

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

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

June 21, 2010

Thomas F. Flynn III
Site Development Project Manager
Maxton Technology Inc.
1296 Blue Hills Avenue
Bloomfield, CT 06002

RE: **EM-CLEARWIRE-155-100602** – Clearwire Corporation notice of intent to modify an existing telecommunications facility located at 345 North Main Street, West Hartford, Connecticut.

Dear Mr. Flynn:

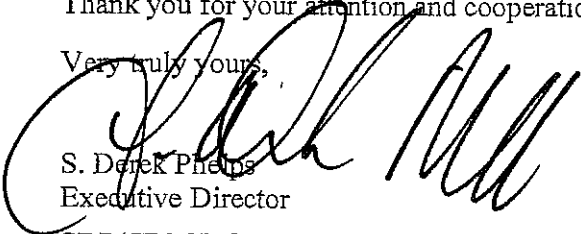
The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated June 2, 2010, including the placement of all necessary equipment and shelters within the tower compound. 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, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to 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. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,


S. Derek Phelps
Executive Director

SDP/CDM/laf

c: The Honorable Scott Slifka, Mayor, Town of West Hartford
Barry M. Feldman, Town Manager, Town of West Hartford
Mila Limson, Town Planner, Town of West Hartford
Edans and Avant LLC



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Daniel F. Caruso
Chairman

June 4, 2010

The Honorable Scott Slifka
Mayor
Town of West Hartford
Town Hall
50 South Main Street, Room 313
West Hartford, CT 06107-2431

RE: **EM-CLEARWIRE-155-100602** – Clearwire Corporation notice of intent to modify an existing telecommunications facility located at 345 North Main Street, West Hartford, Connecticut.

Dear Mayor Slifka:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by June 18, 2010.

Thank you for your cooperation and consideration.

Very truly yours,



S. Derek Phelps
Executive Director

SDP/jbw

Enclosure: Notice of Intent

c: Barry M. Feldman, Town Manager, Town of West Hartford
Mila Limson, Town Planner, Town of West Hartford

June 2, 2010

S. Derek Phelps, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RECEIVED
JUN - 2 2010

ORIGINAL CONNECTICUT
SITING COUNCIL

**Re: Notice of Exempt Modification
Clearwire Corporation Notice to make an Exempt Modification to an Existing
Facility at 345 North Main Street, CT
Clearwire Site Number CT-HFD0041**

Dear Mr. Phelps,

Pursuant to Conn. Agency Regulations Sections 16-50j-73 and 16-50j-72(b), Clearwire Corporation (Clearwire) hereby gives notice to the Connecticut Siting Council (Council) and the City of West Hartford, CT. of Clearwire's intent to make an exempt modification to an existing monopole tower (tower) located at 345 North Main Street, West Hartford, CT. Specifically, Clearwire plans to add three (3) antennas to the tower, one (1) per sector and to add three (3) microwave dishes, one (1) per sector for backhaul at the 100' AGL. Pursuant to the Council's regulations, (Conn. Agency Regulations Section 16-50j-72(b)), Clearwire's plans do not constitute a modification subject to the Council's review because Clearwire will not change the height of the tower, will not extend the boundaries of the compound, will not increase the noise levels at the site and will not increase the total radio frequency electromagnetic radiation power density at the site to levels above applicable standards. A copy of this notice has been sent to the Town Manager of West Hartford, CT.

Clearwire is currently developing a 4G wireless broadband network to provide high-speed wireless data and VoIP service within the State of Connecticut. Clearwire's 4G service leverages the WiMAX technology to enable enhanced wireless data communications. In order to accomplish the upgrade at this site, Clearwire plans to add three (3) WiMAX antennas, three (3) dishes and to install additional WiMAX related electronic equipment at the base of the tower.

The tower is a 73' guyed lattice tower located on the roof at 345 North Main Street, West Hartford, Connecticut (Latitude 41 47 04.5 N Longitude 72 44 55 W). The tower is owned by Edans and Avant LLC. Currently, Nextel, AT&T, Cingular, TMO and Pocket are located on the tower, as well as a number of other public service antennas. Presently, Clearwire is not located at the site. Clearwire's base station equipment will be located on the ground next to the pole. A site plan with the tower elevations and site plan specifications is attached.

Clearwire will add three (3) antennas, one (1) to each sector, and mount three (3) microwave dishes, one (1) above each of those antennas. The center line for the microwave dishes will be 100'. Nine coaxial cables will be added to the structure, 2 per antenna and one per microwave dish. These cables will be inside the tower and bundled. To confirm that the tower

can support these changes, Clearwire commissioned CHA to perform a structural analysis of the tower and the proposed changes. According to that structural dated may 12, 2010 and attached hereto, the structure is sufficient to support the proposed loading and will not need to be modified. The tower, with the additions and the modifications will be at less than 77.5% of its capacity.

Within the existing compound, Clearwire will install one (1) WiMAX radio and power cabinet on the existing pad at the site. The new equipment will be adjacent to the existing tower. Excluding brief, construction related noise during the addition of this equipment, the proposed changes to the tower will not increase noise levels at the site.

The addition of new WiMAX antennas and microwave dishes will not adversely impact the health and safety of the surrounding community or the people working on the tower. The total radio frequency exposure measured around the base of the tower will be well below the National Council on Radiation Protection and Measurements' (NCRP) standard adopted by the Federal Communications Commission (FCC). The worst case power density analysis for the WiMAX antennas and dishes, measured at the base of the tower, indicates that the WiMAX antennas and dishes will emit .0032% of the NCRP's standard for maximum permissible exposure. The cumulative power density analysis indicates that all the antennas on the structure will emit 16.4632% of the NCRP's standard for maximum permissible exposure. Therefore, the power density levels will be well below the FCC mandated radio frequency exposure limits in all locations around the base of the tower. The power density analysis is attached.

In conclusion, Clearwire's proposed plan to add three (3) WiMAX antennas, three (3) microwave dishes and the associated base station equipment does not constitute a modification subject to the Council's jurisdiction because Clearwire will not increase the height of the tower, will not extend the boundaries of the compound at the site, will not increase the noise levels at the site and the radio frequency electromagnetic radiation power density will stay within all applicable standards.

Respectfully Submitted



Thomas F. Flynn III
Site Development Project Manager
Maxton Technology Inc.
1296 Blue Hills Avenue
Bloomfield, CT 06002
508-821-6974
Tom.Flynn@maxtontech.com
Agent for Clearwire Corporation

Cc: Ron Van Winkle Town Manager
City of west Hartford

File: W:\CLEARWIRE\CT\20592\SITES\1027-CT-HFD0041A\LE\CT-HFD0041A_LE.DWG Saved: 5/25/2010 11:54:01 AM Plotted: 5/25/2010 11:57:11 AM User: WYD, Heather

PROPOSED CLEARWIRE MICROWAVE ANTENNA ABOVE OR BELOW WIMAX ANTENNA (TYP. OF 4)

PROPOSED CLEARWIRE WIMAX ANTENNA ON EXISTING PIPE MOUNT (TYP. 1 PER SECTOR, 3 TOTAL)

