

# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

July 27, 2006

Elizabeth H. Lankenau, AICP  
Kise Straw & Kolodner Inc.  
123 South Broad Street, Suite 1270  
Philadelphia, PA 19109

RE: **EM-CING-014-148-060707** - New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 150 North Main Street, Branford; and 23 Wayne Road, Wallingford, Connecticut.

Dear Ms. Lankenau:

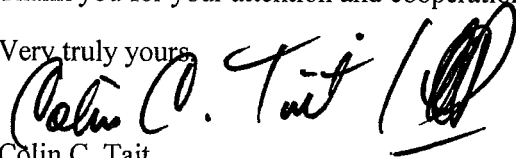
At a public meeting held on July 27, 2006, the Connecticut Siting Council (Council) acknowledged your notice to modify these existing telecommunications facilities, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified here and in your notice dated July 6, 2006 and errata sheets received July 20, 2006, including the placement of all necessary equipment and shelters within the tower compounds. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to existing facility sites that would not increase tower heights, extend the boundaries of the tower sites, increase noise levels at the tower site boundaries by six decibels, and increase the total radio frequencies electromagnetic radiation power densities measured at the tower site boundaries to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on these towers.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to any of these facilities will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

  
Colin C. Tait  
Chairman

CCT/laf

c: See Attached List

List Attachment.

- c: The Honorable Cheryl P. Morris, First Selectman, Town of Branford
- Justine K. Gillen, Zoning Enforcement Officer, Town of Branford
- Diana Ross, Inland Wetland Enforcement Officer, Town of Branford
- The Honorable William W. Dickinson, Jr., Mayor, Town of Wallingford
- Linda Bush, Town Planner, Town of Wallingford
- Thomas J. Regan, Esq., Brown Rudnick Berlack Israels LLP
- Karen L. Couture, Site Acquisition Specialist
- Michele G. Briggs, New Cingular Wireless PCS, LLC
- Christopher B. Fisher, Esq., Cuddy & Feder LLP
- Thomas F. Flynn III, Esq., Sprint Nextel Communications
- Sam J. D'Agostino, Zoning Specialist, PageNet, Inc.
- Global Signal
- Stephen B. Tripp

**Perrone, Michael**

EM-CING-014-148-060707

**From:** Karen Couture [karencouture@myeastern.com]  
**Sent:** Thursday, July 20, 2006 2:12 PM  
**To:** Perrone, Michael  
**Subject:** 23 Wayne Road, Wallingford, CT-Errata Sheet  
**Importance:** High

Dear Mr. Perrone,

Attached you will find an errata sheet for 23 Wayne Road, Wallingford, CT. The "antenna configuration" text has been revised on the "Proposed Modifications" page, which matches the structural analysis letter.

Should you have any further questions, please do not hesitate to call.

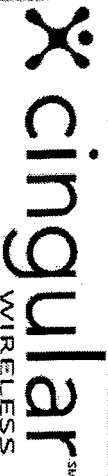
Thank you.

Karen L. Couture  
Site Acquisition Specialist  
Mobile: 860-389-4924  
E-Fax: 888-281-6394  
Email: [karencouture@myeastern.com](mailto:karencouture@myeastern.com)

RECEIVED  
JUL 21 2006

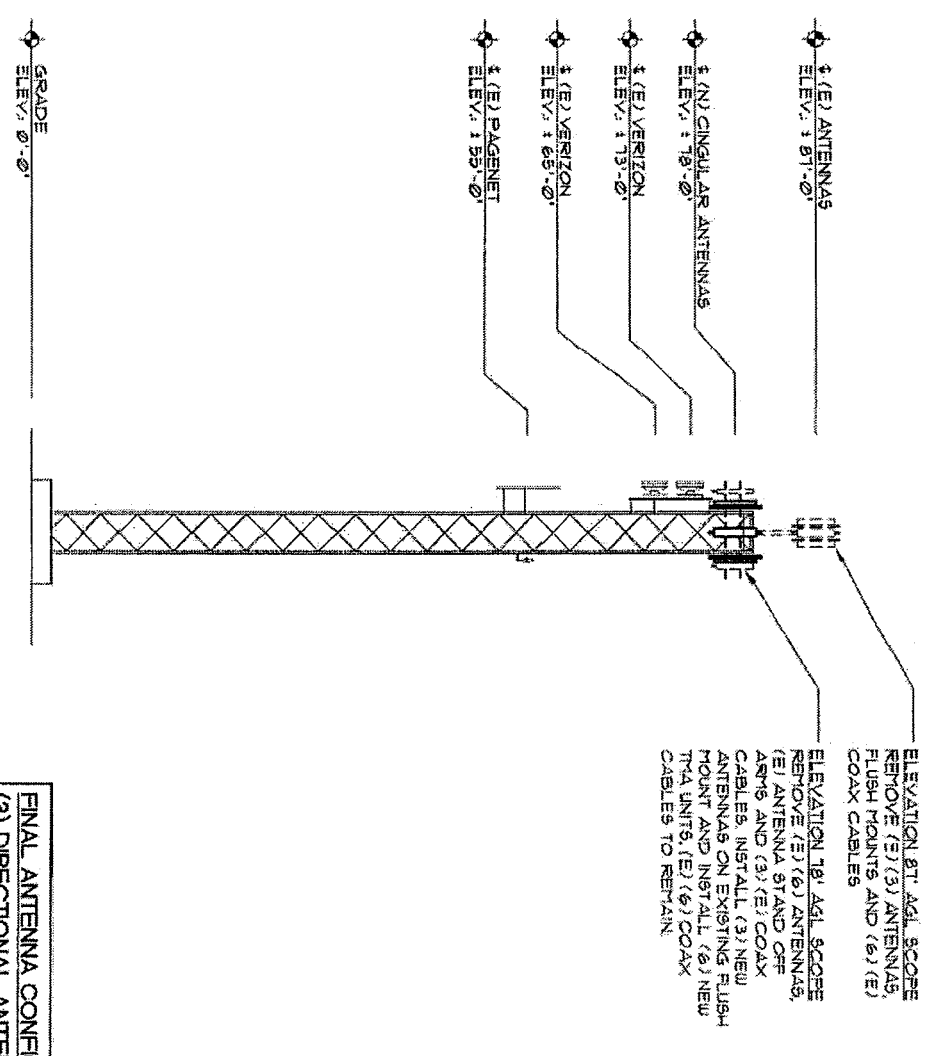
CONNECTICUT  
SITING COUNCIL

7/21/2006



NO.	DATE	DESCRIPTION	BY	CHECKED BY	SCALE
1	05-05-06	ISSUED FOR SUBMITAL	RR	JZ	1"=30'-0"
2	07-05-06	ISSUED FOR CSC REVIEW	RR	JZ	
3	08-05-06	REVISION DESCRIPTION	RR	JZ	

