Yes	5	0.00000001	0.00033969
16	Yes	5	0.00000001	0.00037278
17	Yes	5	0.00000001	0.00033334
18	Yes	4	0.00000001	0.00000001
19	Yes	5	0.00000001	0.00041612
20	Yes	5	0.00000001	0.00090824
21	Yes	6	0.00000001	0.00005488
22	Yes	5	0.00000001	0.00092742
23	Yes	5	0.00000001	0.00041756
24	Yes	5	0.00000001	0.00090940
25	Yes	6	0.00000001	0.00005502
26	Yes	5	0.00000001	0.00092344
27	Yes	5	0.00000001	0.00041601
28	Yes	5	0.00000001	0.00092294
29	Yes	6	0.00000001	0.00005488
30	Yes	5	0.00000001	0.00090504
31	Yes	5	0.00000001	0.00041793
32	Yes	5	0.00000001	0.00092970
33	Yes	6	0.00000001	0.00005505
34	Yes	5	0.00000001	0.00091436
35	Yes	4	0.00000001	0.00010806
36	Yes	4	0.00000001	0.00049962
37	Yes	4	0.00000001	0.00058778
38	Yes	4	0.00000001	0.00053032
39	Yes	4	0.00000001	0.00011522
40	Yes	4	0.00000001	0.00050114
41	Yes	4	0.00000001	0.00058983
42	Yes	4	0.00000001	0.00051971
43	Yes	4	0.00000001	0.00010782
44	Yes	4	0.00000001	0.00052478
45	Yes	4	0.00000001	0.00058817
46	Yes	4	0.00000001	0.00049554
47	Yes	4	0.00000001	0.00011612
48	Yes	4	0.00000001	0.00052953
49	Yes	4	0.00000001	0.00059101
50	Yes	4	0.00000001	0.00050948

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 95.83	31.290	50	1.728	0.001
L2	101 - 47.83	14.694	50	1.382	0.001
L3	54 - 30	4.026	50	0.717	0.000
L4	30 - 0	1.182	50	0.377	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	10-ft Dipole	50	30.928	1.723	0.001	42894
138.000	APXVSPP18-C-A20	50	26.972	1.665	0.001	17872
129.000	RRUS-11	50	23.793	1.613	0.001	10212
127.000	7770.00	50	23.098	1.600	0.001	9324
125.000	Valmont 13' Low Profile Platform	50	22.408	1.587	0.001	8578
113.000	APX16DWV-16DWV-S-E-ACU	50	18.401	1.497	0.001	5795
104.000	4'-6" Standoff	50	15.587	1.414	0.001	4665
80.000	DB846F65ZAXY	50	9.138	1.110	0.001	4168
78.000	Valmont 13' Low Profile Platform	50	8.674	1.081	0.001	4149
40.000	Stand-off	50	2.129	0.513	0.000	3492

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 95.83	100.973	2	5.583	0.007
L2	101 - 47.83	47.465	17	4.465	0.006
L3	54 - 30	13.017	17	2.319	0.002
L4	30 - 0	3.825	17	1.218	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.000	10-ft Dipole	2	99.809	5.566	0.007	13503
138.000	APXVSPP18-C-A20	17	87.053	5.379	0.007	5625
129.000	RRUS-11	17	76.804	5.211	0.007	3212
127.000	7770.00	17	74.564	5.170	0.007	2932
125.000	Valmont 13' Low Profile Platform	17	72.340	5.128	0.007	2697
113.000	APX16DWV-16DWV-S-E-ACU	17	59.423	4.838	0.007	1820
104.000	4'-6" Standoff	17	50.348	4.568	0.007	1463
80.000	DB846F65ZAXY	17	29.533	3.587	0.004	1301
78.000	Valmont 13' Low Profile Platform	17	28.035	3.493	0.004	1295
40.000	Stand-off	17	6.886	1.661	0.001	1082

Base Plate Design Data

Plate Thickness	Number of Anchor Bolts	Anchor Bolt Size	Actual Allowable Ratio Bolt Tension	Actual Allowable Ratio Concrete Stress	Actual Allowable Ratio Plate Stress	Actual Allowable Ratio Stiffener Stress	Controlling Condition	Critical Ratio
in		in	K	ksi	ksi	ksi		
2.750	16	2.250	158.398 131.211 1.21	2.804 2.800 1.00	56.468 45.000 1.25		Plate	1.25 ✔

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
L1	150 - 95.83 (1)	TP33.469x23.61x0.281	54.170	0.000	0.0	39.000	29.209	-12.599	1139.140	0.011
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	53.170	0.000	0.0	39.000	48.476	-24.258	1890.570	0.013
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	24.000	0.000	0.0	39.000	61.564	-31.964	2401.020	0.013
L4	30 - 0 (4)	TP49.6x44.139x0.58	30.000	0.000	0.0	39.000	91.550	-43.942	3570.440	0.012

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	150 - 95.83 (1)	TP33.469x23.61x0.281	634.217	33.078	39.000	0.848	0.000	0.000	39.000	0.000
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	1946.358	49.160	39.000	1.261	0.000	0.000	39.000	0.000
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	2802.525	51.236	39.000	1.314	0.000	0.000	39.000	0.000
L4	30 - 0 (4)	TP49.6x44.139x0.58	3989.292	43.803	39.000	1.123	0.000	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V	Actual f_v	Allow. F_v	Ratio $\frac{f_v}{F_v}$	Actual T	Actual f_{vt}	Allow. F_{vt}	Ratio $\frac{f_{vt}}{F_{vt}}$
	ft		K	ksi	ksi		kip-ft	ksi	ksi	
L1	150 - 95.83 (1)	TP33.469x23.61x0.281	21.610	0.740	26.000	0.058	1.030	0.025	26.000	0.001
L2	95.83 - 47.83 (2)	TP41.644x31.965x0.375	33.804	0.697	26.000	0.054	0.431	0.005	26.000	0.000
L3	47.83 - 30 (3)	TP44.139x39.771x0.438	37.451	0.608	26.000	0.048	0.324	0.003	26.000	0.000
L4	30 - 0 (4)	TP49.6x44.139x0.58	41.723	0.456	26.000	0.036	0.324	0.002	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 95.83 (1)	0.011	0.848	0.000	0.058	0.001	0.860 ✔	1.333	H1-3+VT ✔
L2	95.83 - 47.83 (2)	0.013	1.261	0.000	0.054	0.000	1.274 ✔	1.333	H1-3+VT ✔
L3	47.83 - 30 (3)	0.013	1.314	0.000	0.048	0.000	1.328 ✔	1.333	H1-3+VT ✔
L4	30 - 0 (4)	0.012	1.123	0.000	0.036	0.000	1.136 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 95.83	Pole	TP33.469x23.61x0.281	1	-12.599	1518.474	64.5	Pass
L2	95.83 - 47.83	Pole	TP41.644x31.965x0.375	2	-24.258	2520.130	95.6	Pass
L3	47.83 - 30	Pole	TP44.139x39.771x0.438	3	-31.964	3200.560	99.6	Pass
L4	30 - 0	Pole	TP49.6x44.139x0.58	4	-43.942	4759.396	85.2	Pass
							Summary	
						Pole (L3)	99.6	Pass
						Base Plate	94.1	Pass
						RATING =	**99.6**	**Pass**

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Subject: CAISSON FOUNDATION ANALYSIS

Location: Fairfield, CT

Rev. 0: 8/30/16

Prepared by: TJL Checked by: C.F.C.
Job No. 16071.42

Caisson Foundation:

Input Data:

Shear Force =	$S := 42k$	*USER INPUT-FROM RisaTower*
Overturning Moment =	$M := 3989ft \cdot k$	*USER INPUT-FROM RisaTower*
Applied Axial Load =	$A1 := 44k$	*USER INPUT-FROM RisaTower*
Bending Moment =	$Mu := 4112ft \cdot k$	*USER INPUT--FROM LPILE*
Moment Capacity =	$Mn := 9378ft \cdot k$	*USER INPUT--FROM LPILE*
Foundation Diameter =	$d := 6.6ft$	*USER INPUT*
Overall Length of Caisson =	$L_c := 26.5ft$	*USER INPUT*
Depth From Top of Caisson to Grade =	$L_{pag} := 1ft$	*USER INPUT*
Number of Rebar =	$n := 40$	*USER INPUT*
Area of Rebar =	$Ar := 1.56in^2$	*USER INPUT*
Rebar Yield Strength =	$fy := 60ksi$	*USER INPUT*
Concrete Comp Strength =	$f'c := 3.0ksi$	*USER INPUT*

Check Moment Capacity:

Factor of Safety = $FS := \frac{0.9Mn}{Mu} = 2.1$

Factor of Safety Required = $FS_{reqd} := 1.3$

$FOSCheck := if(FS \geq FS_{reqd}, "OK", "NO GOOD")$

FOSCheck = "OK"

LPILE Plus for Windows, Version 5.0 (5.0.47)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This program is licensed to:

TJL
Centek Engineering

Files Used for Analysis

Path to file locations: J:\Jobs\1607100.WI\42_Fairfield Greenfield Hill\04_Structural\Backup Documentation\Calcs\Foundation\
Name of input data file: Caisson Analysis.lpd
Name of output file: Caisson Analysis.lpo
Name of plot output file: Caisson Analysis.lpp
Name of runtime file: Caisson Analysis.lpr

Time and Date of Analysis

Date: August 30, 2016 Time: 10:48:31

Problem Title

16071.42 - CT2128

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 3:
- Computation of Nonlinear Bending Stiffness and Ultimate Bending Moment Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- Analysis includes computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:
- Number of pile increments = 100
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-04 in
- Maximum allowable deflection = 1.0000E+02 in

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 8

Pile Structural Properties and Geometry

Pile Length = 318.00 in

Depth of ground surface below top of pile = 12.00 in

Slope angle of ground surface = 0.00 deg.

Structural properties of pile defined using 2 points

Point No.	Point Depth in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	78.00000000	1816972.	4778.4000	3122018.
2	318.0000	78.00000000	1816972.	4778.4000	3122018.

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness

that the above values of moment of inertia and modulus of are not used for any computations other than total stress due to combined axial loading and bending.

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 12.000 in
Distance from top of pile to bottom of layer = 48.000 in
p-y subgrade modulus k for top of soil layer = 10.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 10.000 lbs/in**3

Layer 2 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 48.000 in
Distance from top of pile to bottom of layer = 114.000 in
p-y subgrade modulus k for top of soil layer = 90.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 90.000 lbs/in**3

Layer 3 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 114.000 in
Distance from top of pile to bottom of layer = 318.000 in
p-y subgrade modulus k for top of soil layer = 27.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 27.000 lbs/in**3

(Depth of lowest layer extends 0.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 6 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	12.00	0.05700
2	48.00	0.05700
3	48.00	0.06900
4	114.00	0.06900
5	114.00	0.06100
6	318.00	0.06100

Shear Strength of Soils

Shear strength parameters with depth defined using 6 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	12.000	0.00000	30.00	------	------
2	48.000	0.00000	30.00	------	------
3	48.000	0.00000	35.00	------	------
4	114.000	0.00000	35.00	------	------
5	114.000	0.00000	30.00	------	------
6	318.000	0.00000	30.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Case Number 1

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head = 42000.000 lbs
Bending moment at pile head = 47868000.000 in-lbs
Axial load at pile head = 44000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Load Case Number 2

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head = 13000.000 lbs
Bending moment at pile head = 14796000.000 in-lbs
Axial load at pile head = 44000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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Number of sections = 1

Pile Section No. 1

The sectional shape is a circular drilled shaft (bored pile).