PROPOSED CLEARWIRE GPS ANTENNA MOUNTED TO EXISTING GUYED TOWER

EXISTING 50'± GUYED TOWER

EXISTING SPRINT PLATFORM

PROPOSED CLEARWIRE CABINET ON EXISTING SPRINT FRAME

EXISTING AIR DUCT

EXISTING PENTHOUSE

UPPER ROOF

EXISTING SCREEN WALL

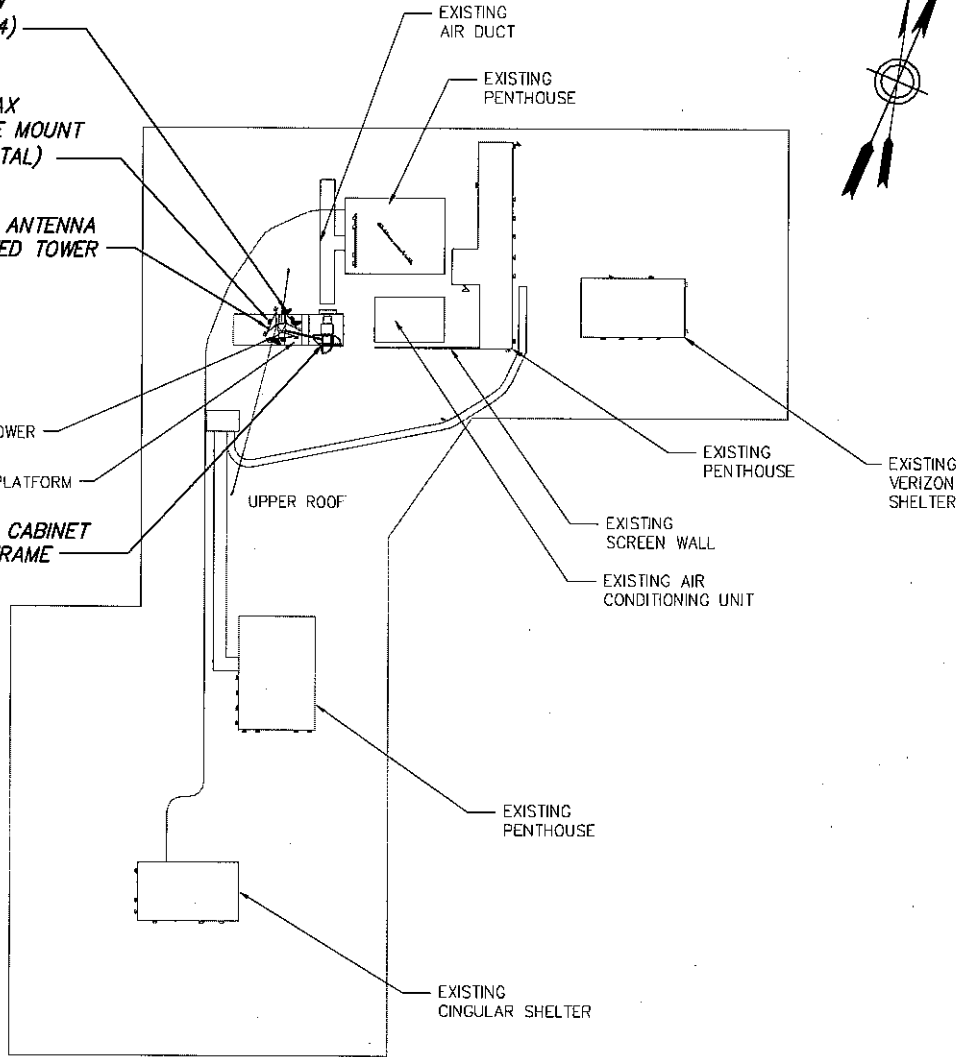
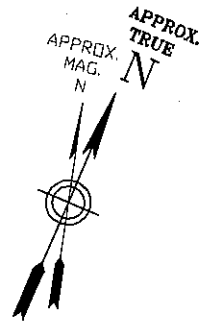
EXISTING AIR CONDITIONING UNIT

EXISTING PENTHOUSE

EXISTING VERIZON SHELTER

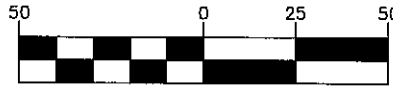
EXISTING PENTHOUSE

EXISTING CINGULAR SHELTER



ROOF PLAN

GRAPHIC SCALE



IN FEET

LEASE EXHIBIT

SCALE: 1" = 50'
MAY 25, 2010

1 OF 3

REVISION NUMBER 2

Drawing Copyright © 2000



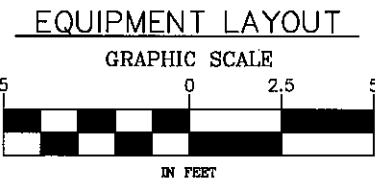
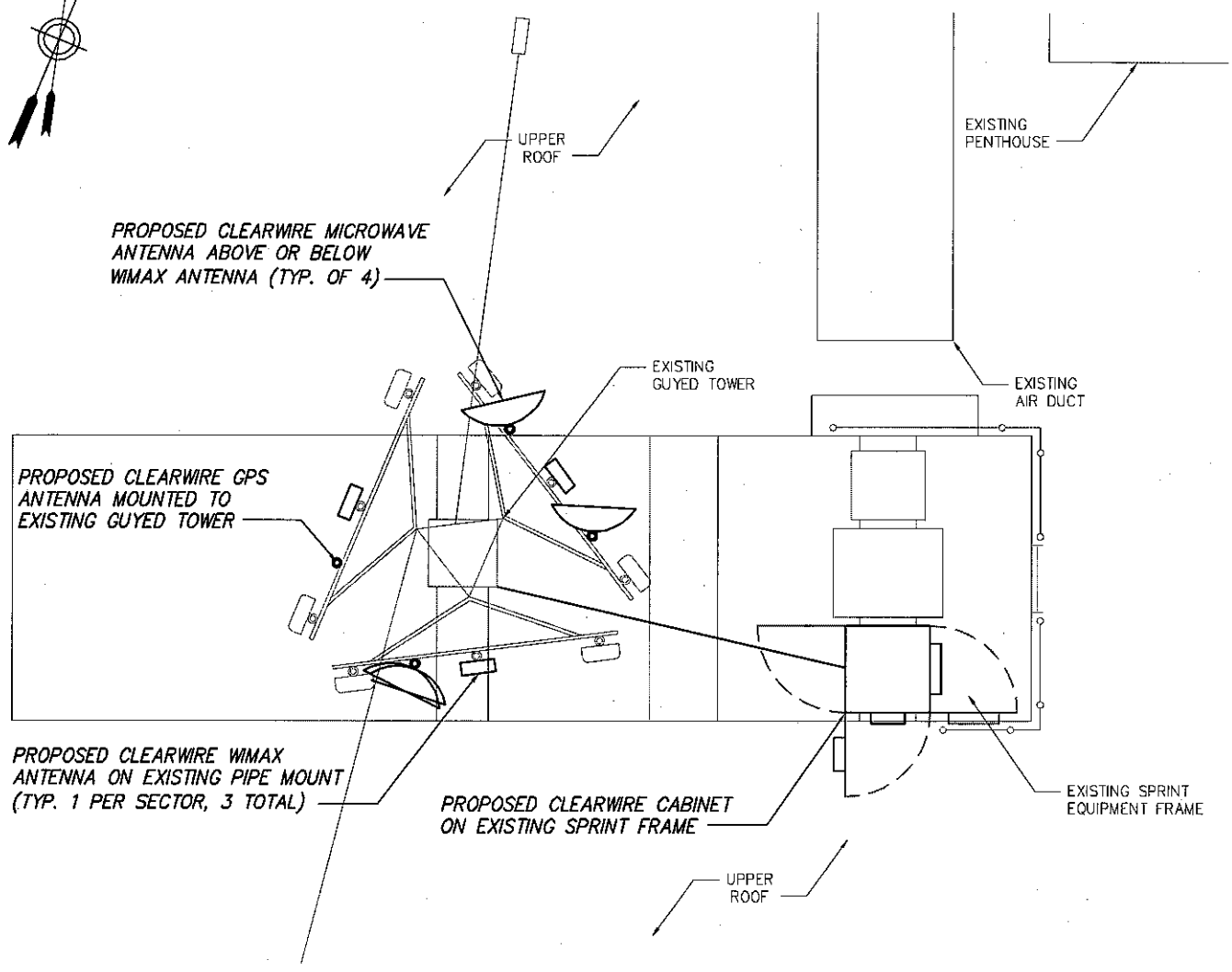
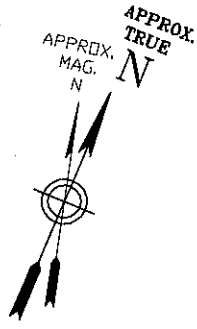
111 Winners Circle, PO Box 5289 · Albany, NY 12205-0289
Main: (618) 453-6800 · www.chacompanies.com

clearw're
TECHNOLOGIES, INC.