1 TOWER ELEVATION  
1"=30'-0"

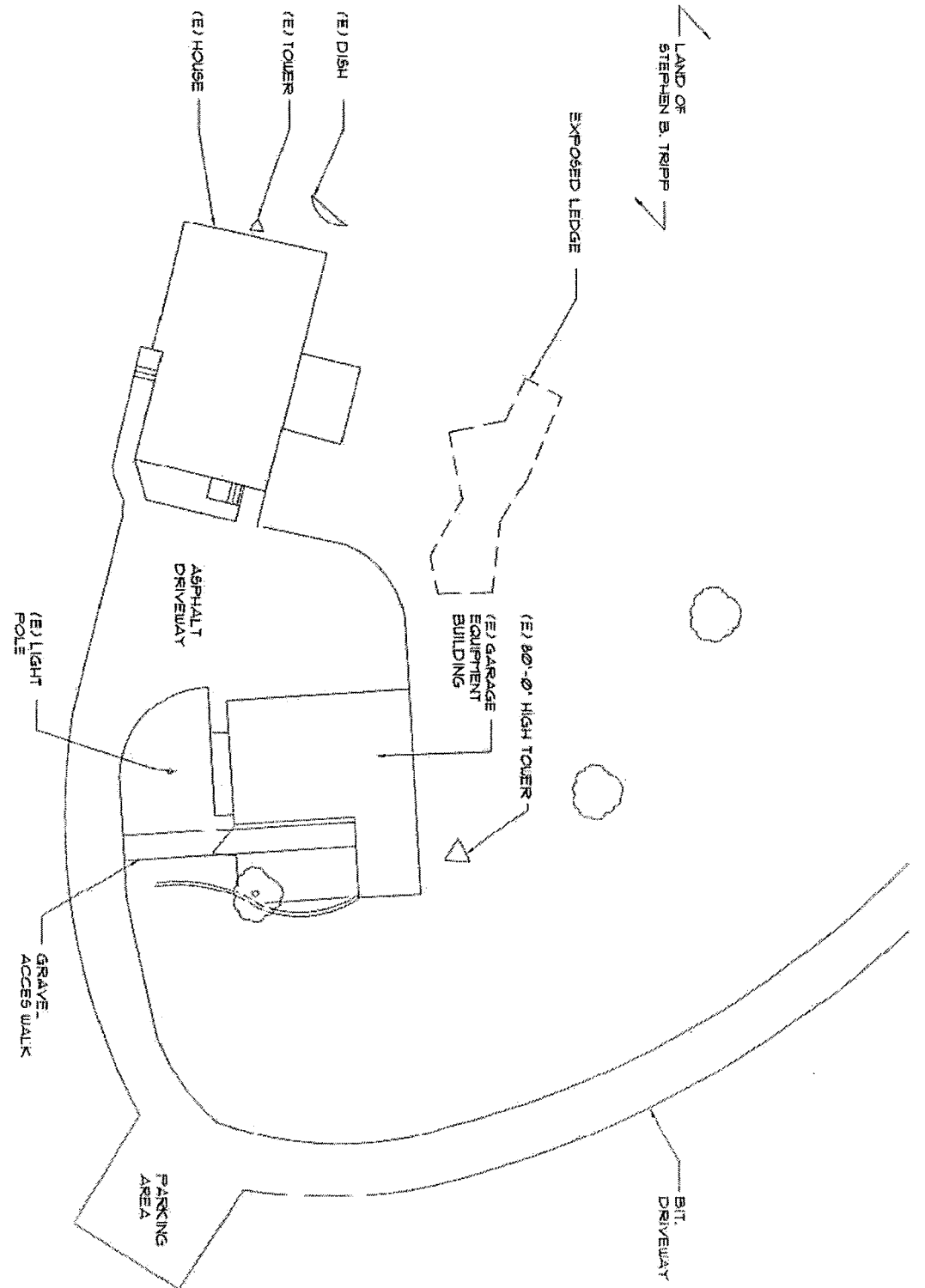


**FINAL ANTENNA CONFIGURATION**  
**(3) DIRECTIONAL ANTENNAS POWERWAVE # 7770**  
**(6) EXISTING 1-5/8" DIA. COAX CABLES**  
**(6) TMAS**

CINGULAR WIRELESS

SITE # 2182  
 SITE NAME: COLLETTA  
 23 WARRIOR ROAD WASHINGTON, CT, 06492  
 DRAWING NUMBER 2182  
 REV 0

LAND OF  
STEPHEN B. TRIPP



1 EXISTING SITE PLAN  
NTS

NORTH



**CH2M HILL**  
8619 WEST BRYN MAWR  
CHICAGO, ILLINOIS 60631

NO.	DATE	REVISION DESCRIPTION	BY	CHKD BY	DATE
1	07-08-06	ISSUED FOR SUBMITTAL	JZ	JZ	
1	05-08-08	ISSUED FOR CEC REVIEW	JZ	JZ	
		REVISION DESCRIPTION			

SCALE: N.T.S.

CHECKED BY: JZ

DRAWN BY: BR

CINGULAR WIRELESS

Site #: 2168  
Site Name: GULFORD  
23 WAVER ROAD, WILMINGTON, CT 06492  
DRAWING NUMBER: 2168

**Perrone, Michael**

EM-CING-014-148-060707

**From:** Karen Couture [karencouture@myeastern.com]  
**Sent:** Thursday, July 20, 2006 2:07 PM  
**To:** Perrone, Michael  
**Subject:** 150 N. Main Street, Branford, CT-Errata Sheet  
**Importance:** High

Dear Mr. Perrone,

Attached you will find an errata sheet for 150 N. Main Street, Branford, CT. The tower elevation drawings have been revised to show Sprint's antennas centered at the 147' level, not 150.