Outside Diameter	=	78.0000 in

Material Properties:

Compressive Strength of Concrete	=	3.000 kip/in**2
Yield Stress of Reinforcement	=	60. kip/in**2
Modulus of Elasticity of Reinforcement	=	29000. kip/in**2
Number of Reinforcing Bars	=	40
Area of Single Bar	=	1.56000 in**2
Number of Rows of Reinforcing Bars	=	21
Area of Steel	=	62.400 in**2
Area of Shaft	=	4778.362 in**2
Percentage of Steel Reinforcement	=	1.306 percent
Cover Thickness (edge to bar center)	=	4.000 in

Unfactored Axial Squash Load Capacity = 15769.70 kip

Distribution and Area of Steel Reinforcement

Row	Area of	Distance to

Number	Reinforcement in**2	Centroidal Axis in
1	1.560	35.000
2	3.120	34.569
3	3.120	33.287
4	3.120	31.185
5	3.120	28.316
6	3.120	24.749
7	3.120	20.572
8	3.120	15.890
9	3.120	10.816
10	3.120	5.475
11	3.120	0.000
12	3.120	-5.475
13	3.120	-10.816
14	3.120	-15.890
15	3.120	-20.572
16	3.120	-24.749
17	3.120	-28.316
18	3.120	-31.185
19	3.120	-33.287
20	3.120	-34.569
21	1.560	-35.000

Axial Thrust Force = 44000.00 lbs

Bending Moment in-lbs	Bending Stiffness lb-in2	Bending Curvature rad/in	Maximum Strain in/in	Neutral Axis Position inches	Max. Concrete Stress psi	Max. Steel Stress psi
5671609.	6.805931E+12	8.333333E-07	0.00003525	42.29798439	108.13396	925.53462
11278189.	6.766913E+12	0.00000167	0.00006787	40.72204855	206.00102	1774.89901
16820316.	6.728126E+12	0.00000250	0.00010053	40.21376958	301.99249	2625.49829
22296606.	6.688982E+12	0.00000333	0.00013316	39.94675192	395.85287	3474.85269
22296606.	5.351185E+12	0.00000417	0.00010050	24.12084773	298.69647	6027.06423
22296606.	4.459321E+12	0.00000500	0.00011911	23.82194844	351.83587	7275.81748
22296606.	3.822275E+12	0.00000583	0.00013775	23.61385891	404.43178	

8523.65553					
22296606.	3.344491E+12	0.00000667	0.00015642	23.46256819	456.48168
9770.57015					
22296606.	2.972881E+12	0.00000750	0.00017537	23.38323721	508.70279
11009.14591					
22296606.	2.675593E+12	0.00000833	0.00019410	23.29158130	559.61073
12254.53452					
22296606.	2.432357E+12	0.00000917	0.00021285	23.22035381	609.97060
13498.92261					
22296606.	2.229661E+12	0.00001000	0.00023164	23.16448250	659.77969
14742.30007					
22790768.	2.103763E+12	0.00001083	0.00025047	23.12045494	709.03519
15984.65707					
24464552.	2.096962E+12	0.00001167	0.00026933	23.08576754	757.73441
17225.98198					
26135262.	2.090821E+12	0.00001250	0.00028823	23.05857459	805.87427
18466.26671					
27802879.	2.085216E+12	0.00001333	0.00030717	23.03750226	853.45200
19705.49913					
29467377.	2.080050E+12	0.00001417	0.00032614	23.02149752	900.46468
20943.66810					
31128726.	2.075248E+12	0.00001500	0.00034515	23.00973746	946.90918
22180.76420					
32786901.	2.070752E+12	0.00001583	0.00036419	23.00157818	992.78254
23416.77535					
34441875.	2.066512E+12	0.00001667	0.00038328	22.99650362	1038.08169
24651.68992					
36093620.	2.062493E+12	0.00001750	0.00040240	22.99409536	1082.80348
25885.49661					
37742108.	2.058660E+12	0.00001833	0.00042156	22.99401167	1126.94470
27118.18380					
39387309.	2.054990E+12	0.00001917	0.00044076	22.99597129	1170.50213
28349.73929					
41029193.	2.051460E+12	0.00002000	0.00045999	22.99973944	1213.47247
29580.15113					
42667734.	2.048051E+12	0.00002083	0.00047927	23.00512084	1255.85243
30809.40616					
44302896.	2.044749E+12	0.00002167	0.00049859	23.01194814	1297.63854
32037.49259					
45934653.	2.041540E+12	0.00002250	0.00051795	23.02008185	1338.82744
33264.39659					
47562975.	2.038413E+12	0.00002333	0.00053735	23.02940342	1379.41571
34490.10369					
49187819.	2.035358E+12	0.00002417	0.00055680	23.03980359	1419.39949
35714.60431					
50809168.	2.032367E+12	0.00002500	0.00057628	23.05120102	1458.77556
36937.87926					
52426977.	2.029431E+12	0.00002583	0.00059581	23.06351200	1497.53993
38159.91893					

54041215.	2.026546E+12	0.00002667	0.00061538	23.07667145	1535.68896
39380.70741					
55651848.	2.023704E+12	0.00002750	0.00063499	23.09062126	1573.21889
40600.22954					
57258839.	2.020900E+12	0.00002833	0.00065465	23.10530797	1610.12573
41818.47195					
58862157.	2.018131E+12	0.00002917	0.00067435	23.12068972	1646.40573
43035.41661					
60461761.	2.015392E+12	0.00003000	0.00069410	23.13672468	1682.05477
44251.04953					
62057616.	2.012679E+12	0.00003083	0.00071390	23.15337798	1717.06879
45465.35452					
63649678.	2.009990E+12	0.00003167	0.00073374	23.17061707	1751.44355
46678.31665					
65237914.	2.007320E+12	0.00003250	0.00075362	23.18841639	1785.17493
47889.91755					
68402746.	2.002032E+12	0.00003417	0.00079354	23.22560039	1850.69022
50308.96761					
71551773.	1.996794E+12	0.00003583	0.00083365	23.26476261	1913.57902
52722.36752					
74684666.	1.991591E+12	0.00003750	0.00087397	23.30577984	1973.80487
55129.96442					
77801052.	1.986410E+12	0.00003917	0.00091448	23.34854516	2031.32918
57531.61078					
80900567.	1.981238E+12	0.00004083	0.00095521	23.39298418	2086.11240
59927.14123					
83472928.	1.964069E+12	0.00004250	0.00099377	23.38280252	2135.08247
60000.00000					
85599826.	1.938109E+12	0.00004417	0.00103042	23.33034602	2179.04155
60000.00000					
87359822.	1.906032E+12	0.00004583	0.00106542	23.24547789	2218.65749
60000.00000					
88990574.	1.873486E+12	0.00004750	0.00109989	23.15565839	2255.48271
60000.00000					
90402656.	1.838698E+12	0.00004917	0.00113334	23.05106387	2289.10690
60000.00000					
91788236.	1.805670E+12	0.00005083	0.00116680	22.95351747	2320.70273
60000.00000					
92891535.	1.769363E+12	0.00005250	0.00119872	22.83278802	2348.89818
60000.00000					
93988620.	1.735175E+12	0.00005417	0.00123075	22.72150335	2375.33454
60000.00000					
95079397.	1.702915E+12	0.00005583	0.00126289	22.61885217	2399.99358
60000.00000					
95934310.	1.668423E+12	0.00005750	0.00129357	22.49680004	2421.74953
60000.00000					
96762584.	1.635424E+12	0.00005917	0.00132420	22.38081971	2441.77097
60000.00000					
97585613.	1.604147E+12	0.00006083	0.00135493	22.27283826	2460.15338

60000.00000					
98403314.	1.574453E+12	0.00006250	0.00138576	22.17223969	2476.88025
60000.00000					
99263122.	1.546958E+12	0.00006417	0.00141808	22.10000101	2492.58936
60000.00000					
99734738.	1.514958E+12	0.00006583	0.00144816	21.99739400	2505.47366
60000.00000					
1.003254E+08	1.486302E+12	0.00006750	0.00147710	21.88299438	2516.31220
60000.00000					
1.009119E+08	1.458967E+12	0.00006917	0.00150614	21.77546391	2525.67037
60000.00000					
1.014941E+08	1.432858E+12	0.00007083	0.00153527	21.67433766	2533.53324
60000.00000					
1.020720E+08	1.407890E+12	0.00007250	0.00156449	21.57919720	2539.88555
60000.00000					
1.025497E+08	1.382693E+12	0.00007417	0.00159282	21.47623685	2544.56787
60000.00000					
1.029582E+08	1.357690E+12	0.00007583	0.00162056	21.36998489	2547.75136
60000.00000					
1.033631E+08	1.333717E+12	0.00007750	0.00164838	21.26942351	2549.55689
60000.00000					
1.037637E+08	1.310700E+12	0.00007917	0.00167629	21.17420635	2549.03904
60000.00000					
1.041588E+08	1.288562E+12	0.00008083	0.00170429	21.08401957	2544.86234
60000.00000					
1.045511E+08	1.267286E+12	0.00008250	0.00173238	20.99857262	2547.77391
60000.00000					
1.049407E+08	1.246820E+12	0.00008417	0.00176057	20.91760513	2549.48952
60000.00000					
1.053273E+08	1.227114E+12	0.00008583	0.00178885	20.84091720	2549.62886
60000.00000					
1.055803E+08	1.206632E+12	0.00008750	0.00182000	20.79999992	2544.73421
60000.00000					
1.060158E+08	1.188962E+12	0.00008917	0.00184946	20.74157390	2546.53561
60000.00000					
1.062692E+08	1.169936E+12	0.00009083	0.00187576	20.65059909	2548.53620
60000.00000					
1.065210E+08	1.151578E+12	0.00009250	0.00190214	20.56368300	2549.69065
60000.00000					
1.067710E+08	1.133851E+12	0.00009417	0.00192860	20.48072335	2549.43778
60000.00000					
1.070180E+08	1.116709E+12	0.00009583	0.00195518	20.40188983	2545.72565
60000.00000					
1.072638E+08	1.100141E+12	0.00009750	0.00198182	20.32637581	2543.59522
60000.00000					
1.075084E+08	1.084118E+12	0.00009917	0.00200852	20.25402090	2546.25745
60000.00000					
1.079939E+08	1.053599E+12	0.00010250	0.00206212	20.11820725	2549.45790
60000.00000					

1.084730E+08	1.024942E+12	0.00010583	0.00211602	19.99384680	2547.34798
60000.00000					
1.089068E+08	9.976198E+11	0.00010917	0.00216945	19.87286165	2542.37954
60000.00000					
1.092152E+08	9.708014E+11	0.00011250	0.00222069	19.73949346	2546.86437
60000.00000					
1.095209E+08	9.455045E+11	0.00011583	0.00227211	19.61533526	2549.39866
60000.00000					
1.095209E+08	9.190568E+11	0.00011917	0.00232375	19.49999884	2548.72474
60000.00000					
1.101868E+08	8.994841E+11	0.00012250	0.00238525	19.47142741	2541.35765
60000.00000					
1.104724E+08	8.779268E+11	0.00012583	0.00243579	19.35725793	2543.25677
60000.00000					
1.107567E+08	8.574710E+11	0.00012917	0.00248646	19.25000176	2546.90278
60000.00000					
1.110394E+08	8.380332E+11	0.00013250	0.00253726	19.14914981	2549.15575
60000.00000					
1.113206E+08	8.195384E+11	0.00013583	0.00258820	19.05425110	2549.99466
60000.00000					
1.115912E+08	8.018528E+11	0.00013917	0.00263976	18.96835783	2545.55047
60000.00000					
1.118202E+08	7.847031E+11	0.00014250	0.00269117	18.88542143	2540.71344
60000.00000					
1.119503E+08	7.676591E+11	0.00014583	0.00274177	18.80069974	2538.26009
60000.00000					
1.120704E+08	7.513098E+11	0.00014917	0.00279301	18.72410014	2542.67351
60000.00000					
1.121896E+08	7.356693E+11	0.00015250	0.00284437	18.65157786	2546.06503
60000.00000					
1.123079E+08	7.206922E+11	0.00015583	0.00289583	18.58288416	2548.41978
60000.00000					
1.124252E+08	7.063366E+11	0.00015917	0.00294741	18.51778892	2549.72243
60000.00000					
1.125394E+08	6.925502E+11	0.00016250	0.00299928	18.45710573	2548.80721
60000.00000					
1.126217E+08	6.791260E+11	0.00016583	0.00305338	18.41233662	2544.25842
60000.00000					
1.127033E+08	6.662265E+11	0.00016917	0.00310758	18.36994556	2539.69142
60000.00000					
1.127841E+08	6.538211E+11	0.00017250	0.00316189	18.32980236	2535.10597
60000.00000					
1.128642E+08	6.418816E+11	0.00017583	0.00321631	18.29179314	2536.59239
60000.00000					
1.129434E+08	6.303820E+11	0.00017917	0.00327083	18.25580862	2541.15055
60000.00000					
1.130219E+08	6.192980E+11	0.00018250	0.00332547	18.22175118	2544.78116
60000.00000					
1.131580E+08	6.089218E+11	0.00018583	0.00338217	18.20000008	2547.65936

