

SOUTHWESTERN BELL MOBILE  
SYSTEMS, LLC d/b/a CINGULAR  
WIRELESS

Follow up Structural Analysis  
for 347<sub>+</sub> East Street,  
Wolcott, CT

***See Complete file under  
East Hampton***

EM-CING-042-083-090-118-021113



Southwestern Bell Mobile Systems, LLC  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067-3900  
Phone: (860) 513-7636  
Fax: (860) 513-7190

Steven L. Levine  
*Real Estate Consultant*

### **Follow-up Structural Analyses Per Conditional Approvals**

During the preceding months, the Council has given conditional approval to a number of exempt modification notices in connection with Cingular's GSM upgrade project. The Council has required certification of specified tower tests and/or repairs having been made prior to installation of Cingular's new equipment in some instances. This letter addresses the resolution of several of these conditions.

- Cingular is electing in some cases to reduce proposed tower loading to the extent that existing towers will support the load without strengthening. Confirmations in the form of new tower analyses are attached hereto. The reduced loads will have no effect, however, on power densities or other parameters.
- In other cases, the tower owner/manager has determined that Cingular's relatively minor modifications will not by themselves cause a tower to be overloaded. Confirmations in the form of new tower analyses are attached hereto. These are instances where multiple carriers have future co-location plans for the same tower and all were included in the original analysis. Where appropriate, the tower owner/manager has eliminated proposed modifications by other carriers from the analyses where: 1) the other carriers' proposed modifications are sufficient, by themselves, to cause overloading; 2) the other carriers are not as far advanced in their projects as Cingular and have no critical need to proceed immediately; and 3) the owner/manager has committed to upgrading the tower for the other carriers.
- Other miscellaneous requirements of the Council that have been satisfied are also listed below.

Attached are passing structural reports for the following towers:

1. 15 Dwight Street, North Haven - EM-CING-101-020925

Cingular's plans have been modified so that only six CSS antennas will be installed in the first of two phases. All of the existing antennas will be removed at this time. The tower

passes structural analysis with only 6 CSS antennas, and Cingular will proceed with their installation. Structural re-enforcement is still required for the additional 4 antennas, and Cingular will certify completion of repairs prior to installation of these antennas.

2. 347 East Street, Wolcott - EM-CING-166-020730

Tower passes structural analysis without modification after elimination of AT&T antennas included in original analysis. Per Crown Atlantic, Cingular's modifications can go forward without tower repairs as they are relatively insignificant in terms of tower loading and do not in themselves cause overstressed conditions. AT&T, on the other hand, has not decided whether to proceed with this co-location project and has not sought approvals. Tower modification would be necessary only if AT&T decides to proceed at some later date.

3. 4 Elkington Farm Road, New Milford - EM-CING-096-020730

Tower passes structural analysis without strengthening after elimination of Nextel and Verizon antennas included in original analysis. Per Spectrasite, Cingular's modifications can go forward without tower repairs as they are relatively insignificant in terms of tower loading and do not in themselves cause overstressed conditions. The tower will be strengthened by Spectrasite prior to installation of the Nextel and Verizon equipment.

4. 2 Larkin Drive, Middlebury - EM-CING-081-020930 (note: Not 083)

Tower passes structural analysis without strengthening after elimination of unspecified "future" antennas included in original analysis (i.e., 115 ft and 143 ft).

5. Prospect, CT (Bradshaw) - EM-CING-115-020828

Per instructions of the Council, the guy wires have been examined and were found to be in good condition.

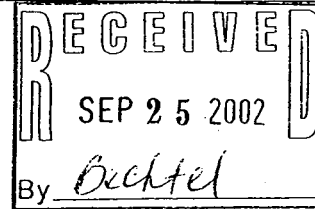
Please feel free to call Steve Levine at (860) 513-7730 with questions concerning this matter. Thank you for your consideration.