Should you have any further questions, please do not hesitate to call.

Thank you.

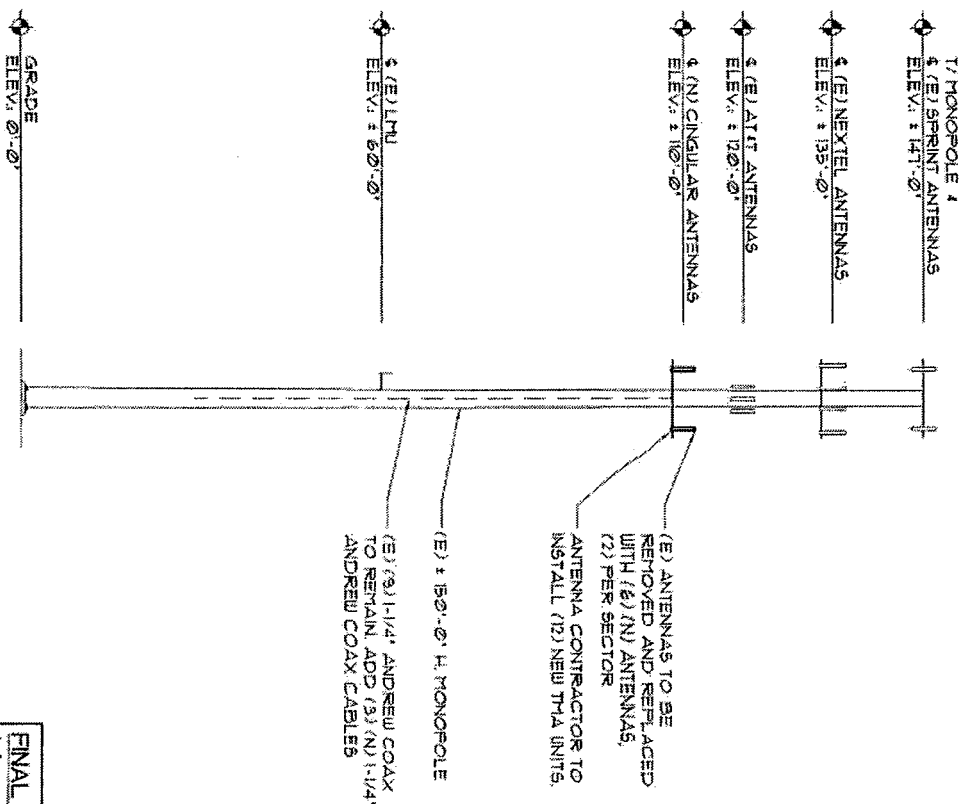
Karen L. Couture  
Site Acquisition Specialist  
Mobile: 860-389-4924  
E-Fax: 888-281-6394  
Email: [karencouture@myeastern.com](mailto:karencouture@myeastern.com)

RECEIVED  
JUL 21 2006  
CONNECTICUT  
SITING COUNCIL



3	04-26-08	ISSUED FOR CSC SUBMITTAL	14	22	JF	SITE # 2229
2	04-21-08	ISSUED FOR CSC REVIEW	08	22	JF	SITE NAME: BRANDED 1-05 EXT 74
1	04-07-08	SECURING REVIEW	08	22	JF	150 NORTH WASH STREET BRANDED, CT 06405
NO.	DATE	REVISION DESCRIPTION	BY	CHK'D BY	DATE	DRAWING NUMBER
						2229