60000.00000
1.134064E+08 5.995052E+11 0.00018917 0.00344283 18.20000008 2549.57550
60000.00000
1.136443E+08 5.903599E+11 0.00019250 0.00350350 18.20000008 2548.72471
60000.00000
1.138690E+08 5.814588E+11 0.00019583 0.00356417 18.20000008 2543.78409
60000.00000
1.140886E+08 5.728299E+11 0.00019917 0.00362483 18.20000008 2538.84346
60000.00000
1.140886E+08 5.634006E+11 0.00020250 0.00368480 18.19653413 2534.02595
60000.00000
1.140886E+08 5.542767E+11 0.00020583 0.00374265 18.18290046 2529.57959
60000.00000
1.140886E+08 5.454436E+11 0.00020917 0.00379781 18.15686515 2532.84163
60000.00000
1.140886E+08 5.368877E+11 0.00021250 0.00385194 18.12677810 2537.01904
60000.00000

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 112540.50458 in-kip

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Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 42000.000 lbs
Specified moment at pile head = 47868000.000 in-lbs
Specified axial load at pile head = 44000.000 lbs

Depth X	Deflect. y	Moment M	Shear V	Slope S	Total Stress	Flx. Rig. EI	Soil Res. Es*h p
							F/L
in	in	lbs-in	lbs	Rad.	lbs/in**2	lbs-in**2	lbs/in
0.000	2.028	4.79E+07	42000.	-0.011970	1036.660	2.04E+12	0.000
0.000							
25.440	1.731	4.89E+07	40376.	-0.011365	1059.721	2.04E+12	-232.653
427.392							
50.880	1.450	4.99E+07	28627.	-0.010747	1079.585	2.03E+12	-1399.986
3070.824							
76.320	1.184	5.00E+07	-23386.	-0.010121	1082.804	2.03E+12	-2683.732
7206.078							

101.760	0.934741	4.84E+07	-1.07E+05	-0.009503	1048.901	2.04E+12	-3826.926
13019.							
127.200	0.700492	4.46E+07	-1.86E+05	-0.008921	966.443	2.04E+12	-2342.177
10633.							
152.640	0.480323	3.92E+07	-2.41E+05	-0.008400	849.601	2.06E+12	-1935.940
12817.							
178.080	0.272449	3.25E+07	-2.82E+05	-0.007957	706.131	2.07E+12	-1285.246
15001.							
203.520	0.074699	2.50E+07	-3.04E+05	-0.007606	545.060	2.10E+12	-403.692
17186.							
228.960	-0.116678	1.72E+07	-3.01E+05	-0.007480	378.637	6.72E+12	710.699
19370.							
254.400	-0.306266	9.93E+06	-2.66E+05	-0.007429	222.371	6.77E+12	2075.874
21554.							
279.840	-0.494894	4.01E+06	-1.93E+05	-0.007404	95.230	6.81E+12	3694.328
23738.							
305.280	-0.683121	4.89E+05	-75904.	-0.007396	19.700	6.81E+12	5568.650
25923.							

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	2.02789291	in
Computed slope at pile head	=	-0.01196952	
Maximum bending moment	=	50120832.	lbs-in
Maximum shear force	=	-306385.08079	lbs
Depth of maximum bending moment	=	66.78000000	in
Depth of maximum shear force	=	213.06000	in
Number of iterations	=	21	
Number of zero deflection points	=	1	

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 2

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 13000.000 lbs
Specified moment at pile head = 14796000.000 in-lbs
Specified axial load at pile head = 44000.000 lbs

Depth X	Deflect. y	Moment M	Shear V	Slope S	Total Stress	Flx. Rig. EI	Soil Res. Es*h p
in	in	lbs-in	lbs	Rad.	lbs/in**2	lbs-in**2	lbs/in F/L
0.000	0.373013	1.48E+07	13000.	-0.002086	326.794	6.74E+12	0.000 0.000
25.440	0.320649	1.51E+07	12700.	-0.002030	333.913	6.74E+12	-43.095 427.392
50.880	0.269739	1.54E+07	9615.875	-0.001972	340.441	6.74E+12	-827.025 9749.945
76.320	0.220308	1.54E+07	-16371.	-0.001914	339.065	6.74E+12	-1179.888 17031.
101.760	0.172348	1.46E+07	-48579.	-0.001857	321.541	6.74E+12	-1317.641 24312.
127.200	0.125779	1.30E+07	-69493.	-0.001805	287.805	6.75E+12	-420.556 10633.
152.640	0.080452	1.11E+07	-79089.	-0.001760	247.166	6.77E+12	-324.260 12817.
178.080	0.036183	8.99E+06	-85502.	-0.001722	202.087	6.78E+12	-170.689 15001.
203.520	-0.007228	6.78E+06	-87293.	-0.001692	154.700	6.79E+12	39.064 17186.
228.960	-0.049994	4.60E+06	-83039.	-0.001671	107.918	6.81E+12	304.517 19370.
254.400	-0.092320	2.62E+06	-71323.	-0.001658	65.430	6.81E+12	625.745 21554.
279.840	-0.134394	1.05E+06	-50720.	-0.001651	31.698	6.81E+12	1003.237 23738.
305.280	-0.176363	1.29E+05	-19791.	-0.001649	11.968	6.81E+12	1437.674 25923.

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection	=	0.37301266 in
Computed slope at pile head	=	-0.00208645
Maximum bending moment	=	15484522. lbs-in
Maximum shear force	=	-87370.88607 lbs
Depth of maximum bending moment	=	60.42000000 in
Depth of maximum shear force	=	200.34000 in
Number of iterations	=	5
Number of zero deflection points	=	1

Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

Type 1 = Shear and Moment,
Type 2 = Shear and Slope,
Type 3 = Shear and Rot. Stiffness,
Type 4 = Deflection and Moment,
Type 5 = Deflection and Slope,

y = pile-head displacment in
M = Pile-head Moment lbs-in
V = Pile-head Shear Force lbs
S = Pile-head Slope, radians
R = Rot. Stiffness of Pile-head in-lbs/rad

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
1	V= 42000.	M= 4.79E+07	44000.0000	2.0279	5.0121E+07	-306385.
1	V= 13000.	M= 1.48E+07	44000.0000	0.3730127	1.5485E+07	-87370.8861

Computed Pile-head Stiffness Matrix Members
K22, K23, K32, K33 for Superstructure

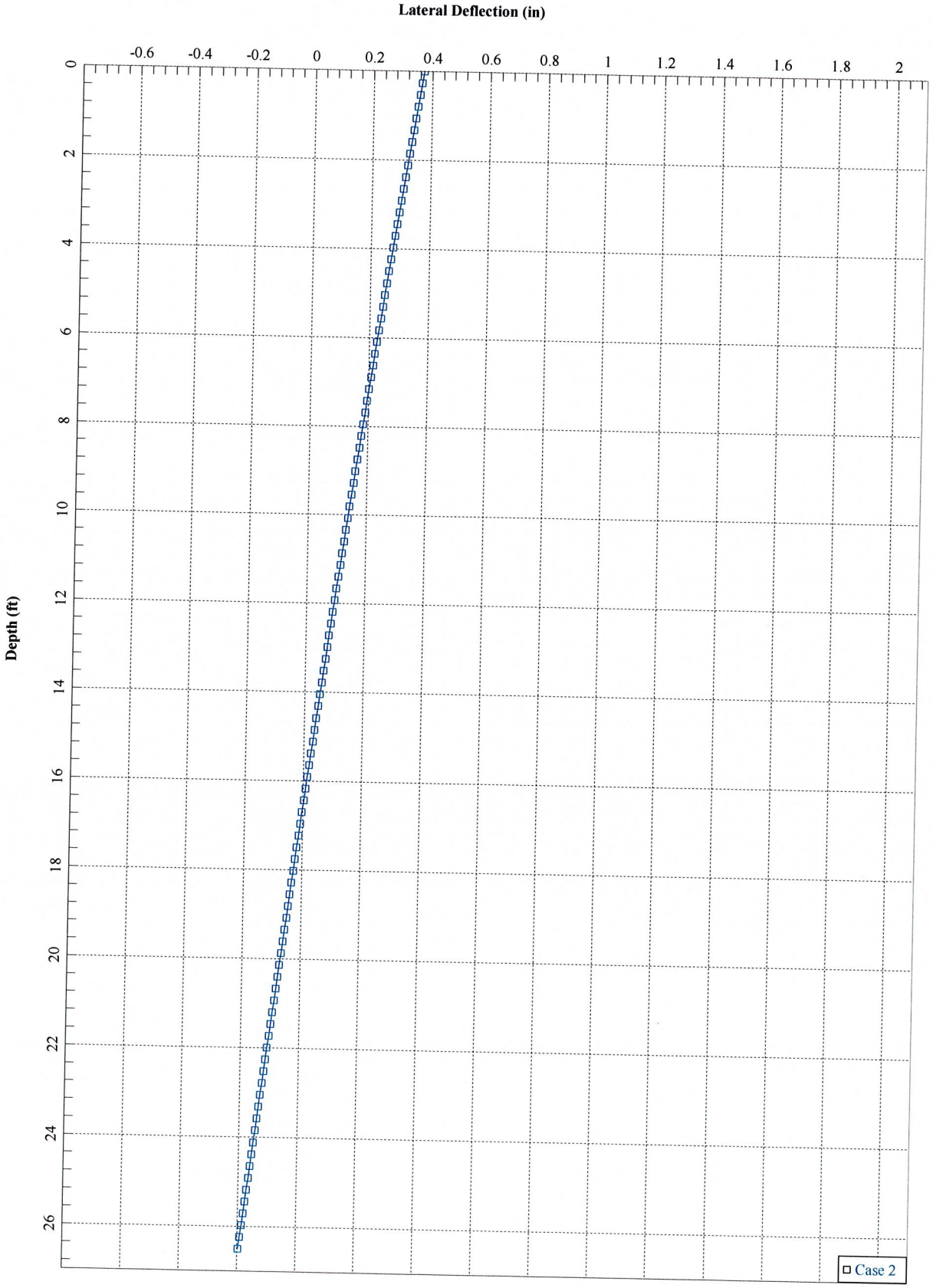
Top y in	Shear React. lbs	Mom. React. in-lbs	K22 lbs/in	K32 in-lbs/in
0.00410508	4200.00006	725989.75631	1023123.	1.768516E+08
0.01235752	12643.25982	2185447.	1023123.	1.768516E+08
0.01958620	20039.09270	3463851.	1023123.	1.768516E+08
0.02471503	25286.51964	4370894.	1023123.	1.768516E+08
0.02869327	29356.74018	5074451.	1023123.	1.768516E+08