5808 LAKE WASHINGTON
BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
FAX: (425) 216-7900

CT-HFD0041A
345 MAIN STREET
WEST HARTFORD, CT 06117

File: W:\CLEARWIRE\CT\20592\SITES\1027-CT-HFD0041A\LE\CT-HFD0041A_LE.DWG Saved: 5/25/2010 11:54:01 AM Plotted: 5/25/2010 11:57:23 AM User: Wyld, Heather



LEASE EXHIBIT

SCALE: 1" = 5'
MAY 25, 2010

3 OF 3

REVISION NUMBER 2

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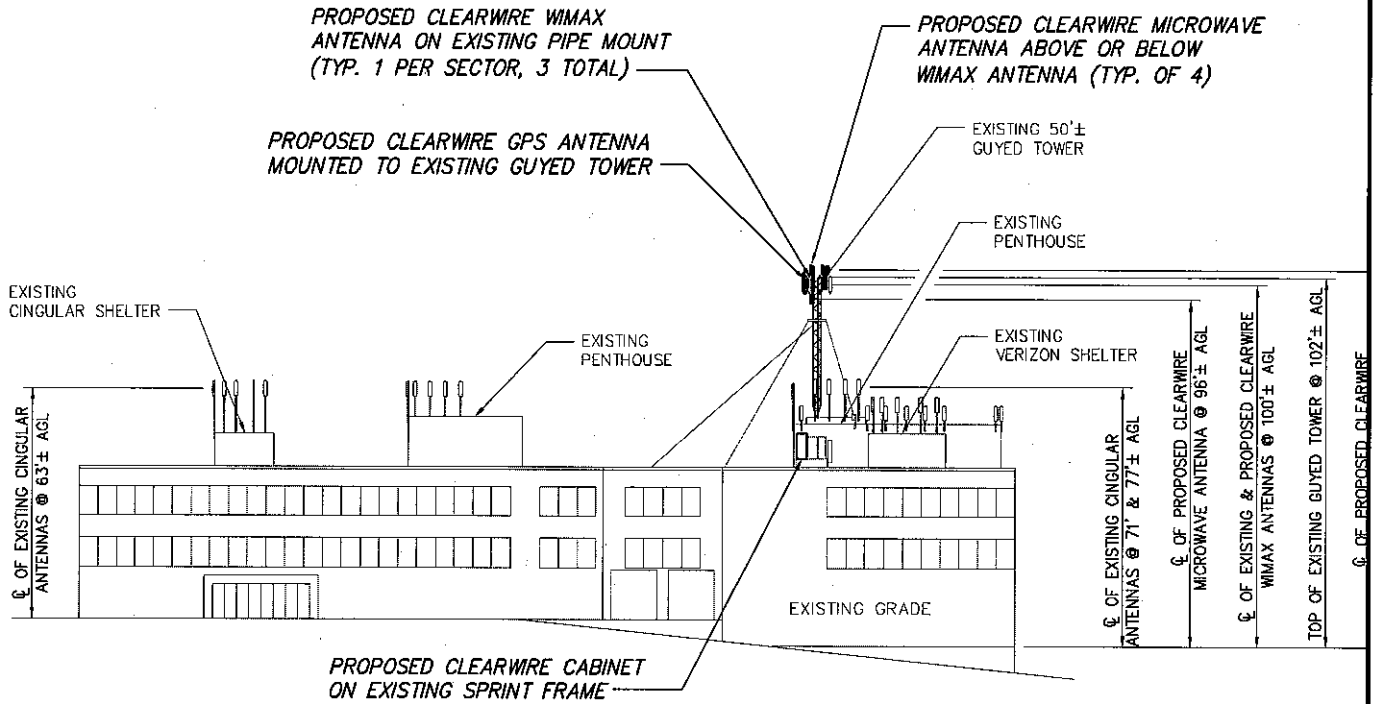
III Winners Circle, PO Box 5269 - Albany, NY 12205-0269
Main: (618) 463-4600 · www.chacompanies.com

clearw're
TECHNOLOGIES, INC.

5808 LAKE WASHINGTON
BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
FAX: (425) 216-7900

CT-HFD0041A
345 MAIN STREET
WEST HARTFORD, CT 06117

File: W:\CLEARWIRE\CT\20592\SITES\1027-CT-HFD0041A\LE\CT-HFD0041A_LE.DWG Saved: 5/25/2010 11:54:01 AM Plotted: 5/25/2010 11:57:17 AM User: Wjrd, Heather



EAST ELEVATION

NO SCALE

LEASE EXHIBIT

NO SCALE
MAY 25, 2010

2 OF 3

REVISION
NUMBER 2

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Main: (518) 463-4500 · www.chacompanies.com

clearw're
TECHNOLOGIES, INC.

5805 LAKE WASHINGTON
BLVD. NE STE. 300
KIRKLAND, WA 98033
OFFICE: (425) 216-7600
FAX: (425) 216-7900

CT-HFD0041A
345 MAIN STREET
WEST HARTFORD, CT 06117



May 12, 2010

Mr. Joe Carbonell
Construction Manager
MAXTON Technology, Inc.
1296 Blue Hills Avenue
Bloomfield, Connecticut 06002

**RE: Structural Review for Rooftop Guyed Tower at 345 Main St.
Located in West Hartford, CT
Clearwire Site No. CT-HFD0041B
CHA Project No. 20592-1027-1203**

Dear Mr Carbonell:

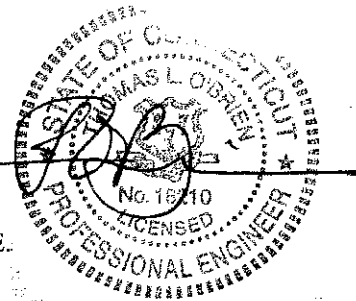
CHA has performed a structural review of the referenced site. This review is based on the following information:

- A site visit performed by CHA on October 3, 2009
- Tower mapping information performed by Maxton Technology, dated April 29, 2010
- Existing tower information by ROHN, dated July 30, 1997
- Rooftop steel framing information provided by SEA Consultants Inc., dated May 5, 1997

The above-mentioned site will be modified for the installation of the Clearwire equipment. Based upon our analysis the existing tower and steel framing are capable of supporting the proposed equipment, which includes (4) microwave antennas, (3) panel antennas, (3) remote radio units and (1) GPS antenna. In addition, (1) equipment cabinet will be placed on an existing Sprint platform on the building rooftop.

Very truly yours,

Thomas L. O'Brien, P.E.
Partner



TOB/am

W:\Clearwire\CT\20592\Sites\1027-CT-HFD0041B\Struct\CT-HFD0041B\20592-1027-1203\Letters\100510.ctb, Albany, NY 12205-0269



CHA COMPUTATION PAD

COMPLETED BY: ALU
 CHECKED BY: _____
 PROJECT NAME: CT-HFD 0041 B
 PROJECT LOCATION: 345 MAIN ST. - W. HARTFORD, CT.

