

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING DEPARTMENT

PERMIT

Permit Number: 081311

Please Read
Application And
Notes, If Any,
Attached

This is to certify that GLOBAL SIGNAL ACQUISITION SYSTEMS IV INC in Community of
has permission to Adding concrete into existing foundation for the tower
AT R. 525
PRESUMPCOT ST CE 415-B006002

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is lath or other work is set-in. 24 HOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

PERMIT ISSUED

OTHER REQUIRED APPROVALS

Fire Dept.

Health Dept.

Appeal Board

Other

CITY OF PORTLAND

Department Name

Thomas M. Mackley 10/27/08
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

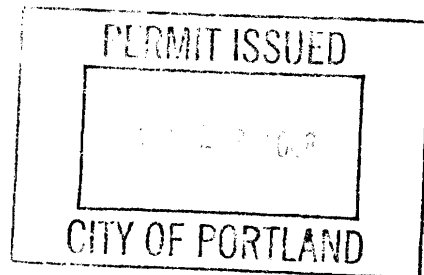
Permit No: 08-1311	Issue Date:	CBL: 415 B006002
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Location of Construction: R 525 PRESUMPCOT ST	Owner Name: GLOBAL SIGNAL ACQUISITION	Owner Address: PMB 353 4017 WASHINGTON RD	Phone:
Business Name:	Contractor Name: Eastern Communications, Inc	Contractor Address: 66 Industrial Park Road Saco	Phone 2072834499
Lessee/Buyer's Name	Phone:	Permit Type: Radio/Telecommunications Tower	Zone: I-M

Past Use: Communications Tower	Proposed Use: Communications Tower - Adding concrete into existing foundation for the tower	Permit Fee:	Cost of Work: \$32,000.00	CEO District: 4
Proposed Project Description: Adding concrete into existing foundation for the tower		FIRE DEPT: Approved Denied	INSPECTION: Use Group: U Type: IIB IBC 2003 Signature: <i>Jm</i> 10/22/08	
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.) Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Signature: _____ Date: _____		

Permit Taken By: Idobson	Date Applied For: 10/15/2008	Zoning Approval		
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1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. 2. Building permits do not include plumbing, septic or electrical work. 3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied	Historic Preservation <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied
	Date: <i>10/20/09</i>	Date: <i>10/20/09</i>	Date: <i>[Signature]</i>


CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE



General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>Presumpscot St.</u>		
Total Square Footage of Proposed Structure/Area <u>700</u>		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart# <u>115</u>	Block# <u>B</u>	Lot# <u>6</u>
Applicant * <u>must be owner, Lessee or Buyer</u> * Name <u>Eastern Communications Inc.</u> Address <u>1200 McArthur Blvd</u> City, State & Zip <u>Milbrook NJ 07430</u>		Telephone: <u>201-236-9094</u>
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name Address City, State & Zip	Cost Of Work: \$ <u>32,000</u> C of O Fee: \$ _____ Total Fee: \$ <u>340</u>
Current legal use (i.e. single family) <u>Communications Tower</u> If vacant, what was the previous use? _____ Proposed Specific use: _____ Is property part of a subdivision? <u>NO</u> If yes, please name _____ Project description: <u>Adding concrete onto existing foundation for the tower</u>		
Contractor's name: <u>Eastern Communications Inc.</u> Address: <u>606 Industrial Park Rd</u> City, State & Zip: <u>Saco ME 04072</u> Telephone: <u>207-263-4499</u> Who should we contact when the permit is ready: <u>Mike Heath</u> Telephone: <u>415-1774</u> Mailing address: <u>72 Foreside Rd Falmouth, ME 04105</u>		

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature: Mike Heath

Date: 10/15/08

This is not a permit; you may not commence ANY work until the permit is issued.

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 08-1311	Date Applied For: 10/15/2008	CBL: 415 B006002
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Business Name:	Contractor Name: Eastern Communications, Inc	Contractor Address: 66 Industrial Park Road Saco	Phone (207) 283-4499
Lessee/Buyer's Name	Phone:	Permit Type: Radio/Telecommunications Tower	

Proposed Use: Communications Tower - Adding concrete into existing foundation for the tower	Proposed Project Description: Adding concrete into existing foundation for the tower
---	--

Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 10/20/2008
Note: **Ok to Issue:**

2) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.

Dept: Building **Status:** Approved with Conditions **Reviewer:** Tom Markley **Approval Date:** 10/23/2008
Note: **Ok to Issue:**

- 1) Special inspections by a licensed structural engineer to verify foundation integrity should be provided before calling for a final inspection.
- 2) Application approval based upon information provided by applicant. Any deviation from approved plans requires separate review and approval prior to work.

ACORD™ CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 9/26/2008												
PRODUCER (207)780-1677 FAX: (207)780-6377 Cross Insurance-Portland 2331 Congress Street PO Box 567 Portland ME 04112		THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.												
INSURED Eastern Communications, Inc. 66 Industrial Park Road Saco ME 04072		<table border="1"> <thead> <tr> <th>INSURERS AFFORDING COVERAGE</th> <th>NAIC #</th> </tr> </thead> <tbody> <tr> <td>INSURER A: Lexington Insurance</td> <td></td> </tr> <tr> <td>INSURER B: Peerless Insurance</td> <td>24198</td> </tr> <tr> <td>INSURER C: National Union Fire Ins</td> <td></td> </tr> <tr> <td>INSURER D: Commerce & Industry Ins</td> <td></td> </tr> <tr> <td>INSURER E:</td> <td></td> </tr> </tbody> </table>	INSURERS AFFORDING COVERAGE	NAIC #	INSURER A: Lexington Insurance		INSURER B: Peerless Insurance	24198	INSURER C: National Union Fire Ins		INSURER D: Commerce & Industry Ins		INSURER E:	
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COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A		GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR _____ _____ GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC	2676381	9/26/2008	9/26/2008	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B		AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS _____	BA8395669	3/4/2008	3/4/2009	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ GARAGE LIABILITY <input type="checkbox"/> ANY AUTO AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC AGG \$
C		EXCESS/UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE _____ DEDUCTIBLE RETENTION \$	BE2843715			EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$ \$ \$
D		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WC3427507	4/5/2008	4/5/2009	<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
A		OTHER Leased/Rented Equipment	IM8399281	3/4/2008	3/4/2009	Special Form \$350,000 Deductible \$1,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
 *10 Day notice for nonpayment of premium except for Workers' Compensation.
 Re: Presumpscot
 Crown Castle and Veronica Harris, 1200 McArthur Blvd., Mahwah NJ 07430 are named as Additional Insured with regards to general liability only.

CERTIFICATE HOLDER

Crown Castle 46 Broadway Albany, NY 12204	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <u>30</u> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE Elizabeth Gamblin/EJG <i>Elizabeth Gamblin</i>
---	--

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

ACORD™ CERTIFICATE OF LIABILITY INSURANCE		DATE (MM/DD/YYYY) 10/15/2008
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INSURED Eastern Communications, Inc. 66 Industrial Park Road Saco ME 04072		INSURERS AFFORDING COVERAGE INSURER A: Lexington Insurance INSURER B: Peerless Insurance INSURER C: National Union Fire Ins INSURER D: Commerce & Industry Ins INSURER E:
		NAIC # 24198

COVERAGES

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						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000
						MED EXP (Any one person)	\$ 5,000
						PERSONAL & ADV INJURY	\$ 1,000,000
						GENERAL AGGREGATE	\$ 2,000,000
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						OTHER THAN EA ACC	\$
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						AGGREGATE	\$ 5,000,000
							\$
							\$
							\$
D		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WC3427507	4/5/2008	4/5/2009	<input checked="" type="checkbox"/> WC STATUTORY LIMITS	OTH-ER
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						Deductible	\$1,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
 *10 Day notice for nonpayment of premium except for Workers' Compensation.
 Re: Site WAKEFIELD 2
 Verizon Wireless and Village Condominium Trust, 894 Main Street, Wakefield MA 01880 are named as Additional Insureds with respect to General Liability only.