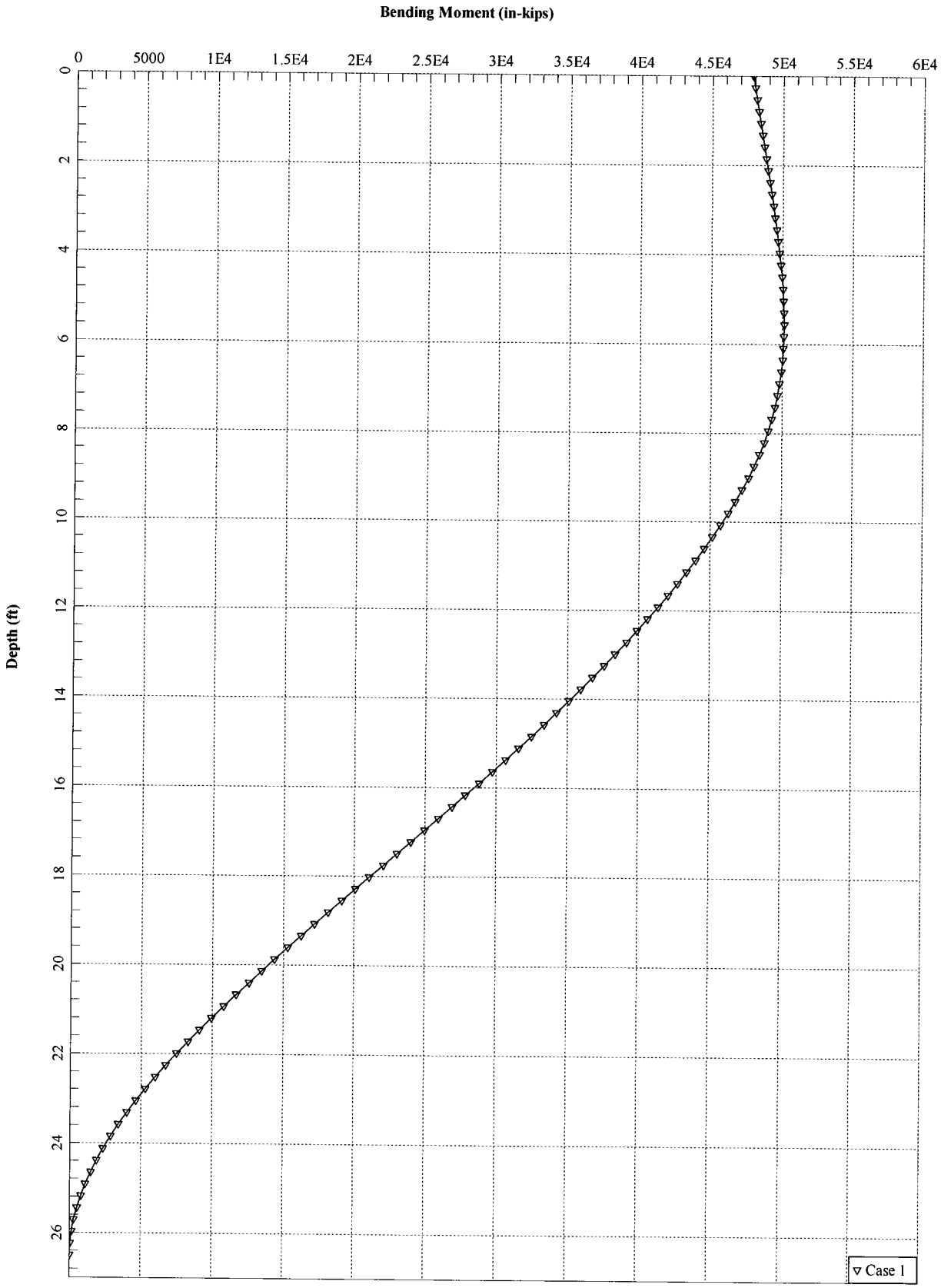
0.03194372	32682.35252	5649298.	1023123.	1.768516E+08
0.03469286	35494.11768	6135280.	1023096.	1.768456E+08
0.03707551	37929.77945	6556194.	1023041.	1.768335E+08
0.03917790	40078.18540	6927426.	1022979.	1.768197E+08
0.04105904	42000.00000	7259476.	1022917.	1.768058E+08

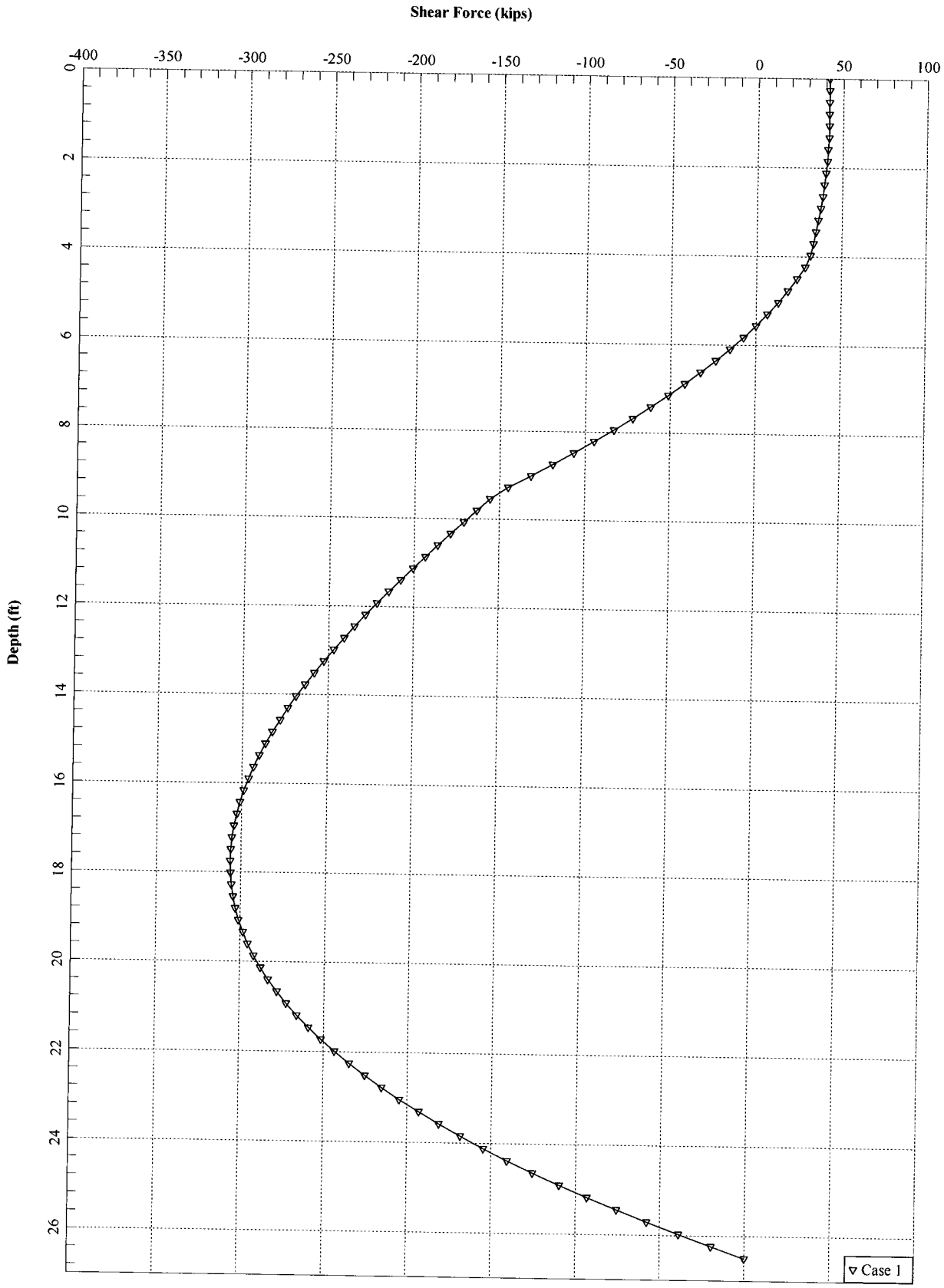
Top Rota. rad	Shear React. lbs	Mom. React. in-lbs	K23 lbs/rad	K33 in-lbs/rad
0.00012353	21846.36785	4786800.	1.768516E+08	3.875030E+10
0.00037278	65773.60589	14409704.	1.764398E+08	3.865450E+10
0.00059320	104270.04511	22838840.	1.757767E+08	3.850133E+10
0.00108054	133229.68904	28819408.	1.232992E+08	2.667131E+10
0.00140527	156978.75645	33458296.	1.117073E+08	2.380918E+10
0.00164047	176425.28223	37248544.	1.075454E+08	2.270599E+10
0.00183931	193108.26864	40453153.	1.049895E+08	2.199365E+10
0.00200008	207349.54639	43229111.	1.036707E+08	2.161370E+10
0.00214211	219970.05671	45677680.	1.026887E+08	2.132372E+10
0.00227051	231341.85862	47868000.	1.018899E+08	2.108250E+10

K22 = abs(Shear Reaction/Top y)
K23 = abs(Shear Reaction/Top Rotation)
K32 = abs(Moment Reaction/Top y)
K33 = abs(Moment Reaction/Top Rotation)

The analysis ended normally.


Lateral Deflection (in)
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 2


Bending Moment (in-kips)
0
5000
1E4
1.5E4
2E4
2.5E4
3E4
3.5E4
4E4
4.5E4
5E4
5.5E4
6E4
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
▽ Case 1


Shear Force (kips)
-400
-350
-300
-250
-200
-150
-100
-50
0
50
100
Depth (ft)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 1

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CTU2128	DATE:	06/16/2016	RF DESIGN ENG:	Omair Mohammed	RF PERF ENG:	
ISSUE:	Bronze Standard	Approved? (Y/N):	Yes	RF DESIGN PHONE:	860-721-4315	RF PERF PHONE:	
REVISION:	Final	RF MANAGER:	Deepak Rathore	RF DESIGN EMAIL:	OM636A@US.ATT.COM	RF PERF EMAIL:	
INITIATIVE /PROJECT:	LTE 2C 1900 w/ Bronze Standard					TRIDENT:	
						GSM FREQUENCY:	850
						UMTS FREQUENCY:	850, 1900
						LTE FREQUENCY:	700, 1900
						I-PLAN JOB # 1:	NER-RCTB-12-04514
						I-PLAN JOB # 2:	
						I-PLAN JOB # 3:	
						I-PLAN JOB # 4:	

RFDS PROGRAM TYPE:	2017 LTE Next Carrier
RFDS TECHNOLOGY:	LTE 2C
State:	Final
Status:	Approved
RFDS ID:	1279762
RFDS Version:	1.00
Created By:	om636a
Date Created:	6/16/2016 9:20:36 AM
Date Updated:	8/9/2016 2:01:01 PM
Updated By:	mm093q
IPLAN PRD GRP || SUB GRP #1:	LTE Next Carrier || LTE 2C
IPLAN PRD GRP || SUB GRP #2:	
IPLAN PRD GRP || SUB GRP #3:	
IPLAN PRD GRP || SUB GRP #4:	

Section 2 - LOCATION INFORMATION

USID:	5787	FA LOCATION CODE:	10035251	LOCATION NAME:	FAIRFIELD GREENFIELD HILL	ORACLE PTN # 1:	2051A06UYB
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CONNECTICUT	ORACLE PTN # 2:	
ADDRESS:	3965 CONGRESS STREET	CITY:	FAIRFIELD	STATE:	CT	ORACLE PTN # 3:	
ZIP CODE:	06824	COUNTY:	FAIRFIELD	MSA / RSA:		ORACLE PTN # 4:	
LATITUDE (D-M-S):	41d 11m 18.17196s	LONGITUDE (D-M-S):	-73d -17m-56.598s	LAT (DEC. DEG.):	41.1883811	SEARCH RING NAME:	
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	UPDATED 4/04 CT-083 FAIRFIELD-GREENFIELD HILL TAKE RT. 17 NORTH TO GARDEN STATE PARKWAY NORTH TO I-87 SOUTH. GO ACROSS TAPPAN ZEE BRIDGE. FOLLOW SIGNS TO I-287 EAST; ONCE ON I-287 YOU WILL GET OFF EXIT 9N FOR THE HUTCHINSON AND MERRITT PARKWAY YOU NEED TO					SEARCH RING ID:	
						BTA:	
						LONG (DEC. DEG.):	-73.2990550
						BORDER CELL WITH CONTOUR COORD:	
						AM STUDY REQ'D (Y/N):	No
						FREQ COORD:	