PROJECT: 2 0 5 9 2 | PHASE: 1 0 2 7 | ORG: 1 2 0 3
 SHEET #: 1 OF 10
 DATE: 5.10.10
 SUBJECT: TOWER BASE RENS CHECK

EXISTING TOWER: 50' HEIGHT
 BASE @ 59' AGL ON BLDG ROOFTOP
 3/8" EHS GUYED WIRES (29', 90', 43' RADII)

TOWER LEGS: 3" o.d.
 TOWER DIAGONALS: 1 1/2" o.d. Hollow } INFO PROVIDED BY \Rightarrow

ROHN 7/30/97

MAXON TOWER
MILLEN-HESTER

EXISTING APPURTENANCES: 12' GPS w/ 1/2" ϕ COAX
 (6) DECEMBER DB 980 F90 E-M PANEL ANT w/ (6) 7/8" ϕ COAX

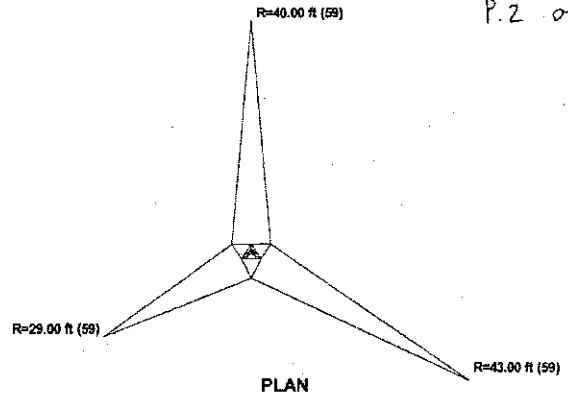
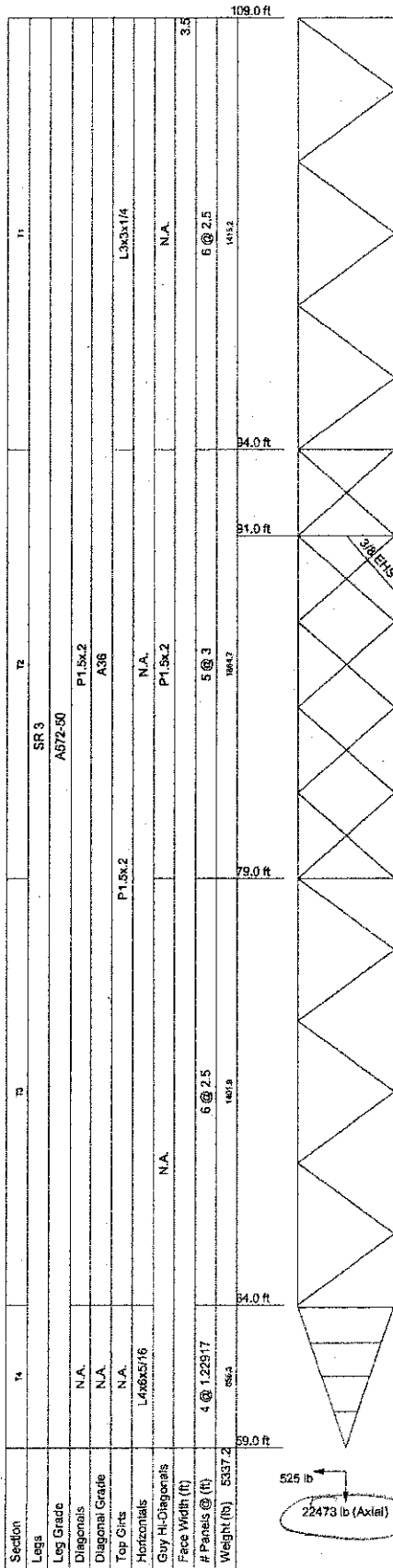


ORIGINAL BASE RENS:
 @ BASE \downarrow + 23.0 K
 @ 43' ANCHOR \downarrow - 10.7 K
 \rightarrow + 8.6 K

PROPOSED BASE RENS:
 @ BASE: \downarrow + 22.47 K < ORIGINAL (23.0 K) \checkmark OK
 @ 29' ANCHOR: \downarrow - 8.88 K < ORIGINAL (-10.7 K) \checkmark OK
 (WORST CASE) \rightarrow + 7.64 K < ORIGINAL (8.6 K) \checkmark OK

ALL PROPOSED RENS ARE LESS THAN ORIGINAL, PER ROHN DWG NO. E-1, DATED 7/30/97, THEREFORE TOWER IS ACCEPTABLE w/ PROPOSED EQUIP.

SEE ATTACHED: ① RISA TOWER ELEVATION w/ BASE RENS
 ② RISA TOWER MAX MEMBER FORCES OUTPUT



DESIGNED APPURTENANCE LOADING

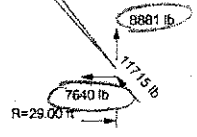
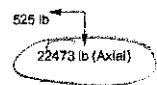
TYPE	ELEVATION	TYPE	ELEVATION
(2) DB980F90E-M w/Mount Pipe (E)	107.5	Remote Radio Heads (P)	107.5
(2) DB980F90E-M w/Mount Pipe (E)	107.5	4'x4' Pipe Mount (P)	107.5
(2) DB980F90E-M w/Mount Pipe (E)	107.5	4'x4' Pipe Mount (P)	107.5
(2) DB980F90E-M w/Mount Pipe (E)	107.5	(2) HP2-102 (P)	107.5
LLPX310R w/ mounting pipe (P)	107.5	HP2-102 (P)	107.5
LLPX310R w/ mounting pipe (P)	107.5	HP2-102 (P)	107.5
LLPX310R w/ mounting pipe (P)	107.5	Pirod 10' PCS Frame (1) (E)	106.5
Remote Radio Heads (P)	107.5	Pirod 10' PCS Frame (1) (E)	106.5
Remote Radio Heads (P)	107.5	Pirod 10' PCS Frame (1) (E)	106.5
		GPS Antenna (E)	71

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 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.



<p>CHA, Inc. III Winner's Circle Albany, NY Consulting Engineers Phone: (518) 453-8761 FAX: (518) 453-4712</p>		<p>Job: 20592-1027-1203 Project: CT-HFD0041B Client: Clearwire Drawn by: Tony Marruso App'd: Code: TIA/EIA-222-F Date: 05/10/10 Scale: NTS Path: W:\Clearwire\20592\20592-1027-1203-CT-HFD0041B\Drawings\051010.dwg Dwg No. E-1</p>	
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RISATower CHA, Inc. III Winner's Circle Albany, NY Phone: (518) 453-8761 FAX: (518) 453-4712	Job 20592-1027-1203	Page 3 of 10 28 of 28
	Project CT-HFD0041B	Date 10:30:09 05/10/10
	Client Clearwire	Designed by Tony Marruso

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P}{P_o}$	$\frac{f_{ix}}{F_{br}}$	$\frac{f_{by}}{F_{by}}$			
T2	94 - 79 (110)	C8x11.5	0.022	0.641	0.000	0.663	1.333	H2-1 ✓
T2	94 - 79 (111)	C8x11.5	0.021	0.671	0.000	0.692	1.333	H2-1 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail	
T1	109 - 94	Leg	3	3	-10371.20	179143.20	9.6	Pass	
		Diagonal	P1.5x.2	8	-2759.34	21990.63	12.5	Pass	
		Top Girt	L3x3x1/4	5	-341.80	32347.11	1.1	Pass	
T2	94 - 79	Leg	3	27	-9013.69	232349.89	20.2	Pass	
		Diagonal	P1.5x.2	52	-1734.18	24309.39	7.1	Pass	
		Guy Upper	P1.5x.2	58	-2747.78	31443.20	8.7	Pass	
		Diagonal@91							
		Top Girt	P1.5x.2	30	-1462.33	24198.35	6.0	Pass	
		Guy A@91	3/8	108	5125.79	7700.00	66.6	Pass	
		Guy B@91	3/8	104	4978.28	7700.00	64.7	Pass	
		Guy C@91	3/8	101	5970.62	7700.00	77.5	Pass	
T3	79 - 64	Torque Arm Top@91	C8x11.5	102	1429.39	97319.66	71.8	Pass	
		Leg	3	62	-10679.00	179143.20	6.4	Pass	
		Diagonal	P1.5x.2	82	-1094.54	21990.63	5.0	Pass	
T4	64 - 59	Top Girt	P1.5x.2	64	468.65	30754.84	1.5	Pass	
		Leg	3	86	-7199.10	264203.26	4.1	Pass	
		Horizontal	L4x6x5/16	88	1800.75	87242.18	2.1	Pass	
							Summary		
							Leg (T2)	20.2 Pass	
							Diagonal (T1)	12.5 Pass	
							Guy Upper Diagonal (T2)	8.7 Pass	
							Horizontal (T4)	2.1 Pass	
							Top Girt (T2)	6.0 Pass	
							Guy A (T2)	66.6 Pass	
							Guy B (T2)	64.7 Pass	
							Guy C (T2)	77.5 Pass	
							Torque Arm Top (T2)	71.8 Pass	
							RATING =	77.5 Pass	

