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CONNECTICUT
SITING COUNCIL

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August 5, 2002

David Martin
Siting Analyst I
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-AT&T-054-020703 - 366 Three Mile Road, Glastonbury, Connecticut**

Dear Mr. Martin:

Enclosed you will find a revised structural analysis, including the information previously undisclosed. Please note that this structural analysis also includes the XM Radio antennas. Therefore, any condition relating to the submission of future structural information will not be required.

The submission of this information should clear the way for Council acknowledgement at its August 15, 2002 meeting.

Sincerely,



Kenneth C. Baldwin



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Enclosure

cc: Christopher B. Fisher, Esq.
Linda Grant
Lincoln Erhard

HART1-1039090-1

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STRUCTURAL ANALYSIS REPORT

GLASTONBURY TOWER

BU: 806368

147' MONOPILE

HARTFORD COUNTY, CONNECTICUT
CT338.2

Prepared for:

CROWN CASTLE ATLANTIC, LLC
500 West Cummings Park, Suite 3400
Woburn, Massachusetts 01801

June 11, 2002
KCI J.O.: 1202016H

KCI Technologies, Inc. - Tower Engineering Group
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Structural Analysis Report

Crown Glastonbury CT Tower

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Structural Analysis Report

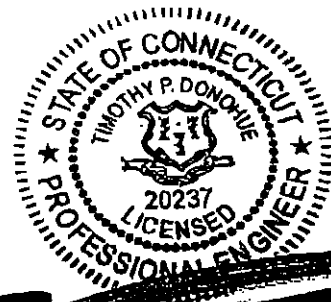
Crown Glastonbury CT Tower

EXECUTIVE SUMMARY

KCI Technologies, Inc. has completed a structural analysis of the Crown Glastonbury CT Tower, site number 806368. AT&T, Northcoast Communications, and XM Radio are proposing to add appurtenances to the tower.

KCI studied two loading cases. The first case consisted of the existing and proposed appurtenances with an 80-mph wind load per TIA/EIA-222-F for Hartford County, Connecticut. The second case included the existing and proposed appurtenances with 1/2 inch of radial ice and a reduced wind load in accordance with the TIA/EIA code. The proposed transmission lines were assumed to be mounted outside the monopole shaft attached flush to the tower.

The results of this analysis indicate that none of the tower structural components will exceed the allowable stress limits established by the TIA/EIA-222-F standard for the proposed appurtenance configuration at the specified loadings.



The purpose of this report is to assess the feasibility of adding antennas and transmission lines to the existing structure, including whether or not structural modifications are required. Any modifications recommended herein are conceptual only. This is not a construction document. This report may not be suitable for bidding and definitely is not a substitute for complete and properly engineered plans/specifications required to accomplish any recommended modifications. KCI Technologies, Inc. assumes no liability for use of this report for any other purpose than that for which it was intended.



Structural Analysis Report

Crown Glastonbury CT Tower

A. PURPOSE / BACKGROUND

Pursuant to the request of Mr. Lincoln Erhard with Crown Communications, Inc., KCI Technologies, Inc. conducted a structural analysis of the Crown Glastonbury CT Tower to determine the adequacy of the structure for the proposed loading. AT&T, Northcoast Communications, and XM Radio are proposing to add appurtenances to the tower. Crown Communications provided the following information:

- Current Loading.
- Proposed Appurtenances.

B. CONDITIONS INVESTIGATED

The tower was originally designed and manufactured by EEI.

The tower is located on Three Mile Road in Glastonbury, Hartford County, Connecticut.

KCI conducted the monopole analysis using a proprietary monopole spreadsheet. See enclosed calculations for details.

KCI examined two loading options including the existing, proposed and future appurtenances. Both loading options included the following loading cases:

| Loading Case | Code | Wind Speed and Ice Loading |
|--------------|--|------------------------------|
| 1 | TIA/EIA-222-F, Hartford County, Connecticut Wind Speed | 80 mph, No Ice |
| 2 | TIA/EIA-222-F | * 70 mph, 1/2" of Radial Ice |

* Wind load reduced by 25% per TIA code when considered with ice loading.

Design Loading:

| Number | Elevation | Antenna Information | Transmission Lines | Mount |
|--------|-----------|--------------------------------|--------------------|----------------|
| 1 | Top | (15)- ALP 9212 panel antennas | N/A | Large platform |
| 2 | 138' | (15)- ALP 11011 panel antennas | N/A | Large platform |
| 3 | 128' | (15)- ALP 9212 panel antennas | N/A | Large platform |

*- A 90-mph wind load was applied to the tower in excess of the 80-mph requirement per TIA/EIA-222-F for Hartford County, Connecticut



