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ATTORNEYS AT LAW

CARRIE L. LARSON
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Hartford, CT 06103-3702
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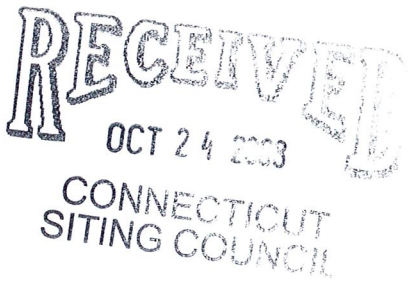
ORIGINAL

October 23, 2008



Via Federal Express

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

Re: EM- POCKET-033-080922
Crown Castle USA, Inc. Telecommunications Facility
201 Main Street, Cromwell, Connecticut

Dear Mr. Phelps:

Pursuant to your letter dated October 14, 2008 (a copy of which is attached) I have enclosed the new structural for the site indicating that it is below 100% together with a letter from a professional engineer.

If you should need anything further, please feel free to contact me.

Respectfully Submitted,

Carrie L. Larson

Enclosure

Hartford/72572.58/JTP/332643v1

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

October 14, 2008

Carrie L. Larson, Esq.
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103

RE: **EM-POCKET-033-080922** – Youghiogheny Communications-Northeast, LLC d/b/a Pocket Communications notice of intent to modify an existing telecommunications facility located at 201 Main Street, Cromwell, Connecticut.

Dear Attorney Larson:

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:

- the applicant shall take steps to reduce the post-construction tower rating to not more than 100 percent; and
- a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be provided to the Council to certify that the post-construction tower rating of not more than 100 percent has been achieved.

The proposed modifications are to be implemented as specified here and in your notice dated September 19, 2008, 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/DM/jb

c: The Honorable Jeremy J. Shingleton, First Selectman, Town of Cromwell
Frederic Curtin, Zoning Enforcement Officer, Town of Cromwell
Crown Castle

October 7, 2008

Tara Brewer
Crown Castle USA
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6546

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
caseltyne@verticalstructures.com

Subject: **Structural Analysis Report**

Carrier Designation	**Youghiogheny Co-Locate** **Carrier Site Number: N/A** **Carrier Site Name: CT-0210**
Crown Castle Designation	**Crown Castle BU Number: 876364** **Crown Castle Site Name: Cromwell/First Line Emergency** **Crown Castle JDE Job Number: 106053**
Engineering Firm Designation	**Vertical Structures Project Number: 2008-004-130**
Site Data	**201 Main Street, Cromwell, CT, Middlesex County** **Latitude 41°-35'-0.11", Longitude -72°-38'-59.14"** **125' EEI Monopole Tower**

Dear Ms. Brewer,

Vertical Structures is pleased to submit this structural analysis report to determine the structural integrity of the aforementioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 304880, and Application Number 64283, Revision 2. The purpose of the analysis is to determine the suitability of the tower for the following load case:

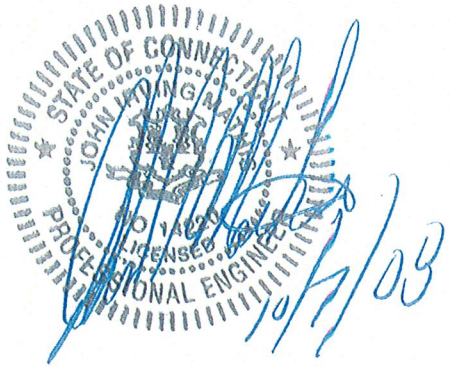
Load Case 1 (LC1): Proposed Equipment (Table 1) + Existing/Reserved Equipment (Table 2)

Based on our analysis we have determined the tower superstructure and foundation are sufficient for LC1. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon an 80 MPH basic "fastest mile" wind speed, equivalent to a 100 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1

Vertical Structures appreciates the opportunity of providing our continuing professional services to you and Crown Castle USA. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Craig Aseltyne, P.E.
Project Engineer



October 7, 2008

Tara Brewer
Crown Castle USA
3530 Toringdon Way, Suite 300
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(704) 405-6546

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Craig Aseltyne, P.E.
Project Engineer

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1.) INTRODUCTION

The 125' tall monopole tower was designed and manufactured by EEI for Sprint PCS in 2000. The tower consists of three (3) 18-sided tapered polygonal tubes joined via slip joint connections and is founded on a 24' square by 3' thick mat bearing 6' below grade. The tower has been previously reworked to accommodate additional loading.

2.) ANALYSIS CRITERIA

The Cromwell/First Line Emergency tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The proposed, existing and reserved antennas, cables and mounts considered in this analysis are listed in Tables 1 and 2. Applied forces in this study were derived from an 80 MPH basic "fastest mile" wind speed with no ice and a reduced 69 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for a 90 MPH basic "fastest mile" wind speed with no ice and a reduced 78 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are unavailable. All cables are assumed to be routed in accordance with the drawing in Appendix B.

Table 1 – Proposed Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
85	3	Kathrein	742 213		(3) Mount Pipes	6	1 5/8

Table 2 – Existing and Reserved Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
125	6	Decibel	DB980H90A-M	EEI	10'-8" L.P. Platform	6	1 5/8
	9*	EMS Wireless	FV65-14-00NA2			9*	1 5/8
115	6**	Powerwave Technologies	7770.00		(3**) 4' T-Arms	6 + 6**	1 1/4
	6***		LGP21401 TMA				
105	6	Decibel	DB844H90		12' L.P. Platform	12	1 5/8
	6	Decibel	DB948F85T2E-M				
95	12	Decibel	DB844H65E-XY		12' L.P. Platform	12	1 5/8
						15****	1 1/4

*Indicates MLA loading. MLA loading controls and is used in this analysis.
**Indicates reserved equipment.
***Indicates reserved TMAs to be installed directly behind the reserved panel antennas.
****Indicates SLA loading. SLA loading controls and is used in this analysis.

3.) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference	Source
Online Application	Youghiogheny Co-Locate Revision #2	64283	CCI iSite
Tower Drawing	EEI Drawing No. GS52064	1771100	CCI iSite
Foundation Drawing	EEI Drawing No. S6464-125	1613633	CCI iSite
Geotechnical Report	Dr. Clarence Welti Report Dated "August 2, 1999"	1614540	CCI iSite
Rework Information	Vertical Structures Job No. 2007-004-104	1956332	CCI iSite
Rework Drawings	Vertical Structures Job No. 2007-004-138	2133336	CCI iSite

3.1) Analysis Methods

RISA Tower (Version 5.3), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/TIA/EIA-222-F or the local building code requirements. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and any referenced drawings.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and Vertical Structures should be allowed to review any new information to determine its effect on the structural integrity of the tower.

4.) ANALYSIS RESULTS

Table 4 – Tower Component Stresses vs. Capacity (LC1)

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	124.771 - 84.9115	Pole	TP27.0855x18.5x0.1875	1	-8104.83	806298.34	74.3	Pass
L2	84.9115 - 40.3411	Pole	TP36.1854x25.8736x0.25	2	-14194.30	1438293.61	99.6	Pass
L3	40.3411 - 0	Pole	TP44.25x34.6164x0.3125	3	-22980.10	2265620.03	91.3	Pass
							Summary	
						Pole (L2)	99.6	Pass
						RATING =	**99.6**	**Pass**

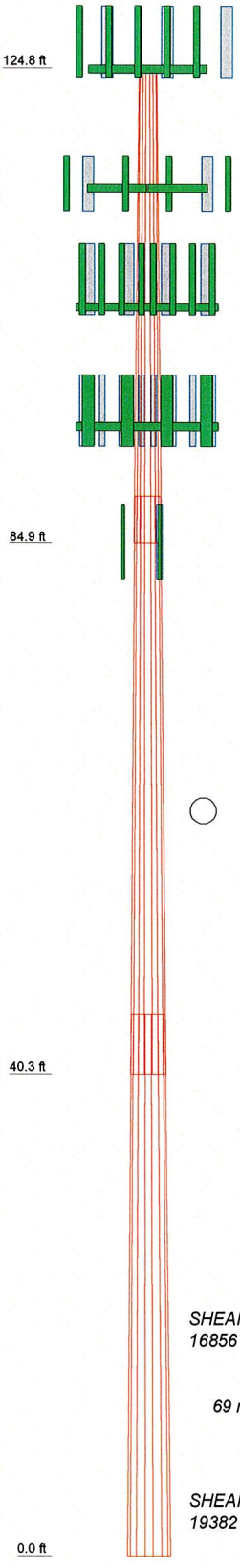
Notes	Component	% Capacity	Pass/Fail
Additional Component Analysis Summary:			
1	Anchor Bolts (Tension)	78.7	Pass
1	Base Plate and Gussets (Bending)	89.0	Pass
1	Foundation (Compared to Allowable Loads)	95.5	Pass
	Structure Rating =	**99.6**	**Pass**

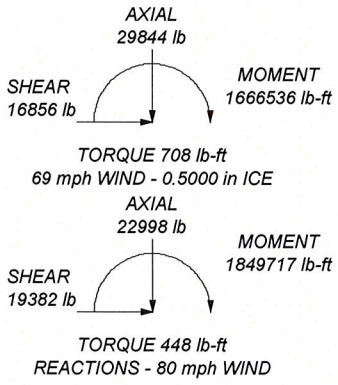
1) Indicates calculations supporting % capacity are included in Appendix C.

APPENDIX A

Section	1	2	3
Length (ft)	39.86	48.46	45.36
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Lap Splice (ft)	3.89	5.02	
Top Dia (in)	18.5000	25.8736	34.6164
Bot Dia (in)	27.0855	36.1854	44.2500
Grade		A572-65	
Weight (lb)	1824.7	4027.1	5989.8

11841.6





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
EEI 10'-8" Low-Profile Platform	125	(2) DB948F85T2E-M w/Mount Pipe	105
EEI Monopole Platform Ladder (VSI)	125	(2) DB844H90 w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB948F85T2E-M w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB844H90 w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB948F85T2E-M w/Mount Pipe	105
(3) FV65-14-00NA2 w/Mount Pipe	125	12' Low Profile Platform (VSI)	95
(3) FV65-14-00NA2 w/Mount Pipe	125	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
(3) FV65-14-00NA2 w/Mount Pipe	125		
4' T-Arm Mount	115	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
(2) 7770.00 w/ mount pipe	115		
(2) LGP21401 TMA (VSI)	115	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
4' T-Arm Mount	115		
(2) 7770.00 w/ mount pipe	115	742 213 w/ Mount Pipe (Youghiogheny)	85
(2) LGP21401 TMA (VSI)	115	742 213 w/ Mount Pipe (Youghiogheny)	85
4' T-Arm Mount	115		
(2) 7770.00 w/ mount pipe	115	742 213 w/ Mount Pipe (Youghiogheny)	85
(2) LGP21401 TMA (VSI)	115		
12' L.P. Platform (VSI)	105		
(2) DB844H90 w/Mount Pipe	105		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex 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 50 mph wind.
5. TOWER RATING: 99.6%

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job: ***Cromwell/First Line Emergency, CT BU#87636***		
Project: ***Vertical Structures Job No. 2008-004-130***		
Client: Crown Castle	Drawn by: Asel	App'd:
Code: TIA/EIA-222-F	Date: 10/07/08	Scale: NTS
Path: Y:\asel\Eng Archive\Structural Archive\2008 Jobs\2008-004\2008-004-130\Cromwell-First Line_CT\SSA\87636.tnl		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 Middlesex County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
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, feedline supports, and appurtenance mounts are not considered.

Options

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

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	124.77-84.91	39.86	3.89	18	18.5000	27.0855	0.1875	0.7500	A572-65 (65 ksi)
L2	84.91-40.34	48.46	5.02	18	25.8736	36.1854	0.2500	1.0000	A572-65 (65 ksi)
L3	40.34-0.00	45.36		18	34.6164	44.2500	0.3125	1.2500	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	18.7854	10.8982	461.7305	6.5009	9.3980	49.1307	924.0685	5.4501	2.9260	15.605
	27.5033	16.0077	1463.2065	9.5488	13.7594	106.3421	2928.3383	8.0054	4.4370	23.664
L2	27.1123	20.3323	1686.5721	9.0964	13.1438	128.3170	3375.3635	10.1681	4.1138	16.455
	36.7436	28.5147	4652.1299	12.7571	18.3822	253.0782	9310.3812	14.2601	5.9286	23.715
L3	36.2336	34.0252	5058.5228	12.1779	17.5851	287.6593	10123.7017	17.0158	5.5425	17.736
	44.9326	43.5805	10629.1961	15.5978	22.4790	472.8500	21272.3785	21.7944	7.2380	23.162

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
L1 124.77-84.91				1	1	1		
L2 84.91-40.34				1	1	1		
L3 40.34-0.00				1	1	1		

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 plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	124.77 - 4.00	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	115.00 - 4.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	107.00 - 4.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	96.00 - 4.00	15	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
AVA7-50 (1-5/8 LOW DENSI. FOAM) (Youghiogheny)	C	No	Inside Pole	85.00 - 4.00	6	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72

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 lb
L1	124.77-84.91	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	859.97
L2	84.91-40.34	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1754.29
L3	40.34-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1430.39

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 lb
L1	124.77-84.91	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	859.97
L2	84.91-40.34	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1754.29
L3	40.34-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1430.39

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	124.77-84.91	0.0000	0.0000	0.0000	0.0000
L2	84.91-40.34	0.0000	0.0000	0.0000	0.0000
L3	40.34-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
EEI 10'-8" Low-Profile Platform	C	None		0.0000	125.00	No Ice	22.50	22.50	1500.00
						1/2" Ice	28.10	28.10	2250.00
EEI Monopole Platform Ladder (VSI)	A	From Centroid-Face	3.00 0.00 -3.00	0.0000	125.00	No Ice	5.00	5.50	60.00
						1/2" Ice	8.00	9.00	90.00
6' x 2" Antenna Mount Pipe (VSI)	A	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice	1.43	1.43	23.00
						1/2" Ice	1.92	1.92	33.83
6' x 2" Antenna Mount Pipe (VSI)	B	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice	1.43	1.43	23.00
						1/2" Ice	1.92	1.92	33.83
6' x 2" Antenna Mount Pipe (VSI)	C	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice	1.43	1.43	23.00
						1/2" Ice	1.92	1.92	33.83
(3) FV65-14-00NA2 w/Mount Pipe	A	From Centroid-Leg	2.82 1.63 2.00	30.0000	125.00	No Ice	8.64	6.95	55.55
						1/2" Ice	9.29	8.13	121.25
(3) FV65-14-00NA2 w/Mount Pipe	B	From Centroid-Leg	2.82 1.63 2.00	30.0000	125.00	No Ice	8.64	6.95	55.55
						1/2" Ice	9.29	8.13	121.25
(3) FV65-14-00NA2	C	From	2.82	30.0000	125.00	No Ice	8.64	6.95	55.55