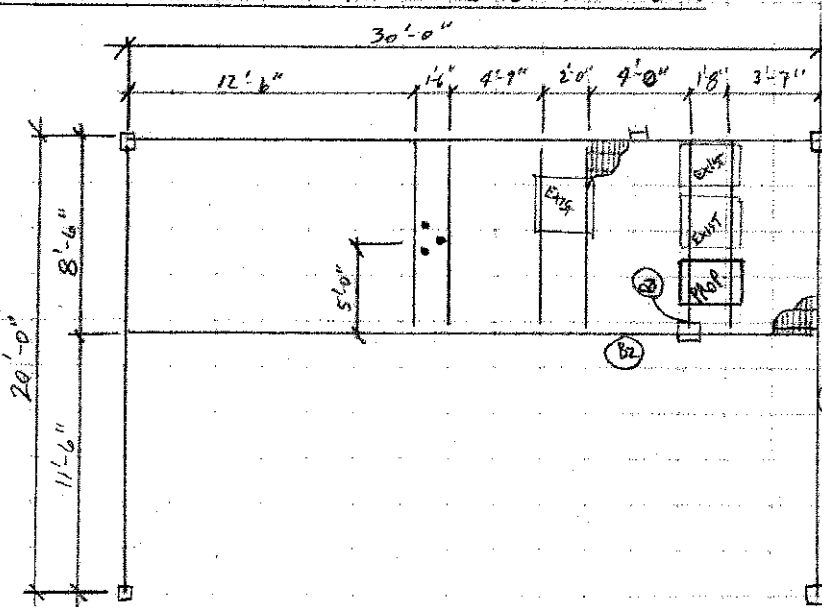


CHA COMPUTATION PAD

COMPLETED BY: AM
 CHECKED BY: _____
 PROJECT NAME: CT-HFD 0041B
 PROJECT LOCATION: West Hartford, CT.

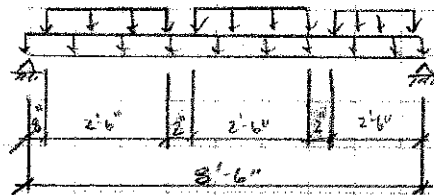
PROJECT: 2 0 5 9 2 | PHASE: 1 0 2 7 | ORG: 1 2 0 3
 SHEET #: 4 OF 10
 DATE: 5.10.10
 SUBJECT: EXISTING STEEL PLATFORM ANALYSIS

CHECK EXISTING STEEL PLATFORM FOR PROPOSED EQUIPMENT LOAD:



SEE NOTES BY
G.S. - 10/31/09

ANALYSIS B1: W6x15



DEAD: (2) EXIST CABINETS \Rightarrow (Assume) 1500# EA $\hat{=}$ 2'-6" SQ FOOTPRINT = 300 PLF (EA)
 GRATING \Rightarrow 15 PLF (Assumed), $A_T \hat{=} 3'$ = 45 PLF
 PROPOSED \Rightarrow 1250# / 2 SIDES = 625# / 2.5' = 250 PLF
LIVE: 60 PLF (PEDESTRIAN); $A_T \hat{=} 3'$ \Rightarrow = 180 PLF

TDC 16074-0610C

FROM ENERCALC: W6x15 \checkmark (OK) W/ PROPOSED LOADS.

$f_b/f_b = 0.191$
 $R_{max} = 2.15K$

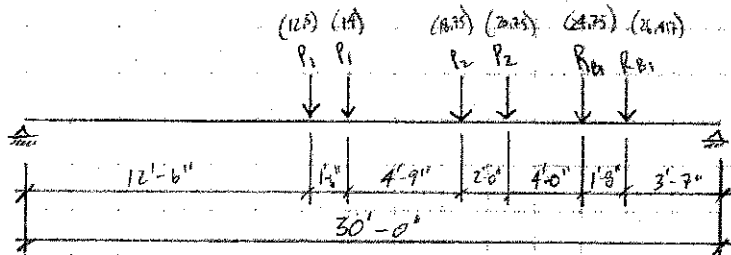


CHA COMPUTATION PAD

COMPLETED BY: Jen
 CHECKED BY: _____
 PROJECT NAME: CT-HFD 00 91B
 PROJECT LOCATION: W. HARTFORD

PROJECT: 20592 | PHASE: 10271 | ORG: 203
 SHEET #: 5 OF 10
 DATE: 5.10.10
 SUBJECT: Platform Analysis

ANALYSIS R2: W 14x53 Assume CONSERVATIVE FT. LOADS, BASED ON SITE NOTES



$$P_1 = \left(\text{Base Rev of Given Tower} \right) / 2 + \text{WT. BEAM} = 11.24^k + \left(\frac{35^{11}}{4} * \frac{8.5'}{2} \right) = 11.4^k$$

$$P_2 = R_{B1} = 2.15^k \quad (\text{CONSERVATIVE})$$

From ENERCALC: EXISTING W14x53 ✓ OK
 $P_b/F_b = 0.475$

∴ EXISTING STEEL ADEQUATE FOR ADD'L EQUIP. WT.

Rev: 580007
 User: KW-0602423, Ver 5.8.0, 1-Nov-2006
 (c)1983-2006 ENERCALC Engineering Software

Steel Beam Design

Page 1
 platform analysis.ecw:Calculations

Description B1

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : W6X15

Center Span 8.50 ft
 Left Cant 0.00 ft
 Right Cant 0.00 ft
 Lu : Unbraced Length 8.50 ft

Pinned-Pinned
 Bm Wt. Added to Loads
 LL & ST Act Together

Fy 50.00 ksi
 Load Duration Factor 1.00
 Elastic Modulus 29,000.0 ksi

Distributed Loads

Note! Short Term Loads Are WIND Loads.

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	
DL	0.050	0.300	0.300	0.250				k/ft
LL	0.180							k/ft
ST								k/ft
Start Location		0.667	3.330	6.000				ft
End Location		3.167	5.833	8.500				ft

Summary

Beam OK
 Static Load Case Governs Stress

Using: W6X15 section, Span = 8.50ft, Fy = 50.0ksi
 End Fixity = Pinned-Pinned, Lu = 8.50ft, LDF = 1.000

	Actual	Allowable		
Moment	4.667 k-ft	24.425 k-ft	Max. Deflection	-0.071 in
fb : Bending Stress	5.732 ksi	30.000 ksi	Length/DL Defl	2,204.0 : 1
fb / Fb	0.191 : 1		Length/(DL+LL Defl)	1,433.4 : 1
Shear	2.148 k	27.554 k		
fv : Shear Stress	1.559 ksi	20.000 ksi		
fv / Fv	0.078 : 1			