MAX ENGINEERING LLC  
9000 Southwest Freeway, Suite 410  
Houston, Texas 77074-1522

E-mail: hak@maxengr.com  
Phone: (713) 776-0629  
Fax: (713) 776-9599

To: Lincoln Erhard  
Crown Castle International  
500 W. Cummings Park, Suite 6500  
Woburn, MA 01801



Subject: 180' Rohn Self Supporting Tower at Wolcott site, 347 East Street, Wolcott, CT  
(BU#806362)

#1060

Dear Mr. Erhard,

Max Engineering has performed a structural analysis on the above referenced tower (Crown BU#806362) for Cingular's proposed nine antennas "change-out" with nine 1+5/8" coaxial cables at elevation 158'. The tower is analyzed in accordance with TIA/EIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures for 85 mph basic design wind (1/2" ice case does not govern).

Our analysis report (dated 09-06-2002, without previously proposed AT&T antennas, & on conservative side in assuming Cingular's antennas elevation) indicates that the existing the tower upper-structure is structurally adequate. The existing foundation is also deemed acceptable within engineering accuracy without modifications.

We appreciate this opportunity to provide you with our services. If you have any questions or comments, please do not hesitate to call me.

Sincerely Yours,

Hak-Fong Ma, Ph.D., PE  
(President, Max Engineering LLC)  
Date: 09-19-2002

EM-CING-042-083-090-118-021113



Southwestern Bell Mobile Systems, LLC  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067-3900  
Phone: (860) 513-7730  
Fax: (860) 513-7190

Peter W. van Wilgen  
Senior Manager - Construction

HAND DELIVERED

November 13, 2002

**RECEIVED**  
NOV 13 2002  
CONNECTICUT  
SITING COUNCIL

Mr. Mortimer A. Gelston, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: Southwestern Bell Mobile Systems, LLC notice of intent to modify existing telecommunications facilities located in East Hampton, Middletown, New Canaan, and Ridgefield; with structural updates for North Haven (EM-CING-101-020925); Wolcott (EM-CING-166-020730); New Milford (EM-CING-096-020730); Middlebury (EM-CING-081-020930); and Prospect (EM-CING-115-020828).

Dear Mr. Gelston:

In order to accommodate technological changes, implement E-911 capability and enhance system performance, Southwestern Bell Mobile Systems, LLC ("SNET" or "Cingular Wireless"; formerly SNET Mobility, LLC) plans to modify the antenna configurations at its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of each of the municipalities in which an affected cell site is located.

Attached are summary sheets detailing the planned changes, including power density calculations reflecting the change in the effect of Cingular's operations at each site. Also included is documentation of the structural sufficiency of each tower to accommodate the revised antenna configuration.

The changes to the facilities do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facilities will not be significantly changed or altered. Rather, the planned changes to the

Mr. Mortimer A. Gelston  
November 13, 2002  
Page 2

facilities fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected. At almost all sites, new panel antennas approximately the same size will replace those previously installed. Tower mount amplifiers, approximately 5" x 9" x 13", will be added to the platform on which the panel antennas are mounted to enhance signal reception at the cell site. In addition, the mandated provision of E-911 capability *may* require installation of one LMU ("location measurement unit"), approximately nine inches high, on either the tower, the equipment shelter, or the ice bridge. At this writing, however, it appears that the new panel antennas will serve this purpose as well. One GPS receive-only antenna will be attached to the equipment shelter at each site. None of the modifications will extend the height of the tower.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. Radio frequency power density will increase due to use of additional channels broadcasting at higher power. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Cingular Wireless respectfully submits that the proposed changes at the referenced sites constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 513-7730 with questions concerning this matter. Thank you for your consideration.

Sincerely,

Handwritten signature of Peter W. van Wilgen in cursive, followed by a slash and the initials 'SLL'.

Peter W. van Wilgen  
Senior Manager - Construction

Enclosures





**SNET Mobility, LLC**  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067-3900  
Phone: (860) 513-7730  
Fax: (860) 513-7190

**Peter W. van Wilgen**  
*Senior Manager – Construction*

HAND DELIVERED

July 30, 2002

**RECEIVED**

JUL 30 2002

**CONNECTICUT  
SITING COUNCIL**

Mr. Mortimer A. Gelston, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

Re: SNET Mobility, LLC notice of intent to modify existing telecommunications facilities located in Wolcott, Waterbury, Middlebury and Southbury

Dear Mr. Gelston:

In order to accommodate technological changes, implement E-911 capability and enhance system performance, SNET Mobility, LLC ("SNET" or "Cingular Wireless") plans to modify the antenna configurations at its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of each of the municipalities in which an affected cell site is located.