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
w/Mount Pipe		Centroid-Leg	1.63 2.00			1/2" Ice	9.29	8.13	121.25
**									
4' T-Arm Mount	A	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	A	From Centroid-Leg	5.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	A	From Centroid-Leg	5.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.36 0.48	14.10 21.26
4' T-Arm Mount	B	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	B	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	B	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.36 0.48	14.10 21.26
4' T-Arm Mount	C	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	C	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	C	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	0.00 0.00	0.36 0.48	14.10 21.26
**									
12' L.P. Platform (VSI)	C	None		0.0000	105.00	No Ice 1/2" Ice	24.00 28.30	24.00 28.30	1750.00 2150.00
(2) DB844H90 w/Mount Pipe	A	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	A	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
(2) DB844H90 w/Mount Pipe	B	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	B	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
(2) DB844H90 w/Mount Pipe	C	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	C	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
**									
12' Low Profile Platform (VSI)	C	None		0.0000	95.00	No Ice 1/2" Ice	15.30 17.00	15.30 17.00	1340.00 2000.00
(4) DB844H65E-XY w/ Mount Pipe (VSI)	A	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) DB844H65E-XY w/ Mount Pipe (VSI)	B	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63
(4) DB844H65E-XY w/ Mount Pipe (VSI) **	C	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63
742 213 w/ Mount Pipe (Youghiogheny)	A	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36
742 213 w/ Mount Pipe (Youghiogheny)	B	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36
742 213 w/ Mount Pipe (Youghiogheny)	C	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	39.86	0.00	0.0	39.000	15.5096	-8104.83	604875.00	0.013
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	48.46	0.00	0.0	39.000	27.6665	-14194.30	1078990.00	0.013
L3	40.3411 - 0 (3)	TP44.25x34.6164x0.3125	45.36	0.00	0.0	39.000	43.5805	-22980.10	1699640.00	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	317043.33	-38.119	39.000	0.977	0.00	0.000	39.000	0.000
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	1017508.33	-51.261	39.000	1.314	0.00	0.000	39.000	0.000
L3	40.3411 - 0 (3)	TP44.25x34.6164x0.3125	1849716.67	-46.942	39.000	1.204	0.00	0.000	39.000	0.000

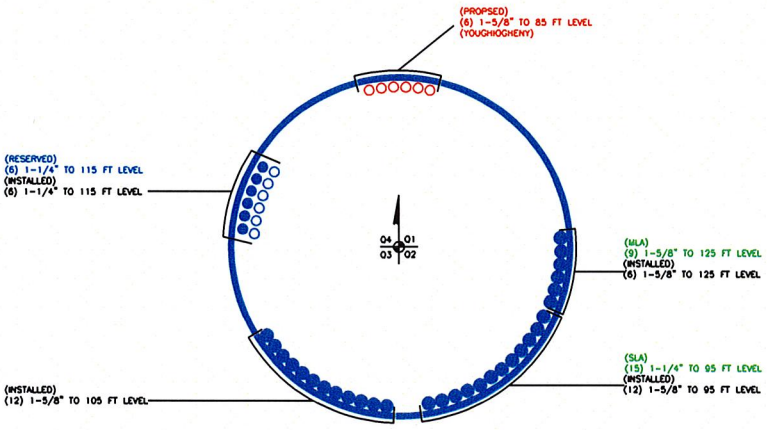
Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	0.013	0.977	0.000	0.991 ✔	1.333	H1-3 ✔
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	0.013	1.314	0.000	1.328 ✔	1.333	H1-3 ✔
L3	40.3411 - 0 (3)	TP44.25x34.6164x0.3125	0.014	1.204	0.000	1.217 ✔	1.333	H1-3 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	124.771 - 84.9115	Pole	TP27.0855x18.5x0.1875	1	-8104.83	806298.34	74.3	Pass
L2	84.9115 - 40.3411	Pole	TP36.1854x25.8736x0.25	2	-14194.30	1438293.61	99.6	Pass
L3	40.3411 - 0	Pole	TP44.25x34.6164x0.3125	3	-22980.10	2265620.03	91.3	Pass
							Summary	
						Pole (L2)	99.6	Pass
						RATING =	**99.6**	**Pass**

APPENDIX B



0 1 2 3FT

: SCALE :

BUSINESS UNIT: 876364 TOWER ID: C_BASELEVEL

LEGEND: FEEDLINES

- SOLID BLUE CIRCLE DENOTES EXISTING FEEDLINE
- OPEN RED CIRCLE DENOTES PROPOSED FEEDLINE
- OPEN BLUE CIRCLE DENOTES RESERVED FEEDLINE
- x BLUE "X" DENOTES LOCATION NOT GIVEN

NOTE: ASSUME FEEDLINE ATTACHMENT HEIGHT TO TOWER STEEL AT 8-FEET ABOVE FINISHED GRADE UNLESS OTHERWISE SPECIFIED

BASE LEVEL DRAWING

SCALE: 1" = 1'-0" | 1

PLOT DATE: 20/02/08 - FILE NAME: 876364 BASELEVEL.DWG

Ref: R:\RDAPLANS\SPECIAL BLOCKS FOR RDAPLANS\VALE BLOCK SBC-VER 8.1.dwg

DRAWN BY: SAT
CHECKED BY: JM
DRAWING DATE: 20/02/08

SITE NUMBER:
SITE NAME:

SITE NAME
CROMWELL / FIRST LINE EMEGENC

BUSINESS UNIT NUMBER
876364

SITE ADDRESS
201 MAIN ST.
CROMWELL, CT 06416
MIDDLESEX COUNTY
USA

SHEET TITLE
BASE LEVEL

SHEET NUMBER
A1-0

APPENDIX C

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-130
Tower Model:	125' EEI Monopole Tower
Date:	10/7/2008

Input Information:	***Existing Bolts***	
# Bolts, **n**	12	
Bolt Diameter, **d**	2.25	in
Bolt Circle Diameter, **D**	53	in
Bolt Ultimate Tensile Stress, F_u	100	ksi
Applied Vertical Load **P**	23.00	kips
Applied Shear **S**	19.38	kips
Applied Moment **M**	22196.60	kip-in
Steel Grade	A615 Gr 75	

Bolt Cross-Sectional Area, **A**	3.976	in^2 (each)
Bolt Group Moment of Inertia, **I**	16753.2055	in^4
Maximum Tensile Stress (outer bolt), σ_y	34.63	ksi
Maximum Shear Stress(any bolt), τ_{xy}	0.406	ksi
Maximum Allowable Stress (per bolt), **Ft**	44.00	ksi
% Capacity	**78.7%**	

The Bolt Group is Adequate for Loading

Maximum Allowable Stress (per bolt), **Ft**

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

BASE PLATE CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-130
Tower Model:	125' EEI Monopole Tower
Date:	10/7/2008

FOR BASE PLATES WITH GUSSET PLATE STIFFENERS

Reference: Roark's Formulas for Stress & Strain, Fifth Edition, Table 26, pg. 396, section 10a

Length of Side Perpendicular to Free Edge	7	in
Length of Side Parallel to Free Edge	13.125	in
Roark's Coefficient Beta^3	1.444	
Maximum Tensile Force Per Bolt	137.68	kips
Base Plate Yield Strength	60	ksi
Base Plate Thickness	1.75	in

Applied Base Plate Flexural Stress	34.62	ksi
Allowable Base Plate Flexural Stress	60	ksi
% Capacity	**57.7%**	

Base Plate is Adequate for Applied Loading

GUSSET PLATE AND WELD CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-130
Tower Model:	125' EEI Monopole Tower
Date:	10/7/2008

Anchor Bolt Load	137.68	kips
Weld Size at Bottom of Gusset Plate	0.625	in
Length of Bottom Weld Along Gusset Plate	6.25	in
Gusset Plate Thickness	0.75	in
Distance From Pole Edge to Center of Horizontal Weld	3.875	in
Length of Vertical Weld Along Gusset Plate	21.25	in
Weld Size Along Vertical Face of Gusset Plate	0.375	in
Gusset Plate Yield Strength	50	ksi
Nominal Tensile Strength of Weld Metal	70	ksi
Base Plate Yield Strength	60	ksi
Number of Gusset Plates Between Each Anchor Bolt	1	

Stress in Bottom Weld Along Gusset Plate	24.93	ksi
Allowable Bottom Weld Stress	28.00	ksi
% Capacity	**89.0%**	

Bottom Weld Along Gusset Plate is Adequate for Loading

Tension Stress Along Gusset Plate	29.37	ksi
Allowable Tension Stress Along Bottom of Gusset Plate	40.00	ksi
% Capacity	**73.4%**	

Bottom of Gusset Plate is Adequate for Loading

Bending Moment on Gusset Plate	533.52853	kip-in
Stress in Vertical Weld Along Top of Gusset Plate	18.11	ksi
Allowable Stress in Vertical Weld Along Top of Gusset Plate	28.00	ksi
% Capacity	**64.7%**	

Top Weld Along Gusset Plate is Adequate for Loading

Bending Stress Along Top of Gusset Plate	9.45	ksi
Allowable Bending Stress Along Top of Gusset Plate	40.00	ksi
Shear Stress Along Top of Gusset Plate	8.64	ksi
Allowable Shear Stress Along Top of Gusset Plate	26.67	ksi
% Capacity	**32.4%**	

Top of Gusset Plate is Adequate for Loading

VERTICAL STRUCTURES, INC.

Overturning Calculation for Square Mat Foundations

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-130
Tower Model:	125' EEI Monopole Tower
Date:	10/7/2008

Soil Ultimate Bearing	8	ksf	
Unit wt soil	0.0626	kcf	
Unit wt concrete	0.0876	kcf	
Mat Width	24	ft	
Mat Thickness	3	ft	
Depth of Soil Over Mat	2	ft	
Has Pedestals? (Y or N)	Y		
Pedestal Round or Square? (R or S)	S		
Number of Pedestals	1		
Pedestal Height	3	ft	
Pedestal Diameter or Width	14	ft	
Applied Shear	19.38	kip	
Applied Axial Force	23.00	kip	
Applied Moment	1849.72	k-ft	
wt. Concrete =	202.882	kip	
wt. Soil =	47.576	kip	
x =	1.424	ft	
Shear Moment =	116.292	k-ft	
Allowable Bearing =	4	ksf	
Bearing =	0.893	ksf	BEARING ADEQUATE
Resisting Moment =	3086.73292	k-ft	
SF =	1.570		OVERTURNING ADEQUATE

PULLMAN & COMLEY, LLC
ATTORNEYS AT LAW

EM-POCKET-033-080922

CARRIE L. LARSON
90 State House Square
Hartford, CT 06103-3702
p (860) 424-4312
f (860) 424-4370

www.pullcom.com

September 19, 2008

Via Federal Express

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

Re: Notice of Exempt Modification
Crown Castle USA, Inc. Telecommunications Facility
201 Main Street, Cromwell, Connecticut

Dear Mr. Phelps:

Youghiogheny Communications-Northeast, LLC, doing business as Pocket Communications ("Pocket"), intends to install antennas and appurtenant equipment at the existing 125-foot monopole facility owned by Crown Castle USA, Inc. and located at 201 Main Street, Cromwell, Connecticut ("Facility"). Pocket Communications provides prepaid, flat rate wireless voice and data services to more than a quarter of a million subscribers. Pocket is licensed by the Federal Communications Commission (FCC) to provide PCS wireless telecommunications service in the State of Connecticut, which includes the area to be served by the proposed installation. This installation constitutes an exempt modification pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes Section 16-50g et. seq. (PUESA), and Section 16-50j-72(b)(2) of the Regulations of the Connecticut State Agencies adopted pursuant to PUESA. In accordance with R.C.S.A. Section 16-50j-73, a copy of this notice has been sent to Jeremy Shingleton, First Selectman, Town of Cromwell.

The existing Facility consists of a 125-foot self-supporting monopole tower capable of supporting multiple carriers within a fenced compound. The coordinates for the Facility are **Lat: 41°-35'-0.1" and Long: 72°–38'-59".** The tower is located approximately 300 feet east of Route 9, right at its intersection with Main Street (Route 99) in the south end of Cromwell. The facility is a few hundred feet south of The Mattabassett District's Water Pollution Control Facility and roughly 800 feet west of the Connecticut River. The facility is roughly 3,000 feet from the Middletown town line (see Site Map, attached as Exhibit A). The tower currently supports Nextel antennas at the ninety five foot (95') level centerline AGL (above ground level), Verizon antennas at the one hundred five foot level (105') AGL, AT&T antennas at the one hundred fifteen foot level (115') and Sprint antennas at the one hundred twenty five foot level (125') AGL. Pocket proposes to install three Kathrein 742-213 flush mount antennas on the tower at the eighty five foot centerline (85') AGL, and a Nortel CDMA Micro BTS 3231 cabinet,

mounted on an "H-Frame," contained within a six foot by six foot (6'-0" x 6'-0") lease area. A small GPS antenna will be mounted to an ice bridge which will run from the lease area to the tower. Utilities will be run via a proposed underground conduit from an existing utility backboard, within the compound (See Design Drawings and Equipment Specifications, attached as Exhibits B and C respectively).

For the following reasons, the proposed modifications to the Main Street Facility meet the exempt modification criteria set forth in R.C.S.A. Section 16-50j-72(b)(2):

1. The proposed modification will not increase the height of the tower as Pocket's antennas will be installed at a center line height of approximately 85 feet.

2. The installation of Pocket's equipment and shelter will not require an extension of the site boundaries.

3. The proposed modifications will not increase the noise levels at the existing Facility by six decibels or more.

4. The operation of the additional antennas will not increase the total radio frequency (RF) power density, measured at the site boundary, to a level at or above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and MPE limits established by the Federal Communications Commission. The worst-case RF power density calculations for the proposed Pocket antennas would be 43.35% of the FCC standard (see general power density calculations table, attached as Exhibit D).

Also attached, Exhibit E, is a structural analysis confirming that the tower can support the existing and proposed antennas and associated equipment.

For the foregoing reasons, Pocket respectfully submits that the proposed antenna installation and equipment at the Cromwell Facility constitutes an exempt modification under R.C.S.A. Section 16-50j-72(b)(2).