PACE JOB # 1:	MRCTB019231
PACE JOB # 2:	
PACE JOB # 3:	
PACE JOB # 4:	
CASPR INITIATIVE # 1:	
CASPR INITIATIVE # 2:	
CASPR INITIATIVE # 3:	
CASPR INITIATIVE # 4:	

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED (Yes/No):	No	CGSA LOSS:		PCS REDUCED - UPS ZIP:	
CGSA - MINOR FILING NEEDED (Yes/No):	No	CGSA EXT AGMT NEEDED:		PCS POPS REDUCED:	
CGSA - MAJOR FILING NEEDED (Yes/No):	Yes	CGSA SCORECARD UPDATED:		CGSA CALL SIGNS:	z_KNLB312,z_KNLB312,z_KNLB312

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	Yes	GROUND ELEVATION (ft):		STRUCTURE TYPE:	MONOPOLE	MARKET LOCATION 700 MHz Band:	
ADDITIONAL REGULATORY?:	Yes	HEIGHT OVERALL (ft):	90.00	FCC ASR NUMBER:	NR	MARKET LOCATION 850 MHz Band:	
SUB-LEASE RIGHTS?:	Yes	STRUCTURE HEIGHT (ft):	90.00			MARKET LOCATION 1900 MHz Band:	
LIGHTING TYPE:	NOT REQUIRED					MARKET LOCATION AWS Band:	
						MARKET LOCATION WCS Band:	
						MARKET LOCATION Future Band:	

Section 5 - E-911 INFORMATION - existing

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911	FAIRFIELD EMERGENCY COMMUNICATIONS CENTER	1340		INTRADO_MIAMI		0		
SECTOR B		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR C		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 5 - E-911 INFORMATION - final

		PSAP NAME:	PSAP ID:	E911 PHASE:	MPC SVC PROVIDER:	LMU REQUIRED:	ESRN:	DATE LIVE PH1:	DATE LIVE PH2:
SECTOR A	E-911	FAIRFIELD EMERGENCY COMMUNICATIONS CENTER	1340		INTRADO_MIAMI		0		
SECTOR B		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR C		CONNECTICUT STATE POLICE-G TROOP	1319		INTRADO_MIAMI		0		
SECTOR D									
SECTOR E									
SECTOR F									
OMNI									

Section 6 - RBS GENERAL INFORMATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
RBS ID:	128722	172438	222852	409056	362938							
CTS COMMON ID:	321D2128	CTU2128	CTV2128	CTU6128	CTL02128							
CELL ID / BCF:	042G2128	CTU2128	CTU2128	CTU6128	CTL02128							
BTA/TID:	042G	321V	321U	321W	321L							
4-DIGIT SITE ID:	2128	2128	9128	6128	02128							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	GROUND	INTERNAL	INTERNAL	GROUND	INTERNAL							
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	CT-SOUTH	CT-SOUTH	CT-SOUTH	CT-SOUTH	CT-SOUTH							
RF DISTRICT:	NPO TRIAGE	NPO TRIAGE	BRIDGEPORT	NPO Triage	NPO TRIAGE							
OPS ZONE:	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS							
RF ZONE:	HOTSEAT	HOTSEAT	BBP02	Hotseat	HOTSEAT							
BASE STATION TYPE:	BASE	BASE	OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	CT2128 2ND NODE	FAIRFIELD GREENFIELD HILL							
DISASTER PRIORITY:	0	2	0	0	3							

Section 6 - RBS GENERAL INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
RBS ID:	128722	172438	222852	409056	362938							
CTS COMMON ID:	321D2128	CTU2128	CTV2128	CTU6128	CTL02128							
CELL ID / BCF:	042G2128	CTU2128	CTU2128	CTU6128	CTL02128							
BTA/TID:	042G	321V	321U	321W	321L							
4-DIGIT SITE ID:	2128	2128	9128	6128	02128							
COW OR TOY?:	No	No	No	No	No							
CELL SITE TYPE:	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED	SECTORIZED							
SITE TYPE:	BTS-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL	MACRO-CONVENTIONAL							
BTS LOCATION ID:	GROUND	INTERNAL	INTERNAL	GROUND	INTERNAL							
ORIGINATING CO:	CINGULAR	CINGULAR	CINGULAR	CINGULAR	CINGULAR							
CELLULAR NETWORK:	GOLD	GOLD	GOLD	GOLD	GOLD							
OPS DISTRICT:	CT-South	CT-South	CT-South	CT-South	CT-South							
RF DISTRICT:	NPO Triage	NPO Triage	Bridgeport	NPO Triage	NPO Triage							
OPS ZONE:	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS	NE_CT_S_FRFD_CTL_CS							
RF ZONE:	Hotseat	Hotseat	BBP02	Hotseat	Hotseat							
BASE STATION TYPE:	BASE	BASE	OVERLAY	OVERLAY	BASE							
EQUIPMENT NAME:	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	FAIRFIELD GREENFIELD HILL	CT2128 2ND NODE	FAIRFIELD GREENFIELD HILL							
DISASTER PRIORITY:	0	2	0	0	3							

Section 7 - RBS SPECIFIC INFORMATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:	BRIDGEPORT BSC 02	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820	FF01							
LAC:	05011	05989	05989	05989								
RAC:												
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	3206 INDOOR	3206 INDOOR	6601 MAIN UNIT UMTS	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:	0	0	0	0	2128							
PARENT NAME:	BRIDGEPORT BSC 02	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820	FF01							

Section 7 - RBS SPECIFIC INFORMATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS							
MSC:												
BSC/RNC/MME POOL ID:	BRPTCTBSC02	BRPTCT04CRBR06	BRPTCT04CRBR06	BRPTCT04CRBR06	FF01							
LAC:	05011	05989	05989	05989								
RAC:												
EQUIPMENT VENDOR:	NOKIA	ERICSSON	ERICSSON	ERICSSON	ERICSSON							
EQUIPMENT TYPE:	ULTRASITE	3206 INDOOR	3206 INDOOR	6601 MAIN UNIT UMTS	6601 INDOOR MU							
BASEBAND CONFIGURATION:												
LOCATION:												
CABINET LOCATION:												
MARKET STATE CODE:					CT							
AGPS:	Yes	Yes	Yes	Yes	Yes							
NODE B NUMBER:	0	0	0	0	2128							
PARENT NAME:	BRIDGEPORT BSC 02	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820	BRIDGEPORT RNC06 ERICSSON 3820								

Section 8 - RBS/SECTOR ASSOCIATION - existing

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS
CTS Common ID	321D2128	CTU2128	CTV2128	CTU6128	CTL02128
Soft Sector IDs	321G21281	CTU21287	CTV21281	CTV6128A	CTL02128_7A_1
	321G21282	CTU21288	CTV21282	CTV6128B	CTL02128_7B_1
	321G21283	CTU21289	CTV21283	CTV6128C	CTL02128_7C_1

Section 8 - RBS/SECTOR ASSOCIATION - final

	GSM 1ST RBS	UMTS 1ST RBS	UMTS 2ND RBS	UMTS 3RD RBS	LTE 1ST RBS
CTS Common ID	321D2128	CTU2128	CTV2128	CTU6128	CTL02128
Soft Sector IDs	321G21281	CTU21287	CTV21281	CTV6128A	CTL02128_7A_1
	321G21282	CTU21288	CTV21282	CTV6128B	CTL02128_7B_1
	321G21283	CTU21289	CTV21283	CTV6128C	CTL02128_7C_1
					CTL02128_9A_1
					CTL02128_9B_1
					CTL02128_9C_1

Section 9 - SOFT SECTOR ID - existing

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)	5787.850.25G.1	5787.850.3G.1	5787.1900.3G.1	5787.850.3G.2		
SECTOR A SOFT SECTOR ID	321G21281	CTV21281	CTU21287	CTV6128A	CTL02128_7A_1	
SECTOR B	321G21282	CTV21282	CTU21288	CTV6128B	CTL02128_7B_1	
SECTOR C	321G21283	CTV21283	CTU21289	CTV6128C	CTL02128_7C_1	
SECTOR D						
SECTOR E						
SECTOR F						
OMNI						

Section 9 - SOFT SECTOR ID - final

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)	5787.850.25G.1	5787.850.3G.1	5787.1900.3G.1	5787.850.3G.2		
SECTOR A SOFT SECTOR ID	321G21281	CTV21281	CTU21287	CTV6128A	CTL02128_7A_1	CTL02128_9A_1
SECTOR B	321G21282	CTV21282	CTU21288	CTV6128B	CTL02128_7B_1	CTL02128_9B_1
SECTOR C	321G21283	CTV21283	CTU21289	CTV6128C	CTL02128_7C_1	CTL02128_9C_1
SECTOR D						
SECTOR E						
SECTOR F						
OMNI						

Section 9 - Cell Number - existing

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)	5787.850.25G.1	5787.850.3G.1	5787.1900.3G.1	5787.850.3G.2		
SECTOR A CELL NUMBER	0	0	0	0	15	
SECTOR B	0	0	0	0	16	
SECTOR C	0	0	0	0	17	
SECTOR D						
SECTOR E						
SECTOR F						
OMNI						

Section 9 - Cell Number - final

	GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
USEID (excluding Hard Sector)	5787.850.25G.1	5787.850.3G.1	5787.1900.3G.1	5787.850.3G.2		
SECTOR A CELL NUMBER	0	0	0	0	15	8
SECTOR B	0	0	0	0	16	9
SECTOR C	0	0	0	0	17	10
SECTOR D						
SECTOR E						
SECTOR F						
OMNI						

Section 10 - CID/SAC - existing

		GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
SECTOR A	CID/SAC	21281	21281	21287	61281		
SECTOR B		21282	21282	21288	61282		
SECTOR C		21283	21283	21289	61283		
SECTOR D							
SECTOR E							
SECTOR F							
OMNI							

Section 10 - CID/SAC - final

		GSM 1ST 850	UMTS 1ST 850	UMTS 1ST 1900	UMTS 2ND 850	LTE 1ST 700	LTE 1ST 1900
SECTOR A	CID/SAC	21281	21281	21287	61281		
SECTOR B		21282	21282	21288	61282		
SECTOR C		21283	21283	21289	61283		
SECTOR D							
SECTOR E							
SECTOR F							
OMNI							

Section 15A - CURRENT SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770		P65-16-XLH-RR	7770			
ANTENNA VENDOR	Powerwave		Powerwave	Powerwave			
ANTENNA SIZE (H x W x D)	55X11X5		72X12X6	55X11X5			
ANTENNA WEIGHT	35		64	35			
AZIMUTH	143		30	143			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	128.03		128.03	128.03			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0		0	0			
FEEDER AMOUNT	2			2			
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein 860-10025		Internal	2 Kathrein 860-10025			
SURGE ARRESTOR (QTY/MODEL)			1 DC/Fiber Squid				
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901			2 Powerwave / LGP 21901			
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)			LTE RRH	1 Kathrein / 860-10006			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave LGP 21401 (DB - 850 Bypass)			2 Powerwave LGP 21401 (DB - 850 Bypass)			
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860			2 Polyphaser 1000860			
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)			1 LGP 12104 (1900 AND 850 Bypass TMA)			
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)			1 RRUS-11				
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1							
Local Market Note 2							
Local Market Note 3							

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	5787.A.850.3G.1	5787.A.850.3G.1	CTV21281	CTV21281		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685	NO			NO					
	PORT 2	5787.A.850.3G.1	5787.A.850.3G.1	CTV6128A	CTV6128A		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685									
	PORT 3	5787.A.1900.3G.1	5787.A.1900.3G.1	CTU21287	CTU21287		UMTS 1900	7770.00.1900.03	15.5		3	None	Commscope 1-1/4 (1900)	155.039685	NO			NO					
ANTENNA POSITION 3	PORT 1	5787.A.700.4G.1	5787.A.700.4G.1	CTL02128_7A_1	CTL02128_7A_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	TOP	FIBER	0	NO								
ANTENNA POSITION 4	PORT 1	5787.A.850.25G.1	5787.A.850.25G.1	321G21281	321G21281		GSM 850	7770.00.850.07	13.5		7	None	1-1/4 at 850 MHz	155.039685	NO			NO	11.22	131.21			