1 TOWER ELEVATION  
SCALE: 1"=30'-0"

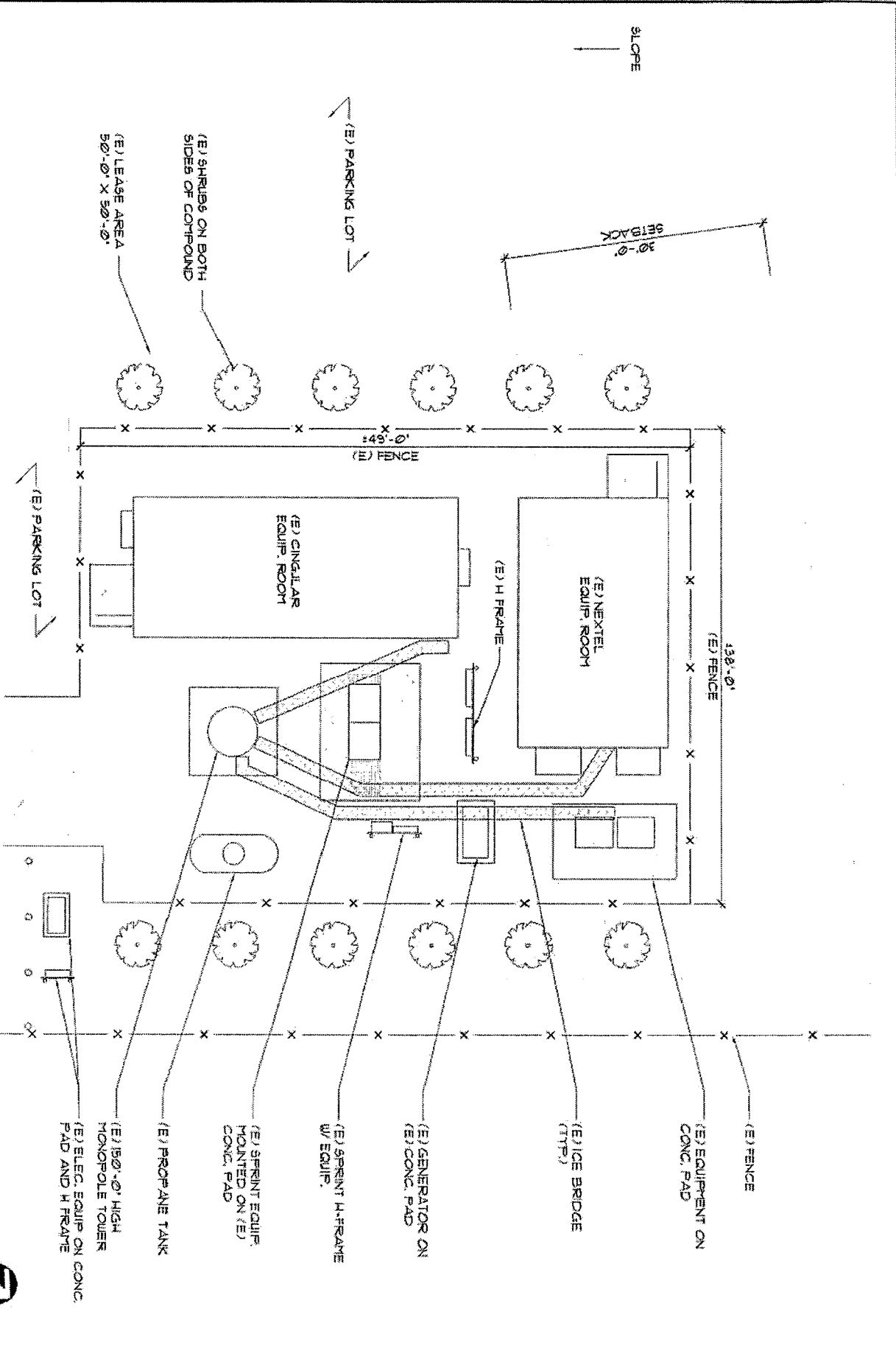


**FINAL ANTENNA CONFIGURATION**  
**(6) DIRECTIONAL ANTENNAS POWERWAVE # 7770**  
**(12) 1-1/4" DIA. COAX CABLES**  
**(12) TMAS**



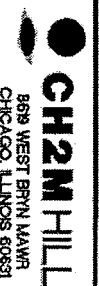
NO.	DATE	REVISION DESCRIPTION	BY	CHECKED BY	DATE
1	04-21-06	ISSUED FOR GSC REVIEW	PH	JZ	JZ
SCALE: 3/32" = 1'-0"					
DRAWN BY: PH					
SITE # 2220					
SITE NAME: BRANDED 1-95 EXIT 54					
190 NORTH VAN STREET IRVINGTON, CT 06455					
DRAWING NUMBER: 2220					
REV					
0					

1  
EXISTING SITE PLAN  
3/32" = 1'-0"

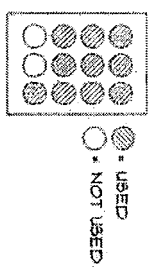
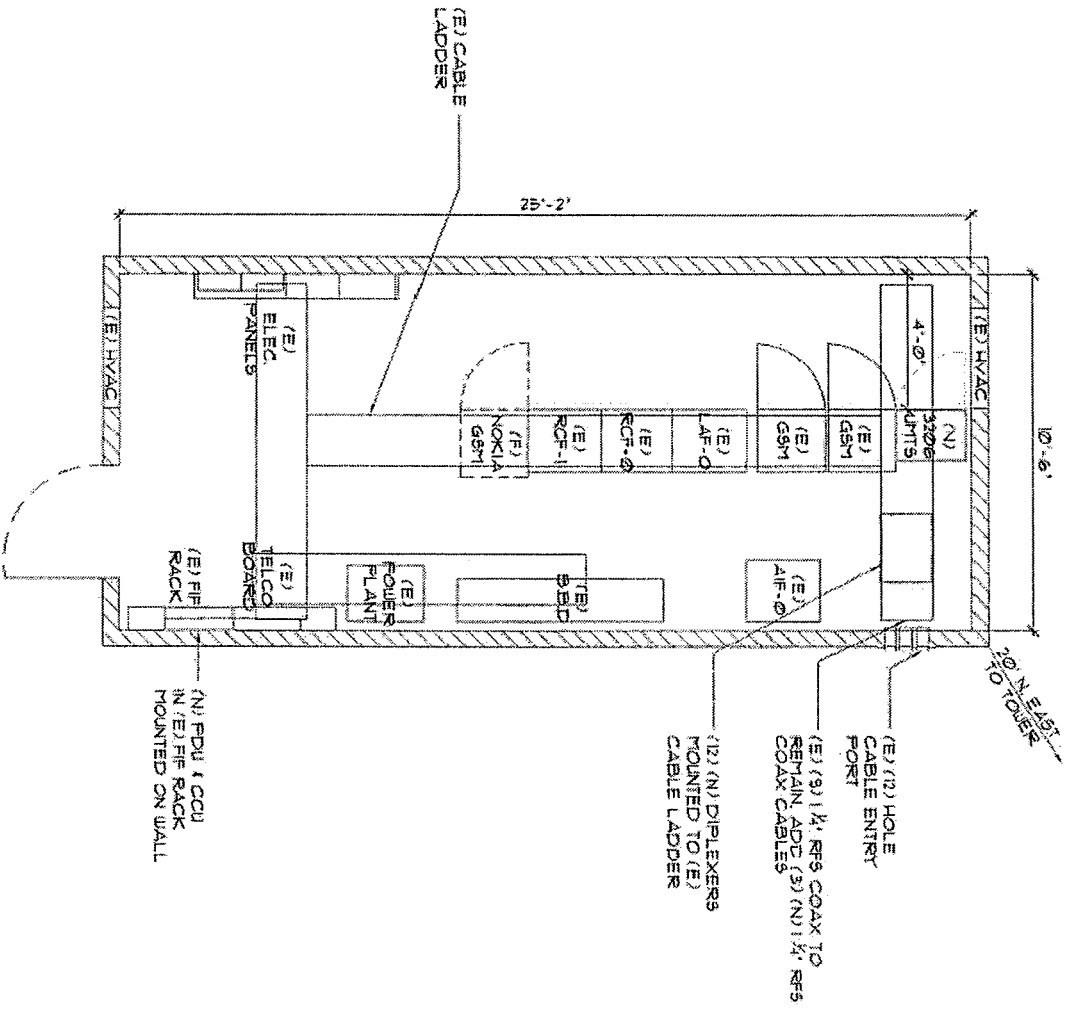