Force & Stress Summary

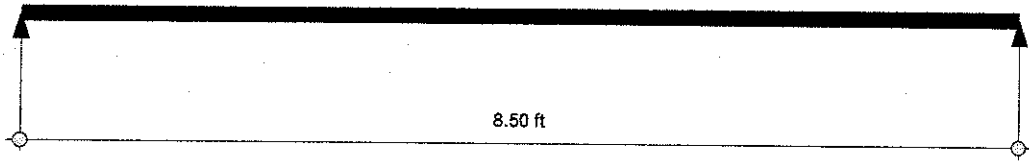
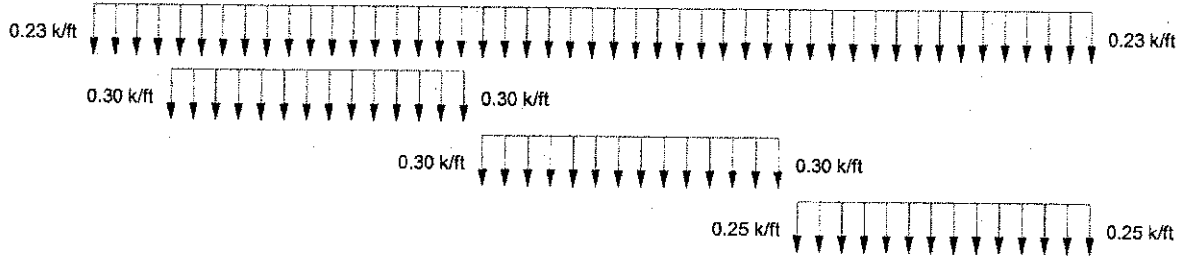
<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max. M +	4.67 k-ft	3.04	4.67				k-ft
Max. M -		-0.00	-0.00				k-ft
Max. M @ Left							k-ft
Max. M @ Right							k-ft
Shear @ Left	2.06 k	1.30	2.06				k
Shear @ Right	2.15 k	1.38	2.15				k
Center Defl.	-0.071 in	-0.046	-0.071	-0.071	0.000	0.000 in	
Left Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000 in	
Right Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000 in	
...Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000 in	
Reaction @ Left	2.06	1.30	2.06	2.06			k
Reaction @ Rt	2.15	1.38	2.15	2.15			k

Fa calc'd per Eq. E2-2, $K \cdot L / r > C_c$

I Beam, Major Axis, $(102,000 \cdot C_b / F_y)^{0.5} \leq L / r \leq (510,000 \cdot C_b / F_y)^{0.5}$, Fb per Eq. F1-6

I Beam, Major Axis, Fb per Eq. F1-8, $F_b = 12,000 C_b A_f / (l \cdot d)$

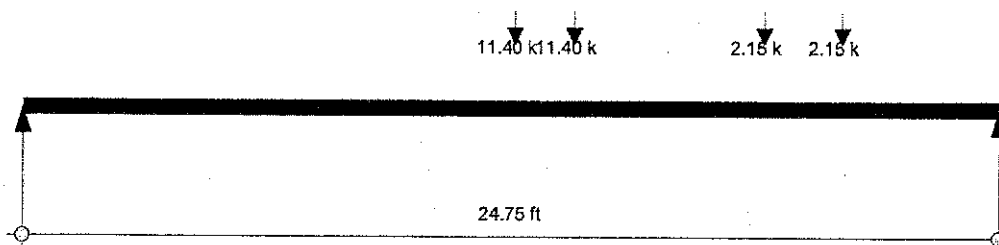


$M_{max} = 4.66 \text{ k-ft}$

$D_{max} = -0.0711 \text{ in}$

$L_{max} = 2.060 \text{ k}$
 $V_{max} \text{ @ left} = 2.060 \text{ k}$

$R_{max} = 2.148 \text{ k}$
 $V_{max} \text{ @ rt} = 2.148 \text{ k}$

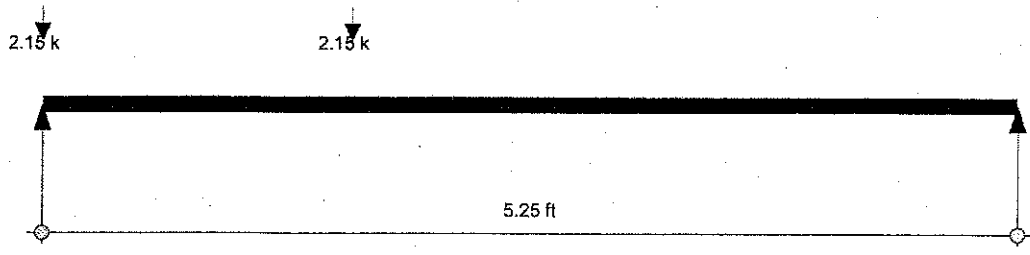


Mmax = 91.87 k-ft at 12.53 ft from left

Dmax = -0.4421 in at 11.71 ft from left

DL Reaction = 7.362 k
LL Reaction = 0.000 k
Total Reaction = 7.362 k

Mmax @ right = -101.47 k-ft
DL Reaction = 42.681 k
LL Reaction = 0.000 k
Total Reaction = 42.681 k



Mmax = 5.20 k-ft at 5.24 ft from left

Dmax = 0.0191 in at 2.20 ft from left

Mmax @ left = -101.47 k-ft

DL Reaction = 42.681 k

LL Reaction = 0.000 k

Total Reaction = 42.681 k

DL Reaction = -18.643 k

LL Reaction = 0.000 k

Total Reaction = -18.643 k



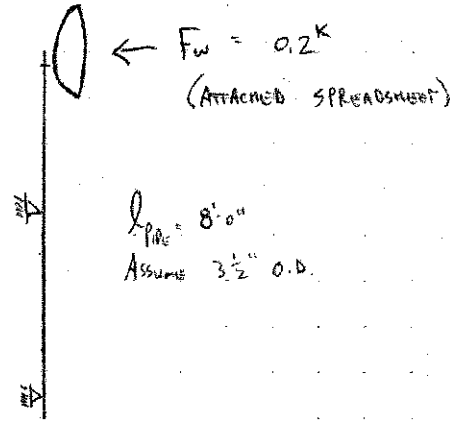
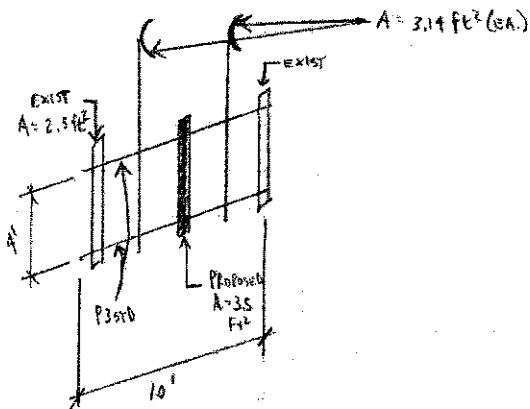
CHA COMPUTATION PAD

COMPLETED BY: Jim
 CHECKED BY: _____
 PROJECT NAME: CT - HFD 0041 B
 PROJECT LOCATION: W. HARTFORD, CT.

PROJECT	PHASE	ORG
20592	1027	1203

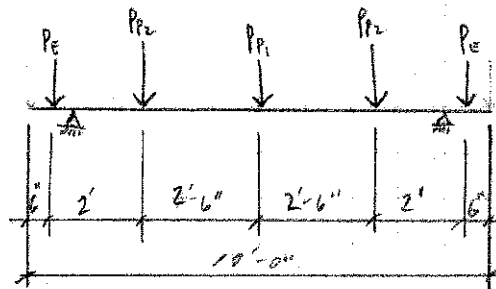
SHEET #: 1 OF 6
 DATE: 5.11.10
 SUBJECT: MW PPS MOUNTS

DESIGN MW ANT. PIPE MOUNT :



FROM ENERCALC : USE P3 STD
 $F_b/F_b = 0.1195$
 $R_{max} = 0.23K$

CHK EXISTING HORIZONTAL PIPE FOR ADEQUACY : Assume P3 STD - CONSERVATIVE



$P_e = 25.1 \text{ lbf} \times 2.5 \text{ ft}^2 = 0.06K$ (EXIST. PANEL)
 $P_{p1} = 25.1 \text{ lbf} \times 3.5 \text{ ft}^2 = 0.09K$ (PROPOSED PANEL)
 $P_{p2} = R_{p1} = 0.23K$ (PROPOSED MW)