CERTIFICATE HOLDER

Verizon Wireless
 400 Friberg Parkway
 Westborough, MA 01581

CANCELLATION

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AUTHORIZED REPRESENTATIVE
 Hope Cote/EJG

Hope A. Cote

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Date: **June 7, 2008**

Veronica Harris
Crown Castle USA, Inc.
1200 McArthur Blvd.
Mahwah, NJ 07430
(201) 236-9094

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469

Phone: (281) 239-8490
Fax: (281) 239-8515

Subject: Structural Analysis Report

Carrier Designation

AT&T Mobility Co-Locate
Carrier Site Number: "5022"
Carrier Site Name: "East Deering"

Crown Castle Designation

Crown Castle BU Number: 878783
Crown Castle Site Name: PORTLAND NORTH
Crown Castle JDE Job Number: 106227

Engineering Firm Designation

PSG Engineering Project Number: 0801F166-A040180

Site Data

527 Persumpscot, Portland, ME, Cumberland County
Latitude 43° 44' 35.3", Longitude -70° 13' 11.3"
178 Foot - Monopole Tower

Dear Ms. Harris,

PSG Engineering, Ltd. 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 290170, in accordance with application 64527, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table 1 and Table 2 for the proposed and existing/reserved loading.

The analysis has been performed in accordance with the TIA/EIA 222-F standard based upon a wind speed of 80 mph fastest mile (100 mph 3-second gust). ***This analysis is based on completing the required foundation modifications shown in Appendix D prior to installing the proposed loads shown in Table 1.***

We at PSG Engineering, Ltd. appreciate the opportunity of providing our continuing professional services to you and Crown Castle International. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

Oscar Pedraza, P.E.
President



Date: **June 7, 2008**

Veronica Harris
Crown Castle USA, Inc.
1200 McArthur Blvd.
Mahwah, NJ 07430
(201) 236-9094

PSG Engineering, Ltd.
1006 Thompson Highway
Richmond, TX 77469

Phone: (281) 239-8490
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Subject: Structural Analysis Report

Carrier Designation	AT&T Mobility Co-Locate Carrier Site Number: "5022" Carrier Site Name: "East Deering"
Crown Castle Designation	Crown Castle BU Number: 878783 Crown Castle Site Name: PORTLAND NORTH Crown Castle JDE Job Number: 106227
Engineering Firm Designation	PSG Engineering Project Number: 0801F166-A040180
Site Data	527 Persumpscot, Portland, ME, Cumberland County Latitude 43° 44' 35.3", Longitude -70° 13' 11.3" 178 Foot - Monopole Tower

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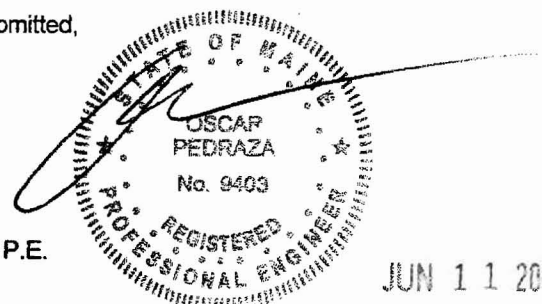
LC1: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
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President



JUN 11 2008

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Required Foundation Modifications

1) INTRODUCTION

The tower superstructure analysis is based on the original tower design by Pittsburg Monopole Division dated December 18, 1996 (TIA/EIA-222-F: 85 mph with 1/2" radial ice). The tower substructure analysis is based on the original foundation design by Pittsburg Monopole Division dated December 18, 1996 and a geotechnical report by Gemini Geotechnical Associates, Inc. dated September 30, 1996.

2) ANALYSIS CRITERIA

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 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.
- Deflections calculated using a wind speed of 50 mph.
- Feedline torque is considered.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.333

Table Legend

Proposed = (P)
Reserved = (R)

Table 1 – Proposed (P) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (Inches)
160	3(P)	Allgon/ Powerwave	7391.00	-	12(P) (Internal)	1 5/8
	6(P)	Powerwave Technologies	7770.00			
	6(P)		LGP21401			
	6(P)		LGP21903			

Table 2 – Installed and Reserved (R) Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (Inches)
180	CASE A					
	6	Decibel	DB978H65A-M	Low Profile Platform w/Handrail (1)	6 (Internal)	1 5/8
	*CASE B (Controlling Load Case)					
170	9(R)	MLA	72"x12"x7"	Low Profile Platform (1)	9(R) (Internal)	1 5/8
	6+3(R)	RFS/Celwave	APXV18-206517-C	Low Profile Platform (1)	12+6(R) (Internal)	1 5/8
6	Ericsson	KRY 11271				
**160	**6	**Decibel	**DB844H90-XY	Standoff T-Arm (3)	**9 (Internal)	**7/8
	**3	**Allgon	**7262.02		**6 (Internal)	**1 5/8
151	6	Decibel	DB948P85E-M	Low Profile Platform	12 (Internal)	1 5/8
150	6	Decibel	DB844H80-XY	w/Handrail (1)		
135	6	Antel	BSA-185065/10CF	Low Profile Platform (1)	6 (Internal)	1 5/8

*Note: Controlling load case results shown in Table 5 and Appendix A.

**Note: All installed antennas and coax lines will be removed and replaced with proposed loading. Installed mounts will remain to support proposed loads.

Table 3 – Original Tower Manufacturer Design Antenna and Cable Information

Center Line Elevation (feet)	Number Of Antenna	Antenna Manufacturer	Antenna Model	Mount	Number Of Feed Lines	Feed Line Size (Inches)
180	12	Standard	4 Sq. Ft.	Platform w/Handrail (1)	Not Available (Internal)	
170	2	Standard	6 Dish	Dish Mount (2)		
160	12	Standard	4 Sq. Ft.	Platform w/Handrail (1)		

3) ANALYSIS PROCEDURE

Table 4 – Documents Provided

Document	Remarks	Reference	Source
Original Tower Design	Pittsburg Monopole Division	1619399	Crown Site Data Manager
Original Foundation Design		1620582	
Geotechnical Report	Gemini Geotechnical Associates, Inc.	1620506	
CAD Level Drawing(s)	178',168',158',149',134' Level Drawing(s)	-	Crown CAD Department

3.1) Analysis Method

RISATower (Version 5.1.2.0), a commercially available software program, 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/EIA/TIA 222F 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 the manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts, and other appurtenances are as specified in Tables 1 and 2 and the Level drawing(s) listed in Table 4.
4. When applicable, transmission cables are considered to be structural components for calculating wind loads, as allowed by TIA/EIA-222F.

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

4) ANALYSIS RESULTS

Table 5 – Tower Component Stresses vs. Capacity – LC1

Notes	Component	Elevation (ft)	% Capacity	Pass/Fail
RISA Tower Analysis Summary:(Monopole)				
			Summary	
Notes:	Component	Elevation	% Capacity	Pass/Fail
	L1	178 - 140	74.6	Pass
	L2	140 – 100	94.7	Pass
	L3	100 – 60	75.6	Pass
	L4	60 – 20	89.2	Pass
	L5	20 - 0	93.8	Pass
Individual Components:				
Notes:	Component	Elevation	% Capacity	Pass/Fail
	Base Plate	-	68.3	Pass
	Anchor Bolts	-	*101.0	Pass
BASE FOUNDATION				
	Soil Bearing	-	86.6	Pass
	Foundation Stability	-	78.1	Pass
	Footing Shear	-	25.6	Pass
	Footing Bending	-	74.4	Pass
Structure Rating (max from all components) =				101.0%

*Notes:

- 1) Tower stresses equal or less than 105% are sufficient.