1  
SCALE: 3/16" = 1'-0"  
PROPOSED EQUIPMENT PLAN



889 WEST BRYN MAWR  
CHICAGO, ILLINOIS 60681



INTERIOR VIEW  
CABLE ENTRY  
PORT

NO.	DATE	REVISION DESCRIPTION	BY	CHKD BY	DATE	APP'D BY
2	04-21-08	ISSUED FOR SSC REVIEW	CB	JZ		
1	03-20-06	SCOPING REVIEW	CB	JZ		
		REVISION DESCRIPTION	BY	CHKD BY	DATE	APP'D BY
			KIMMARTI	CB		

SCALE: 3/16" = 1'-0" CHECKED BY: JZ DRAWN BY: CB

CINGULAR WIRELESS

SITE # 2220  
SITE NAME BRACKFORD 95 054  
150 N. MAIN ST., BARTONVILLE, IL 60103  
DRAWING NUMBER 2220  
REV 0



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July 11, 2006

The Honorable Cheryl P. Morris  
First Selectman  
Town of Branford  
Town Hall  
1019 Main Street  
P. O. Box 150  
Branford, CT 06405-0150

RE: **EM-CING-014-148-060707** - New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 150 North Main Street, Branford; and 23 Wayne Road, Wallingford, Connecticut.

Dear Ms. Morris:

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

The Council will consider this item at the next meeting scheduled for July 27, 2006 at 1:30 p.m. in Hearing Room Two, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by July 26, 2006.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps  
Executive Director

SDP/ap

Enclosure: Notice of Intent

c: Justine K. Gillen, Zoning Enforcement Officer, Town of Branford  
Diana Ross, Inland Wetland Enforcement Officer, Town of Branford



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July 11, 2006

The Honorable William W. Dickinson, Jr.  
Mayor  
Town of Wallingford  
Municipal Building  
45 South Main Street  
Wallingford, CT 06492

RE: **EM-CING-014-148-060707** - New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 150 North Main Street, Branford; and 23 Wayne Road, Wallingford, Connecticut.

Dear Mayor Dickinson:

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

The Council will consider this item at the next meeting scheduled for July 27, 2006 at 1:30 p.m. in Hearing Room Two, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by July 26, 2006.

Thank you for your cooperation and consideration.

Very truly yours,

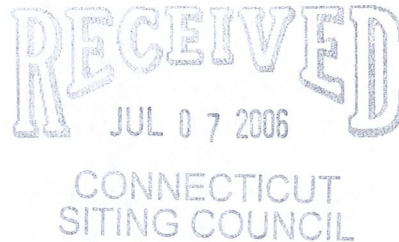
S. Derek Phelps  
Executive Director

SDP/ap

Enclosure: Notice of Intent

c: Linda Bush, Town Planner, Town of Wallingford

ORIGINAL



6 July 2006

Mr. Colin C. Tait, Chairman, and  
Members of the Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

**RE: Notice of Exempt Modification –Two (2) Existing Telecommunications  
Tower Facilities in Hartford County  
Site 1: 150 N. Main Street, Branford  
Site 2: 23 Wayne Road, Wallingford**

Dear Chairman Tait and Members of the Council:

Kise Straw & Kolodner Inc., in association with Network Building & Consulting, LLC, submits this notice of intent to modify existing telecommunications facilities. New Cingular Wireless PCS, LLC (“Cingular”) proposes to remove and replace telecommunications antennas and associated equipment located on an existing facility in the above-referenced municipalities. Cingular operates under licenses issued by the Federal Communications Commission (FCC) to provide cellular and PCS mobile telephone service in the areas to be served by the proposed installations.

Please accept this letter and attachments as notification to the Council, pursuant to Regulations of Connecticut State Agencies (RCSA) Section 16-50j-73. This submission will demonstrate that the proposed changes fall within the limits of an exempt modification as described under the RCSA Section 16-50j-72(b)(2).

In accordance with RCSA Section 16-50j-73, the chief elected officials will receive notification of the work proposed at locations within their jurisdiction.

Attached you will find 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 planned changes to these facilities fall within those activities explicitly provided for in RCSA Section 16-50j-72(b)(2). As such, the proposed work does not result in any substantial adverse environmental effect:

*James Bennett Straw, AIA*

*Harvey D. Kolodner, MBA*

*James Nelson Kise, AIA/AICP/PP*

*Scott W. Killinger, AIA*

*John R. Gibbons, AIA/AICP*

*Philip E. Scott, EA*

*Suzanna Barucco*

*Katherine Bottom, LEED*

*LaVern Browne*

*Johnette Davies*

*Petar D. Glumac, Ph.D*

*Douglas S. Heckrotte, RA/LEED*

*Jody Holton, AICP*

*Marian Maxfield Hull, AICP/PP*

Kise Straw & Kolodner Inc.  
123 South Broad St.  
Suite 1270  
Philadelphia, PA 19109  
(215) 790-1050 FAX (215) 790-0215  
www.kski.com

1. The proposed work does not affect the height of the structure.
2. The proposed changes do not affect the existing property boundaries. All proposed work will occur on the property controlled by Cingular.
3. The proposed work will not increase noise levels at the site boundary by six (6) decibels or more.
4. Addition of the UMTS broadcasts will not increase the exposure to radio frequency electromagnetic energy, measured at the base of the tower, to or above the standard adopted by the state of Connecticut and the FCC. The power density tables provided for each facility summarize the cumulative results for a point of interest at the tower's base of the "worst-case" exposure calculations resulting from all carriers co-located on this tower. The calculations are in accordance with the Federal Communications Commission's Office of Engineering and Technology Bulletin No. 65 (1997), and for simplicity, an assumption is made that the antennas are all pointed down, thus focusing their energy at the tower's base.

For the foregoing reasons, Cingular respectfully submits that proposed changes at the these facilities constitute an exempt modification under RCSA Section 16-50j-72(b)(2).

Please do not hesitate to call me at 215.790.1050 ext. 138 with questions concerning this notice. Thank you for your consideration of this matter.