Attached are summary sheets detailing the planned changes, including power density calculations reflecting the change in the effect of Cingular's operations at each site. Also included is documentation of the structural sufficiency of each tower to accommodate the revised antenna configuration.

The changes to the facilities do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facilities will not be significantly changed or altered. Rather, the planned changes to the facilities fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).



Mr. Mortimer A. Gelston

July 30, 2002

Page 2

1. The height of the overall structure will be unaffected. At almost all sites, new panel antennas approximately the same size will replace those previously installed. Tower mount amplifiers, approximately 5" x 9" x 13", will be added to the platform on which the panel antennas are mounted to enhance signal reception at the cell site. In addition, the mandated provision of E-911 capability will require installation of one LMU ("location measurement unit"), approximately nine inches high, on either the tower, the equipment shelter or the ice bridge. One GPS receive-only antenna will be attached to the equipment shelter at each site. None of the modifications will extend the height of the tower.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. Radio frequency power density will increase due to use of additional channels broadcasting at higher power. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, Cingular Wireless respectfully submits that the proposed changes at the referenced sites constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 513-7730 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Peter W. van Wilgen  
Senior Manager - Construction

Enclosures

**CINGULAR WIRELESS  
Antenna Modification**

**Site Address:** 347 East Street, Wolcott  
exempt modification

**Tower Owner/Manager:** Crown Atlantic Company LLC

**Antenna configuration** Antenna center line – current 158', proposed 162'

**Current and/or approved:** 12 DB846H80 or comparable

**Planned:** 9 CSS DUO4-8670 or comparable  
6 tower mount amplifiers  
1 LMU (at 25')

**Power Density:**

Calculations for Cingular's current operations at the site indicate a radio frequency electromagnetic radiation power density, measured at the tower base, of approximately 4.7% of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density for Cingular's planned operations would be approximately 6.3%, or an additional 1.6% of the standard.

Cingular Current

| Company | Centerline Ht (feet) | Frequency (MHz) | Number of Channels | Power Per Channel (Watts) | Power Density (mW/cm <sup>2</sup> ) | Standard Limits (mW/cm <sup>2</sup> ) | Percent of Limit |
|---------|----------------------|-----------------|--------------------|---------------------------|-------------------------------------|---------------------------------------|------------------|
| SNET    | 158                  | 880 - 894       | 19                 | 100                       | 0.0274                              | 0.5867                                | 4.7              |

Cingular Planned

| Company      | Centerline Ht (feet) | Frequency (MHz) | Number of Channels | Power Per Channel (Watts) | Power Density (mW/cm <sup>2</sup> ) | Standard Limits (mW/cm <sup>2</sup> ) | Percent of Limit |
|--------------|----------------------|-----------------|--------------------|---------------------------|-------------------------------------|---------------------------------------|------------------|
| SNET TDMA    | 162                  | 880 - 894       | 16                 | 100                       | 0.0219                              | 0.5867                                | 3.7              |
| SNET GSM     | 162                  | 880 - 894       | 2                  | 296                       | 0.0081                              | 0.5867                                | 1.4              |
| SNET GSM     | 162                  | 1930 - 1935     | 2                  | 427                       | 0.0117                              | 1.0000                                | 1.2              |
| <b>Total</b> |                      |                 |                    |                           |                                     |                                       | <b>6.3%</b>      |

**Structural information:** Please see attached. Modifications are to be made by AT&T Wireless, per AT&T Wireless agreement with Crown, and will be reflected in a filing to be made by AT&T Wireless.



MAX ENGINEERING LLC  
9000 Southwest Freeway, Suite 410  
Houston, Texas 77074-1522

E-mail: hak@maxengr.com  
Phone: (713) 776-0629  
Fax: (713) 776-9599

To: Lincoln Erhard  
Crown Castle International  
500 W. Cummings Park, Suite 6500  
Woburn, MA 01801

Subject: 180' Rohn Self Supporting Tower at Wolcott site, 347 East Street, Wolcott, CT  
(BU#806362)

Dear Mr. Erhard,

Max Engineering has performed a structural analysis on the above referenced tower (Crown BU#806362) for Cingular's proposed nine antennas "change-out" with nine 1+5/8" coaxial cables at elevation 162'. The tower is analyzed in accordance with TIA/EIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures for 85 mph basic design wind (1/2" ice case does not govern).