Section 15B - CURRENT SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770				P65-16-XLH-RR		7770							
ANTENNA VENDOR	Powerwave				Powerwave		Powerwave							
ANTENNA SIZE (H x W x D)	55X11X5				72X12X6		55X11X5							
ANTENNA WEIGHT	35				64		35							
AZIMUTH	263				150		263							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03				128.03		128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0		0							
FEEDER AMOUNT	2						2							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025				Internal	2	Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)					2	Powerwave LGP 21401 (DB - 850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860					2	Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	5787.B.850.3G.1	5787.B.850.3G.1	CTV21282	CTV21282		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685	NO			NO					
	PORT 2	5787.B.850.3G.1	5787.B.850.3G.1	CTV6128B	CTV6128B		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685									
	PORT 3	5787.B.1900.3G.1	5787.B.1900.3G.1	CTU21288	CTU21288		UMTS 1900	7770.00.1900.06	15.5		6	None	Commscope 1-1/4 (1900)	155.039685	NO			NO					
ANTENNA POSITION 3	PORT 1	5787.B.700.4G.1	5787.B.700.4G.1	CTL02128_7B_1	CTL02128_7B_1		LTE 700	P65-16-XLH-RR_716MHz_07DT	14.8		7	TOP	FIBER	0	NO								
ANTENNA POSITION 4	PORT 1	5787.B.850.25G.1	5787.B.850.25G.1	321G21282	321G21282		GSM 850	7770.00.850.07	13.5		7	None	1-1/4 at 850 MHz	155.039685	NO			NO	12.58	147.23			

Section 15C - CURRENT SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770				P65-16-XLH-RR		7770							
ANTENNA VENDOR	Powerwave				Powerwave		Powerwave							
ANTENNA SIZE (H x W x D)	55X11X5				72X12X6		55X11X5							
ANTENNA WEIGHT	35				64		35							
AZIMUTH	23				270		23							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03				128.03		128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0				0		0							
FEEDER AMOUNT	2						2							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025				Internal	2	Kathrein 860-10025						
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901					2	Powerwave / LGP 21901						
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)						LTE RRH								
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)					2	Powerwave LGP 21401 (DB - 850 Bypass)						
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860					2	Polyphaser 1000860						
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)					1	RRUS-11								
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1														
Local Market Note 2														
Local Market Note 3														

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (AtoII)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	5787.C.850.3G.1	5787.C.850.3G.1	CTV21283	CTV21283		UMTS 850	7770.00.850.06	13.5		6	None	Commscope 1-1/4 (850)	155.039685	NO			NO					
	PORT 2	5787.C.850.3G.1	5787.C.850.3G.1	CTV6128C	CTV6128C		UMTS 850	7770.00.850.06	13.5		6	None	Commscope 1-1/4 (850)	155.039685									
	PORT 3	5787.C.1900.3G.1	5787.C.1900.3G.1	CTU21289	CTU21289		UMTS 1900	7770.00.1900.02	15.5		2	None	Commscope 1-1/4 (1900)	155.039685	NO			NO					
ANTENNA POSITION 3	PORT 1	5787.C.700.4G.1	5787.C.700.4G.1	CTL02128_7C_1	CTL02128_7C_1		LTE 700	P65-16-XLH-RR_716MHz_02DT	14.8		2	TOP	FIBER	0	NO								
ANTENNA POSITION 4	PORT 1	5787.C.850.25G.1	5787.C.850.25G.1	321G21283	321G21283		GSM 850	7770.00.850.06	13.5		6	None	1-1/4 at 850 MHz	155.039685	NO			NO	17.78	207.96			

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				128.03			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and Install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU						
Local Market Note 2							
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2_ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_ _ _ _ _ _ _ _ D1E.D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3		5787.A.1900.4G.1	CTL02128_9A_1_P	CTL02128_9A_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_03DT	17		3	TOP	FIBER	0						3664.3757		7	

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				150			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				128.03			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and Install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU						
Local Market Note 2							
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2_ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_____D1E.D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (C&Sng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (C&SNG)
ANTENNA POSITION 4	PORT 3		5787.B.1900.4G.1	CTL02128_9B_1_P	CTL02128_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	TOP	FIBER	0						3664.3757		15	

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - SECTOR C

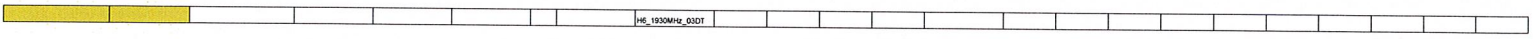
ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
Existing Antenna?							
ANTENNA MAKE - MODEL				HPA-65R-BUU-H6			
ANTENNA VENDOR				CCI Antennas			
ANTENNA SIZE (H x W x D)				72X14.8X9			
ANTENNA WEIGHT				50.7			
AZIMUTH				270			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)				128.03			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT				0			
FEEDER AMOUNT							
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)							
SURGE ARRESTOR (QTY/MODEL)							
DIPLEXER (QTY/MODEL)							
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)							
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)							
CURRENT INJECTORS FOR TMA (QTY/MODEL)							
PDU FOR TMAS (QTY/MODEL)							
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)							
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)							
RRH - AWS band (QTY/MODEL)				1	RRUS-12+RRUS-A2		
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU						
Local Market Note 2							
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2_ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_____ D1E D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 4	PORT 3		5787.C.1900.4G.1	CTL02128_9C_1_P	CTL02128_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	TOP	FIBER	0						3664.3757		23	

Section 17A - FINAL SECTOR/CELL INFORMATION - SECTOR A (OR OMNI)

ANTENNA COMMON FIELDS	ANTENNA POSITION 1	ANTENNA POSITION 2	ANTENNA POSITION 3	ANTENNA POSITION 4	ANTENNA POSITION 5	ANTENNA POSITION 6	ANTENNA POSITION 7
ANTENNA MAKE - MODEL	7770	7770		HPA-65R-BUU-H6			
ANTENNA VENDOR	Powerwave	Powerwave		CCI Antennas			
ANTENNA SIZE (H x W x D)	55X11X5	55X11X5		72X14.8X9			
ANTENNA WEIGHT	35	35		50.7			
AZIMUTH	143	143		30			
MAGNETIC DECLINATION							
RADIATION CENTER (feet)	128.03	128.03		128.03			
ANTENNA TIP HEIGHT							
MECHANICAL DOWNTILT	0	0		0			
FEEDER AMOUNT	2	2					
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)							
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RGHT (CENTERLINE to CENTERLINE)							
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)							
Antenna RET Motor (QTY/MODEL)	2 Kathrein 860-10025	2 Kathrein 860-10025					
SURGE ARRESTOR (QTY/MODEL)				1 DC/Fiber Squid			
DIPLEXER (QTY/MODEL)	2 Powerwave / LGP 21901	2 Powerwave / LGP 21901					
DUPLEXER (QTY/MODEL)							
Antenna RET CONTROL UNIT (QTY/MODEL)		1 Kathrein / 860-10006		LTE RRH			
DC BLOCK (QTY/MODEL)							
TMA/LNA (QTY/MODEL)	2 Powerwave LGP 21401 (DB - 850 Bypass)	2 Powerwave LGP 21401 (DB - 850 Bypass)					
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2 Polyphaser 1000860	2 Polyphaser 1000860					
PDU FOR TMAS (QTY/MODEL)	1 LGP 12104 (1900 AND 850 Bypass TMA)	1 LGP 12104 (1900 AND 850 Bypass TMA)					
FILTER (QTY/MODEL)							
SQUID (QTY/MODEL)							
FIBER TRUNK (QTY/MODEL)							
DC TRUNK (QTY/MODEL)							
RRH - 700 band (QTY/MODEL)				1 RRUS-11			
RRH - 850 band (QTY/MODEL)							
RRH - 1900 band (QTY/MODEL)				1 RRUS-12+RRUS-A2			
RRH - AWS band (QTY/MODEL)							
RRH - WCS band (QTY/MODEL)							
Additional RRH #1 - any band (QTY/MODEL)							
Additional RRH #2 - any band (QTY/MODEL)							
Additional Component 1 (QTY/MODEL)							
Additional Component 2 (QTY/MODEL)							
Additional Component 3 (QTY/MODEL)							
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU						
Local Market Note 2							
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2_ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_____ D1E.D1D						

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/ Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	5787.A.850.3G.1	5787.A.850.3G.1	CTV21281	CTV21281		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685						252.35		1	
	PORT 2	5787.A.850.3G.1,5787.A.850 3G.2	5787.A.850.3G.1	CTV6128A	CTV6128A		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685						252.35		1	
	PORT 3	5787.A.1900.3G.1	5787.A.1900.3G.1	CTU21287	CTU21287		UMTS 1900	7770.00.1900.03	15.5		3	None	Commscope 1-1/4 (1900)	155.039685						323.59		2	
ANTENNA POSITION 2	PORT 1	5787.A.850.25G.1	5787.A.850.25G.1	321G21281	321G21281		GSM 850	7770.00.850.07	13.5		7	None	1-1/4 at 850 MHz	155.039685					11.22	131.21		3	
ANTENNA POSITION 4	PORT 1	5787.A.700.4G.1	5787.A.700.4G.1	CTL02128_7A_1	CTL02128_7A_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.27		2	TOP	FIBER	0						1475.7065		7	
	PORT 3	5787.A.1900.4G.tmp1	5787.A.1900.4G.1	CTL02128_9A_1	CTL02128_9A_1		LTE 1900	HPA-65R-BUU-	17		3	TOP	FIBER	0						3664.3757		7	


H6_1930MHz_03DT

Section 17B - FINAL SECTOR/CELL INFORMATION - SECTOR B

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		7770				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Powerwave				CCI Antennas							
ANTENNA SIZE (H x W x D)	55X11X5		55X11X5				72X14.8X9							
ANTENNA WEIGHT	35		35				50.7							
AZIMUTH	263		263				150							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03		128.03				128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2		2											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025	2	Kathrein 860-10025										
SURGE ARRESTOR (QTY/MODEL)														
DIPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Powerwave / LGP 21901										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)														
DC BLOCK (QTY/MODEL)								LTE RRH						
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)	2	Powerwave LGP 21401 (DB - 850 Bypass)										
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860	2	Polyphaser 1000860										
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)							1	RRUS-11						
RRH - 850 band (QTY/MODEL)														
RRH - 1900 band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - AWS band (QTY/MODEL)														
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and Install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU													
Local Market Note 2														
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2 _ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_____ D1E.D1D													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (CSSng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (CSSNG)
ANTENNA POSITION 1	PORT 1	5787.B.850.3G.1	5787.B.850.3G.1	CTV21282	CTV21282		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685						252.35		9	
	PORT 2	5787.B.850.3G.1,5787.B.850.3G.2	5787.B.850.3G.1	CTV6128B	CTV6128B		UMTS 850	7770.00.850.07	13.5		7	None	Commscope 1-1/4 (850)	155.039685						252.35		9	
	PORT 3	5787.B.1900.3G.1	5787.B.1900.3G.1	CTU21288	CTU21288		UMTS 1900	7770.00.1900.06	15.5		6	None	Commscope 1-1/4 (1900)	155.039685						323.59		10	
ANTENNA POSITION 2	PORT 1	5787.B.850.2G.1	5787.B.850.2G.1	321G21282	321G21282		GSM 850	7770.00.850.07	13.5		7	None	1-1/4 at 850 MHz	155.039685					12.58	147.23		11	
ANTENNA POSITION 4	PORT 1	5787.B.700.4G.1	5787.B.700.4G.1	CTL02128_7B_1	CTL02128_7B_1		LTE 700	HPA-65R-BUU-H6_719MHz_07DT	14.02		7	TOP	FIBER	0						1475.7065		15	
	PORT 3	5787.B.1900.4G.tmp1	5787.B.1900.4G.1	CTL02128_9B_1	CTL02128_9B_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	TOP	FIBER	0						3664.3757		15	