Respectfully Submitted,

Carrie L. Larson

cc: Jeremy Shingleton, First Selectman
Cell Tower Lease Acquisition, LLC, (underlying property owner)

Exhibit A

Site Map

Pocket Site HFCT0210A

201 Main Street

Cromwell, Connecticut

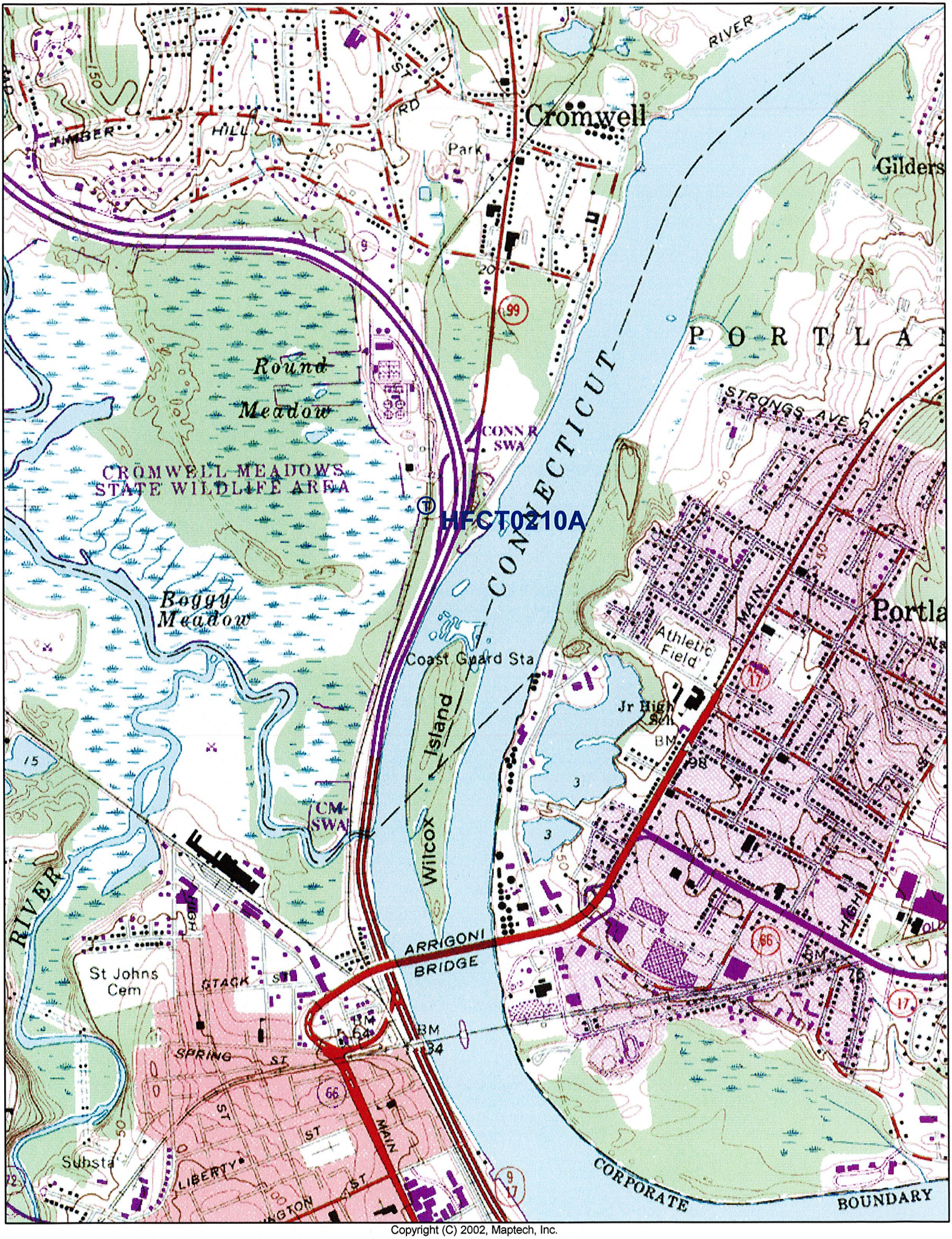


Exhibit B

Design Drawings

Pocket Site HFCT0210A

201 Main Street

Cromwell, Connecticut

SITE INFORMATION

OWNER:	CROWN CASTLE INTERNATIONAL 500 WEST CUMMINGS PARK WOBURN MA, 01801 781-970-0060 TARA KATHLEEN RAND
OWNER SITE ID#:	876364
APPLICANT:	YOUGHIOGHENY COMMUNICATIONS - NORTHEAST LLC 2819 NW LOOP 410 SAN ANTONIO, TX 78230
SITE ADDRESS:	201 MAIN STREET CROMWELL CT, 06416
COUNTY:	MIDDLESEX
LATITUDE:	41°35'00.11" N
LONGITUDE:	72°38'59.14" W
ZONING CLASSIFICATION:	N/A
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
POWER COMPANY:	CONNECTICUT LIGHT & POWER 1-860-947-2121
TELEPHONE COMPANY:	AT&T 1-888-727-8368
DESIGN FIRM:	TRIVIS 180 CHANDALAR PLACE DRIVE PELHAM, AL 35124 PHONE: (205) 621-0106

DRAWING INDEX

1	TITLE SHEET	
2	DETAILED SITE PLAN	
3	TOWER ANTENNA H-FRAME DESIGN	
4	GROUNDING PLAN & DETAILS	
5	COAX SUPPORT	
6	ELECTRICAL PLAN	

APPROVALS

_____ REAL ESTATE

_____ RF

_____ OPS/CONSTRUCTION

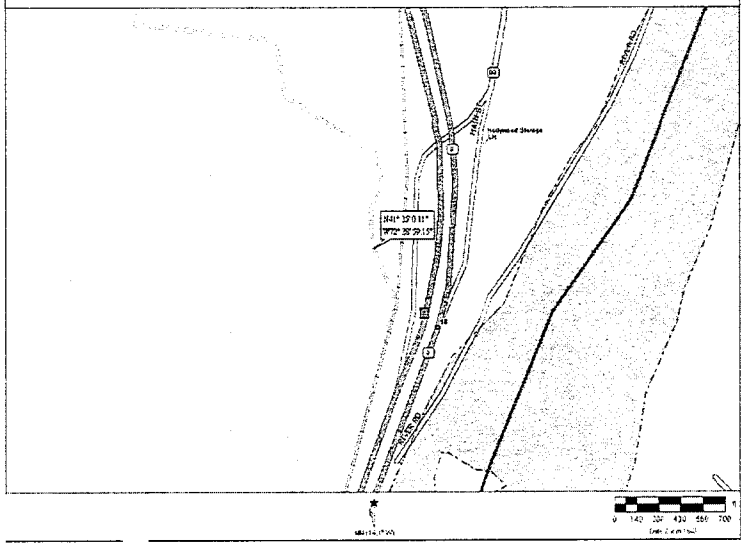
_____ LEGAL/COMPLIANCE

_____ NET DESIGN

pocket™
COMMUNICATIONS

HFCT0210A
CCI876364
125' MONOPOLE

LOCATION MAP



DRIVING DIRECTIONS

FROM I91 TAKE CT 9 SOUTH, FIRST EXIT CROMWELL/PORTLAND (EXIT 19), TAKE A RIGHT ON MAIN STREET (ROUTE 99.) FOLLOW 99 TO JUNCTION W/ROUTE 99. TOWER IS AT 200 MAIN STREET ON THE RIGHT.

SITE INFORMATION

CONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
2005 NEC NFPA 70-/: 2000 IECC CODES AND THE 2004 CITY PUBLIC SERVICE ELECTRICAL SERVICE STANDARDS.

BUILDING CODE:
INTERNATIONAL BUILDING CODE (IBC), 2006

ELECTRICAL CODE:
[NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 – 2005, NATIONAL ELECTRICAL CODE
LIGHTNING PROTECTION CODE:
[NFPA 780 – 2005, LIGHTNING PROTECTION CODE]

CONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS.

AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1275, GENERAL INSTALLATION REQUIREMENTS

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM – DC POWER SYSTEMS – TELECOM, ENVIRONMENTAL PROTECTION

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN

SITE INFORMATION

1. THIS SITE IS UNMANNED AND IS RESTRICTED TO OUTDOOR EQUIPMENT. IT WILL BE USED FOR THE TRANSMISSION OR RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
2. POCKET COMMUNICATIONS CERTIFIES THAT THIS TELEPHONE EQUIPMENT FACILITY WILL BE SERVICED ONLY BY POCKET COMMUNICATIONS EMPLOYEES AND THE WORK ASSOCIATED WITH ANY EQUIPMENT CANNOT BEPERFORMED BY HANDICAPPED PERSONS. THIS FACILITY WILL BE FREQUENTED ONLY BY SERVICE PERSONNEL FOR REPAIR PURPOSES ONLY. THIS FACILITY IS EXEMPT FROM THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), APPENDIX B, SECTION 4.11.(5)(B).
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTE WATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.
6. POCKET COMMUNICATIONS MAINTENANCE CREW (TYPICALLY ONE PERSON) WILL MAKE AN AVERAGE OF ONE TRIP PER MONTH AT ONE HOUR PER VISIT.

NO.	DATE	REVISIONS	INT.
A	8/28/08	ISSUED FOR REVIEW & COMMENT	JHB

pocket COMMUNICATIONS

PROJECT NAME: CCI 876364
SHEET NAME: TITLE SHEET

TRIVIS
The Complete Solutions Provider
180 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 621-0106

CHECKED BY: JSW
DRAWN BY: JHB
DATE: 8/28/08
JOB NO. 08428
DWG. NO.

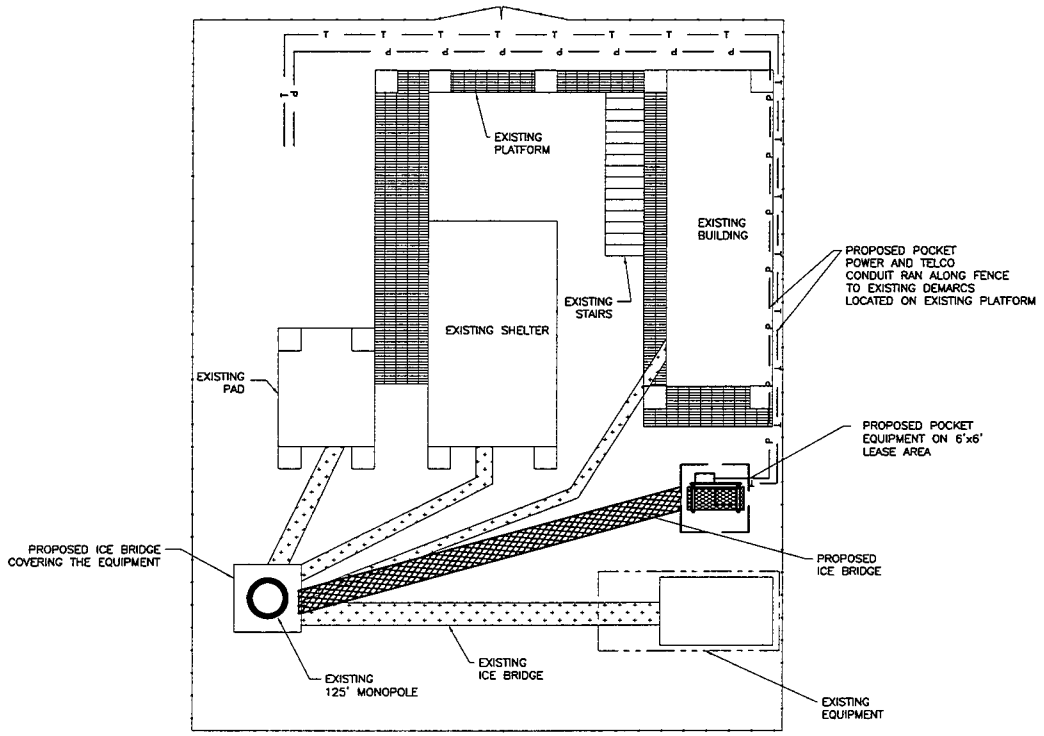
01

CONSTRUCTION NOTES

1. FIELD VERIFICATION: CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, POCKET COMMUNICATIONS ANTENNA MOUNT LOCATION AND ANTENNAS TO BE INSTALLED.
2. COORDINATION OF WORK: CONTRACTOR SHOULD COORDINATE RF WORK AND PROCEDURES WITH POCKET COMMUNICATIONS.
3. GRAVEL SURFACE IN AREAS OF COMPOUND THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION BY CONTRACTOR.

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – POCKET COMMUNICATIONS
   OEM – ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED EQUIPMENT, ON THE DRAWINGS.
5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
6. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL.
7. CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING.
8. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, GROUNDING CABLES AS SHOWN ON THE ELECTRICAL PLAN.
9. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
10. CONTRACTOR TO OBTAIN REQUIRED NOTICE TO PROCEED DOCUMENTS FROM THE TOWER OWNER BEFORE COMMENCING CONSTRUCTION.



SITE PLAN

11x17 SCALE: 3/32" = 1'
22x34 SCALE: 3/16" = 1'

0' 5' 10' 15'

NO.	DATE	REVISIONS	INT.
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pocket COMMUNICATIONS

PROJECT NAME: CCI 876364
SHEET DESC: SITE PLAN

TRIVIS
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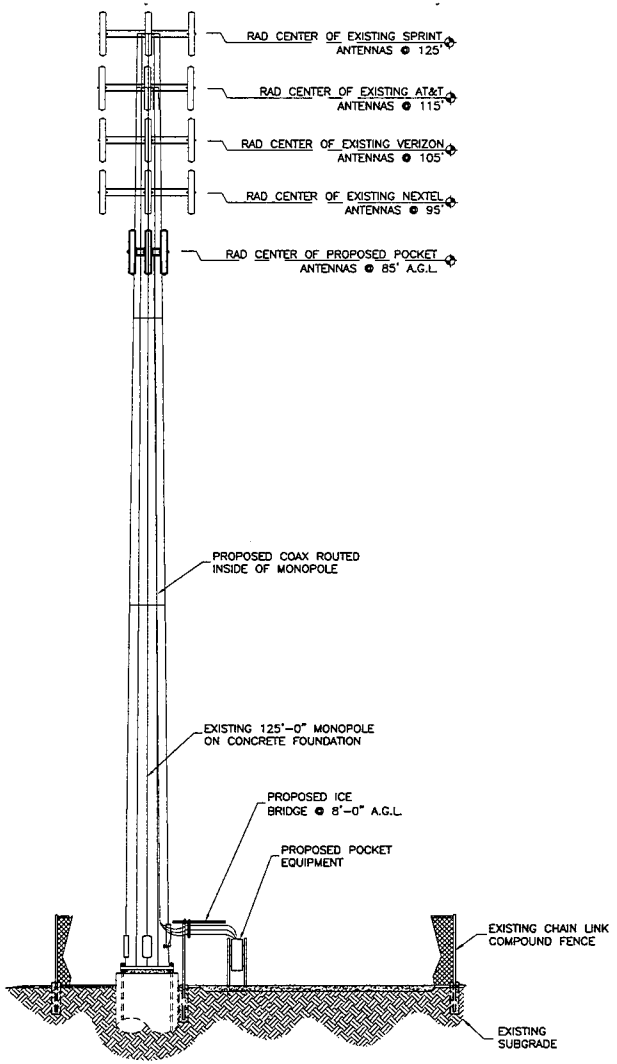
CHECKED BY: JSW
DRAWN BY: JHB
DATE: 8/28/08
JOB NO. 08428
DWG. NO. 02



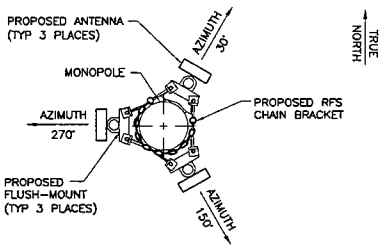
TOWER ELEVATION
SCALE: N.T.S.