Sincerely,



Elizabeth H. Lankenau, AICP  
Planner

Attachments

cc: Honorable Cheryl Morris, First Selectwoman, Town of Branford  
Honorable William W. Dickinson, Jr., Mayor, Town of Wallingford

**150 N. Main Street, Branford, CT**

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**Summary Sheet  
Project Location Map  
Site Plan and Elevation  
Structural Analysis  
Elected Official Letter**

**CINGULAR WIRELESS**  
**Proposed Modifications**

---

**Site Address:** 150 North Main Street, Branford CT; *Project Location Map* attached

**Coordinates:** Lat: 14' 17' 22"; Long: 72' 48' 49"

**Site Owner:** Global Signal

**Type of Existing Facility:** 150' monopole

**Antenna Configuration:** Center line – 110' above ground level; remove existing CSS DUO4-8670 antennas and replace with six (6) Powerwave 7770 units; *specification attached*

**TMA Configuration:** Existing units to be removed and add twelve (12) new LGP 214nn units; *specification attached*

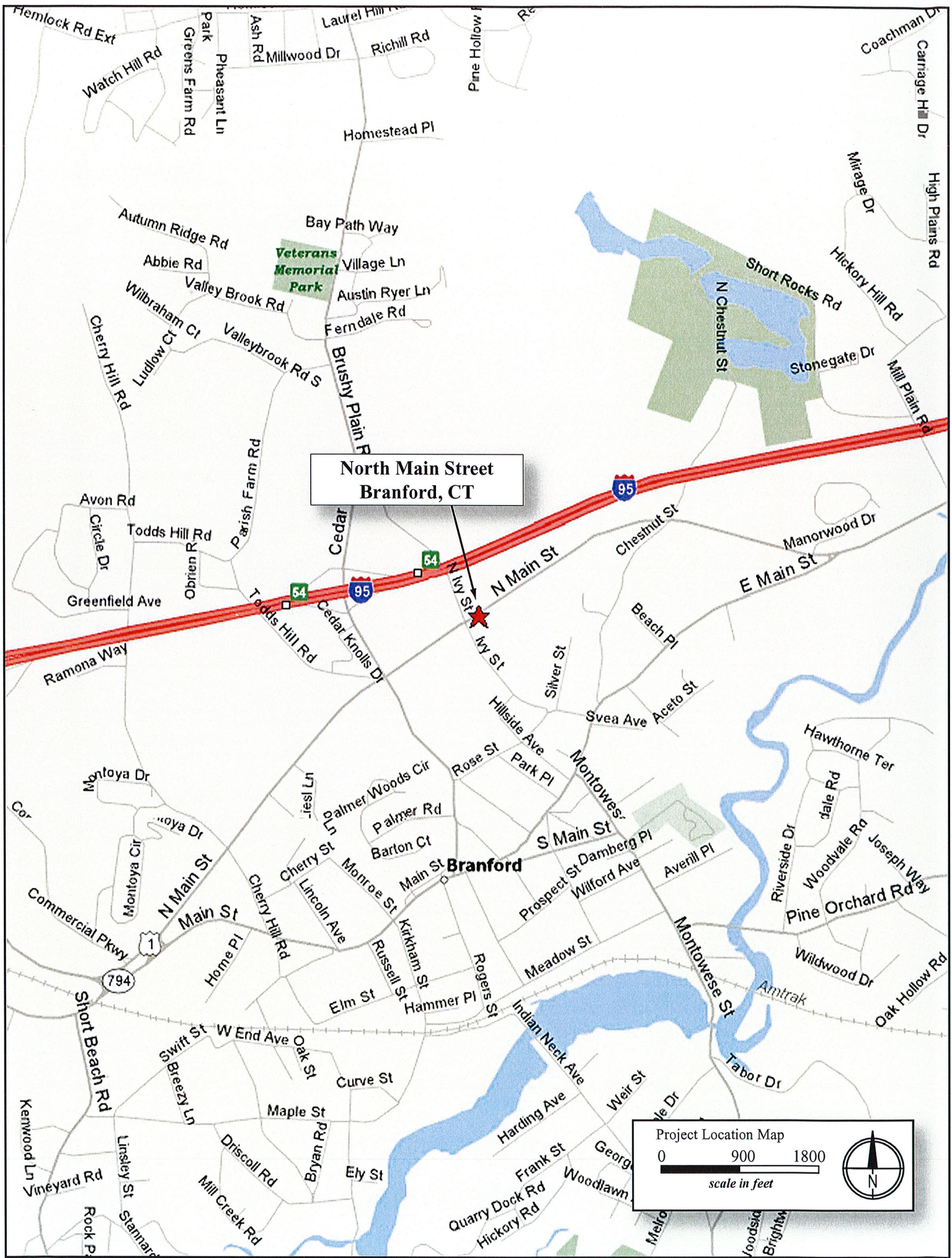
**Coaxial Cables:** Nine (9) existing 1 ¼" diameter coaxial cables to remain and add three (3) new cables of the same dimension

**Power Density:**

As the table demonstrates, the cumulative worst-case exposure would be approximately 40.28% of the ANSI/IEEE standard, as calculated for mixed frequency sites. Total power density levels resulting from Cingular's use of the facility would be within applicable standards.

Site # 2220								
Carrier	Antenna Height (ft)	Freq. (MHz) For Limit	# of Channels	W ERP/Channel (ref 1/2-w dipole)	W EIRP/Sector	Power Density ( $\mu\text{W}/\text{cm}^2$ )	FCC Limit ( $\mu\text{W}/\text{cm}^2$ )	Percent of Limit (%)
Cingular UMTS	110	1935.0	1	500.0	820.0	14.9	1000	1.49%
Sprint	147	1900.0	12	500.0	9840.0	99.9	1000	9.99%
Nextel	135	851.0	12	100.0	1968.0	23.7	567	4.17%
AT&T	120	1900.0	16	250.0	6560.0	99.9	1000	9.99%
Cingular TDMA	110	880.0	16	100.0	2624.0	47.6	587	8.11%
Cingular 800	110	880.0	2	296.0	970.9	17.6	587	3.00%
Cingular 1900	110	1900.0	2	427.0	1400.6	25.4	1000	2.54%
Pagenet	95	900.0	1	150.0	246.0	6.0	600	1.00%
<b>TOTAL</b>								<b>40.28%</b>