Section 17C - FINAL SECTOR/CELL INFORMATION - SECTOR C

ANTENNA COMMON FIELDS	ANTENNA POSITION 1		ANTENNA POSITION 2		ANTENNA POSITION 3		ANTENNA POSITION 4		ANTENNA POSITION 5		ANTENNA POSITION 6		ANTENNA POSITION 7	
ANTENNA MAKE - MODEL	7770		7770				HPA-65R-BUU-H6							
ANTENNA VENDOR	Powerwave		Powerwave				CCI Antennas							
ANTENNA SIZE (H x W x D)	55X11X5		55X11X5				72X14.8X9							
ANTENNA WEIGHT	35		35				50.7							
AZIMUTH	23		23				270							
MAGNETIC DECLINATION														
RADIATION CENTER (feet)	128.03		128.03				128.03							
ANTENNA TIP HEIGHT														
MECHANICAL DOWNTILT	0		0				0							
FEEDER AMOUNT	2		2											
VERTICAL SEPARATION from ANTENNA ABOVE (TIP to TIP)														
VERTICAL SEPARATION from ANTENNA BELOW (TIP to TIP)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to LEFT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from CLOSEST ANTENNA to RIGHT (CENTERLINE to CENTERLINE)														
HORIZONTAL SEPARATION from ANOTHER ANTENNA (which antenna # / # of inches)														
Antenna RET Motor (QTY/MODEL)	2	Kathrein 860-10025	2	Kathrein 860-10025										
SURGE ARRESTOR (QTY/MODEL)														
DPLEXER (QTY/MODEL)	2	Powerwave / LGP 21901	2	Powerwave / LGP 21901										
DUPLEXER (QTY/MODEL)														
Antenna RET CONTROL UNIT (QTY/MODEL)								LTE RRH						
DC BLOCK (QTY/MODEL)														
TMA/LNA (QTY/MODEL)	2	Powerwave LGP 21401 (DB - 850 Bypass)	2	Powerwave LGP 21401 (DB - 850 Bypass)										
CURRENT INJECTORS FOR TMA (QTY/MODEL)	2	Polyphaser 1000860	2	Polyphaser 1000860										
PDU FOR TMAS (QTY/MODEL)														
FILTER (QTY/MODEL)														
SQUID (QTY/MODEL)														
FIBER TRUNK (QTY/MODEL)														
DC TRUNK (QTY/MODEL)														
RRH - 700 band (QTY/MODEL)														
RRH - 850 band (QTY/MODEL)							1	RRUS-11						
RRH - 1900 band (QTY/MODEL)														
RRH - AWS band (QTY/MODEL)							1	RRUS-12+RRUS-A2						
RRH - WCS band (QTY/MODEL)														
Additional RRH #1 - any band (QTY/MODEL)														
Additional RRH #2 - any band (QTY/MODEL)														
Additional Component 1 (QTY/MODEL)														
Additional Component 2 (QTY/MODEL)														
Additional Component 3 (QTY/MODEL)														
Local Market Note 1	LTE 2C Bronze Standard- Move GSM Antenna to Pos 2- Replace existing LTE BB antenna with Hex port antenna and install at Pos 4- Add RRUS-12+A2- DUL to DUS upgrade- Add XMU													
Local Market Note 2														
Local Market Note 3	Baseband Config - 1 DUS + XMU DUS-1 - 7A.7B.7C.X1P1.X1P2_ XMU-1 - PA.PA2A.PC.PA2C.PB.PA2B_____D1E.D1D													

PORT SPECIFIC FIELDS	PORT NUMBER	USEID (C&Sng)	USEID (Atoll)	ATOLL TXID	ATOLL CELL ID	TX/RX ?	TECHNOLOGY/FREQUENCY	ANTENNA ATOLL	ANTENNA GAIN	ELECTRICAL AZIMUTH	ELECTRICAL TILT	RRH LOCATION (Top/Bottom/Integrated/None)	FEEDERS TYPE	FEEDER LENGTH (feet)	RXAIT KIT MODULE?	TRIPLEXER or LLC (QTY)	TRIPLEXER or LLC (MODEL)	SCPA/MCPA MODULE?	HATCHPLATE POWER (Watts)	ERP (Watts)	Antenna RET Name	CABLE NUMBER	CABLE ID (C&SNG)
ANTENNA POSITION 1	PORT 1	5787.C.850.3G.1	5787.C.850.3G.1	CTV21283	CTV21283		UMTS 850	7770.00.850.06	13.5		6	None	Commscope 1-1/4 (850)	155.039685						252.35		17	
	PORT 2	5787.C.850.3G.1,5787.C.850.3G.2	5787.C.850.3G.1	CTV6128C	CTV6128C		UMTS 850	7770.00.850.06	13.5		6	None	Commscope 1-1/4 (850)	155.039685						252.35		17	
	PORT 3	5787.C.1900.3G.1	5787.C.1900.3G.1	CTU21289	CTU21289		UMTS 1900	7770.00.1900.02	15.5		2	None	Commscope 1-1/4 (1900)	155.039685						323.59		18	
ANTENNA POSITION 2	PORT 1	5787.C.850.25G.1	5787.C.850.25G.1	321G21283	321G21283		GSM 850	7770.00.850.06	13.5		6	None	1-1/4 at 850 MHz	155.039685					17.78	207.96		19	
ANTENNA POSITION 4	PORT 1	5787.C.700.4G.1	5787.C.700.4G.1	CTL02128_7C_1	CTL02128_7C_1		LTE 700	HPA-65R-BUU-H6_719MHz_02DT	14.27		2	TOP	FIBER	0						1475.7065		23	
	PORT 3	5787.C.1900.4G.Imp1	5787.C.1900.4G.1	CTL02128_9C_1	CTL02128_9C_1		LTE 1900	HPA-65R-BUU-H6_1930MHz_02DT	16.85		2	TOP	FIBER	0						3664.3757		23	

Diagram - Sector	A	Diagram File Name - CT2128_A_B_C_LTE2C_PCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2128	Location Name -	FAIRFIELD GREENFIELD HILL	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

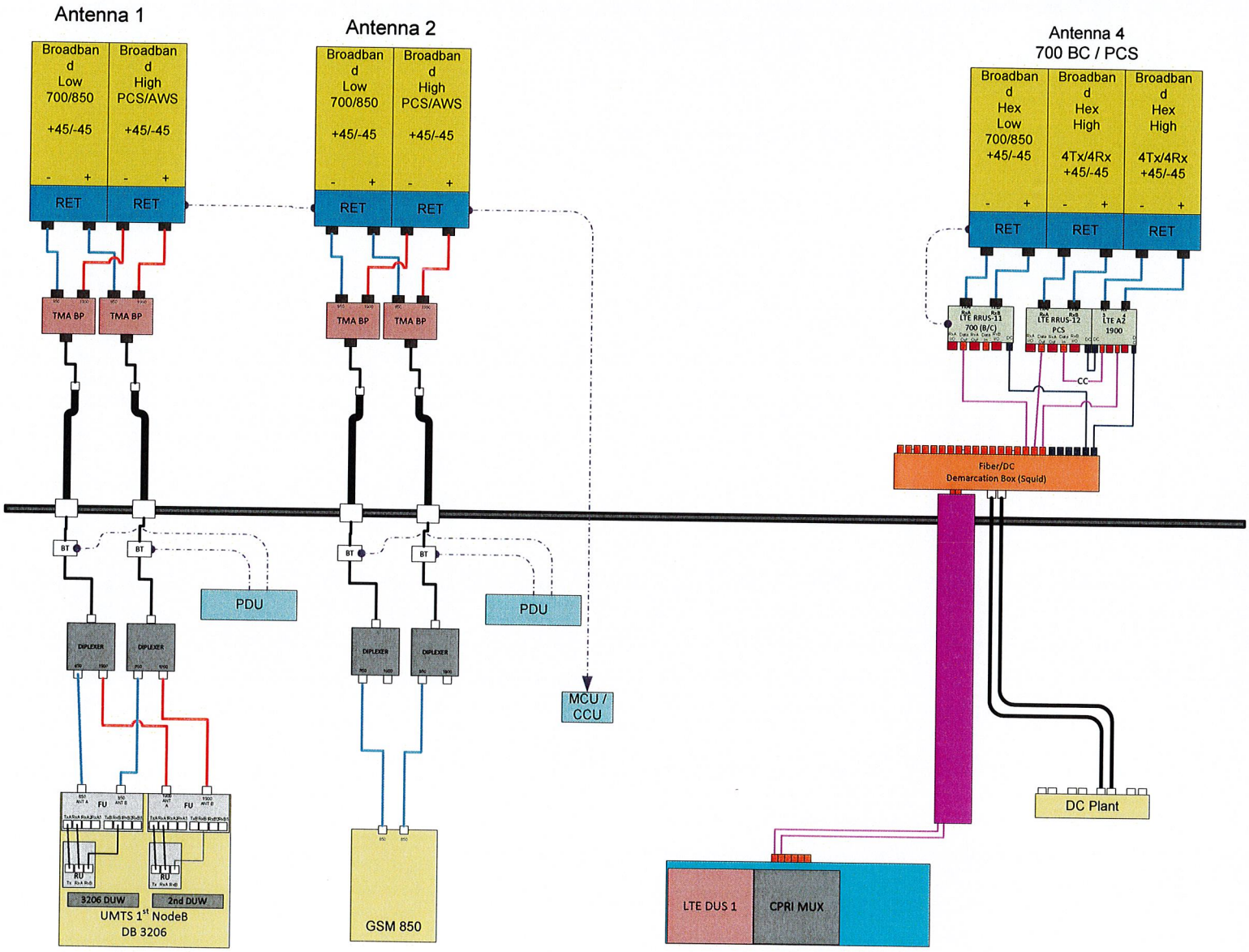


Diagram - Sector	B	Diagram File Name - CT2128_A_B_C_LTE2C_PCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2128	Location Name -	FAIRFIELD GREENFIELD HILL	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