FROM ENERCALC : P3 STD $\sqrt{0.1195}$ (ASSUMED FROM PHOTOS)
 $F_b/F_b = 0.176$



CLOUGH HARBOUR & ASSOCIATES LLP

Completed by:
 Checked by:
 Project Name:
 Project Location:

Project #
 Sheet #: of
 Date:
 Subject:

Wind Load Calculation = ASCE-7

Velocity Pressure = $qz = 0.00256(Kz)(Kzt)(Kd)(V^2)(I)$

-Click on yellow cells for drop down menus or Type in appropriate values if no drop down menu-

- 1. Classification (see Data sheet) = *
- 2. Exposure (see Data sheet) = *
- 3. Height (z) - use centerline elevation (Round to the nearest foot) = Feet
- 4. Kz (velocity pressure exposure coefficient evaluated at height z) = (assuming Case 2)
- 5. Kzt (topographical factor) =
- 6. Kd (wind directionality factor) = **
- 7. V (Basic Wind Speed (MPH)) - (Insert Wind Speed) = MPH
- 8. I = Impotance Factor =

*see ASCE-7 for more specific category info., **For Towers, Arched, & Monoslope Roofs, See ASCE -7

9. qz (psf) = $0.00256(Kz)(Kzt)(Kd)(V^2)(I) = 25.14$ PSF

10. Design Wind Force = F (lbs) = $(qz)(G)(Cf)(Af) = 204.56$ lbs = 0.20 Kips

qz = From line #9 above = 25.13715 PSF
 G = Gust effect factor = 0.85
 Height of projected area (Feet) = Ft
 Width of projected area (Feet) = Ft
 Area (Feet²) = Height x Width = 5.175 Ft² *input solid area if open sign & Lattice work
 Solid Signs = ▶ Fill in corresponding information below.
 Cf=Net Force Coefficient = Calculated below = ▶ Type in Corresponding Calculated Cf below

Open Signs & Lattice Works:

Solid Area: Ft²
 Gross Area: Ft²
 $\epsilon = (\text{solid})/(\text{gross area}) = \#DIV/0!$
 Flat-Sided Members?
 Choose No for Rounded Members
Rounded Members:
 D = Typ. member Dia. () Feet
 $D\sqrt{qz} = 0$
 Cf = Net Force Coeff. =
 *Signs w/ openings of 30% or more of the gross area are considered open signs

Chimneys, Tanks, & Similar Structures

h = height of structure (ft) =
 D = Dia. of circular cross section or least horizontal of square, hexagonal, or octagonal crosssections at elevation under consideration = Feet
 $qz = 25.137152$ PSF
 h/D =
 Cross Section Type:
 *See ASCE-7, Table 6-11 for Round Cross Sections
 $D\sqrt{qz} = 0$
 *See Table 6-11 of ASCE-7
 Cf = Net Force Coefficients =

Solid Freestanding Walls & Solid Signs (For Case A&B only, see ASCE-7 for case C)

Ground Level: Elevation(AGL) to top of sign=
 Height of Sign (ft)= Width/ Height= Aspect Ratio (B/s)
 Width of Sign(ft) = Height / Elevation (AGL) = clearance ratio (s/h)
 Cf = Net Force Coefficients =

Steel Beam Design

Description MW Pipe Mount

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : P3STD

Center Span	4.00 ft	Pinned-Pinned	Fy	35.00ksi
Left Cant	3.50 ft	Bm Wt. Added to Loads	Load Duration Factor	1.00
Right Cant	0.50 ft	LL & ST Act Together	Elastic Modulus	29,000.0 ksi
Lu : Unbraced Length	4.00 ft			

Point Loads

Note! Short Term Loads Are WIND Loads.

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	
Dead Load								k
Live Load	0.200							k
Short Term								k
Location	-3.000							ft

Summary

Beam OK
 Static Load Case Governs Stress

Using: P3STD section, Span = 4.00ft, Fy = 35.0ksi, Left Cant. = 3.50ft, Right Cant. = 0.50ft
 End Fixity = Pinned-Pinned, Lu = 4.00ft, LDF = 1.000

	Actual	Allowable		
Moment	0.646 k-ft	3.311 k-ft	Max. Deflection	0.105 in
fb : Bending Stress	4.510 ksi	23.100 ksi	Length/DL Defl	14,721.8 : 1
fb / Fb	0.195 : 1		Length/(DL+LL Defl)	800.0 : 1
Shear	0.226 k	10.584 k		
fv : Shear Stress	4.455 ksi	14.000 ksi		
fv / Fv	0.318 : 1			

Force & Stress Summary

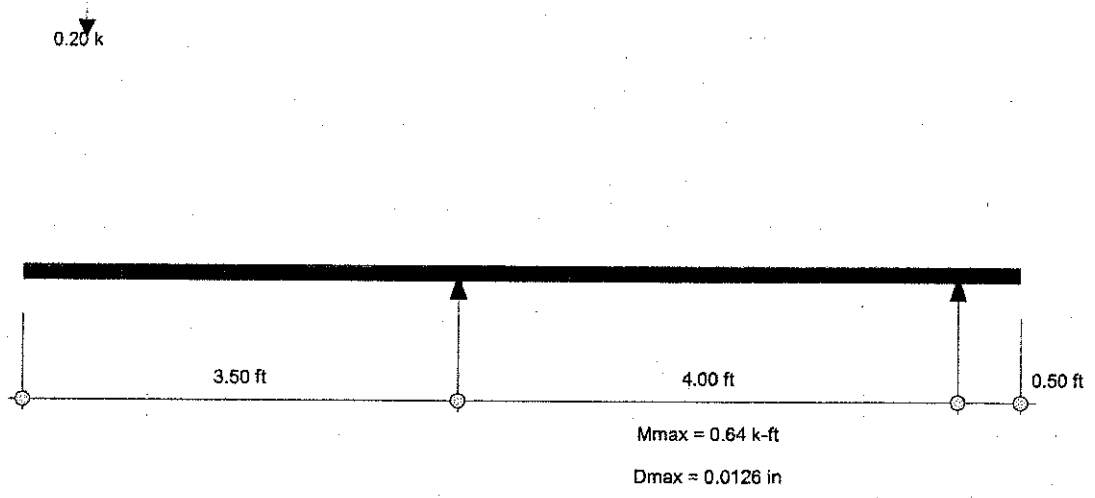
<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max. M +	0.65 k-ft						k-ft
Max. M -		-0.05	-0.05		-0.65		k-ft
Max. M @ Left		-0.05	-0.05		-0.65		k-ft
Max. M @ Right		-0.00	-0.00		-0.00		k-ft
Shear @ Left	0.23 k	0.03	0.03		0.23		k
Shear @ Right	0.15 k	0.00	0.00		0.15		k
Center Defl.	0.013 in	0.000	0.000	0.000	0.013	0.013 in	
Left Cant Defl	0.105 in	-0.006	-0.006	-0.006	-0.105	-0.105 in	
Right Cant Defl	0.004 in	-0.000	-0.000	-0.000	-0.004	-0.004 in	
...Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000 in	
Reaction @ Left	0.40	0.05	0.05	0.05	0.40	0.40 k	
Reaction @ Rt	-0.14	0.01	0.01	0.01	-0.14	-0.14 k	

Fa calc'd per Eq. E2-1, K*L/r < Cc

Section Properties P3STD

Diameter	3.500 in	Weight	7.57 #/ft
		Ixx	3.020 in4
		Iyy	3.020 in4
Thickness	0.216 in	Sxx	1.720 in3
Area	2.23 in2	Syy	1.720 in3
		R-xx	1.160 in
Values for LRFD Design....		R-yy	1.160 in
J	6.030 in4	Zx	2.330 in3
		Zy	2.330 in3



Mmax = 0.64 k-ft
Dmax = 0.0126 in

Mmax @ left = 0.64 k-ft	Mmax @ right = 0.00 k-ft
Lmax = 0.403 k	Rmax = -0.142 k
Vmax @ left = 0.226 k	Vmax @ rt = 0.146 k
Defl @ left end = -0.1050 in	Defl @ right end = -0.0043 in

Rev: 580007
 User: KW-0602423, Ver 5.8.0, 1-Nov-2006
 (c)1983-2006 ENERCALC Engineering Software

Steel Beam Design

Page 1
 platform analysis.ecw:Calculations

Description Exist Horiz. Pipe Analysis

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : P3STD

Center Span 8.00 ft
 Left Cant. 1.00 ft
 Right Cant 1.00 ft
 Lu : Unbraced Length 8.00 ft

Pinned-Pinned
 Bm Wt. Added to Loads
 LL & ST Act Together

Fy 35.00ksi
 Load Duration Factor 1.00
 Elastic Modulus 29,000.0ksi

Point Loads

Note! Short Term Loads Are WIND Loads.