ANTENNA KEY

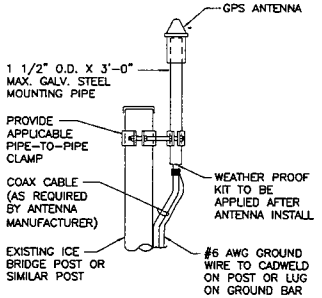
	# ANTENNAS PER SECTOR	ANTENNA NUMBER	COAX COLOR CODE	ANTENNA VENDOR	MODEL NUMBER	AZIMUTH	C/L HEIGHT	MECHANICAL DOWNTILT	COAX SIZE	# COAX PER ANTENNA	COAX MODEL NUMBER
ALPHA FACE	1	A-1	(1)-RED BAND	KATHREIN	N/A	30°	85'-0"	0°	1 5/8"	2	COMMSCOPE
BETA FACE	1	B-1	(1)-BLUE BAND	KATHREIN	N/A	150°	85'-0"	0°	1 5/8"	2	COMMSCOPE
GAMMA FACE	1	C-1	(1)-GREEN BAND	KATHREIN	N/A	270°	85'-0"	0°	1 5/8"	2	COMMSCOPE

TOWER NOTES
1. FOR DETAILED TOWER INFORMATION, REFER TO TOWER ERECTION DRAWINGS BY OTHERS. THE TOWER ON THIS SHEET IS SHOWN FOR GENERAL CONFIGURATION PURPOSES ONLY.
2. ANTENNA CONFIGURATION IS SUBJECT TO CHANGE. VERIFY ANTENNA HEIGHT, DOWN-TILT, AND AZIMUTH WITH PROJECT MANAGER PRIOR TO CONSTRUCTION.

ANTENNA NOTES
1. ALL COAX SHALL BE COLOR-CODED AT (3) PLACES EACH: AT ANTENNA, EXTERIOR OF SHELTER, AND THE INTERIOR OF SHELTER.
2. (2) COLOR BANDS DENOTES TRANSMIT.
3. PRIOR TO ORDERING ANY ANTENNAS OR COAX, CONTRACTOR SHALL CONTACT POCKET'S CONSTRUCTION MANAGER AND OBTAIN APPROVAL FOR MATERIALS LISTED. CONTRACTOR IS SOLELY RESPONSIBLE FOR THIS COORDINATION.

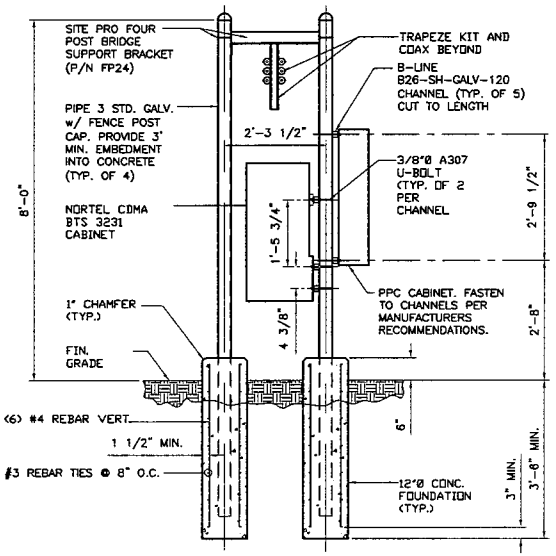


ONE ANTENNA PER SECTOR WITH FLUSH/FACE MONOPOLE MOUNTING
SCALE: N.T.S.

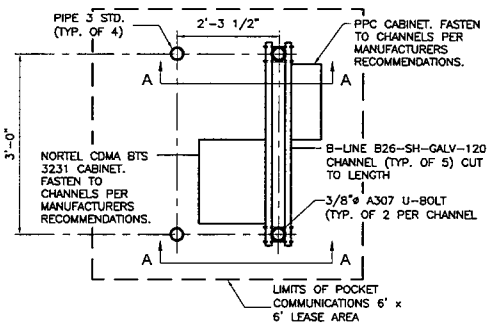


NOTES:
1. LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SOUTHERN SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
2. ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.

GPS ANTENNA PIPE MOUNT
SCALE: N.T.S.



SECTION
SCALE: N.T.S.



PROPOSED H-FRAME FOR NORTEL BTS CABINET
SCALE: N.T.S.

NO.	DATE	REVISIONS	BY
A	6/28/08	ISSUED FOR REVIEW & COMMENT	JHB

pocket COMMUNICATIONS

PROJECT NAME: CCI876364
SHEET DESC: TOWER, ANTENNA, H-FRAME

TRIVIS
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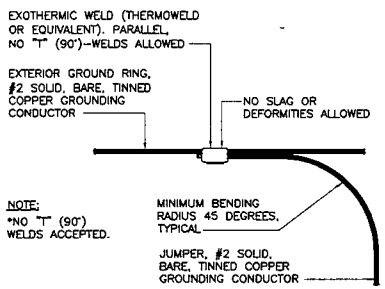
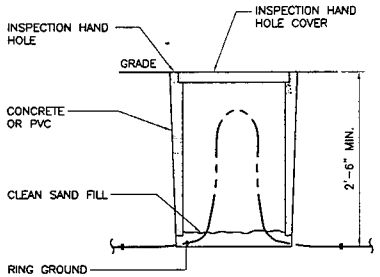
CHECKED BY: JSW
DRAWN BY: JHB
DATE: 8/28/08
JOB NO. 08428
DWG. NO. 03

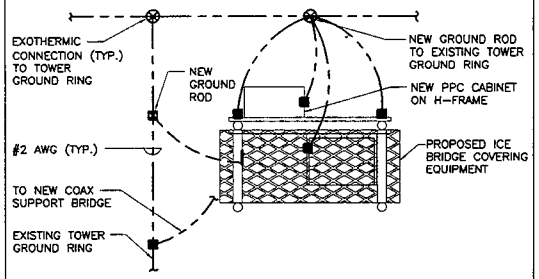


TYPICAL GROUNDING CONNECTION



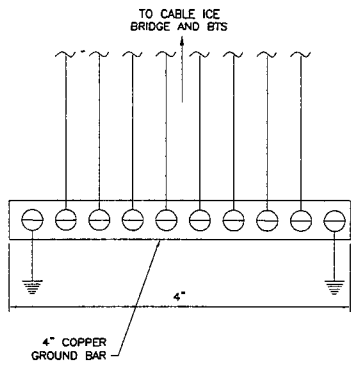
NOTE: INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 8" IN WIDTH/DIAMETER

GROUND ROD WITH ACCESS AREA

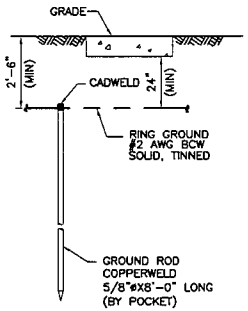


THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

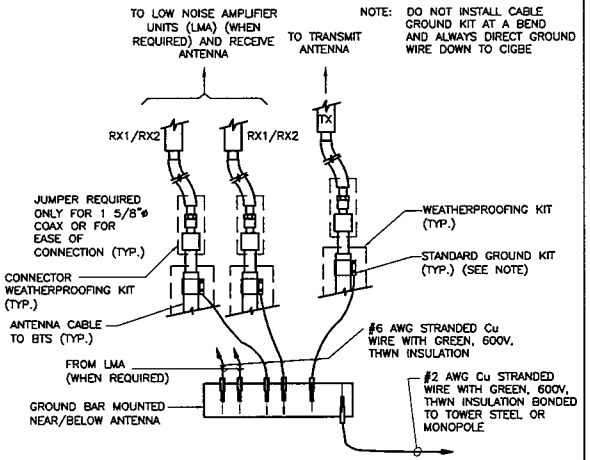
TYPICAL CABINET GROUNDING



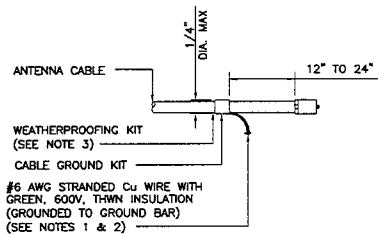
LOWER 4" GROUND BAR
SCALE: N.T.S.



GROUNDING - STANDARD DETAIL GROUND ROD
SCALE: N.T.S.



CONNECTION OF GROUND WIRE TO GROUNDING BAR (CIGBE) TOWER/MONOPOLE

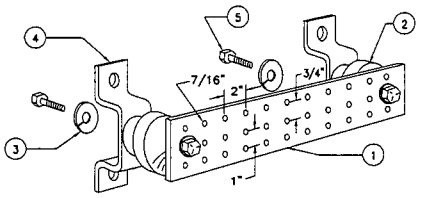


CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE

NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE (TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.)

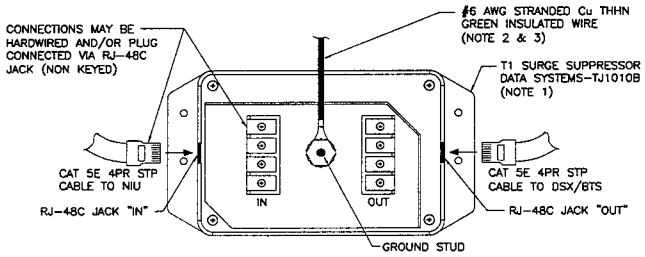
CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE
SCALE: N.T.S.



LEGEND

1- COPPER GROUND BAR, ¼"X 4"X 20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056
5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
6- SECTOR CIGBE GROUND BAR TO BE SIZED FOR (4) ANTENNAS AND (4) BRACKETS OR MASTS ALL OTHER GROUND BARS SHALL BE SIZED TO ACCOMMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY

GROUND BAR (TYP.)
SCALE: N.T.S.



T1 SURGE SUPPRESSOR
SCALE: N.T.S.

NOTES:

1. MOUNT T1-TVSS UNIT ON EQUIPMENT FRAME HOUSING THE DSX UNIT. USE APPROPRIATE STAINLESS STEEL BOLTS WITH FLAT WASHERS AND A LOCK WASHER ON THE NUT SIDE. THE TVSS MAY BE LOCATED ON THE TELCO BACKBOARD. REFER TO MANUFACTURER'S INSTRUCTIONS.
2. ATTACH RING TERMINAL FROM SUPPLIED GROUND CONDUCTOR TO TVSS GROUND STUD SECURELY FASTEN WITH SUPPLIED WASHER AND NUT. REFER TO MANUFACTURER'S INSTRUCTIONS. FOR PROPER PERFORMANCE, THE GROUND CONDUCTOR LENGTH SHOULD BE LIMITED WITH NO SHARP BENDS ON COILS.
3. WHEN TVSS IS MOUNTED ON EQUIPMENT FRAME, BOND THE GROUND CONDUCTOR TO THE EQUIPMENT FRAME GROUND. ENSURE PROPER GROUNDING SURFACES. WHEN TVSS IS MOUNTED ON THE TELCO BACK BOARD, BOND THE GROUND CONDUCTOR TO THE TELCO (BOARD) GROUND BAR OR NEAREST GROUND BAR.

NO.	DATE	REVISIONS	INT.
A	8/28/08	ISSUED FOR REVIEW & COMMENT	JHB

pocket COMMUNICATIONS

PROJECT NAME: CCI876364
SHEET DESC.: GROUNDING PLAN & DETAILS

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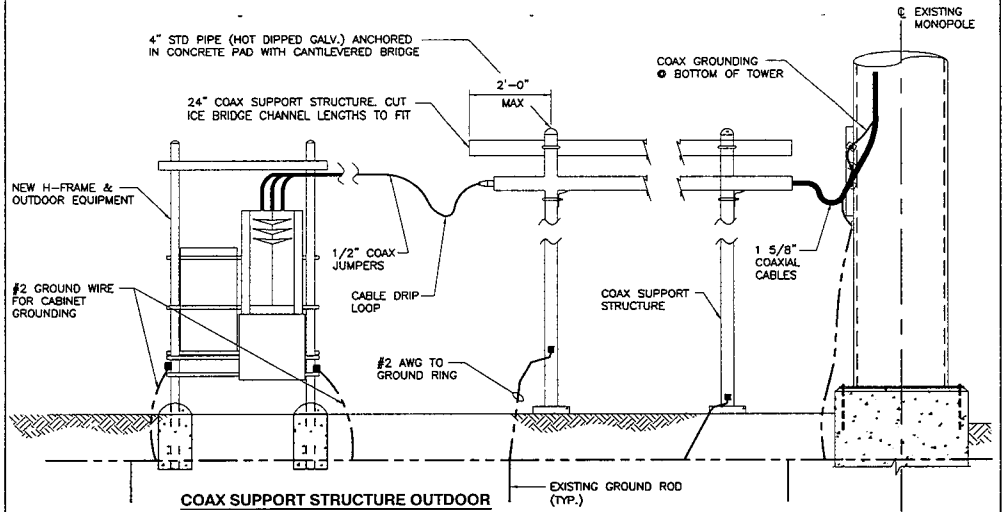
CHECKED BY: JSW
DRAWN BY: JHB
DATE: 8/28/08
JOB NO. 08428
DWG. NO. 04

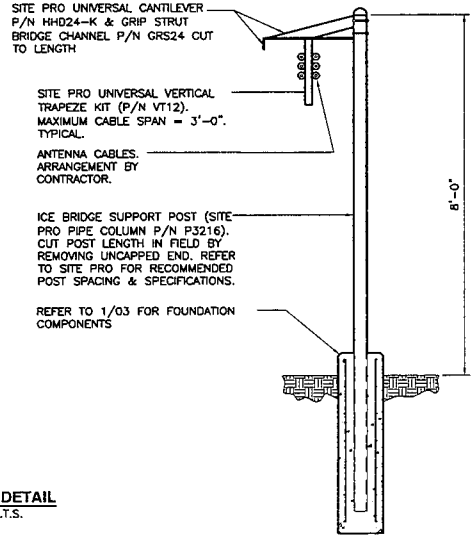


COAX SUPPORT STRUCTURE OUTDOOR EQUIPMENT CABINETS

SCALE: N.T.S.