Structural Analysis Report

Crown Glastonbury CT Tower

Existing Appurtenances:

| Number | Elevation | Carrier | Mount | Antenna Information | Azimuth | Transmission Lines |
|--------|-----------|----------------------|----------------------|---|-----------------|--------------------|
| 1 | 146' | Bell Atlantic Mobile | Large Platform | (12)- ALP-E9011-DIN panel antennas w/ TMA | 40°, 180°, 285° | *(12)- 1 5/8" |
| 2 | 138' | SNET | Large Platform | (9)- Allgon 7120.16 panel antennas | 30°, 150°, 280° | *(9)- 1 5/8" |
| 3 | 128' | Nextel | Low Profile Platform | (12)- DB844 panel antennas | 40°, 180°, 285° | *(12)- 1 5/8" |
| 4 | 116' | Omnipoint | Low Profile Platform | (2)- EMS RR90-17 & (1)- DB844 panel antennas w/ TMA | 45°, 165°, 116° | *(3)- 1 5/8" |
| 5 | 100' | Sprint PCS | Side arm | (1)- EMS RR65-18-02DP panel antenna | TBD | *(1)- 1 5/8" |
| 6 | 100' | Sprint PCS | Side arm | (1)- DA1900-39 Repeater Star Donor antenna | TBD | *(1)- 1 5/8" |

*- Denotes transmission lines mounted inside the tower.

Proposed Appurtenances (in addition to the Existing Appurtenances):

| Number | Elevation | Carrier | Mount | Antenna Information | Transmission Lines |
|--------|-----------|---------------------------|----------------------|--|--------------------|
| 7 | 108' | XM Radio | Side Arm | Tiltek TA 2350-LCC-H Omni antenna | (1)- 1 5/8" |
| 8 | 90' | Northcoast Communications | Large Platform | (6)- DAPA 48010 panel antennas | (6)- 1 5/8" |
| 9 | 90' | Northcoast Communications | Large Platform | (3)- Ericsson Minilink 4xT1 microwave antennas | (3)- 1/2" |
| 10 | 80' | AT&T | Low Profile Platform | (6)- Allgon 7250 panel antennas | (12)- 1 1/4" |
| 11 | 55' | XM Radio | Flush | (1)- Tiltek TA 2324-LHCP microwave antenna | (1)- 7/8" |

*- Denotes transmission lines mounted inside the tower.



Structural Analysis Report

Crown Glastonbury CT Tower

C. APPLICABLE CODES AND PROVISIONS OF ANALYSIS

KCI utilized the following codes and criteria to conduct the structural analysis:

| Standard | Title | Date |
|---------------|---|-----------|
| TIA/EIA-222-F | Structural Standards for Steel Antenna Towers and Supporting Structures | June 1996 |

Allowable unit stresses and minimum safety factors used to evaluate the integrity of the structure were also in accordance with the above standard.

The following assumptions were made in the analysis:

1. The tower has been erected and maintained according to the manufacturer's plans and specifications.
2. The structural integrity of the tower has not been compromised.
3. All connections and fasteners are in accordance with AISC specifications.
4. The proposed transmission lines were assumed to be mounted outside the monopole shaft attached flush to the tower.
5. All information provided by Crown Communications, AT&T and Northcoast Communications is accurate and correct.

D. RESULTS

KCI has determined that none of the Crown Glastonbury CT tower structural components will exceed the allowable stress limits established by TIA/EIA-222-F for both loading cases, detailed herein.

Superstructure Summary:

| Item | Results | Elevation | % Capacity (Maximum) | Modifications |
|--------------|---------|-----------|----------------------|---------------|
| Shaft | OK | All | 55.8 | None |
| Anchor Bolts | OK | N/A | 59.3 | None |
| Foundation | OK | N/A | 72.2 | None |

Foundation Summary:

| Foundation | Design | Actual | % Capacity |
|----------------------------|--------|---------|------------|
| Shear (Kips) | 46.6 | 33.6 | 72.2 |
| Overtuning Moment (Kip-ft) | 5001.4 | 3026.19 | 60.5 |



Structural Analysis Report

Crown Glastonbury CT Tower

E. RECOMMENDATIONS

The Crown Glastonbury CT Tower will meet the allowable limits for the proposed appurtenance configuration at the specified wind loadings. No modifications are required for this tower. The transmission lines shall be mounted outside the monopole shaft attached flush to the tower.

F. SUMMARY OF CALCULATIONS

Shaft Summary:

| Bot. Elev. (ft) | Top Elev. (ft) | Allowable Stress (ksf) | Actual Stress (ksf) | Stress Level (%) |
|--------------------|-------------------|---------------------------|------------------------|---------------------|
| 0 | 15 | 7025 | 3916.8 | 55.76% |
| 15 | 30 | 7025 | 3794.2 | 54.01% |
| 30 | 45 | 7025 | 3632.8 | 51.71% |
| 45 | 60 | 7025 | 3552.9 | 50.58% |
| 60 | 75 | 7025 | 3324.1 | 47.32% |
| 75 | 90 | 7025 | 2907.4 | 41.39% |
| 90 | 105 | 7025 | 2606.3 | 37.10% |
| 105 | 120 | 7025 | 2410 | 34.31% |
| 120 | 135 | 7025 | 1654.3 | 23.55% |
| 135 | 145 | 7025 | 641 | 9.12% |