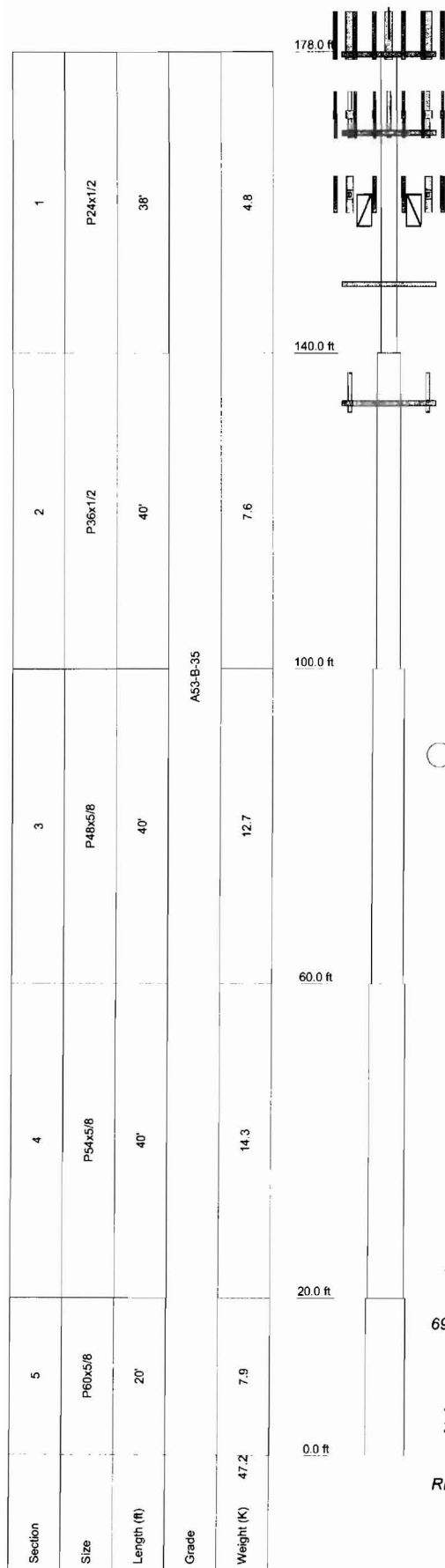
4.1) Recommendations (if applicable)

See Appendix D for required foundation modifications.

*Crown Castle International
178 Ft Monopole Tower
PSG Project Number 0801F166-A040180*

*June 7, 2008
CCI BU No. 878783
Application 64527, Revision 1*

**APPENDIX A
RISA TOWER OUTPUT**



DESIGNED APPURTENANCE LOADING

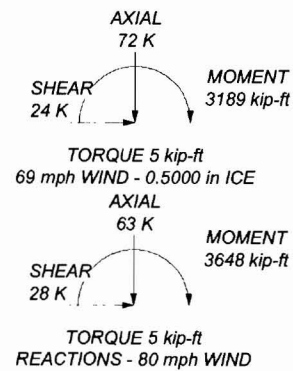
TYPE	ELEVATION	TYPE	ELEVATION
ERI--A-1 Lightning Spur	181.5	(2) LGP219nn	160
(3) 72"x12" MLA Antenna w/Mount Pipe	180	(2) 7770.00 w/Mount Pipe	160
		7391.00 w/Mount Pipe	160
(3) 72"x12" MLA Antenna w/Mount Pipe	180	(2) LGP21401	160
		(2) LGP219nn	160
(3) 72"x12" MLA Antenna w/Mount Pipe	180	(2) 7770.00 w/Mount Pipe	160
		5 Standoff T-Arm (14' face width)	158
PIROD 13' Low Profile Platform	178	5 Standoff T-Arm (14' face width)	158
L3 Rail	178	5 Standoff T-Arm (14' face width)	158
(2) TMA	170	(2) DB948F85E-M w/Mount Pipe	151
(3) APXV18-206517-C w/Mount Pipe	170	(2) DB948F85E-M w/Mount Pipe	151
(2) TMA	170	(2) DB948F85E-M w/Mount Pipe	151
(3) APXV18-206517-C w/Mount Pipe	170	(2) DB844H80-XY w/Mount Pipe	150
(2) TMA	170	(2) DB844H80-XY w/Mount Pipe	150
(3) APXV18-206517-C w/Mount Pipe	170	(2) DB844H80-XY w/Mount Pipe	150
PIROD 13' Low Profile Platform	168	PIROD 13' Low Profile Platform	149
7391.00 w/Mount Pipe	160	L3 Rail	149
(2) LGP21401	160	(2) BSA-185065/10CF w/Mount Pipe	135
(2) LGP219nn	160	(2) BSA-185065/10CF w/Mount Pipe	135
(2) 7770.00 w/Mount Pipe	160	(2) BSA-185065/10CF w/Mount Pipe	135
7391.00 w/Mount Pipe	160	(2) BSA-185065/10CF w/Mount Pipe	135
(2) LGP21401	160	PIROD 13' Low Profile Platform	134

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Cumberland County, Maine.
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%



PSG Engineering, Ltd.		PSG Engineering Project Number: 0801F166-A04018	
1006 Thompson Highway		Project: (878783) (PORTLAND NORTH)	
Richmond, TX 77469		Client: Crown Castle International	Drawn by: Jamal Huwel, E.I.T.
Phone: 281.239.8490		Code: TIA/EIA-222-F	Date: 05/28/08
FAX: 281.239.8515		Path: K:\Project Files\0801F166\878783.rvt	Scale: NTS
			Dwg No. E-1

RISA Tower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX 77469 Phone: 281.239.8490 FAX: 281.239.8515	Job PSG Engineering Project Number: 0801F166-A040180	Page 1 of 10
	Project (878783) (PORTLAND NORTH)	Date 09:38:57 05/28/08
	Client Crown Castle International	Designed by Jamal Huwel, E.I.T.

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 Cumberland County, Maine.

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.

Pole Section Geometry

Section	Elevation <i>ft</i>	Section Length <i>ft</i>	Pole Size	Pole Grade	Socket Length <i>ft</i>
L1	178'-140'	38'	P24x1/2	A53-B-35 (35 ksi)	
L2	140'-100'	40'	P36x1/2	A53-B-35 (35 ksi)	
L3	100'-60'	40'	P48x5/8	A53-B-35 (35 ksi)	
L4	60'-20'	40'	P54x5/8	A53-B-35 (35 ksi)	
L5	20'-0'	20'	P60x5/8	A53-B-35 (35 ksi)	

Tower Elevation <i>ft</i>	Gusset Area (per face) <i>ft²</i>	Gusset Thickness <i>in</i>	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals <i>in</i>	Double Angle Stitch Bolt Spacing Horizontals <i>in</i>
L1 178'-140'				1	1	1		
L2 140'-100'				1	1	1		
L3 100'-60'				1	1	1		
L4 60'-20'				1	1	1		
L5 20'-0'				1	1	1		

Monopole Base Plate Data

Base Plate Data

Base plate is square

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	Client Crown Castle International	Designed by Jamal Huwel, E.I.T.

Base Plate Data	
Base plate is grouted	
Anchor bolt grade	F1554-36
Anchor bolt size	2.0000 in
Number of bolts	32
Embedment length	48.0000 in
f_c	3 ksi
Grout space	3.0000 in
Base plate grade	A36
Base plate thickness	3.2500 in
Bolt circle diameter	66.0000 in
Outer diameter	72.0000 in
Inner diameter	60.2500 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*										
*										
*										
*										
*										
*										
*										
*										
*										
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_{AA} ft^2/ft	Weight plf
EL. 178' LEVEL							
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	178' - 10'	9	No Ice 1/2" Ice	0.00 0.82
EL. 168' LEVEL							
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	168' - 10'	18	No Ice 1/2" Ice	0.00 0.82
EL. 158' LEVEL							
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	158' - 10'	12	No Ice 1/2" Ice	0.00 0.82
EL. 149' LEVEL							
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	149' - 10'	12	No Ice 1/2" Ice	0.00 0.82
EL. 134' LEVEL							
LDF7-50A (1-5/8)	C	No	Inside Pole	134' - 10'	6	No Ice	0.00 0.82

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	Client Crown Castle International	Designed by Jamal Huwel, E.I.T.

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}	Weight plf
FOAM)						1/2" Ice	0.82
*							
*							
TOWER HARDWARE							
Climbing Ladder (Ar)	C	No	CaAa (Out Of Face)	178' - 10'	1	No Ice 1/2" Ice	0.04 1.53

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	178'-140'	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	1.425	1.00
L2	140'-100'	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	1.500	1.88
L3	100'-60'	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	1.500	1.91
L4	60'-20'	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	1.500	1.91
L5	20'-0'	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	0.375	0.48

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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	178'-140'	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	5.225	1.02
L2	140'-100'	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	5.500	1.90
L3	100'-60'	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	5.500	1.93
L4	60'-20'	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	5.500	1.93
L5	20'-0'	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	1.375	0.48

Discrete Tower Loads

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	Project	(878783) (PORTLAND NORTH)	Date	09:38:57 05/28/08
	Client	Crown Castle International	Designed by	Jamal Huwel, E.I.T.