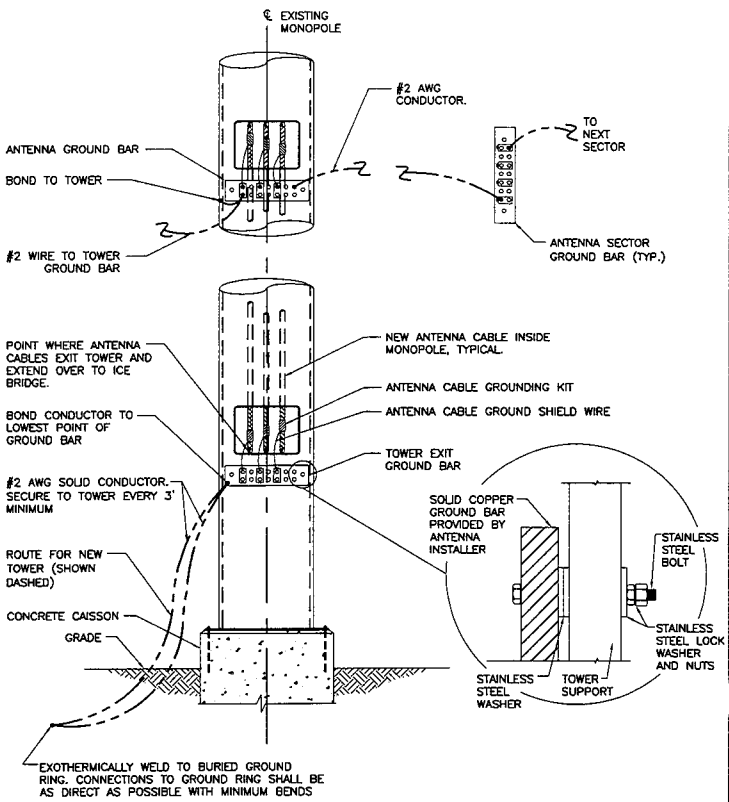
NOTES:

1. WHEN USING COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 8 FEET FOR 10 FEET BRIDGE CHANNEL.
2. WHEN USING COMPONENTS FOR SPLICING BRIDGE CHANNEL SECTIONS, THE SPLICE SHOULD BE PROVIDED AT THE SUPPORT, IF POSSIBLE, OR AT A MAXIMUM OF 2 FEET FROM THE SUPPORT.
3. WHEN USING COMPONENTS, SUPPORT SHOULD BE PROVIDED AS CLOSE AS POSSIBLE TO THE ENDS OF ICE BRIDGES, WITH A MAXIMUM CANTILEVER DISTANCE OF 2 FEET FROM THE SUPPORT TO THE FREE END OF THE ICE BRIDGE.
4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH A MATERIAL TO RESTORE THESE EDGES TO THE ORIGINAL CHANNEL, OR EQUIVALENT, FINISH.
5. ICE BRIDGES MAY BE CONSTRUCTED WITH COMPONENTS FROM OTHER MANUFACTURERS, PROVIDED THE MANUFACTURER'S INSTALLATION GUIDELINES ARE FOLLOWED.
6. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH THE RESPECTIVE MANUFACTURER'S APPROVAL.
7. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS REQUIRE ENGINEERING APPROVAL.
8. THE DESIGN IS BASED ON ASCE 7-98, 3 SECOND GUST WIND SPEED OF 110 MPH, EXPOSURE C, ELEVATION AT GRADE.
9. THIS DESIGN IS BASED ON 24" WIDE ICE BRIDGE AND (12) 1 5/8" DIA COAX CABLES AND MAX. POST SUPPORT SPACING OF 10'-0".



ICE BRIDGE DETAIL

SCALE: N.T.S.



MONOPOLE GROUNDING DETAIL

SCALE: N.T.S.

NO.	DATE	REVISIONS	INT.
A	8/28/08	ISSUED FOR REVIEW & COMMENT	JHB

pocket COMMUNICATIONS

PROJECT NAME: CCI876364

SHEET TITLE: COAX SUPPORT STRUCTURE

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(205) 621-0206

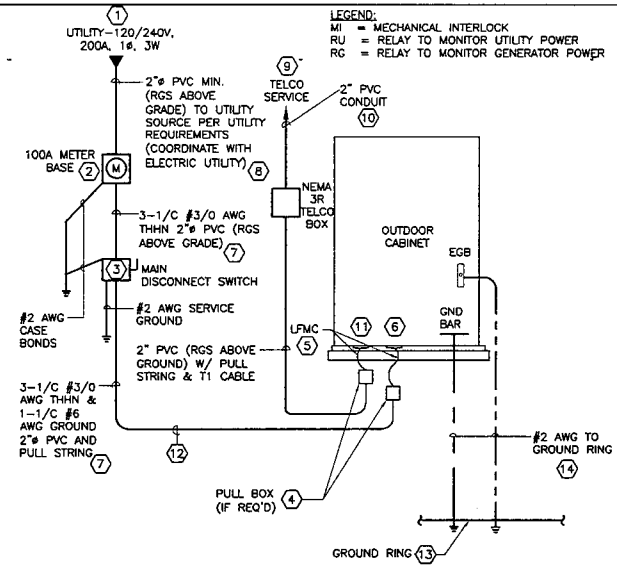
CHECKED BY:	JSW
DRAWN BY:	JHB
DATE:	8/28/08
JOB NO.	08428
DWG. NO.	05

PANEL "SSC"

LOAD DESCRIPTION	LOAD (kVA)	BRKR SIZE	CCT NO.	PHASE A	PHASE B	CCT NO.	BRKR SIZE	LOAD (kVA)	LOAD DESCRIPTION
BTS CABINET	2.5	30/2	1			2	30/2	2.2	TVSS
	2.5		3			4		2.2	
LIGHTING	.9	10/1	5			6	–	–	SPACE
SPACE	–	–	7			8	–	–	SPACE
SPACE	–	–	9			10	–	–	SPACE
SPACE	–	–	11			12	–	–	SPACE
SPACE	–	–	13			14	–	–	SPACE
SPACE	–	–	15			16	–	–	SPACE
SPACE	–	–	17			18	–	–	SPACE
SPACE	–	–	19			20	–	–	SPACE
SPACE	–	–	21			22	–	–	SPACE
SPACE	–	–	23			24	–	–	SPACE
LOAD SUB–TOTAL	5.6	LOAD TOTAL		10.3 kVA				4.4	LOAD SUB–TOTAL

100A MCB, 120/240V, 1ø, 3W, 65,000 AIC		
TOTAL CONNECTED LOAD	10.3 KW	
25% OF LARGEST CONT. LOAD	1250 W	
TOTAL LOADS	11.5 KW	47.9 AMPS
NOTE: ALL NON–OPTIONAL BREAKERS PROVIDED BY SSC MFR		

PANEL SCHEDULE



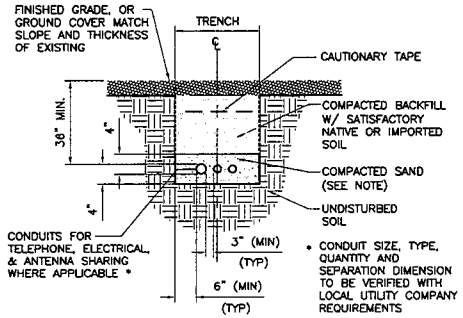
POWER, TELCO & GROUND SINGLE LINE DIAGRAM FOR OUTDOOR CABINET

REFERENCE NOTES

1. ELECTRICAL DEMARCATION POINT. ELECTRICAL CONTRACTOR TO COORDINATE WITH LOCAL POWER FOR SERVICE TO METER.
2. CONTRACTOR TO SUPPLY AND INSTALL A 100A, 120/208/240V 1ø, 3W METER BASE. METER BASE TO BE NEMA 3R RATED AND ACCEPTABLE TO LOCAL UTILITY. PROVIDE WITH MECHANICALLY ATTACHED ENGRAVED IDENTIFICATION LABEL INDICATING "POCKET COMMUNICATIONS METER".
3. CONTRACTOR TO SUPPLY AND INSTALL NEMA 3R 100A FUSIBLE DISCONNECT SWITCH WITH LOCKABLE HANDLE. PROVIDE WITH 100A FUSES, AIC RATING TO COORDINATE WITH LOCAL UTILITY REQUIREMENTS. PROVIDE WITH MECHANICALLY ATTACHED ENGRAVED IDENTIFICATION LABEL INDICATING "POCKET COMMUNICATIONS SERVICE DISCONNECT".
4. WEATHER TIGHT JUNCTION BOX (IF REQUIRED). SIZE TO NEC CODE FOR APPLICATION.
5. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT W/W WEATHER TIGHT FITTINGS AND SUPPORTS. SIZE AND CONTENTS TO MATCH ASSOCIATED USE (POWER OR TELCO)
6. UTILITY POWER ENTRY INTO CABINET. COORDINATE TERMINATION WITH CABINET MANUFACTURER.
7. CONTRACTOR SUPPLY AND INSTALL 2" GRC. AFG AND PVC 24" BFG C/W #3/0 AWG THHN & (1) #6 GRND FOR UTILITY SERVICE
8. CONTRACTOR SUPPLY AND INSTALL 4" GRC. AFG AND PVC 24" BFG C/W #3/0 AWG THHN FOR UTILITY SERVICE
9. TELCO DEMARCATION POINT. ELECTRICAL CONTRACTOR TO COORDINATE WITH LOCAL TELCO FOR SERVICE TO TELCO BOX OR CABINET.
10. CONTRACTOR TO SUPPLY AND INSTALL (1) 2" GRC AFG AND PVC 24" BFG C/W PULL CORDS FOR TELCO SERVICE TO CABINET TERMINATION POINT.
11. TELCO SERVICE ENTRY INTO CABINET. COORDINATE TERMINATION IN WITH CABINET MANUFACTURER.
12. CONTRACTOR TO ARRANGE AND PAY FOR UNDERGROUND UTILITY LOCATION SURVEYS FOR ALL TRENCHING. REUSE NATIVE BACKFILL AND RE–INSTATE TO ORIGINAL CONDITION. INSTALL 6" WIDE METALLIC LINED RED PLASTIC MARKER TAPE 8" ABOVE ALL BURIED CONDUIT.
13. PART OF CABINET BURIED GROUND RING.
14. (1) #2 SOLID BARE TINNED CU GEC BONDED TO 5/8"x10' COPPER CLAD STEEL GROUNDING ELECTRODES. LOCATE GROUNDING ELECTRODE ADJACENT TO "CABINET". BOND GROUNDING ELECTRODE SYSTEM TO CABINET GROUND RING.

GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL AND GROUNDING WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL VERIFY ROUTING AND LENGTHS PRIOR TO CONSTRUCTION.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
4. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
5. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



NOTE: LEAN CONCRETE, RED–COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND.

DIRECT BURIED CONDUIT

SCALE: N.T.S.

NOTES

1. CONTRACTOR SHALL PROVIDE 100AMP, SINGLE PHASE, 120/240 VAC, 60HZ SERVICE FOR SITE.
2. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY BEFORE THE START OF CONSTRUCTION. POWER AND TELCO CONDUIT SHALL BE PROVIDED AND INSTALLED PER UTILITY REQUIREMENTS.
3. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT REFER TO DRAWINGS PROVIDED BY AC OR TELCO PANEL MANUFACTURER.
4. ALL SERVICE EQUIPMENT AND INSTALLATIONS SHALL COMPLY WITH THE N.E.C. AND UTILITY COMPANY AND LOCAL CODE REQUIREMENTS.
5. CONTRACTOR SHALL INSTALL SUFFICIENT LENGTHS OF LFMC INCLUDING ALL CONDUIT FITTINGS (NUTS, REDUCING BUSHINGS, ELBOWS, COUPLINGS, ETC) NECESSARY FOR CONNECTION FROM IMC CONDUIT TO THE PURCELL POWER CABINET.
6. CONTRACTOR SHALL PROVIDE ELECTRICAL SERVICE EQUIPMENT WITH FAULT CURRENT RATINGS GREATER THAN THE AVAILABLE FAULT CURRENT FROM THE POWER UTILITY.
7. CONTRACTOR SHALL VERIFY THAT THE MAIN BONDING JUMPER AND GROUNDING ELECTRODE CONDUCTOR IS INSTALLED PROPERLY IN MAIN DISCONNECT SWITCH.

NO.	DATE	REVISIONS	
A	8/28/08	ISSUED FOR REVIEW & COMMENT	JHB

pocket COMMUNICATIONS

PROJECT NAME: CCI876364
SHEET DESC: ELECTRICAL PLAN & DETAILS

TRIVIS
The Complete Solutions Provider
180 CHANDALAR PLACE DR.
PELHAM, AL 35124
(205) 861-0100

CHECKED BY: JSW
DRAWN BY: JHB
DATE: 8/28/08
JOB NO. 08423
DWG. NO. 06

Exhibit C

Equipment Specifications

Pocket Site HFCT0210A

201 Main Street

Cromwell, Connecticut

KATHREIN
SCALA DIVISION

742 213

65° Panel Antenna

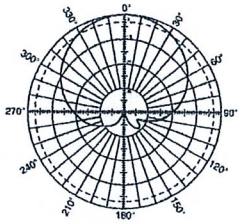
Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled downtilt is available as a retrofitable option.

- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accomodate future 3G / UMTS applications.

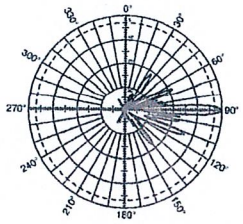
General specifications:

Frequency range	1710–2170 MHz
VSWR	< 1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Front-to-back ratio (180°±30°)	>30 dB (co-polar) >25 dB (total power)
Maximum input power	300 watts per input (at 50°C)
Electrical downtilt continuously adjustable	0–6 degrees
Connector	2 x 7/16 DIN female
Isolation	>30 dB
Cross polar ratio Main direction 0° Sector ±60°	 25 dB (typical) >10 dB
Weight	22 lb (10 kg)
Dimensions	76.5 x 6.1 x 2.7 inches (1942 x 155 x 69 mm)
Equivalent flat plate area	4.62 ft² (0.429 m²)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	87.2 x 6.8 x 3.6 inches (2214 x 172 x 92 mm)
Shipping weight	24.3 lb (11 kg)
Mounting	Fixed and tilt mount options are available for 2 to 4.6 inch (50 to 115 mm) OD masts.

See reverse for order information.