**Structural Analysis:** *Structural Analysis* attached.




North Main Street  
Branford, CT

Project Location Map

0 900 1800

scale in feet





1/ MONOPOLE  
 4 (E) SPRINT ANTENNAS  
 ELEV.: ± 150'-0"

4 (E) NEXTEL ANTENNAS  
 ELEV.: ± 135'-0"

4 (E) AT&T ANTENNAS  
 ELEV.: ± 120'-0"

4 (N) CINGULAR ANTENNAS  
 ELEV.: ± 110'-0"

4 (E) LMU  
 ELEV.: ± 60'-0"

GRADE  
 ELEV.: 0'-0"

(E) ANTENNAS TO BE  
 REMOVED AND REPLACED  
 WITH (6) (N) ANTENNAS,  
 (1) PER SECTOR

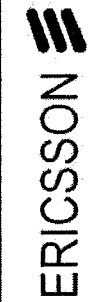
ANTENNA CONTRACTOR TO  
 INSTALL (12) NEW TMA UNITS.

(E) : 150'-0" H. MONOPOLE

(E) (S) 1-1/4" ANDREW COAX  
 TO REMAIN, ADD (3) (N) 1-1/4"  
 ANDREW COAX CABLES

FINAL ANTENNA CONFIGURATION  
 (6) DIRECTIONAL ANTENNAS POWERWAVE # 7770  
 (12) 1-1/4" DIA. COAX CABLES  
 (12) TMAS

1 TOWER ELEVATION  
 SCALE: 1"=30'-0"



3	06-26-06	ISSUED FOR CSC SUBMITAL	FH	JZ	JZ	CINGULAR WIRELESS
2	04-21-06	ISSUED FOR CSC REVIEW	RR	JZ	JZ	SITE # 2220
1	04-07-06	SCOPING REVIEW	GB	JZ	JZ	SITE NAME: BRADFORD I-95 EXIT 54 150 NORTH MAIN STREET BRADFORD, CT 06405
NO.	DATE	REVISION DESCRIPTION	BY	CHK	APP'D	DRAWING NUMBER
						2220
SCALE: 1"=30'-0"						DRAWN BY: GB
						REV: 0

1079 N. 204<sup>th</sup> Avenue  
Elkhorn, NE 68022  
Ph: 402-289-1888  
Fax: 402-289-1861

**SEMAAN ENGINEERING SOLUTIONS**

**147 ft SUMMIT Monopole  
Structural Analysis**

**Prepared for:  
Global Signal  
301 North Cattlemen Road, Suite 300  
Sarasota, FL 34232**

**Site: 3017641 / CT03XC040  
For Cingular  
150 Main St.  
Branford, CT**



**June 16, 2006**

Mr. Louis Belizaire  
Global Signal  
301 North Cattlemen Road, Suite 300  
Sarasota, FL 34232

**Re: Site 3017641 / CT03XC040 – 150 Main St. Branford, CT.**

Dear Mr. Belizaire:

We have completed the structural analysis for the existing monopole, located at the above referenced site. The purpose of this analysis is to determine that the existing monopole design is in conformance with the TIA/EIA-222 Rev F standard and local building codes for the proposed antennae loads installation. Refer to the Review and Recommendations section at the end of this report for the analysis results.

**Description of Structure:**

The structure is a 147 ft SUMMIT Monopole.

Refer to SUMMIT job #4516 dated March 15, 1999 for a detailed description of the structure.

**Method of analysis:**

The tower was analyzed using Semaan Engineering Solutions' software suite for communication structures. The structural analysis is performed using the SAPS finite element engine. The method is 3D, non-linear, which accounts for the second order geometric effects due to the displacements. It also treats guys as exact cable elements and therefore is ideal for guyed towers. The analysis was performed in conformance with **TIA/EIA-222 Rev F and local building codes for a basic wind speed of 85 mph and 1/2" radial ice with reduced wind speed (fastest mile)**. This wind speed is equivalent to 105 mph 3-second gust per the IBC 2003. This is in conformance with the IBC 2003: Section 1609.1.1, Exception (5) and Section 3108.4. Wind is applied to the structure, accessories and antennas.

**Structure loading:**

The following loads were used in the tower analysis:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
147.0	9	RR65-19-02DP	Low Profile platform	(9) 1 5/8"	Sprint
135.0	12	DB844H90	Low Profile platform	(15) 1 1/4"	Nextel
120.0	6	Allgon 7250	(3) T-Arms	(12) 1 1/4"	AT&T

Proposed Loads:

Elev (ft)	Qty	Antennas	Mounts	Coax	Carrier
110.0	9	Allgon 7770	Low Profile platform	(12) 1 5/8"	Cingular
	12	21401 TMA			

**All new access holes shall be reinforced with welded rims that are compatible with the pole and to be sized and supplied by pole manufacturer.**

**All transmission lines are assumed running inside of pole shaft.**

**Results of Analysis:**

Refer to the attached Computer Summary sheets for detailed analysis results.

**Structure:**

The existing monopole is structurally capable of supporting the existing and proposed antennas. The maximum structure usage is: 92.4%.

**Foundation:**

Pole Reactions	Original Design Reactions	Current Analysis Reactions	% Of Design
Moment (ft-kips)	2,979.00	2,808.01	94.3
Shear (kips)	31.00	28.18	90.9

The analysis reactions are less than the design reactions therefore no foundation modifications are required.

**Review and Recommendations:**

Based on the analysis results, the existing structure meets the requirements per the TIA/EIA-222 Rev F standards for a basic wind speed of 85 mph and 1/2" radial ice with reduced wind speed. This wind speed is equivalent to a 105 mph 3-second gust.

6 July 2006

Honorable Cheryl Morris  
First Selectwoman, Town of Branford  
239 N. Main Street  
Branford, CT 06405

**RE: Notice of Exempt Modification – Existing Cingular  
Telecommunications Tower Facility at 150 North Main Street,  
Branford, Connecticut**

Dear Ms. Morris:

New Cingular Wireless PCS, LLC (“Cingular”) proposes to remove and replace telecommunications antennas and associated equipment located on an existing tower at the above-referenced location. The facility is now controlled and operated by Cingular whose corporate office is located at 500 Enterprise Drive, Rocky Hill, CT 06067.