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
EL. 178' LEVEL										
(3) 72"x12" MLA Antenna w/Mount Pipe	A	From Leg	4.00	0' 0'	0.0000	180'	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
(3) 72"x12" MLA Antenna w/Mount Pipe	B	From Leg	4.00	0' 0'	0.0000	180'	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
(3) 72"x12" MLA Antenna w/Mount Pipe	C	From Leg	4.00	0' 0'	0.0000	180'	No Ice 1/2" Ice	8.64 9.29	6.95 8.13	0.08 0.14
L3 Rail	C	None			0.0000	178'	No Ice 1/2" Ice	6.50 8.70	6.50 8.70	0.06 0.09
PiROD 13' Low Profile Platform	C	None			0.0000	178'	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76
* ***EL. 168' LEVEL***										
(3) APXV18-206517-C w/Mount Pipe	A	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	5.05 5.50	4.49 5.42	0.05 0.09
(2) TMA	A	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	0.01 0.02
(3) APXV18-206517-C w/Mount Pipe	B	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	5.05 5.50	4.49 5.42	0.05 0.09
(2) TMA	B	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	0.01 0.02
(3) APXV18-206517-C w/Mount Pipe	C	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	5.05 5.50	4.49 5.42	0.05 0.09
(2) TMA	C	From Leg	4.00	0' 0'	0.0000	170'	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	0.01 0.02
PiROD 13' Low Profile Platform	C	None			0.0000	168'	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1.30 1.76
* ***EL. 158' LEVEL***										
(2) 7770.00 w/Mount Pipe	A	From Leg	4.00	0' 0'	0.0000	160'	No Ice 1/2" Ice	6.22 6.77	4.35 5.20	0.06 0.10
7391.00 w/Mount Pipe	A	From Leg	4.00	0' 0'	0.0000	160'	No Ice 1/2" Ice	5.81 6.26	3.98 4.63	0.03 0.08
(2) LGP21401	A	From Leg	4.00	0' 0'	0.0000	160'	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	0.01 0.02
(2) LGP219nn	A	From Leg	4.00	0' 0'	0.0000	160'	No Ice 1/2" Ice	0.27 0.34	0.18 0.25	0.01 0.01
5' Standoff T-Arm (14' face width)	A	From Leg	2.67	0' 0'	0.0000	158'	No Ice 1/2" Ice	6.90 8.70	6.90 8.70	0.20 0.26
(2) 7770.00 w/Mount Pipe	B	From Leg	4.00	0' 0'	0.0000	160'	No Ice	6.22	4.35	0.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₁ Front	C _A A ₁ Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
(2) BSA-185065/10CF w/Mount Pipe	A	From Leg	4.00	0.0000	135'	No Ice	4.38	3.33	0.03
			0'			1/2" Ice	4.97	4.56	0.07
(2) BSA-185065/10CF w/Mount Pipe	A	From Leg	4.00	0.0000	135'	No Ice	4.38	3.33	0.03
			0'			1/2" Ice	4.97	4.56	0.07
(2) BSA-185065/10CF w/Mount Pipe	A	From Leg	4.00	0.0000	135'	No Ice	4.38	3.33	0.03
			0'			1/2" Ice	4.97	4.56	0.07
PiROD 13' Low Profile Platform	C	None		0.0000	134'	No Ice	15.70	15.70	1.30
						1/2" Ice	20.10	20.10	1.76
* * ***TOWER HARDWARE***									
ERI--A-1 Lightning Spur	C	None		0.0000	181'6"	No Ice	2.00	2.00	0.05
						1/2" Ice	4.00	4.00	0.07

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service

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Comb. No.	Description
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	178 - 140	26.307	27	1.3797	0.0045
L2	140 - 100	15.944	27	1.1162	0.0045
L3	100 - 60	7.952	27	0.7264	0.0019
L4	60 - 20	2.906	27	0.4526	0.0010
L5	20 - 0	0.314	27	0.1459	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
181'6"	ERI---A-1 Lightning Spur	27	26.307	1.3797	0.0045	39131
180'	(3) 72"x12" MLA Antenna w/Mount Pipe	27	26.307	1.3797	0.0045	39131
178'	L3 Rail	27	26.307	1.3797	0.0045	39131
170'	(3) APXV18-206517-C w/Mount Pipe	27	24.013	1.3319	0.0047	24457
168'	PiROD 13' Low Profile Platform	27	23.443	1.3197	0.0047	19565
160'	(2) 7770.00 w/Mount Pipe	27	21.192	1.2689	0.0048	10869
158'	5' Standoff T-Arm (14' face width)	27	20.639	1.2555	0.0048	9782
151'	(2) DB948F85E-M w/Mount Pipe	27	18.746	1.2059	0.0048	7246
150'	(2) DB844H80-XY w/Mount Pipe	27	18.482	1.1984	0.0048	6987
149'	L3 Rail	27	18.219	1.1908	0.0048	6746
135'	(2) BSA-185065/10CF w/Mount Pipe	27	14.757	1.0697	0.0043	5286
134'	PiROD 13' Low Profile Platform	27	14.526	1.0601	0.0042	5314

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	178 - 140	67.219	2	3.5255	0.0118
L2	140 - 100	40.750	2	2.8521	0.0118
L3	100 - 60	20.333	2	1.8571	0.0051
L4	60 - 20	7.432	2	1.1574	0.0025

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	20 - 0	0.803	2	0.3731	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
181'6"	ERI--A-1 Lightning Spur	2	67.219	3.5255	0.0118	15408
180'	(3) 72"x12" MLA Antenna w/Mount Pipe	2	67.219	3.5255	0.0118	15408
178'	L3 Rail	2	67.219	3.5255	0.0118	15408
170'	(3) APXV18-206517-C w/Mount Pipe	2	61.359	3.4027	0.0122	9630
168'	PiROD 13' Low Profile Platform	2	59.903	3.3714	0.0123	7703
160'	(2) 7770.00 w/Mount Pipe	2	54.155	3.2412	0.0125	4279
158'	5' Standoff T-Arm (14' face width)	2	52.743	3.2070	0.0126	3850
151'	(2) DB948F85E-M w/Mount Pipe	2	47.908	3.0802	0.0125	2851
150'	(2) DB844H80-XY w/Mount Pipe	2	47.233	3.0611	0.0125	2749
149'	L3 Rail	2	46.563	3.0417	0.0124	2654
135'	(2) BSA-185065/10CF w/Mount Pipe	2	37.718	2.7342	0.0112	2078
134'	PiROD 13' Low Profile Platform	2	37.129	2.7097	0.0111	2089

Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Bolt Compression K	Actual Allowable Ratio Plate Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Ratio
3.2500	32	2.0000	80.94	84.86	24.551		Bolt T	1.35
			60.13	99.82	27.000			
			1.35	0.85	0.91			

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 K	Allow. P _a K	Ratio P P _a
L1	178 - 140 (1)	P24x1/2	38'	0'	0.0	21.000	36.9137	-11.84	775.19	0.015
L2	140 - 100 (2)	P36x1/2	40'	0'	0.0	21.000	55.7633	-22.91	1171.03	0.020
L3	100 - 60 (3)	P48x5/8	40'	0'	0.0	21.000	93.0206	-37.66	1953.43	0.019
L4	60 - 20 (4)	P54x5/8	40'	0'	0.0	21.000	104.8020	-54.14	2200.83	0.025

RISATower PSG Engineering, Ltd. 1006 Thompson Highway Richmond, TX 77469 Phone: 281.239.8490 FAX: 281.239.8515	Job PSG Engineering Project Number: 0801F166-A040180	Page 9 of 10
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	Client Crown Castle International	Designed by Jamal Huwel, E.I.T.