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization

Specifications:	1710–1880 MHz	1850–1990 MHz	1920–2170 MHz
Gain	19 dBi	19.2 dBi	19.5 dBi
+45° and -45° polarization horizontal beamwidth	67° (half-power)	65° (half-power)	63° (half-power)
+45° and -45° polarization vertical beamwidth	4.7° (half-power)	4.5° (half-power)	4.3° (half-power)
Vertical Pattern–sidelobe suppression for first side-lobe above main beam	0° 2° 4° 6° T 18 17 15 15 dB	0° 2° 4° 6° T 18 18 17 15 dB	0° 2° 4° 6° T 18 18 17 15 dB

RoHS
Lead-Free

10642-H
936.2074/h

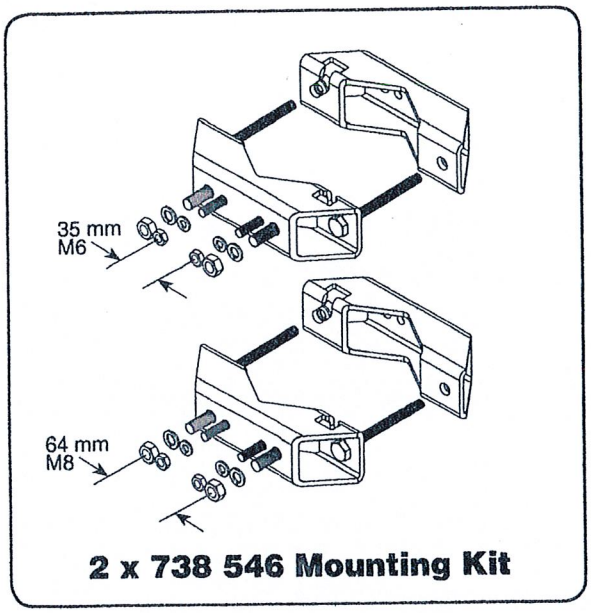
*Mechanical design is based on environmental conditions as stipulated in EIA-222-F (June 1996) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

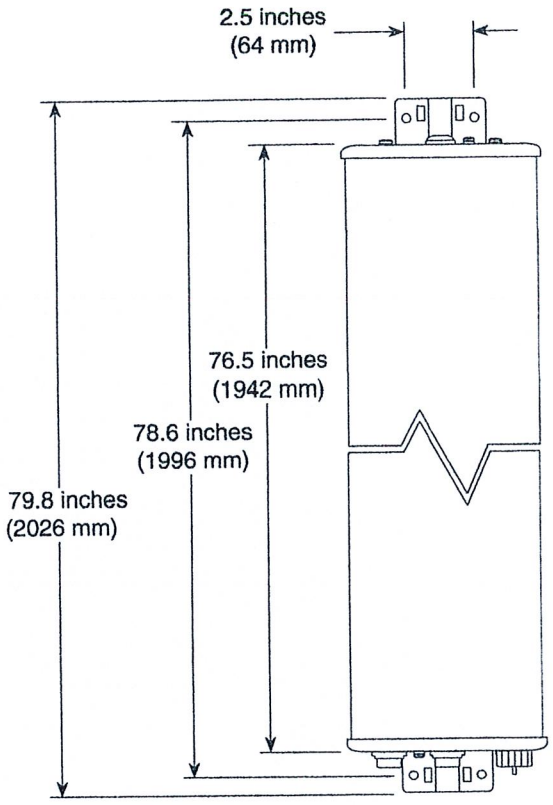
KATHREIN
SCALA DIVISION

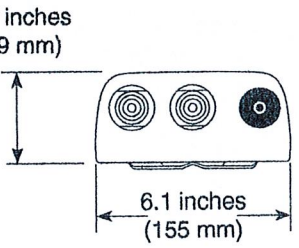
742 213

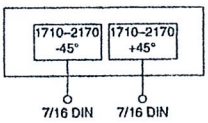
65° Panel Antenna



2 x 738 546 Mounting Kit







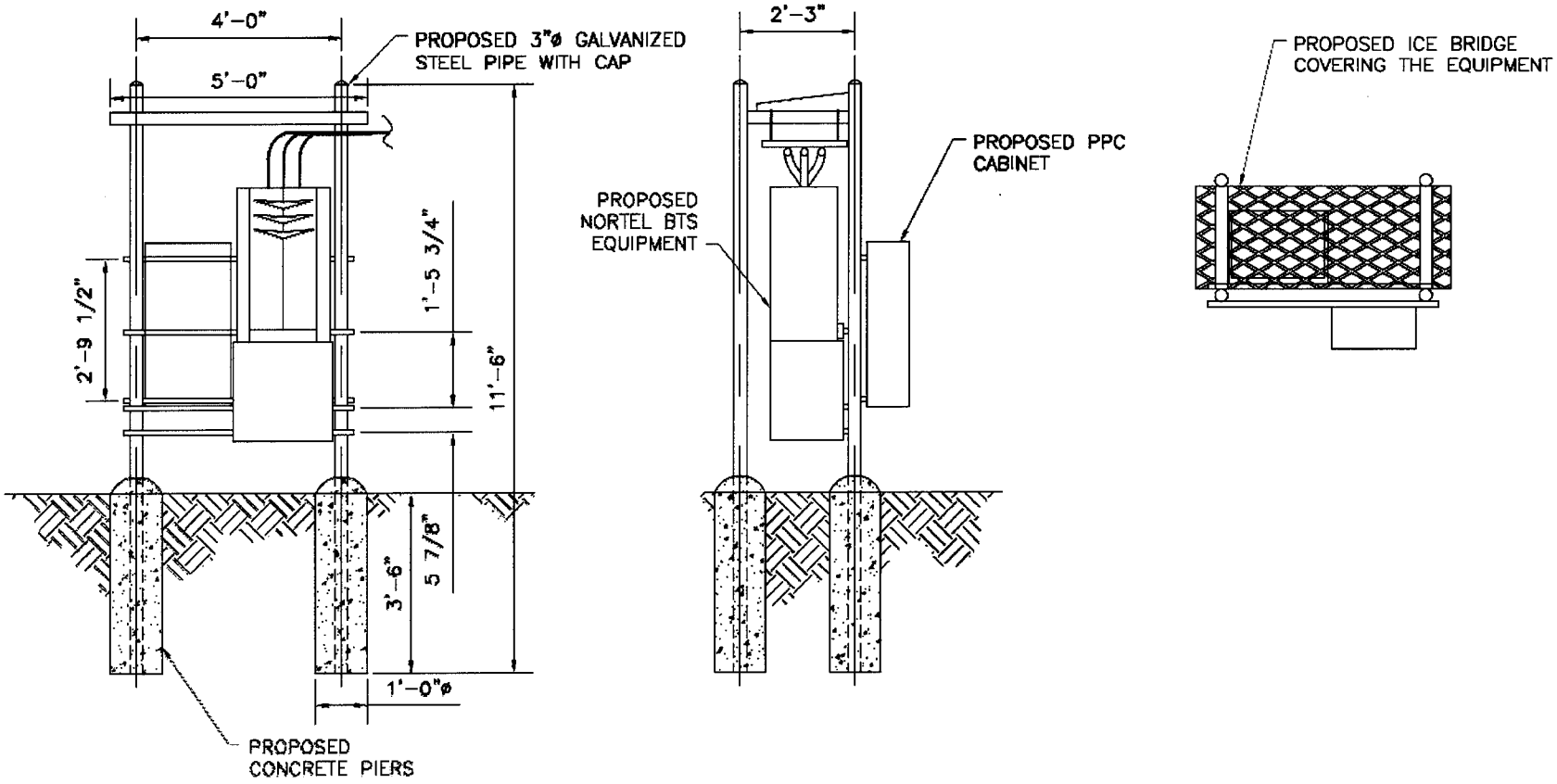
Mounting Options:

Model	Description
2 x 738 546	Mounting Kit for 2 to 4.6 inch (50 to 115 mm) OD mast.
737 978	Tilt Kit for use with the above mounting kit, 0–11 degrees downtilt angle. (requires 2 x 738 546 Mounting Kit)
742 263	Three-panel Sector Mounting Kit (120 deg. ea.) for 3.5 inch (89 mm) OD mast.

Order Information:

Model	Description
742 213	Antenna with 7/16 DIN connectors 0°–6° adjustable electrical downtilt

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com



Pocket/Youghiogheny Communications – Northeast, LLC

Rack Detail

>BUSINESS MADE **SIMPLE**

NORTEL

CDMA BTS 3231 AWS 1.7/2.1 GHz (Outdoor/Indoor)

CDMA BTS 3231

Industry's Highest Capacity AWS Micro BTS

The CDMA BTS 3231 is the latest extension to Nortel Networks BTS (Base Transceiver Station) portfolio providing the ideal solution for urban, sub-urban and rural deployments. The CDMA BTS 3231 is a 3-carrier, 3-sector outdoor/indoor BTS operating at the AWS band of 1.7/2.1 GHz supporting IS-95, 1XRTT and 1xEV-DO simultaneously. BTS 3231 provides flexible deployments solutions including floor, rack, and wall mount options. The power consumption of BTS3231 is industry leading consuming only 630W for 3C3S. The BTS 3231 is also very light at 240lbs making it easy to transport to hard to reach locations such as the top of a high rise building.

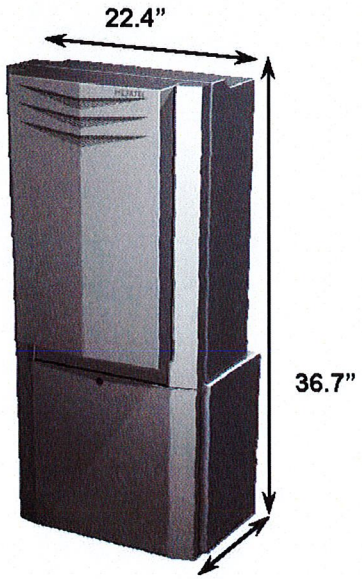


Exhibit D

Power Density Calculations

Pocket Site HFCT0210A

201 Main Street

Cromwell, Connecticut

C Squared Systems, LLC
920 Candia Road
Manchester, NH 03109
Phone: (603) 657 9702
E-mail:
support@csquaredsystems.com

Calculated Radio Frequency Emissions

CT-0210

201 Main Street, Cromwell, CT

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Attachment B: FCC Limits For Maximum Permissible Exposure (MPE) 6

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed Pocket antennas to be installed on the existing tower at 201 Main Street, Cromwell, CT.

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are much more conservative (higher) than the actual signal levels will be from the finished installation.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (mW/ cm^2). The number of mW/cm^2 emitted is called the power density. The general population exposure limit for the cellular band is 0.567-0.593 mW/ cm^2, and the general population exposure limit for the PCS/AWS band is 1.0 mW/ cm^2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

The FCC general population / uncontrolled limits set the maximum exposure to which most people may be subjected. General population / uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Higher exposure limits are permitted under the occupational / controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure (through training), and they must be able to exercise control over their exposure. General population / uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals."

The FCC describes exposure to radio frequency (RF) energy in terms of percentage of maximum permissible exposure (MPE) with 100% being the maximum allowed. Rather than the FCC presenting the user specification in terms of complex power density figures over a specified surface area, this MPE measure is particularly useful, and even more so when considering that power density limits actually vary by frequency because of the different absorptive properties of the human body at different frequencies.

MPE limits are specified as time-averaged exposure limits. This means that exposure can be averaged over 30 minutes for general population / uncontrolled exposure (or 6 minutes for occupational / controlled exposure). However, for the case of exposure of the general public, time averaging is usually not applied because of uncertainties over exact exposure conditions and difficulty in controlling time of exposure. Therefore, the typical conservative approach is to assume that any RF exposure to the general public will be continuous.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population / uncontrolled exposure and for occupational / controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include limits for Maximum Permissible Exposure (MPE) for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit. As shown in these excerpts, each frequency band has different exposure limits, requiring power density to be reported as a percent of Maximum Permissible Exposure (MPE) when dealing with carriers transmitting in different frequency bands.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{EIRP}{\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from bottom of antenna

Off Beam Loss is determined by the selected antenna patterns

4. Calculation Results

Table 1 below outlines the power density information for the site. All information for carriers other than Pocket was obtained from current CSC database[1].

Carrier	Number of Trans.	Effective Radiated Power (ERP) Per Transmitter (Watts)	Antenna Height (Feet)	Operating Frequency (MHz)	Total ERP (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Sprint	N/A	N/A	125	1962.5	N/A	0.0309	1.0000	3.09%
Verizon	9	200	105	880	1,800	0.0587	0.5867	10.01%
Verizon	3	485	105	1900	1,455	0.0475	1.0000	4.75%
Nextel	12	100	95	851	1,200	0.0478	0.5673	8.43%
AT&T GSM	3	655	115	1900	1,965	0.0534	1.0000	5.34%
AT&T UMTS	1	500	115	880	500	0.0136	0.5867	2.32%
Pocket	3	631	85	2130-2133.75	1,893	0.0942	1.0000	9.42%
							Total	43.35%

Table 1: Proposed Carrier Information

5. Conclusion

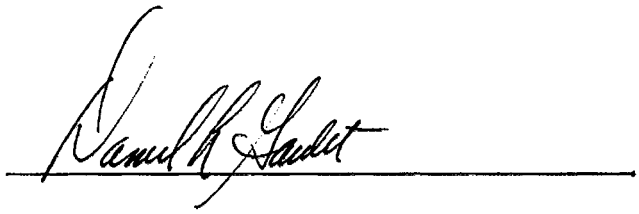
The above analysis verifies that emissions from the proposed site will be well below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 43.35% of the FCC limit.

As noted in the introduction, obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished installation.