Our analysis report (dated 6-07-2002) indicates that provided that the following actions are done, the existing tower foundation and the tower upper-structure will be structurally adequate.

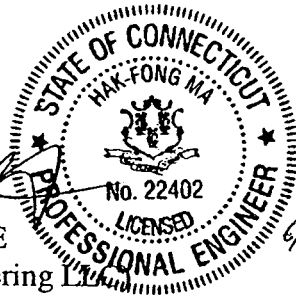
1. Replace existing main diagonals at elevations 40' to 80' by (nominal) 3" standard pipe. Replace diagonals between elevations 160' to 167' by (nominal) 1.5" XS or 2" standard pipe Use new 5/8" diameter (or larger) A325 bolts for deg-to diagonal connections. Do not re-use existing bolts.
2. Reinforce each existing leg foundation by additional concrete dowelled into the existing pier. (To increase dead weights against potential uplift). See Attachment A4 of the report for further details.

We appreciate this opportunity to provide you with our services. If you have any questions or comments, please do not hesitate to call me.

Sincerely Yours,

Hak-Fong Ma, Ph.D., PE  
(President, Max Engineering LLC)

Date: 06-07-2002



## Section 1 Introduction

The purpose of this report is to investigate the structural adequacy of an existing 180' self-supporting tower at Wolcott, CT site (BU#806362, address: 347 East Street, Wolcott, CT), to support Cingular Wireless's (9) proposed antennas change-out at elevation 162', in addition to the existing or previously proposed (AT&T) antennas. The computer inputs and outputs for the critical load cases are listed in Section 8.

The manufacturer of the existing 180' self-supporting tower is Rohn. Information on this tower was obtained from the drawings of Rohn provided by Crown Castle, and this was used as design input.

The new proposed antennas and the existing ones are listed in the "Tower Loading Information" section (Section 3). The main forces considered in the analysis of the tower are those resulting from wind. Per EIA/TIA-222-F, the basic wind speed in New Haven County, NH is 85 mph. The results are summarized in Section 5.

The finite element program used in this analysis is licensed from and developed by Guymast Inc./Weisman Consultants Inc. located in Downsview, Ontario, Canada. It is a specialized computer program developed to facilitate speedy modeling and analysis.

## Section 2 Analysis Criteria

- **Wind and ice conditions:** 85 mph wind with 0" ice case and 73.6 mph wind simultaneously with 1/2" ice case.
- **Source codes governing the analysis:** ANSI/TIA/EIA-222-F-1996

### Section 3 Tower Loading Information

**A) Original Tower Design Loadings (Criteria: EIA Rev unknown)**

| Rad Center Elevation | Antenna Description and Count | Feedline Size, Count, and Location | Mount Type    | Note |
|----------------------|-------------------------------|------------------------------------|---------------|------|
| 180'                 | (4) PD10017 antennas          | Not Clearly stated                 | (3) Side arms |      |
| 170'                 | (3) PD1132D antennas          | Not Clearly stated                 | (3) Side arms |      |
| 160'                 | (2) 6' diameter Std dishes    | Not Clearly stated                 | On tower legs |      |
|                      |                               |                                    |               |      |
|                      |                               |                                    |               |      |

**B) Existing or Previously Proposed Tower Loadings**

| Level | Antenna Description, and Count, (Azimuth)                 | Feedline Size Count & Location | Mount Type     | Carrier       | Note(s) |
|-------|-----------------------------------------------------------|--------------------------------|----------------|---------------|---------|
| 178'  | (12) Allgon 7130.16.05 antennas (27,147,267); (52"x11.4") | (12) 1+5/8"                    | (3) T-arms     | BAM           |         |
| 158'  | (12) DB846H80 antenna (23,143,263) (72"x6.6"x8.25")       | (12) 1+5/8"                    | (3) T-arms     | SNET          | 1       |
| 118'  | (1) Andrew 8' diameter HP dish; (200)                     | (1) EW52                       | On tower leg C | BAM           |         |
| 112'  | (1) Andrew 8' diameter HP dish, (200)                     | (1) EW52                       | On tower leg C | BAM           |         |
| 65'   | (1) Andrew 10' diameter HP dish; (100)                    | (1) EW52                       | On tower leg B | BAM           |         |
| 168'  | (6) EMS RR-90-17-02 antennas (56"x8"), (0,140,270)        | (12) 1+ 5/8"                   | (3) T-arms     | AT&T Wireless | 2       |

Note 1: Changed out to 162' level as shown on next table.