Section No.	Elevation ft	Size	L ft	L _u ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P/P _a
L5	20 - 0 (5)	P60x5/8	20'	0'	0.0	20.896	116.5830	-62.73	2436.09	0.026

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x kip-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio f _{bx} /F _{bx}	Actual M _y kip-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio f _{by} /F _{by}
L1	178 - 140 (1)	P24x1/2	399.01	22.538	23.100	0.976	0.00	0.000	23.100	0.000
L2	140 - 100 (2)	P36x1/2	1164.92	28.638	23.100	1.240	0.00	0.000	23.100	0.000
L3	100 - 60 (3)	P48x5/8	2067.71	22.815	23.100	0.988	0.00	0.000	23.100	0.000
L4	60 - 20 (4)	P54x5/8	3095.27	26.868	23.100	1.163	0.00	0.000	23.100	0.000
L5	20 - 0 (5)	P60x5/8	3647.72	25.558	20.896	1.223	0.00	0.000	20.896	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v /F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} /F _{vt}
L1	178 - 140 (1)	P24x1/2	16.01	0.868	14.000	0.062	0.00	0.000	14.000	0.000
L2	140 - 100 (2)	P36x1/2	20.79	0.746	14.000	0.053	0.00	0.000	14.000	0.000
L3	100 - 60 (3)	P48x5/8	24.22	0.521	14.000	0.037	0.00	0.000	14.000	0.000
L4	60 - 20 (4)	P54x5/8	26.98	0.515	14.000	0.037	0.00	0.000	14.000	0.000
L5	20 - 0 (5)	P60x5/8	28.26	0.485	14.000	0.035	0.00	0.000	13.274	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P _a	Ratio f _{bx} F _{bx}	Ratio f _{by} F _{by}	Ratio f _v F _v	Ratio f _{vt} F _{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	178 - 140 (1)	0.015	0.976	0.000	0.062	0.000	0.995	1.333	H1-3+VT
L2	140 - 100 (2)	0.020	1.240	0.000	0.053	0.000	1.262	1.333	H1-3+VT
L3	100 - 60 (3)	0.019	0.988	0.000	0.037	0.000	1.008	1.333	H1-3+VT
L4	60 - 20 (4)	0.025	1.163	0.000	0.037	0.000	1.189	1.333	H1-3+VT
L5	20 - 0 (5)	0.026	1.223	0.000	0.035	0.000	1.250	1.333	H1-3+VT

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
L1	178 - 140	Pole	P24x1/2	1	-11.84	1033.33	74.6	Pass
L2	140 - 100	Pole	P36x1/2	2	-22.91	1560.98	94.7	Pass

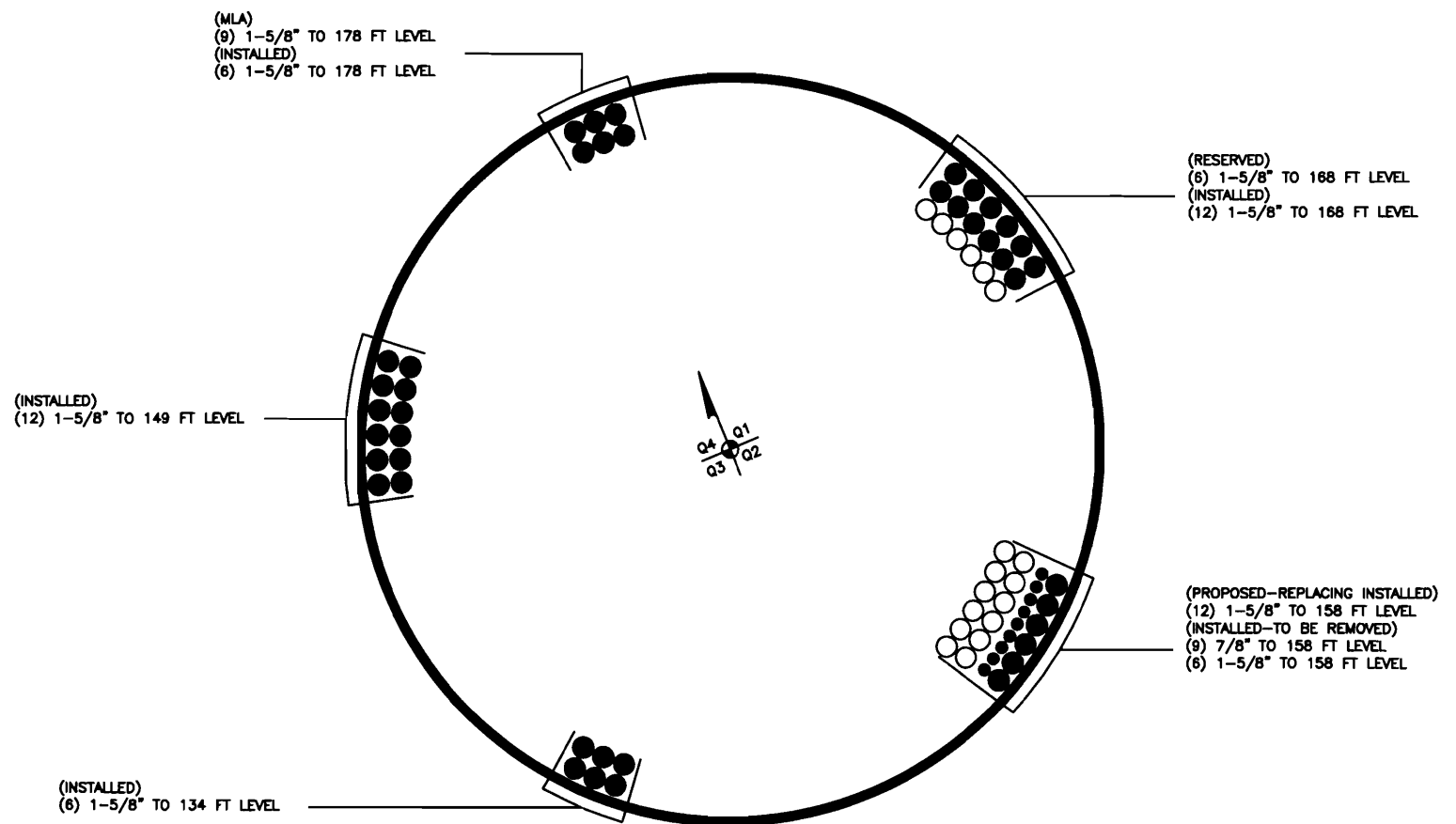
<i>RISATower</i> <i>PSG Engineering, Ltd.</i> <i>1006 Thompson Highway</i> <i>Richmond, TX 77469</i> <i>Phone: 281.239.8490</i> <i>FAX: 281.239.8515</i>	Job PSG Engineering Project Number: 0801F166-A040180	Page 10 of 10
	Project (878783) (PORTLAND NORTH)	Date 09:38:57 05/28/08
	Client Crown Castle International	Designed by Jamal Huwel, E.I.T.

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P K</i>	<i>SF*P_{allow} K</i>	<i>% Capacity</i>	<i>Pass Fail</i>	
L3	100 - 60	Pole	P48x5/8	3	-37.66	2603.92	75.6	Pass	
L4	60 - 20	Pole	P54x5/8	4	-54.14	2933.71	89.2	Pass	
L5	20 - 0	Pole	P60x5/8	5	-62.73	3247.31	93.8	Pass	
							Summary		
							Pole (L2)	94.7	Pass
							Base Plate	101.0	Acceptable
							RATING =	101.0	Acceptable

*Crown Castle International
178 Ft Monopole Tower
PSG Project Number 0801F166-A040180*

*June 7, 2008
CCI BU No. 878783
Application 64527, Revision 1*

APPENDIX B
BASE LEVEL DRAWING



*Crown Castle International
178 Ft Monopole Tower
PSG Project Number 0801F166-A040180*

*June 7, 2008
CCI BU No. 878783
Application 64527, Revision 1*

APPENDIX C
FOUNDATION REVIEW CALCULATIONS

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008
Foundation Name	FOUNDATION REVIEW FOR 878783	Engineer	Time	10:48:31 AM
Designed By:	PSG ENGINEERING	OP	Checker	OP
Filename:				

DETAIL REPORT

PROJECT INFORMATION

Project Name: PORTLAND NORTH
Project Number: 0801F166
Client: Crown Castle
Project Location: Portland, ME
Foundation Description: FOUNDATION REVIEW FOR 878783

DESIGN CODE ACI 318 - 2005 **INPUT UNITS** English **OUTPUT UNITS** English

CONCRETE PARAMETERS:

Compressive Strength (psi) 4000.00
 Unit Weight (pcf) 150.00

REINFORCING STEEL PARAMETERS:

Yield Strength (ksi) 60.00
 Unit Weight (pcf) 490.00
 Modulus of Elasticity (ksi) 29000.00

SOIL PARAMETERS:

Allowable Net Bearing Capacity (psf) 3000.00
 Unit Weight (pcf) 110.00

MINIMUM FOUNDATION CRITERIA:

Depth of Footing Below Grade (ft) 4.50
 Minimum Soil Cover (ft) 0.00

PILE PARAMETERS:

Diameter (in) 0
 Type Auger Cast

REBAR PARAMETERS:

Max Long Bar Size 10
 Min Long Bar Size 10
 Max Tie Bar Size 4
 Min Tie Bar Size 4
 Max Ftg Bar Size 10
 Min Ftg Bar Size 10
 Temp & Shrinkage Steel Ratio 0.0000

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008
Foundation Name	FOUNDATION REVIEW FOR 878783		Time	10:48:31 AM
Designed By:	PSG ENGINEERING	Engineer	OP	Checker
OP				OP
Filename:				

DETAIL REPORT**APPLIED LOADS****P1**

Load Case	Axial (kips)	Shear X (kips)	Mom Z (kip ft)	Shear Z (kips)	Mom X (kip ft)
1 - Dead	63.00	0.00	0.00	0.00	0.00
2 - Wind in Z-Dir	0.00	0.00	0.00	28.00	3648.00
3 - Wind in X-Dir	0.00	28.00	3648.00	0.00	0.00
4 - Wind in X-Z Dir	0.00	19.80	2580.00	19.80	2580.00

UNFACTORED (ALLOWABLE) LOAD COMBINATIONS**P1**

Load Comb	Axial (kips)	Shear X (kips)	Mom Z (kip ft)	Shear Z (kips)	Mom X (kip ft)
1 - Dead + Wind in Z-Dir	63.00	0.00	0.00	28.00	3648.00
2 - Dead + -1Wind in Z-Dir	63.00	0.00	0.00	-28.00	-3648.00
3 - Dead + Wind in X-Dir	63.00	28.00	3648.00	0.00	0.00
4 - Dead + -1Wind in X-Dir	63.00	-28.00	-3648.00	0.00	0.00
5 - Dead + Wind in X-Z Dir	63.00	19.80	2580.00	19.80	2580.00
6 - Dead + -1Wind in X-Z Dir	63.00	-19.80	-2580.00	-19.80	-2580.00

FACTORED (ULTIMATE) LOAD COMBINATIONS**P1**

Load Comb	Axial (kips)	Shear X (kips)	Mom Z (kip ft)	Shear Z (kips)	Mom X (kip ft)
1 - 0.9Dead + 1.6Wind in Z-Dir	56.70	0.00	0.00	44.80	5836.80
2 - 0.9Dead + -1.6Wind in Z-Dir	56.70	0.00	0.00	-44.80	-5836.80
3 - 0.9Dead + 1.6Wind in X-Dir	56.70	44.80	5836.80	0.00	0.00
4 - 0.9Dead + -1.6Wind in X-Dir	56.70	-44.80	-5836.80	0.00	0.00
5 - 0.9Dead + 1.6Wind in X-Z Dir	56.70	31.68	4128.00	31.68	4128.00
6 - 0.9Dead + -1.6Wind in X-Z Dir	56.70	-31.68	-4128.00	-31.68	-4128.00
7 - 1.2Dead + 1.6Wind in Z-Dir	75.60	0.00	0.00	44.80	5836.80
8 - 1.2Dead + -1.6Wind in Z-Dir	75.60	0.00	0.00	-44.80	-5836.80
9 - 1.2Dead + 1.6Wind in X-Dir	75.60	44.80	5836.80	0.00	0.00
10 - 1.2Dead + -1.6Wind in X-Dir	75.60	-44.80	-5836.80	0.00	0.00
11 - 1.2Dead + 1.6Wind in X-Z Dir	75.60	31.68	4128.00	31.68	4128.00
12 - 1.2Dead + -1.6Wind in X-Z Dir	75.60	-31.68	-4128.00	-31.68	-4128.00

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008
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OP				OP
Filename:				

DETAIL REPORT

BEARING CAPACITY - LINEAR SOIL PRESSURE METHOD

Load Comb	Max Pressure (ksf)	All Pressure (ksf)	Ecc N/S Dir (ft)	Ecc E/W Dir (ft)	Moment N/S axis (kip-ft)	Moment E/W axis (kip-ft)	Rem
1 - Dead + Wind in Z-Dir	2.03	3.50	6.17	0.11	64.06	3634.85	
2 - Dead + -1Wind in Z-Dir	2.18	3.50	6.71	0.11	64.06	3955.15	
3 - Dead + Wind in X-Dir	2.34	3.50	0.27	6.33	3730.94	160.15	
4 - Dead + -1Wind in X-Dir	2.43	3.50	0.27	6.55	3859.06	160.15	
5 - Dead + Wind in X-Z Dir	2.76	3.50	4.28	4.45	2619.89	2523.80	
6 - Dead + -1Wind in X-Z Dir	3.03	3.50	4.83	4.67	2748.01	2844.10	

STABILITY RATIO / SLIDING SAFETY FACTOR

Load Comb	S.R. N/S Dir	S.R. E/W Dir	All S.R.	Sliding FS - N/S	Sliding FS - E/W	All FS	Remarks
1 - Dead + Wind in Z-Dir	2.22	100.00	1.50	8.33	100.00	1.50	
2 - Dead + -1Wind in Z-Dir	2.13	100.00	1.50	8.33	100.00	1.50	
3 - Dead + Wind in X-Dir	100.00	1.96	1.50	100.00	8.70	1.50	
4 - Dead + -1Wind in X-Dir	100.00	1.92	1.50	100.00	8.70	1.50	
5 - Dead + Wind in X-Z Dir	3.13	2.77	1.50	11.78	12.30	1.50	
6 - Dead + -1Wind in X-Z Dir	3.01	2.72	1.50	11.78	12.30	1.50	

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008
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Designed By:	PSG ENGINEERING	Engineer	OP	Checker
OP				OP
Filename:				

DETAIL REPORT

FOOTING DESIGN INFORMATION

X Dim (ft)	25.00
Z Dim (ft)	28.00
Thickness (ft)	5.00

Top Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
10. 1.2Dead + -1.6Wind in X-Dir	26	10	12.8	1.18	0.27	-49.61	E-W
8. 1.2Dead + -1.6Wind in Z-Dir	23	10	12.8	1.17	0.43	-81.98	N-S

Bottom Steel

Governing Combination	No of Bars	Bar Size	Bar Spac (in)	Area Prov (sq in/ft)	Area Req (sq in/ft)	Moment (kip ft/ft)	Direction
3. 0.9Dead + 1.6Wind in X-Dir	26	10	12.8	1.18	0.76	139.72	E-W
1. 0.9Dead + 1.6Wind in Z-Dir	23	10	12.8	1.17	0.87	165	N-S

PUNCHING SHEAR

P1

Control Comb	Net Ult Load (kips)	Punch. Stress (psi)	All Stress (psi)	Rem
10. 1.2Dead + -1.6Wind in X-Dir	76.87	2.86	189.74	

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008
Foundation Name	FOUNDATION REVIEW FOR 878783	Engineer	OP	Time
Designed By:	PSG ENGINEERING	OP	Checker	OP
Filename:				