[1] CSC database was incomplete regarding the Sprint information. Only the centerline, frequency, power density and %MPE are available and thus included in the cumulative %MPE.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



September 17, 2008
Date

Daniel l. Goulet
C Squared Systems, LLC

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure

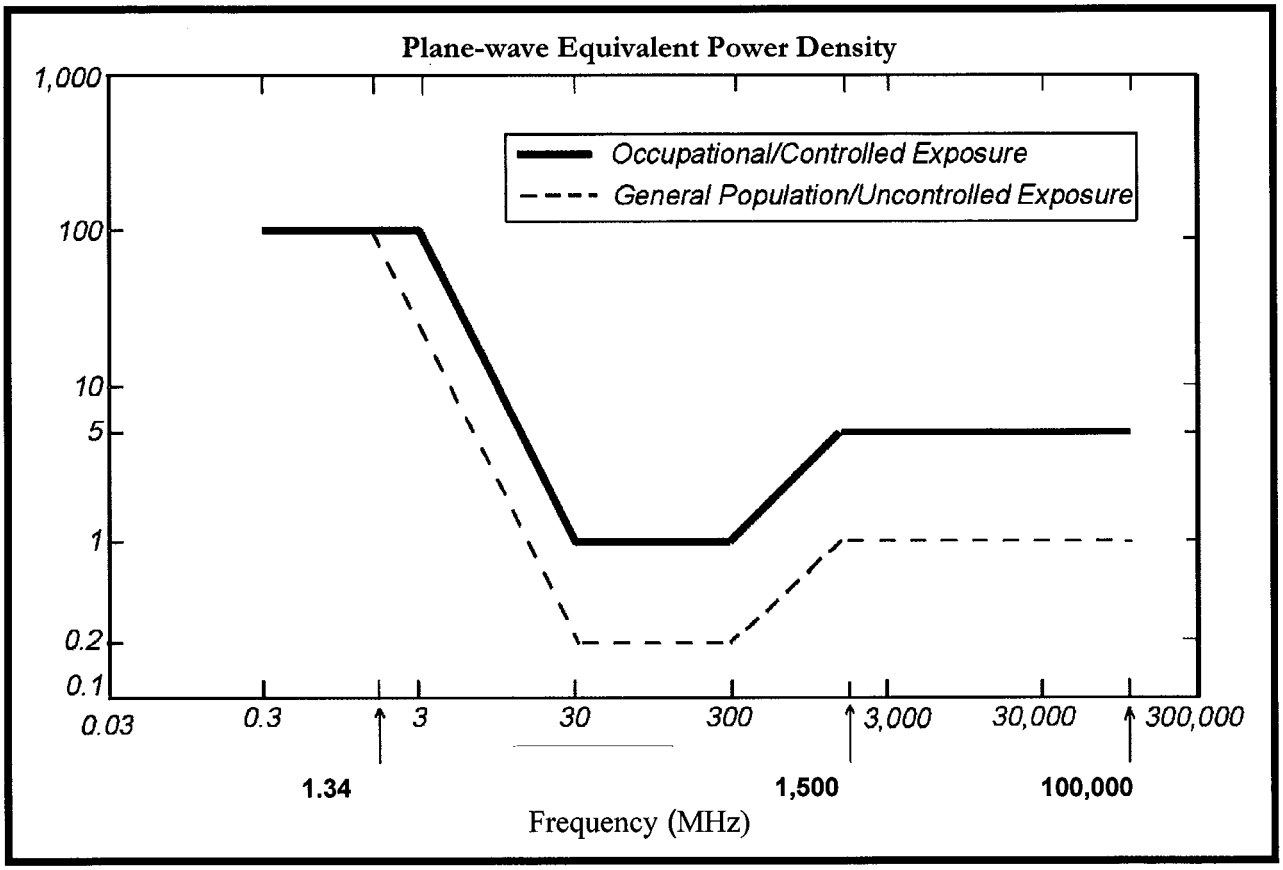
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

NOTE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
NOTE 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



• FCC Limits for Maximum Permissible Exposure (MPE)

Exhibit E

Structural Analysis

Pocket Site HFCT0210A

201 Main Street

Cromwell, Connecticut

May 21, 2008

Tara Brewer
Crown Castle USA
9105 Monroe Road, Suite 150
Charlotte, NC 28270
(704) 321-3812

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, KY 40475
(859) 624-8360
acronin@verticalstructures.com

Subject: Structural Analysis Report

Carrier Designation	**Youghiogheny Co-Locate** **Carrier Site Number: N/A** **Carrier Site Name: CT-0210**
Crown Castle Designation	**Crown Castle BU Number: 876364** **Crown Castle Site Name: Cromwell/First Line Emergency** **Crown Castle JDE Job Number: 106053**
Engineering Firm Designation	**Vertical Structures Project Number: 2008-004-086**
Site Data	**201 Main Street, Cromwell, CT, Middlesex County** **Latitude 41°-35'-0.11", Longitude -72°-38'-59.14"** **125' EEI Monopole Tower**

Dear Ms. Brewer,

Vertical Structures is pleased to submit this structural analysis report to determine the structural integrity of the aforementioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 288212, and Application Number 64283, Revision 2. The purpose of the analysis is to determine the suitability of the tower for the following load case:

Load Case 1 (LC1): Proposed Equipment (Table 1) + Existing/Reserved Equipment (Table 2)

Based on our analysis we have determined the tower superstructure and foundation are sufficient for LC1, provided the modifications detailed in Vertical Structures Job No. 2007-004-138 have been completed. This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon an 80 MPH basic "fastest mile" wind speed, equivalent to a 100 MPH basic "3-second gust" wind speed per IBC Table 1609.3.1.

Vertical Structures appreciates the opportunity of providing our continuing professional services to you and Crown Castle USA. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Andy Cronin
Project Engineer

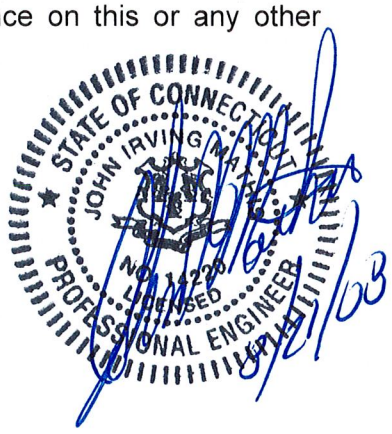


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Table 2 – Existing and Reserved Antenna and Cable Information

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Table 3 – Documents Provided
3.1) Analysis Methods
3.2) Assumptions

4.) ANALYSIS RESULTS
Table 4 – Tower Component Stresses vs. Modified Capacity (LC1)

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RISA Tower Output

6.) APPENDIX B
Feedline Routing Drawing

7.) APPENDIX C
Additional Calculations

1.) INTRODUCTION

The 125' tall monopole tower was designed and manufactured by EEI for Sprint PCS in 2000. The tower consists of three (3) 18-sided tapered polygonal tubes joined via slip joint connections and is founded on a 24' square by 3' thick mat bearing 6' below grade. The tower has been reworked to accommodate additional loading. For the purpose of this analysis, the modifications detailed in Vertical Structures Job No. 2007-004-138 are considered complete.

2.) ANALYSIS CRITERIA

The Cromwell/First Line Emergency tower was analyzed in accordance with the current EIA-222-F publication, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." The proposed, existing and reserved antennas, cables and mounts considered in this analysis are listed in Tables 1 and 2. Applied forces in this study were derived from an 80 MPH basic "fastest mile" wind speed with no ice and a reduced 69 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The tower was originally designed for a 90 MPH basic "fastest mile" wind speed with no ice and a reduced 78 MPH basic "fastest mile" wind speed with a 1/2" of radial ice accumulation. The original design loads are unavailable. All cables are assumed to be routed in accordance with the drawing in Appendix B.

Table 1 – Proposed Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
85	3	Kathrein	742 213		(3) Mount Pipes	6	1 5/8

Table 2 – Existing and Reserved Antenna and Cable Information

Mount Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount Manufacturer	Mount Model	Number Of Feed Lines	Feed Line Size (inches)
125	6	Decibel	DB980H90A-M	EEI	10'-8" L.P. Platform	6	1 5/8
	9*	EMS Wireless	FV65-14-00NA2			9*	1 5/8
115	6**	Powerwave Technologies	7770.00		(3**) 4' T-Arms	6 + 6**	1 1/4
	6**		LGP21401 TMA				
105	6	Decibel	DB844H90		12' L.P. Platform	12	1 5/8
	6	Decibel	DB948F85T2E-M				
	2**	ADC	Dual Band 800/1900 TMA				
95	12	Decibel	DB844H65E-XY		12' L.P. Platform	12	1 5/8

*Indicates MLA loading. MLA loading controls and is used in this analysis.
**Indicates reserved equipment.

3.) ANALYSIS PROCEDURE

Table 3 – Documents Provided

Document	Remarks	Reference	Source
Online Application	Youghiogheny Co-Locate Revision #2	64283	CCI iSite
Tower Drawing	EEI Drawing No. GS52064	1771100	CCI iSite
Foundation Drawing	EEI Drawing No. S6464-125	1613633	CCI iSite
Geotechnical Report	Dr. Clarence Welti Report Dated "August 2, 1999"	1614540	CCI iSite
Rework Information	Vertical Structures Job No. 2007-004-104	1956332	CCI iSite
Rework Drawings	Vertical Structures Job No. 2007-004-138	2133336	CCI iSite

3.1) Analysis Methods

RISA Tower (Version 5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/TIA/EIA-222-F or the local building code requirements. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and any referenced drawings.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222-F.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and Vertical Structures should be allowed to review any new information to determine its effect on the structural integrity of the tower.

4.) ANALYSIS RESULTS

Table 4 – Tower Component Stresses vs. Modified Capacity (LC1)

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail	
L1	124.771 - 84.9115	Pole	TP27.0855x18.5x0.1875	1	-8114.95	806298.34	75.8	Pass	
L2	84.9115 - 40.3411	Pole	TP36.1854x25.8736x0.25	2	-14225.60	1438293.61	101.4	Fail	(1)
L3	40.3411 - 0	Pole	TP44.25x34.6164x0.3125	3	-23031.40	2265620.03	92.8	Pass	
							Summary		
						Pole (L2)	101.4	Fail	(1)
						RATING =	**101.4**	**Fail**	**(1)**

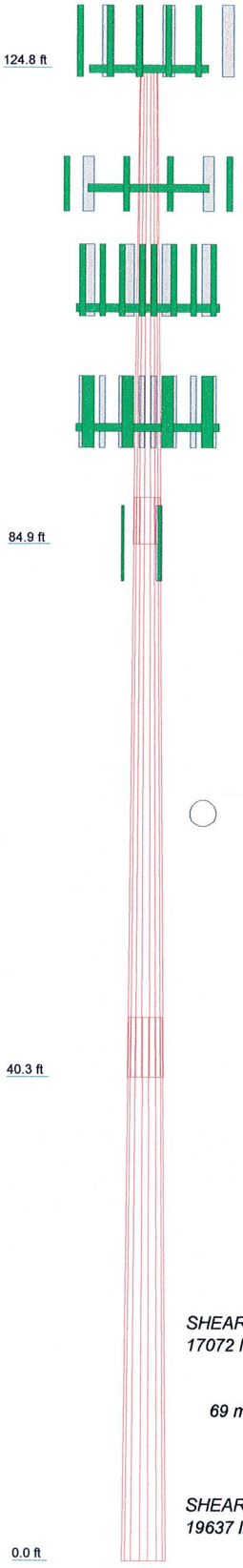
Notes	Component	% Capacity	Pass/Fail
Additional Component Analysis Summary:			
2	Anchor Bolts (Tension)	80.0	Pass
2	Base Plate and Gussets (Bending)	90.5	Pass
2	Foundation (Compared to Allowable Loads)	97.1	Pass
	Structure Rating =	**101.4**	**Pass**

1) Indicates an overstress of less than 5% and is considered acceptable based on the analysis procedure used.
2) Indicates calculations supporting % capacity are included in Appendix C.

APPENDIX A

Section	1	2	3
Length (ft)	39.86	48.46	45.36
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2500	0.3125
Lap Splice (ft)	3.89	5.02	
Top Dia (in)	18.5000	25.8736	34.6164
Bot Dia (in)	27.0855	36.1854	44.2500
Grade		A572-65	
Weight (lb)	1824.7	4027.1	5989.8

11841.6



AXIAL
29918 lb

SHEAR
17072 lb

MOMENT
1692759 lb-ft

TORQUE 631 lb-ft
69 mph WIND - 0.5000 in ICE

AXIAL
23050 lb

SHEAR
19637 lb

MOMENT
1879831 lb-ft

TORQUE 372 lb-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
EEI 10'-8" Low-Profile Platform	125	(2) DB844H90 w/Mount Pipe	105
EEI Monopole Platform Ladder (VSI)	125	(2) DB948F85T2E-M w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB844H90 w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB948F85T2E-M w/Mount Pipe	105
6' x 2" Antenna Mount Pipe (VSI)	125	(2) DB 800/1900 Full Band Masthead (VSI)	105
(3) FV65-14-00NA2 w/Mount Pipe	125	12' Low Profile Platform (VSI)	95
(3) FV65-14-00NA2 w/Mount Pipe	125	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
(3) FV65-14-00NA2 w/Mount Pipe	125	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
4' T-Arm Mount	115	(4) DB844H65E-XY w/ Mount Pipe (VSI)	95
(2) 7770.00 w/ mount pipe	115	742 213 w/ Mount Pipe (Youghiogheny)	85
(2) LGP21401 TMA (VSI)	115	742 213 w/ Mount Pipe (Youghiogheny)	85
4' T-Arm Mount	115	742 213 w/ Mount Pipe (Youghiogheny)	85
(2) 7770.00 w/ mount pipe	115		
(2) LGP21401 TMA (VSI)	115		
4' T-Arm Mount	115		
(2) 7770.00 w/ mount pipe	115		
(2) LGP21401 TMA (VSI)	115		
12' L.P. Platform (VSI)	105		
(2) DB844H90 w/Mount Pipe	105		
(2) DB948F85T2E-M w/Mount Pipe	105		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Middlesex 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 50 mph wind.
5. TOWER RATING: 101.4%

Vertical Structures, Inc.
309 Spangler Drive, Suite E
Richmond, Kentucky 40475
Phone: (859) 624-8360
FAX: (859) 624-8369

Job: Cromwell/First Line Emergency, CT BU#87636			
Project: Vertical Structures Job No. 2008-004-086			
Client: Crown Castle	Drawn by: Andy Cronin	App'd:	
Code: TIA/EIA-222-F	Date: 05/21/08	Scale: NTS	
Path: \\Nas1\acronin\2008-004-086-Cromwell-First Line Emergency\RISA\876364.eri		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 Middlesex County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
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, feedline supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	124.77-84.91	39.86	3.89	18	18.5000	27.0855	0.1875	0.7500	A572-65 (65 ksi)
L2	84.91-40.34	48.46	5.02	18	25.8736	36.1854	0.2500	1.0000	A572-65 (65 ksi)
L3	40.34-0.00	45.36		18	34.6164	44.2500	0.3125	1.2500	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	18.7854	10.8982	461.7305	6.5009	9.3980	49.1307	924.0685	5.4501	2.9260	15.605
	27.5033	16.0077	1463.2065	9.5488	13.7594	106.3421	2928.3383	8.0054	4.4370	23.664
L2	27.1123	20.3323	1686.5721	9.0964	13.1438	128.3170	3375.3635	10.1681	4.1138	16.455
	36.7436	28.5147	4652.1299	12.7571	18.3822	253.0782	9310.3812	14.2601	5.9286	23.715
L3	36.2336	34.0252	5058.5228	12.1779	17.5851	287.6593	10123.7017	17.0158	5.5425	17.736
	44.9326	43.5805	10629.1961	15.5978	22.4790	472.8500	21272.3785	21.7944	7.2380	23.162