Note 2: Previously proposed antennas

**C) Proposed & Future Loading**

| Level | Antenna Description, and Count, Azimuth (Note 1)                            | Feedline size & count | Mount Type & (Carrier)               | Note |
|-------|-----------------------------------------------------------------------------|-----------------------|--------------------------------------|------|
| 162'  | (9) CCS DU04-8670 antennas (48"x14"), (24,140,261) + (6) TMAs (13"x9" each) | (9) 1+ 5/8"           | (3) T-arms (Cingular, replaced SNET) |      |
| 162'  | (1) Omni (9"x1")                                                            | (1) 1/2"              | (Cingular)                           | 2    |
|       |                                                                             |                       |                                      |      |
|       |                                                                             |                       |                                      |      |
|       |                                                                             |                       |                                      |      |
|       |                                                                             |                       |                                      |      |

1. Azimuth is based on best estimate only. The impact of this estimate on results is considered minimal as wind forces in different directions are considered.
2. Conservative to assume at 162' elevation for analysis purpose.

## Section 4 Assumptions made

1. The tower is constructed in accordance with the drawings from the tower manufacturer (Rohn) and the tower has not been deteriorated.
2. Coaxial cables (feed lines) are neatly attached to the tower faces and they are considered as structural members in calculating wind forces in accordance with TIA/EIA-222-F formulas.
3. Material yield stresses assumed are stated in Section 6. The welds between the diagonals and the gusset plates are stronger than the connection bolts.
4. The original foundation design (5'x5' concrete block with rock anchors) is sufficient to support the original uplift load of 185 k. Reinforcements of the foundation will take on the forces exceeding the original design value.



## Section 5 Results

The existing 185' self-supporting tower is analyzed with the existing antennas and the new proposed antennas, for the governing design wind load of 85 mph without ice per TIA/EIA-222-F criteria. (1/2" ice case with 73.6 mph) The results show that except for diagonals between elevations 40' to 100', the existing tower upper structure is structurally adequate to support the proposed antennas. However, existing foundation adequacy is established based on recommended reinforcements and calculations performed in Attachment A4.

The actual and allowable stress of the key tower members are tabulated as follows:

**Tower Legs:** Assumed Steel Yield Stress = 50 ksi, bolts = A325 or better

| Section Elevation | A) Max Member force K | B) Allowable Force K | Stress Ratio A/B | Size           |
|-------------------|-----------------------|----------------------|------------------|----------------|
| 0' - 20'          | 246.0                 | 337.6                | 0.73             | 8.75"OD,3/8" t |
| 20' - 40'         | 229.6                 | 264.1                | 0.87             | 6" XS          |
| 40' - 60'         | 197.4                 | 264.1                | 0.75             | 6" XS          |
| 60' - 80'         | 164.8                 | 212.0                | 0.78             | 6" EHS         |
| 80' - 100'        | 132.7                 | 177.6                | 0.75             | 5" XS          |
| 100' - 120'       | 99.8                  | 177.6                | 0.56             | 5" XS          |
| 120' - 140'       | 73.6                  | 139.1                | 0.53             | 4" XS          |
| 140' - 160'       | 41.5                  | 84.0                 | 0.49             | 3" XS          |
| 160' - 180'       | 9.4                   | 41.0                 | 0.23             | 2.5" STD       |
|                   |                       |                      |                  |                |
|                   |                       |                      |                  |                |

Buckling of leg members govern the leg capacity. Capacity is calculated based on conservative slenderness ratio.

Yield stresses (50 ksi) of leg members are based on materials typically used by (Rohn) tower. This remains as a key assumption.