DETAIL REPORT

MAXIMUM SHEAR - X DIRECTION

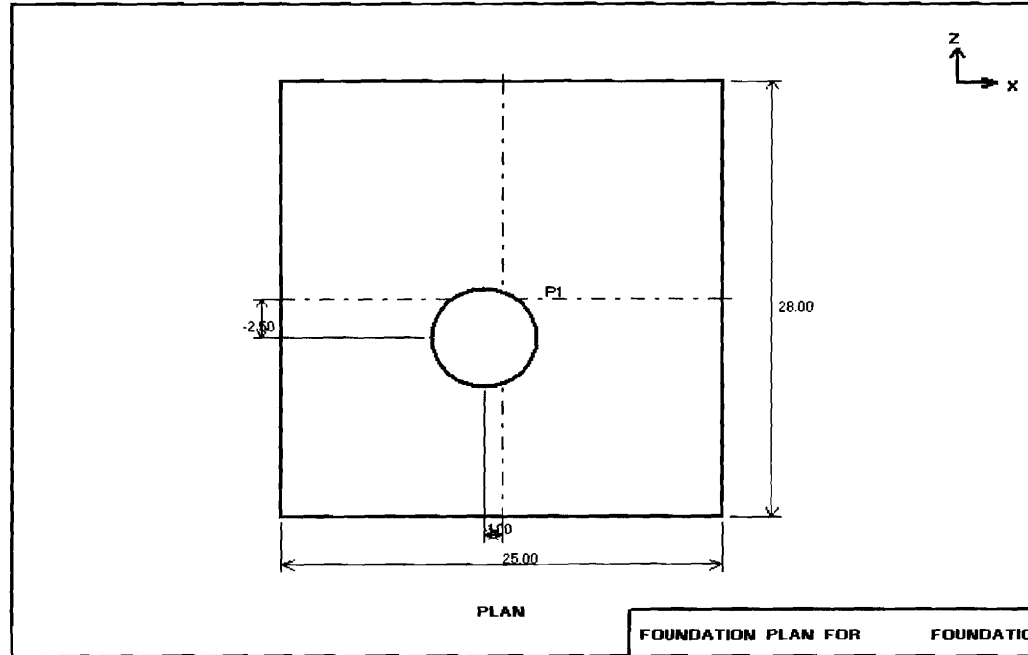
Load Comb	Left Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 0.9Dead + 1.6Wind in Z-Dir	19.17	-10.98	0.58	94.87	
2 - 0.9Dead + -1.6Wind in Z-Dir	19.17	-10.98	0.58	94.87	
3 - 0.9Dead + 1.6Wind in X-Dir	19.17	-419.90	22.32	94.87	
4 - 0.9Dead + -1.6Wind in X-Dir	3.83	457.70	24.33	94.87	
5 - 0.9Dead + 1.6Wind in X-Z Dir	19.17	-248.43	13.20	94.87	
6 - 0.9Dead + -1.6Wind in X-Z Dir	3.83	196.27	10.43	94.87	
7 - 1.2Dead + 1.6Wind in Z-Dir	19.17	-14.64	0.78	94.87	
8 - 1.2Dead + -1.6Wind in Z-Dir	19.17	-14.64	0.78	94.87	
9 - 1.2Dead + 1.6Wind in X-Dir	19.17	-371.55	19.75	94.87	
10 - 1.2Dead + -1.6Wind in X-Dir	3.83	298.75	15.88	94.87	
11 - 1.2Dead + 1.6Wind in X-Z Dir	19.17	-211.13	11.22	94.87	
12 - 1.2Dead + -1.6Wind in X-Z Dir	3.83	160.48	8.53	94.87	

MAXIMUM SHEAR - Z DIRECTION

Load Comb	Bottom Dist (ft)	Max Shear (kips)	Shear Stress (psi)	All Stress (psi)	Rem
1 - 0.9Dead + 1.6Wind in Z-Dir	19.17	-381.09	22.68	94.87	
2 - 0.9Dead + -1.6Wind in Z-Dir	3.83	363.62	21.64	94.87	
3 - 0.9Dead + 1.6Wind in X-Dir	3.83	11.54	0.69	94.87	
4 - 0.9Dead + -1.6Wind in X-Dir	3.83	11.54	0.69	94.87	
5 - 0.9Dead + 1.6Wind in X-Z Dir	19.17	-236.13	14.06	94.87	
6 - 0.9Dead + -1.6Wind in X-Z Dir	19.17	149.06	8.87	94.87	
7 - 1.2Dead + 1.6Wind in Z-Dir	19.17	-344.04	20.48	94.87	
8 - 1.2Dead + -1.6Wind in Z-Dir	3.83	221.61	13.19	94.87	
9 - 1.2Dead + 1.6Wind in X-Dir	3.83	15.39	0.92	94.87	
10 - 1.2Dead + -1.6Wind in X-Dir	3.83	15.39	0.92	94.87	
11 - 1.2Dead + 1.6Wind in X-Z Dir	19.17	-217.88	12.97	94.87	
12 - 1.2Dead + -1.6Wind in X-Z Dir	19.17	179.46	10.68	94.87	

Dimensional Solutions Mat3D	Version	4.0.0	Date	6/7/2008	
Foundation Name	FOUNDATION REVIEW FOR 878783	Engineer	OP	Time	10:48:31 AM
Designed By:	PSG ENGINEERING	Checker	OP		
Filename:					

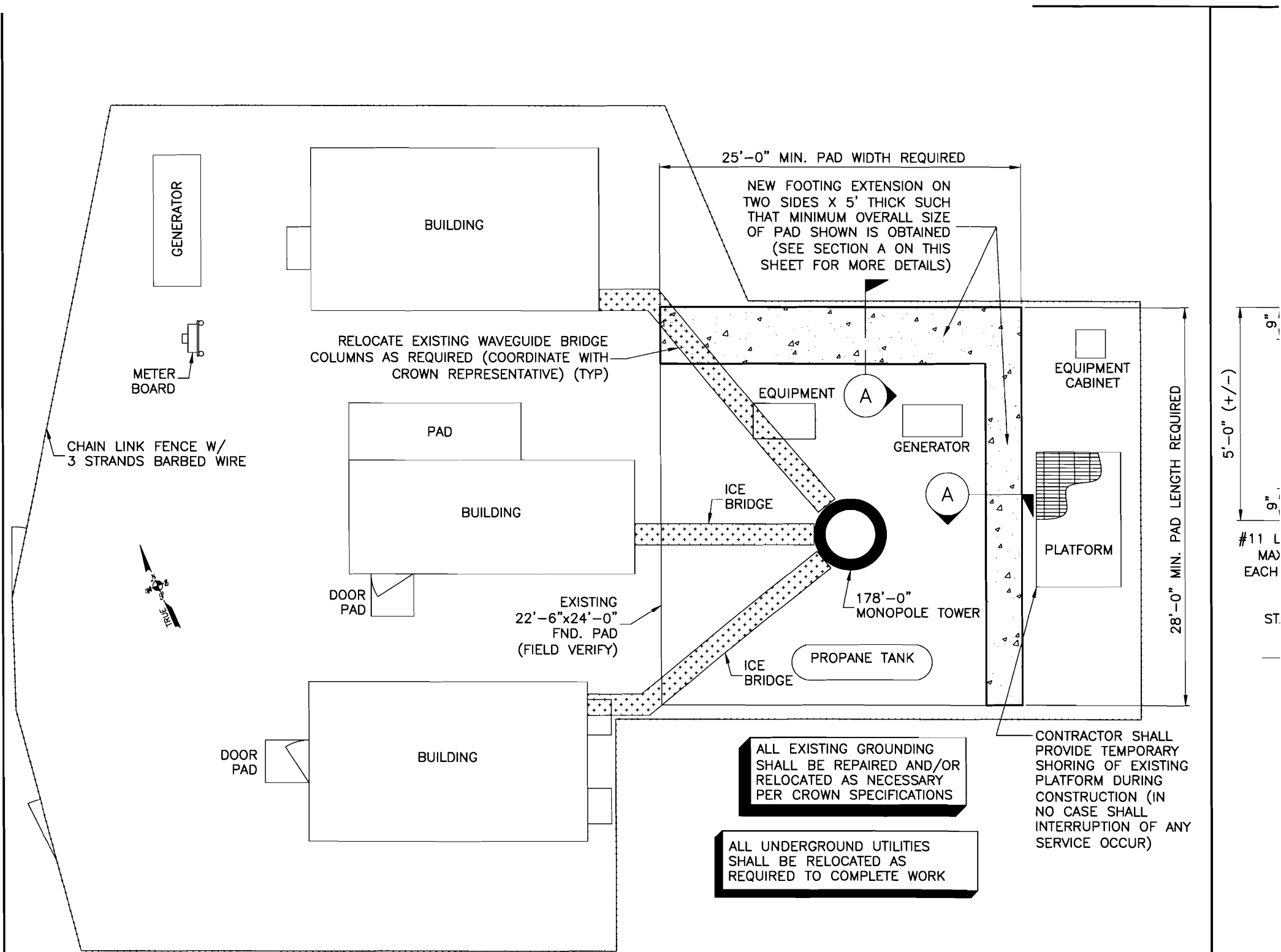
DETAIL REPORT



*Crown Castle International
178 Ft Monopole Tower
PSG Project Number 0801F166-A040180*

*June 7, 2008
CCI BU No. 878783
Application 64527, Revision 1*

APPENDIX D
REQUIRED FOUNDATION MODIFICATIONS



ENLARGED SITE PLAN

SCALE: 1/8" = 1'-0"

REVISIONS		
REV	DESCRIPTION	DATE
0	APPROVED FOR CONSTRUCTION	06.07.08



A. CODES & STANDARDS

1. CONTRACTOR SHALL FOLLOW THE FOLLOWING STANDARDS:
 - a. INTERNATIONAL BUILDING CODE (LATEST ED.)
 - b. AISC MANUAL OF STEEL CONSTRUCTION 9TH EDITION
 - c. STRUCTURAL CONCRETE: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 318 (LATEST ED.)
2. ALL WORK SHALL BE COMPLETED IN STRICT ACCORDANCE WITH ALL LOCAL, COUNTY, STATE AND FEDERAL JURISDICTIONAL REQUIREMENTS INCLUDING BUT NOT LIMITED TO ALL CODES, REGULATIONS, POLICIES, RULES AND ORDINANCES. IF CONFLICT EXISTS BETWEEN SAID REQUIREMENTS AND THESE DRAWINGS, CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER PRIOR TO COMMENCING ANY WORK.