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
L1 124.77-84.91				1	1	1		
L2 84.91-40.34				1	1	1		
L3 40.34-0.00				1	1	1		

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 plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	124.77 - 4.00	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF6-50A (1-1/4 FOAM)	C	No	Inside Pole	115.00 - 4.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	107.00 - 4.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	96.00 - 4.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
AVA7-50 (1-5/8 LOW DENSI. FOAM) (Youghiogheny)	C	No	Inside Pole	85.00 - 4.00	6	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72

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 lb
L1	124.77-84.91	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	859.31
L2	84.91-40.34	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1751.61
L3	40.34-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1428.21

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 lb
L1	124.77-84.91	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	859.31
L2	84.91-40.34	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1751.61
L3	40.34-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1428.21

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	124.77-84.91	0.0000	0.0000	0.0000	0.0000
L2	84.91-40.34	0.0000	0.0000	0.0000	0.0000
L3	40.34-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
EEI 10'-8" Low-Profile Platform	C	None		0.0000	125.00	No Ice	22.50	22.50	1500.00
						1/2" Ice	28.10	28.10	2250.00
EEI Monopole Platform Ladder (VSI)	A	From Centroid-Face	3.00 0.00 -3.00	0.0000	125.00	No Ice 1/2" Ice	5.00 8.00	5.50 9.00	60.00 90.00
6' x 2" Antenna Mount Pipe (VSI)	A	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
6' x 2" Antenna Mount Pipe (VSI)	B	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
6' x 2" Antenna Mount Pipe (VSI)	C	From Centroid-Leg	2.82 1.63 0.00	0.0000	125.00	No Ice 1/2" Ice	1.43 1.92	1.43 1.92	23.00 33.83
(3) FV65-14-00NA2 w/Mount Pipe	A	From Centroid-Leg	2.82 1.63 2.00	30.0000	125.00	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	55.55 121.25
(3) FV65-14-00NA2 w/Mount Pipe	B	From Centroid-Leg	2.82 1.63 2.00	30.0000	125.00	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	55.55 121.25
(3) FV65-14-00NA2	C	From	2.82	30.0000	125.00	No Ice	8.64	6.95	55.55

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
w/Mount Pipe		Centroid-Leg	1.63 2.00			1/2" Ice	9.29	8.13	121.25
**									
4' T-Arm Mount	A	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	A	From Centroid-Leg	5.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	A	From Centroid-Leg	5.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
4' T-Arm Mount	B	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	B	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	B	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
4' T-Arm Mount	C	From Centroid-Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	2.80 3.30	1.10 1.30	120.00 180.00
(2) 7770.00 w/ mount pipe	C	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	56.90 102.99
(2) LGP21401 TMA (VSI)	C	From Centroid-Leg	5.00 0.00 0.00	23.0000	115.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	14.10 21.26
**									
12' L.P. Platform (VSI)	C	None		0.0000	105.00	No Ice 1/2" Ice	24.00 28.30	24.00 28.30	1750.00 2150.00
(2) DB844H90 w/Mount Pipe	A	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	A	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
(2) DB844H90 w/Mount Pipe	B	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	B	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
(2) DB844H90 w/Mount Pipe	C	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	3.58 4.20	5.63 6.73	35.55 77.48
(2) DB948F85T2E-M w/Mount Pipe	C	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	2.62 3.23	4.92 6.01	34.05 68.79
(2) DB 800/1900 Full Band Masthead (VSI)	C	From Centroid-Leg	3.50 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice	1.54 1.71	0.80 0.94	28.70 39.71
**									
12' Low Profile Platform (VSI)	C	None		0.0000	95.00	No Ice 1/2" Ice	15.30 17.00	15.30 17.00	1340.00 2000.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) DB844H65E-XY w/ Mount Pipe (VSI)	A	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63
(4) DB844H65E-XY w/ Mount Pipe (VSI)	B	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63
(4) DB844H65E-XY w/ Mount Pipe (VSI)	C	From Centroid-Face	3.50 0.00 1.00	0.0000	95.00	No Ice 1/2" Ice	6.89 11.04	5.86 6.96	45.55 115.63
**									
742 213 w/ Mount Pipe (Youghiogheny)	A	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36
742 213 w/ Mount Pipe (Youghiogheny)	B	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36
742 213 w/ Mount Pipe (Youghiogheny)	C	From Centroid-Leg	1.75 1.00 0.00	30.0000	85.00	No Ice 1/2" Ice	5.28 5.82	4.53 5.87	47.55 88.36

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	39.86	0.00	0.0	39.000	15.5096	-8114.95	604875.00	0.013
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	48.46	0.00	0.0	39.000	27.6665	-14225.60	1078990.00	0.013
L3	40.3411 - 0 (3)	H1-3 (1.35 CR) - 2 TP44.25x34.6164x0.3125	45.36	0.00	0.0	39.000	43.5805	-23031.40	1699640.00	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	323555.00	-38.902	39.000	0.997	0.00	0.000	39.000	0.000
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	1035750.00	-52.180	39.000	1.338	0.00	0.000	39.000	0.000
L3	40.3411 - 0 (3)	TP44.25x34.6164x0.3125	1879833	-47.706	39.000	1.223	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			.33							

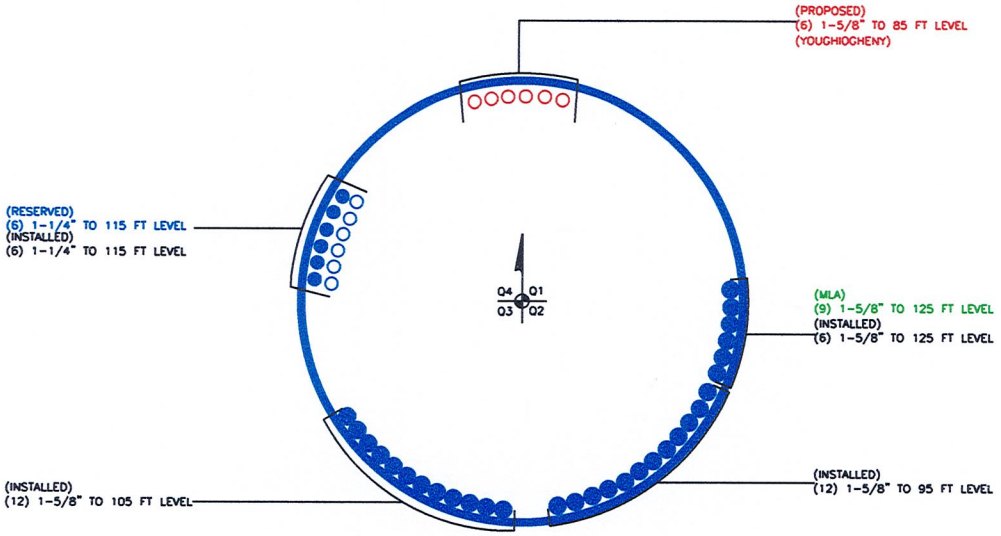
Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	124.771 - 84.9115 (1)	TP27.0855x18.5x0.1875	0.013	0.997	0.000	1.011 ✓	1.333	H1-3 ✓
L2	84.9115 - 40.3411 (2)	TP36.1854x25.8736x0.25	0.013	1.338	0.000	1.351 ✗	1.333	H1-3 ✗
L3	40.3411 - 0 (3)	TP44.25x34.6164x0.3125	0.014	1.223	0.000	1.237 ✓	1.333	H1-3 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
L1	124.771 - 84.9115	Pole	TP27.0855x18.5x0.1875	1	-8114.95	806298.34	75.8	Pass
L2	84.9115 - 40.3411	Pole	TP36.1854x25.8736x0.25	2	-14225.60	1438293.61	101.4	Fail ✗
L3	40.3411 - 0	Pole	TP44.25x34.6164x0.3125	3	-23031.40	2265620.03	92.8	Pass
						Summary		
						Pole (L2)	101.4	Fail ✗
						RATING =	**101.4**	**Fail ✗**

APPENDIX B



0 1 2 3FT

: SCALE :

BUSINESS UNIT: 876364 TOWER ID: C_BASELEVEL

LEGEND: FEEDLINES

- ● SOLID BLUE CIRCLE DENOTES EXISTING FEEDLINE
- ○ OPEN RED CIRCLE DENOTES PROPOSED FEEDLINE
- ○ OPEN BLUE CIRCLE DENOTES RESERVED FEEDLINE
- X BLUE "X" DENOTES LOCATION NOT GIVEN

NOTE: ASSUME FEEDLINE ATTACHMENT HEIGHT TO TOWER STEEL AT 8-FEET ABOVE FINISHED GRADE UNLESS OTHERWISE SPECIFIED

SAT

20/02/08 NEW BUILD PER WORK ORDER # 144877

DRAWN BY: SAT
CHECKED BY: JSI
DRAWING DATE: 20/02/08

SITE NUMBER:
SITE NAME:
SITE NAME
CROMWELL / FIRST LINE BIDDEFORD
BUSINESS UNIT NUMBER
876364
SITE ADDRESS
291 MAIN ST.
CROMWELL, CT 06416
MIDDLESEX COUNTY
USA
SHEET TITLE
BASE LEVEL
SHEET NUMBER
A1-0

BASE LEVEL DRAWING

SCALE: 1" = 1'-0" 1

PLOT DATE: 2/4/2008 FILE NAME: 876364_BASELEVEL.DWG
Xref: R:\TEMPLATES\TYPICAL BLOCKS FOR TEMPLATES\TITLE BLOCK STD-VER 5.1.dwg

APPENDIX C

ANCHOR BOLT CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-086
Tower Model:	125' EEI Monopole Tower
Date:	5/21/2008

Input Information:	***Existing Bolts***	
# Bolts, **n**	12	
Bolt Diameter, **d**	2.25	in
Bolt Circle Diameter, **D**	53	in
Bolt Ultimate Tensile Stress, F_u	100	ksi
Applied Vertical Load **P**	23.05	kips
Applied Shear **S**	19.64	kips
Applied Moment **M**	22557.97	kip-in
Steel Grade	A615 Gr 75	

Bolt Cross-Sectional Area, **A**	3.976	in^2 (each)
Bolt Group Moment of Inertia, **I**	16753.2055	in^4
Maximum Tensile Stress (outer bolt), σ_y	35.20	ksi
Maximum Shear Stress(any bolt), τ_{xy}	0.412	ksi
Maximum Allowable Stress (per bolt), **Ft**	44.00	ksi
% Capacity	**80.0%**	

The Bolt Group is Adequate for Loading

Maximum Allowable Stress (per bolt), **Ft**

$$0.43F_u - 1.8f_v \leq 0.33F_u$$

This equation is for threaded parts, A449 bolts over 1 1/2" dia. (threads included in shear plane) Manual of Steel Construction ASD, 9th Edition, pg. 5-74, Table J3.3

MODIFIED GUSSET PLATE AND WELD CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-086
Tower Model:	125' EEI Monopole Tower
Date:	5/21/2008

Anchor Bolt Load	139.95	kips
Weld Size at Bottom of Gusset Plate	0.625	in
Length of Bottom Weld Along Gusset Plate	6.25	in
Gusset Plate Thickness	0.75	in
Distance From Pole Edge to Center of Horizontal Weld	3.875	in
Length of Vertical Weld Along Gusset Plate	21.25	in
Weld Size Along Vertical Face of Gusset Plate	0.375	in
Gusset Plate Yield Strength	50	ksi
Nominal Tensile Strength of Weld Metal	70	ksi
Base Plate Yield Strength	60	ksi
Number of Gusset Plates Between Each Anchor Bolt	1	

Stress in Bottom Weld Along Gusset Plate	25.34	ksi
Allowable Bottom Weld Stress	28.00	ksi
% Capacity	**90.5%**	

Bottom Weld Along Gusset Plate is Adequate for Loading

Tension Stress Along Gusset Plate	29.86	ksi
Allowable Tension Stress Along Bottom of Gusset Plate	40.00	ksi
% Capacity	**74.6%**	

Bottom of Gusset Plate is Adequate for Loading

Bending Moment on Gusset Plate	542.31867	kip-in
Stress in Vertical Weld Along Top of Gusset Plate	18.41	ksi
Allowable Stress in Vertical Weld Along Top of Gusset Plate	28.00	ksi
% Capacity	**65.8%**	

Top Weld Along Gusset Plate is Adequate for Loading

Bending Stress Along Top of Gusset Plate	9.61	ksi
Allowable Bending Stress Along Top of Gusset Plate	40.00	ksi
Shear Stress Along Top of Gusset Plate	8.78	ksi
Allowable Shear Stress Along Top of Gusset Plate	26.67	ksi
% Capacity	**32.9%**	

Top of Gusset Plate is Adequate for Loading

BASE PLATE CALCULATIONS

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-086
Tower Model:	125' EEI Monopole Tower
Date:	5/21/2008

FOR BASE PLATES WITH GUSSET PLATE STIFFENERS

Reference: Roark's Formulas for Stress & Strain, Fifth Edition, Table 26, pg. 396, section 10a

Length of Side Perpendicular to Free Edge	7	in
Length of Side Parallel to Free Edge	13.125	in
Roark's Coefficient Beta^3	1.444	
Maximum Tensile Force Per Bolt	139.95	kips
Base Plate Yield Strength	60	ksi
Base Plate Thickness	1.75	in

Applied Base Plate Flexural Stress	35.19	ksi
Allowable Base Plate Flexural Stress	60	ksi
% Capacity	**58.7%**	

Base Plate is Adequate for Applied Loading

Modified Overturning Calculation for Square Mat Foundations

Customer:	Crown Castle
Site Name:	Cromwell/First Line Emergency, CT BU#876364
Job Number:	2008-004-086
Tower Model:	125' EEI Monopole Tower
Date:	5/21/2008

Soil Ultimate Bearing	8	ksf	
Unit wt soil	0.0626	kcf	
Unit wt concrete	0.0876	kcf	
Mat Width	24	ft	
Mat Thickness	3	ft	
Depth of Soil Over Mat	2	ft	
Has Pedestals? (Y or N)	Y		
Pedestal Round or Square? (R or S)	S		
Number of Pedestals	1		
Pedestal Height	3	ft	
Pedestal Diameter or Width	14	ft	
Applied Shear	19.64	kip	
Applied Axial Force	23.05	kip	
Applied Moment	1879.83	k-ft	
wt. Concrete =	202.882	kip	
wt. Soil =	47.576	kip	
x =	1.425	ft	
Shear Moment =	117.822	k-ft	
Allowable Bearing =	4	ksf	
Bearing =	0.907	ksf	BEARING ADEQUATE
Resisting Moment =	3087.28285	k-ft	
SF =	1.545		OVERTURNING ADEQUATE