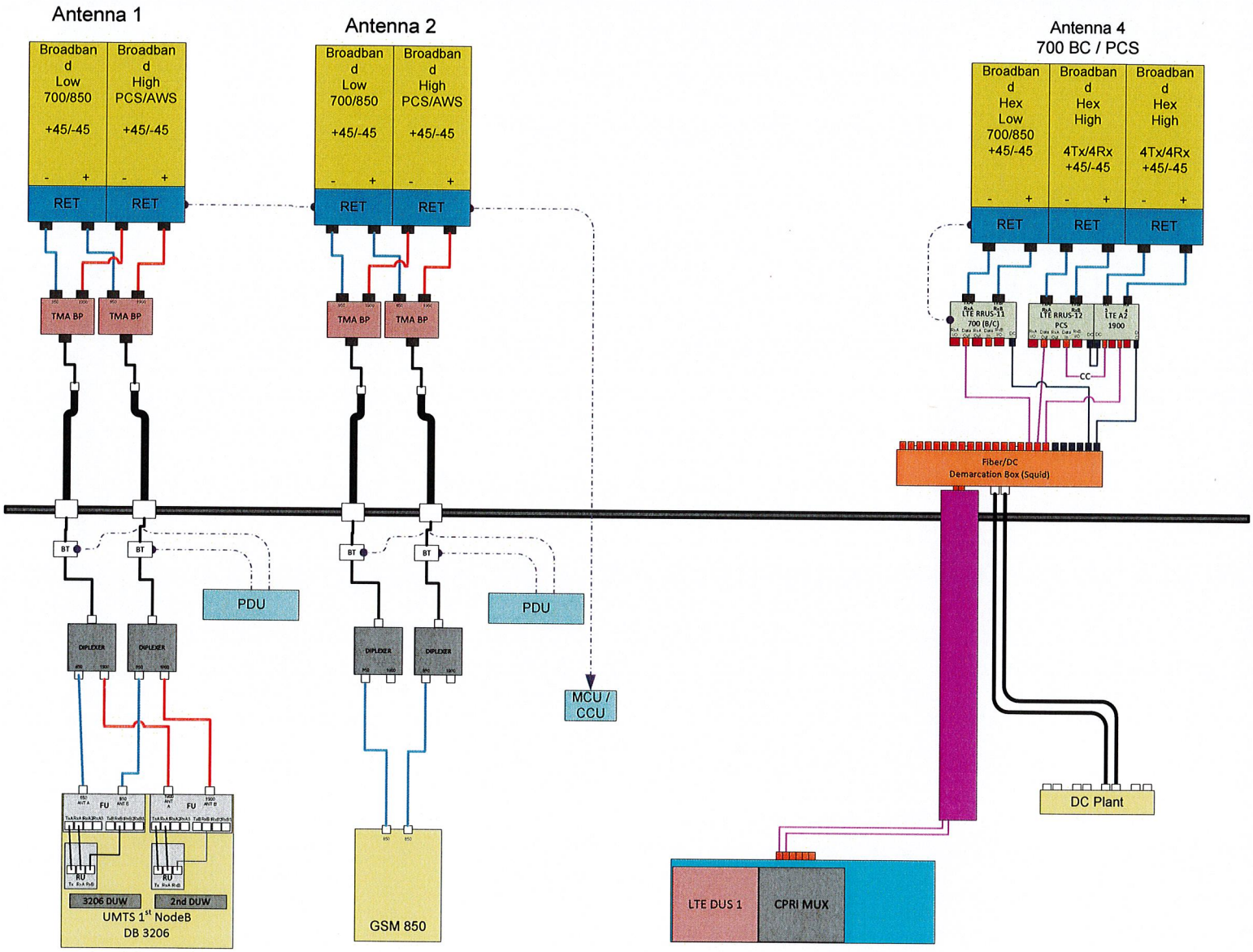
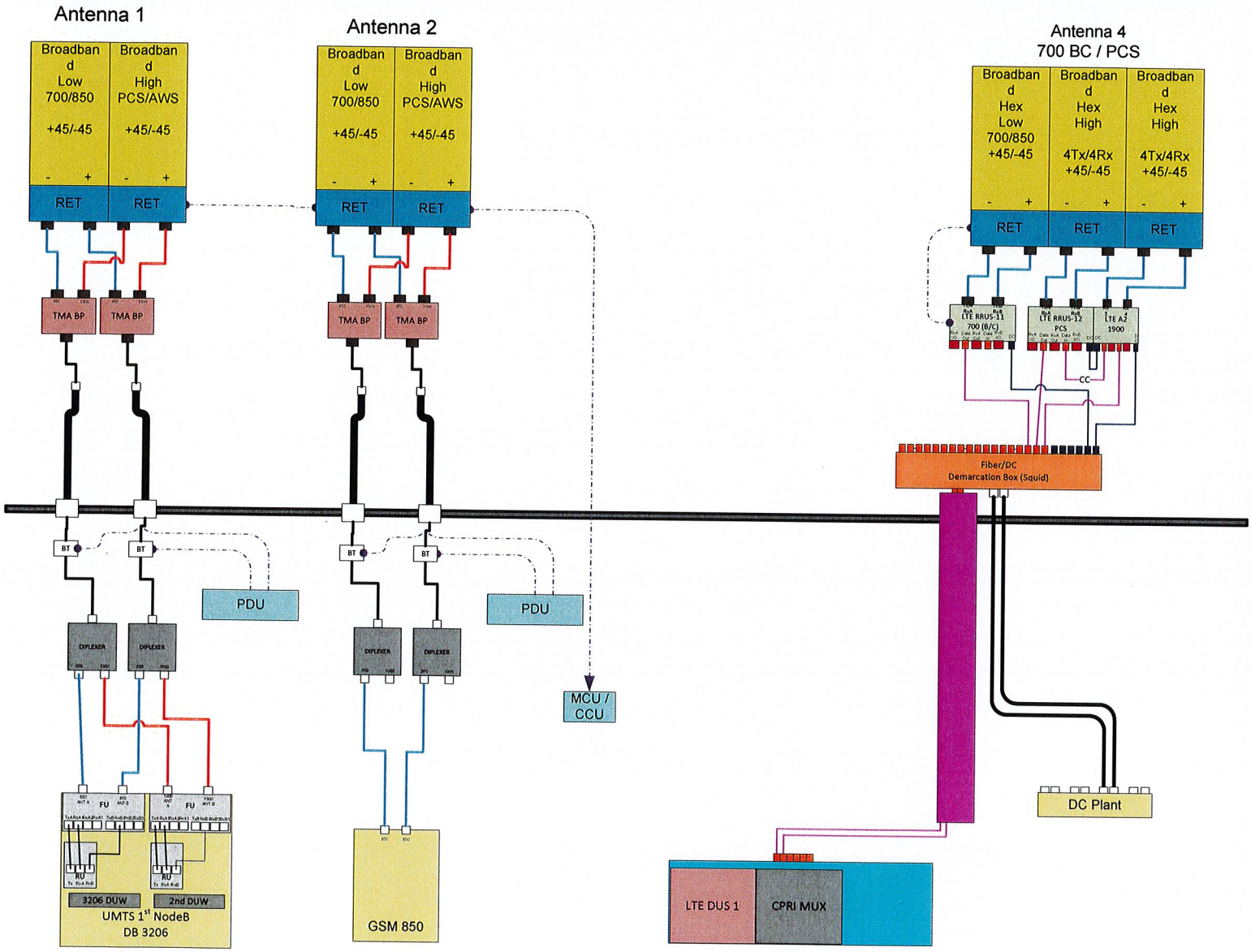


Diagram - Sector	C	Diagram File Name - CT2128_A_B_C_LTE2C_PCS_BrStd_Rev1.vsd					
Atoll Site Name -	CTU2128	Location Name -	FAIRFIELD GREENFIELD HILL	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							

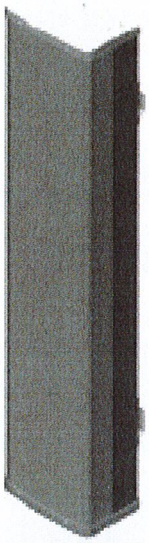


NOTES			
Date Time (Central)	Version	ATTUID	Note
8/9/2016 2:01:28 PM	1.00	mm093q	Updated Revision to Final.

WORKFLOW SUMMARY						
Date	FROM State / Status	FROM ATTUID	TO State / Status	TO ATTUID	Operation	Comments
06/16/2016	Preliminary / In Progress	om636a	Preliminary / Submitted for Approval	AB014M	Promote	LTE Preliminary RFDS
07/06/2016	Preliminary / Submitted for Approval	AB014M	Preliminary / Approved	BG144B	Promote	
08/08/2016	Preliminary / Approved	BG144B	Final / RF Approval	OM636A	Promote	Needs Final
08/08/2016	Final / RF Approval	OM636A	Final / RF Approval	MM093Q	Re-Assign	
08/09/2016	Final / RF Approval	MM093Q	Final / Approved	BG144B	Promote	Update Revision to Final

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6



Hexport Multi-Band Antenna Array

The CCI Hexport Multi-Band Antenna Array is an industry first 6-port antenna with full WCS Band Coverage. With four high band ports and two low band ports, our hexport antenna is ready for 4X4 high band MIMO.

Modern networks demand high performance, consequently CCI has incorporated several new and innovative design techniques to provide an antenna with excellent side-lobe performance, sharp elevation beams, and high front to back ratio.

Multiple networks can now be connected to a single antenna, reducing tower loading and leasing expense, while decreasing deployment time and installation cost.

Full band capability for 700 MHz , Cellular 850 MHz, PCS 1900 MHz, AWS 1710/2170 MHz and WCS 2300 MHz coverage in a single enclosure.

Benefits

- **Includes WCS Band**
- **Reduces tower loading**
- **Frees up space for tower mounted E-nodes**
- **Single radome with six ports**
- **All Band design simplifies radio assignments**
- **Sharp elevation beam eases network planning**

Features

- High Band Ports include WCS Band
- Four High Band ports with two Low Band ports in one antenna
- Sharp elevation beam
- Excellent elevation side-lobe performance
- Excellent MIMO performance due to array spacing
- Excellent PIM Performance
- A multi-network solution in one radome

Applications

- 4x4 MIMO on High Band and 2x2 MIMO on Low Band
- Adding additional capacity without adding additional antennas
- Adding WCS Band without increasing antenna count

ISO 9001:2008
Quality Management Systems
Système de Qualité
www.ca.sgs.com

HPA Antenna Series

HexPort Multi-Band Antenna

Model HPA-65R-BUU-H6

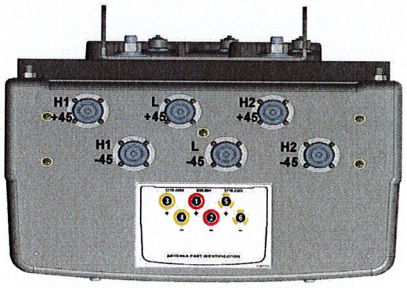
HPA-65R Multi-Band Antenna

Electrical Specifications

Frequency Range	2 X Low Band Ports which cover the full range from 698-894 MHz		4 X High Band Ports which cover the full range from 1710-2360 MHz			
	698-806 MHz	824-894 MHz	1850-1990 MHz	1710-1755/2110-2170 MHz		2305-2360 MHz
Gain	14.1 dBi	14.8 dBi	16.9 dBi	16.3 dBi	17.2 dBi	17.4 dBi
Azimuth Beamwidth (-3dB)	66°	65°	61°	66°	62°	57°
Elevation Beamwidth (-3dB)	12.5°	10.5°	5.7°	6.3°	5.1°	4.5°
Electrical Downtilt	0° to 10°	0° to 10°	0° to 8°	0° to 8°	0° to 8°	0° to 8°
Elevation Sidelobes (1st Upper)	< -17 dB	< -19 dB	< -19 dB	< -18 dB	< -18 dB	< -17 dB
Front-to-Back Ratio @180°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Front-to-Back Ratio over ± 20°	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross-Polar Discrimination (at Peak)	> 25 dB	> 20 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross-Polar Discrimination (at ± 60°)	> 17 dB	> 14 dB	> 17 dB	> 17 dB	> 17 dB	> 17 dB
Cross-Polar Port-to-Port Isolation	> 25 dB	> 25 dB	> 26 dB	> 25 dB	> 26 dB	> 26 dB
VSWR	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Passive Intermodulation (2x20W)	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc	≤ -150dBc
Input Power	500 Watts CW	500 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW	300 Watts CW
Polarization	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°	Dual Pol 45°
Input Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Lightning Protection	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground	DC Ground

Mechanical Specifications

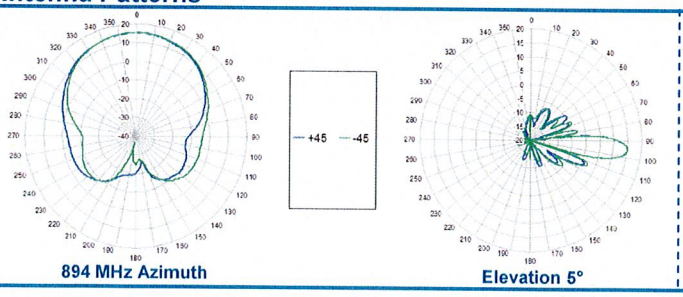
Dimensions (LxWxD)	72.0 x 14.8 x 9.0 inches (1828 x 376 x 229 mm)
Survival Wind Speed	> 150 mph
Front Wind Load	247 lbs (1099 N) @ 100 mph (161 kph)
Side Wind Load	165 lbs (735 N) @ 100 mph (161 kph)
Equivalent Flat Plate Area	9.7 ft^2 (0.90 m^2)
Weight (without Mounting)	51 lbs (23 kg)
RET System Weight	5.0 lbs (2.3 kg)
Connector	6; 7-16 DIN female long neck
Mounting Pole	2-5 inches (5-12 cm)



Bottom View

Rear View

Antenna Patterns*



894 MHz Azimuth | Elevation 5° | 1920 MHz Azimuth | Elevation 4°

*Typical antenna patterns. For detail information on antenna pattern, please contact us at info@cciproducts.com. All specifications are subject to change without notice.