B. GENERAL

1. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING WORK, AND NOTIFY THE ENGINEER OF ANY CONDITIONS DIFFERENT THAN THOSE SHOWN IN THE CONTRACT DOCUMENTS AND/OR DRAWINGS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION AND COORDINATION OF DIMENSIONS AND FOR THE PROPER FIT-UP OF ALL ITEMS OF WORK.
3. WIND SHOULD BE AT A MINIMUM DURING CONSTRUCTION TO ASSURE MINIMUM STRESS ON THE TOWER.
4. CONTRACTOR SHALL PROVIDE ENGINEER WITH FABRICATION SHOP DRAWINGS OF ALL REQUIRED STEEL ITEMS PRIOR TO FABRICATION FOR REVIEW AND APPROVAL.
5. CONTRACTOR SHALL PROVIDE ENGINEER WITH MILL SPECIFICATIONS FOR ALL STEEL MATERIAL TO BE USED ON THE PROJECT PRIOR TO FABRICATION.
6. CONTRACTOR IS RESPONSIBLE FOR ALL WORK ITEMS CONTAINED HEREIN AND SHALL COORDINATE ALL WORK SCHEDULES WITH OWNER.
7. IF ANY CONFLICTS ARISE BETWEEN THESE DRAWINGS AND OWNER'S CONTRACT DOCUMENTS, CONTRACTOR IS RESPONSIBLE FOR NOTIFYING BOTH THE OWNER AND ENGINEER TO DETERMINE APPROPRIATE COURSE OF ACTION PRIOR TO BEGINNING ANY WORK.
8. CONTRACTOR MUST NOTIFY ENGINEER IF ANY DEVIATIONS FROM THE WORK ITEMS OR DETAILS CONTAINED HEREIN ARE ANTICIPATED. NO DEVIATIONS FROM THESE DOCUMENTS WILL BE ALLOWED UNLESS CONTRACTOR RECEIVES PRIOR WRITTEN APPROVAL FROM THE OWNER AND ENGINEER.

C. WELDING

1. CONTRACTOR SHALL REMOVE EXISTING GALVANIZATION PRIOR TO FIELD WELDING AND TOUCH UP ALL EXPOSED STEEL WITH COLD GALVANIZING PAINT AFTER WELDING IS COMPLETE.
2. ALL WELDS SHALL CONFORM TO AWS D1.1 AND ALL WELDING SHALL BE PERFORMED WITH E70XX ELECTRODES.
3. ALL WELDING SHALL BE PERFORMED BY AN AWS D1.1 CERTIFIED WELDER.
4. CONTRACTOR SHALL PROVIDE CUSTOMER'S REPRESENTATIVE AND ENGINEER WITH WELDERS CERTIFICATION DOCUMENTS PRIOR TO ANY WELDING BEING COMMENCED ON THE PROJECT.
5. AT OWNER'S OR ENGINEER'S DISCRETION, CONTRACTOR MAY BE REQUIRED TO INSURE THAT ALL WELDING IS PERFORMED WITH OWNER'S OR ENGINEER'S WELDING INSPECTOR ON SITE. CONTRACTOR SHALL VERIFY WITH OWNER AND ENGINEER PRIOR TO COMMENCING ANY WELDING IF OWNER OR ENGINEER WILL REQUIRE AN ON SITE WELDING INSPECTOR. CONTRACTOR MUST PROVIDE OWNER AND ENGINEER WITH TWO WEEKS NOTICE PRIOR TO COMMENCING WELDING IN ORDER TO ALLOW OWNER OR ENGINEER AMPLE TIME TO SECURE WELDING INSPECTOR.

D. BACKFILL

1. BACKFILL SHALL BE PLACED IN LOOSE LIFTS & WATERED AS REQUIRED AND COMPACTED TO MAXIMUM DRY DENSITY.

E. CAST IN PLACE CONCRETE

1. NO CONCRETE ADMIXTURES SHALL BE PERMITTED BY THE ENGINEER.
2. CAST IN PLACE CONCRETE SHALL BE NORMAL STRENGTH OF 4,000 PSI AT 28 DAYS, AND A MINIMUM OF 28 DAYS SHALL ELAPSE PRIOR TO PLACING NEW CONCRETE AGAINST EXISTING CONCRETE. ALL SURFACES MUST BE "INTENTIONALLY ROUGHENED" AS REQUIRED AND CLEANED OF ALL LOOSE MATERIAL AND DUST.

F. CONCRETE REINFORCING

1. REINFORCING STEEL SHALL BE DEFORMED NEARLY FULLY IN ACCORDANCE WITH A.S.T.M. SPECIFICATION A615.
2. ALL HOOKS AND BENDS IN REINFORCING BARS SHALL BE IN ACCORDANCE WITH A.S.T.M. STANDARDS UNLESS SHOWN OTHERWISE.
3. DETAIL REINFORCING AS FOLLOWS:
 - a) LAP REINFORCING BARS 48 BAR DIAMETER SHALL BE 1.5 TIMES BAR DIAMETER UNLESS OTHERWISE NOTED.
 - b) STAGGER SPLICING OF HORIZONTAL REINFORCING BARS SHALL BE 48 BAR DIAMETER UNLESS OTHERWISE NOTED.
4. WELDING OF REINFORCING STEEL WILL NOT BE PERMITTED.
5. HEAT SHALL NOT BE USED IN THE FABRICATION OF REINFORCING BARS.
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE MAINTAINED:
 - a) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO WEATHER SHALL BE 1 1/2"
 - b) CONCRETE EXPOSED TO EARTH OR WEATHER SHALL BE 1 1/2"
7. ALL REINFORCING ACCESSORIES SHALL BE STAINLESS STEEL OR GALVANNEAL PLASTIC TIPPED.
8. PRIOR TO DRILLING INTO EXISTING CONCRETE, ALL EXISTING REINFORCEMENT BARS BY X-RAY SURFACE PENETRATING METHOD AND SHALL CLIP ALL REINFORCEMENT BARS ON SURFACE OF CONCRETE SO AS TO AVOID DAMAGE TO BARS. BARS SHALL REMAIN UNTIL SUCH TIME AS THE ENGINEER INSPECTS CONTRACTOR'S WORK.

G. EXISTING FOUNDATION DIMENSIONS

1. FOUNDATION DIMENSIONS SHALL BE VERIFIED BY THE ENGINEER TO EXIST WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

H. EXISTING GRADE PRECAUTIONS

1. PRIOR TO EXCAVATION, CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITY LINES AND SHALL NOTIFY THE GOVERNMENT OF ANY DISCREPANCIES AT LEAST 48 HOURS PRIOR TO EXCAVATION.
2. CONTRACTOR SHALL ASSURE THAT NO SOIL IS CONTAMINATED BY EXISTING ANCHORS.

ALL CUTTING AND WELDING SHALL BE CONDUCTED IN ACCORDANCE WITH THE "CUTTING AND WELDING PROCEDURES" ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT.

REVISIONS		
REV	DESCRIPTION	DATE
0	APPROVED FOR CONSTRUCTION	06.07.08