**Diagonals:** Assumed Steel Yield Stress = 36 ksi, bolts = A325 or better

| Section Elevation | A) Member Force K | B) Allowable Force K | Stress Ratio A/B | Note          |
|-------------------|-------------------|----------------------|------------------|---------------|
| 0' - 20'          | 18.82             | 25.60                | 0.74             | Bolt governs  |
| 20' - 40'         | 13.00             | 17.27                | 0.75             | Brace governs |
| 40' - 60'         | 12.49             | 11.93                | 1.05             | Brace governs |
| 60' - 80'         | 11.89             | 11.23                | 1.06             | Brace governs |
| 80' - 100'        | 11.58             | 12.66                | 0.91             | Brace governs |
| 100' - 120'       | 11.67             | 14.39                | 0.81             | Brace governs |
| 120' - 140'       | 8.73              | 11.54                | 0.76             | Brace governs |
| 140' - 160'       | 8.88              | 13.27                | 0.67             | Brace governs |
| 160' - 167'       | 7.45              | 7.21                 | 1.03             | Brace governs |
| 167'-180'         | 4.04              | 7.21                 | 0.56             | Brace governs |

**Horizontals:** Assumed Steel Materials = A36; Bolt Materials = A325

| Section Elevation | A) Connection Force K | B) Allowable Force K | Stress Ratio A/B | Note           |
|-------------------|-----------------------|----------------------|------------------|----------------|
| 20'               | 10.78                 | 24.7                 | 0.44             | Bolt governs   |
| 30', 40'          | 10.22                 | 14.8                 | 0.69             | Member governs |
| 50', 60'          | 9.50                  | 17.0                 | 0.56             | Bolt governs   |
| 70', 80'          | 8.52                  | 17.0                 | 0.50             | Bolt governs   |
| 90', 100'         | 7.75                  | 13.6                 | 0.57             | Member governs |
| 110', 120'        | 8.31                  | 17.0                 | 0.49             | Bolt governs   |
| 120'-140'         | 5.89                  | 17.0                 | 0.35             | Bolt governs   |
| 140'- 160'        | 5.43                  | 14.3                 | 0.38             | Member governs |
| 160'-180'         | 5.05                  | 16.7                 | 0.30             | Member governs |

Forces at the internal braces, sub-diagonals and sub-horizontals are small and are acceptable.

### Comparison of Foundation Forces

| Item                 | a) Calculated Force k (ft-k) | b) Original Design Force k (ft-k) | Comparison Ratio (a/b) | Note |
|----------------------|------------------------------|-----------------------------------|------------------------|------|
| Max. Leg Uplift      | 235.1 k                      | 185 k                             | 1.27                   |      |
| Max. Leg Compression | 274.3 k                      | 225 k                             | 1.22                   |      |

Uplift is the controlling force for the foundation design. See Section 8, Attachment A4 for reinforcements suggested to assure adequacy.

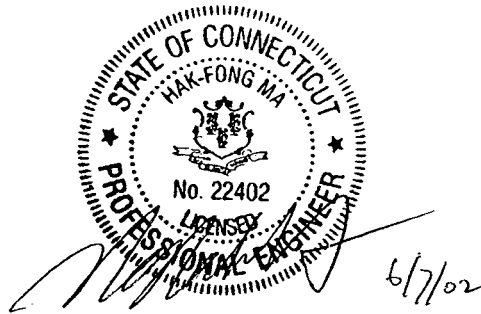
## Section 6 Conclusions

The existing 180' self-supporting tower was analyzed with existing antennas and new proposed antennas, for a basic wind speed of 85 mph per TIA/EIA-222-F criteria. The analysis shows that the existing tower is structurally inadequate to support the Cingular change-out and previous AT&T Wireless's proposed antennas at elevation 168' unless the following actions are done.

Diagonals between elevations 40' to 80' are to be replaced by (nominal) 3" standard pipe, whereas diagonals between elevations 160' to 167' are to be replaced by (nominal) 1.5" XS (or nominal 2" standard) pipe.

The existing foundation adequacy is assured based on the assumption that the original foundation design is capable to resist the original design load (185 k uplift). The additional reinforcements recommended are demonstrated to be sufficient to resist any additional loads beyond the original designed value (see Attachment A4 calculations).

**Section 7 P.E. Signature and Seal**  
(Site: Wilcott, BU# 806362)



**This report is prepared by or under the supervision of:  
Hak-Fong Ma, PE  
Registered & Licensed Professional Engineer  
License Number: 22402**

**Max Engineering, LLC.  
9000 Southwest Freeway, Suite 410  
Houston, Texas 77074-1522  
Telephone (713) 776-0629**