	# 1	# 2	# 3	# 4	# 5	# 6	# 7
Dead Load							
Live Load	0.060	0.230	0.090	0.230	0.060		
Short Term							
Location	-0.500	1.500	4.000	6.500	8.500		

Summary

Beam OK
 Static Load Case Governs Stress

Using: P3STD section, Span = 8.00ft, Fy = 35.0ksi, Left Cant. = 1.00ft, Right Cant. = 1.00ft
 End Fixity = Pinned-Pinned, Lu = 8.00ft, LDF = 1.000

	<u>Actual</u>	<u>Allowable</u>		
Moment	0.582 k-ft	3.311 k-ft	Max. Deflection	-0.078 in
fb : Bending Stress	4.059 ksi	23.100 ksi	Length/DL Defl	8,020.7 : 1
fb / Fb	0.176 : 1		Length/(DL+LL Defl)	717.8 : 1
Shear	0.305 k	10.584 k		
fv : Shear Stress	4.455 ksi	14.000 ksi		
fv / Fv	0.318 : 1			

Force & Stress Summary

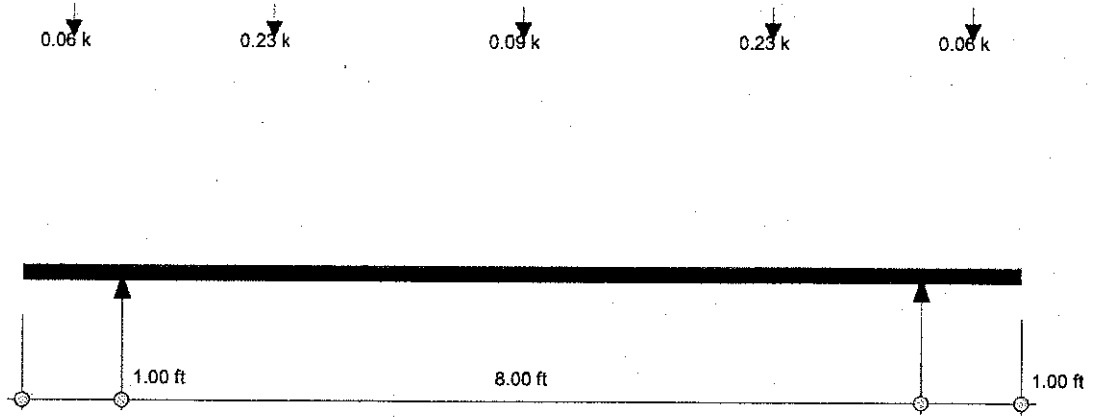
<<-- These columns are Dead + Live Load placed as noted -->>

	<u>Maximum</u>	<u>DL Only</u>	<u>LL @ Center</u>	<u>LL+ST @ Center</u>	<u>LL @ Cants</u>	<u>LL+ST @ Cants</u>	
Max. M +	0.58 k-ft	0.06	0.58		0.03		k-ft
Max. M -		-0.00	-0.00		-0.03		k-ft
Max. M @ Left		-0.00	-0.00		-0.03		k-ft
Max. M @ Right		-0.00	-0.00		-0.03		k-ft
Shear @ Left	0.31 k	0.03	0.31		0.07		k
Shear @ Right	0.31 k	0.03	0.31		0.07		k
Center Defl.	-0.078 in	-0.007	-0.078	-0.078	-0.003	-0.003 in	
Left Cant Defl	0.032 in	0.003	0.032	0.032	0.000	0.000 in	
Right Cant Defl	0.033 in	0.003	0.033	0.033	0.000	0.000 in	
...Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000 in	
Reaction @ Left	0.38	0.04	0.31	0.31	0.10	0.10 k	
Reaction @ Rt	0.38	0.04	0.31	0.31	0.10	0.10 k	

Fa calc'd per Eq. E2-2, K*L/r > Cc

Section Properties P3STD

Diameter	3.500 in	Weight	7.57 #/ft
		Ixx	3.020 in4
		Iyy	3.020 in4
Thickness	0.216 in	Sxx	1.720 in3
Area	2.23 in2	Syy	1.720 in3
		R-xx	1.160 in
Values for LRFD Design....		R-yy	1.160 in
J	6.030 in4	Zx	2.330 in3
		Zy	2.330 in3



$M_{max} = 0.58 \text{ k-ft}$

$D_{max} = -0.0782 \text{ in}$

$M_{max} @ \text{ left} = 0.03 \text{ k-ft}$

$L_{max} = 0.376 \text{ k}$

$V_{max} @ \text{ left} = 0.305 \text{ k}$

$Defl @ \text{ left end} = -0.03320 \text{ in}$

$M_{max} @ \text{ right} = 0.03 \text{ k-ft}$

$R_{max} = 0.376 \text{ k}$

$V_{max} @ \text{ rt} = 0.305 \text{ k}$

$Defl @ \text{ right end} = -0.03334 \text{ in}$



To: Connecticut Siting Council
From: Frantz Pierre – Radio Frequency Engineer
Cc: Cameron Syme
Subject: Power Density Report for CT-HFD0041
Date: May 28, 2010

1. Introduction:

This report is the result of Electromagnetic Field Intensities (EMF – Power Densities) study for the Clearwire broadband antenna installation on a guyed Tower at 345 North Main Street, West Hartford CT, 06107. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location:

2: Discussion:

The following assumptions were used in the calculations:

- 1) The emissions from Clearwire transmitters are in the (2496 – 2960) Frequency Band
- 2) The emissions from the Clearwire Microwave dishes are in the 23 GHz Frequency Band
- 3) The model number for Clearwire Antenna is Argus LLPX310R
- 4) The model number for the Microwave dish is Andrew VHLP1-23 with 12" Diameter.
- 5) The Clearwire Panel antenna centerline is 95 feet.
- 6) The Clearwire Microwave dish centerline is 95 feet.
- 7) The Maximum Transmit power from any Clearwire panel antenna is 251 Watts Effective Isotropic Radiated Power (EiRP) assuming 2 channels per sector.
- 8) The Maximum Transmit power from any Clearwire Microwave Dish is 346 Watts Effective Isotropic Radiated Power (EiRP) assuming 1 channel per dish.
- 9) All antennas are simultaneously transmitting and receiving 24 hours per day.
- 10) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in "FCC OET Bulletin 65, Edition 97-01" were used with the above information to perform the calculations.

3: Conclusion:

Based on the above worst case assumptions, the power density calculation from the Clearwire antenna installation on a guyed roof top Tower at 345 North Main Street, West Hartford, CT is 0.0002278 mW/cm². This value represents 0.0032% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm²) set forth in the FCC/ANSI/IEEE C95-1-1991. Furthermore, the proposed antenna location for Clearwire will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.

The combined Power Density from all other carriers is 16.4600 %. The combined Power Density for this site is 16.4632% of the M.P.E. standard.