**Proposed Modifications**

Cingular proposes to remove the existing antennas and replace them with a total of six (6) new antennas, located at an existing centerline height of approximately 110’ above ground level. Cingular will keep nine (9) of the existing 1 ¼” coaxial cables and three (3) more of the same dimension. It proposes to remove the existing tower mounted amplifiers and replace them with twelve (12) new units, located at the same height as the antennas.

In summary, the final antenna configuration at 150 North Main Street will include:

- 6 antennas,
- 12 coaxial cables, and
- 12 tower mounted amplifiers.

A structural evaluation has demonstrated that the tower will be structurally capable of supporting the proposed Cingular telecommunications equipment once the proposed modifications are complete.

*James Nelson Kise, AIA / AICP / PP*

*James Bennett Straw, AIA*

*Harvey D. Kolodner, MBA*

*John R. Gibbons, AIA / AICP*

*Philip E. Scott, RA*

*Suzanna Barucco*

*LaVern Browne*

*Katherine E. Cowing, LEED*

*Johette Davies*

*Petar D. Glumac, Ph.D.*

*Douglas S. Heckrotte, RA / LEED*

*Jody Holton, AICP*

*Marian Maxfield Hull, AICP / PP*

---

**Kise Straw & Kolodner Inc.**

123 South Broad St.

Suite 1270

Philadelphia, PA 19109

(215) 790-1050 FAX (215) 790-0215

www.ksk1.com

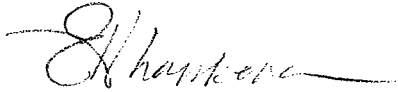
**Statutory Considerations**

The proposed work will not affect the height of the existing structure, nor will it alter the existing property boundaries. Furthermore, the proposed work will not increase noise levels at the facility's site boundary by six (6) decibels or more. Operation of additional antennas will not increase the radio frequency electromagnetic radiation power density, measured at the tower base, to or above the standard adopted by the State of Connecticut and the Federal Communications Commission.

A Notice of Exempt Modification has been filed with the Connecticut Siting Council (CSC) as required by the Regulations of Connecticut State Agencies (RCSA), Section 16-50j-73. Please accept this letter as notification to the Town of Branford under Section 16-50j-73 that the proposed work constitutes an exempt modification pursuant to RCSA Section 16-50j-72(b)(2).

Should you have any questions or require additional information about the plans or the CSC's procedures, please do not hesitate to contact me (215.790.1050 ext. 138) or Mr. Derek Phelps, Executive Director, Connecticut Siting Council (860.827.2935).

Sincerely,



Elizabeth H. Lankenau, AICP  
Planner

**23 Wayne Road, Wallingford, CT**

---

**Summary Sheet  
Project Location Map  
Site Plan and Elevation  
Structural Analysis  
Elected Official Letter**

**CINGULAR WIRELESS**  
**Proposed Modifications**

---

**Site Address:** 23 Wayne Road, Wallingford, CT; *Project Location Map attached*

**Coordinates:** Lat: 41' 27' 45"; Long: 72' 50' 33"

**Site Owner:** Stephen B. Tripp

**Type of Existing Facility:** 80' lattice tower and an equipment shelter

**Antenna Configuration:** Center line – 78' above ground level: remove existing antennas and replace with three (3) Powerwave 7770 units; *specification attached*  
Center line – 80' above ground level: remove existing antennas, stand off arms, and three (3) coaxial cables  
Center line – 87' above ground level: remove existing antennas, flush mounts, and six (6) coaxial cables

**TMA Configuration:** Remove existing units and replace with six (6) new LGP 214nn units; *specification attached*

**Coaxial Cables:** Existing six (6) 7/8" coaxial cables to remain

**Power Density:**

As the table demonstrates, the cumulative worst-case exposure would be approximately 75.32% of the ANSI/IEEE standard, as calculated for mixed frequency sites. Total power density levels resulting from Cingular's use of the facility would be within applicable standards.

Site # 2168								
Carrier	Antenna Height (ft)	Freq. (MHz) For Limit	# of Channels	W ERP/Channel (ref 1/2-w dipole)	W EIRP/Sector	Power Density ( $\mu\text{W}/\text{cm}^2$ )	FCC Limit ( $\mu\text{W}/\text{cm}^2$ )	Percent of Limit (%)
Cingular UMTS	78	1935.0	1	500.0	820.0	29.6	1000	2.96%
AT&T	87	1900.0	16	250.0	6560.0	190.1	1000	19.01%
Cingular 800	78	880.0	20	250.0	8200.0	295.6	587	50.38%
Pagenet	55	900.0	1	150.0	246.0	17.8	600	2.97%
<b>TOTAL</b>								<b>75.32%</b>

**Structural Analysis:** *Structural Analysis attached.*






23 Wayne Road  
Wallingford, CT

Project Area Location

0 900 1800

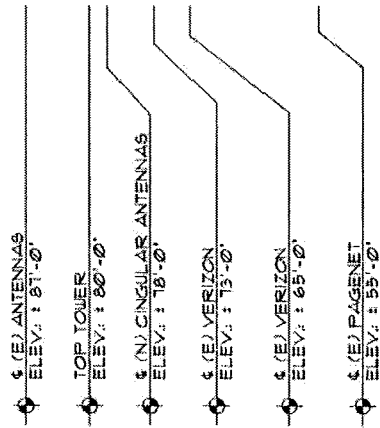
scale in feet



REMOVE (E) (3) ANTENNAS,  
FLUSH MOUNTS AND (6) (E)  
COAX CABLES

REMOVE (E) (6) ANTENNAS,  
(E) ANTENNA STAND OFF  
ARMS AND (3) (E) COAX  
CABLES

INSTALL (3) NEW ANTENNAS  
ON EXISTING FLUSH MOUNT  
USE (E) (6) COAX CABLES  
ANTENNA CONTRACTOR TO  
INSTALL (6) NEW TMA UNITS.



**FINAL ANTENNA CONFIGURATION**  
**(3) DIRECTIONAL ANTENNAS POWERWAVE # 7770**  
**(6) 1-5/8" DIA. COAX CABLES**  
**(6) TMAS**

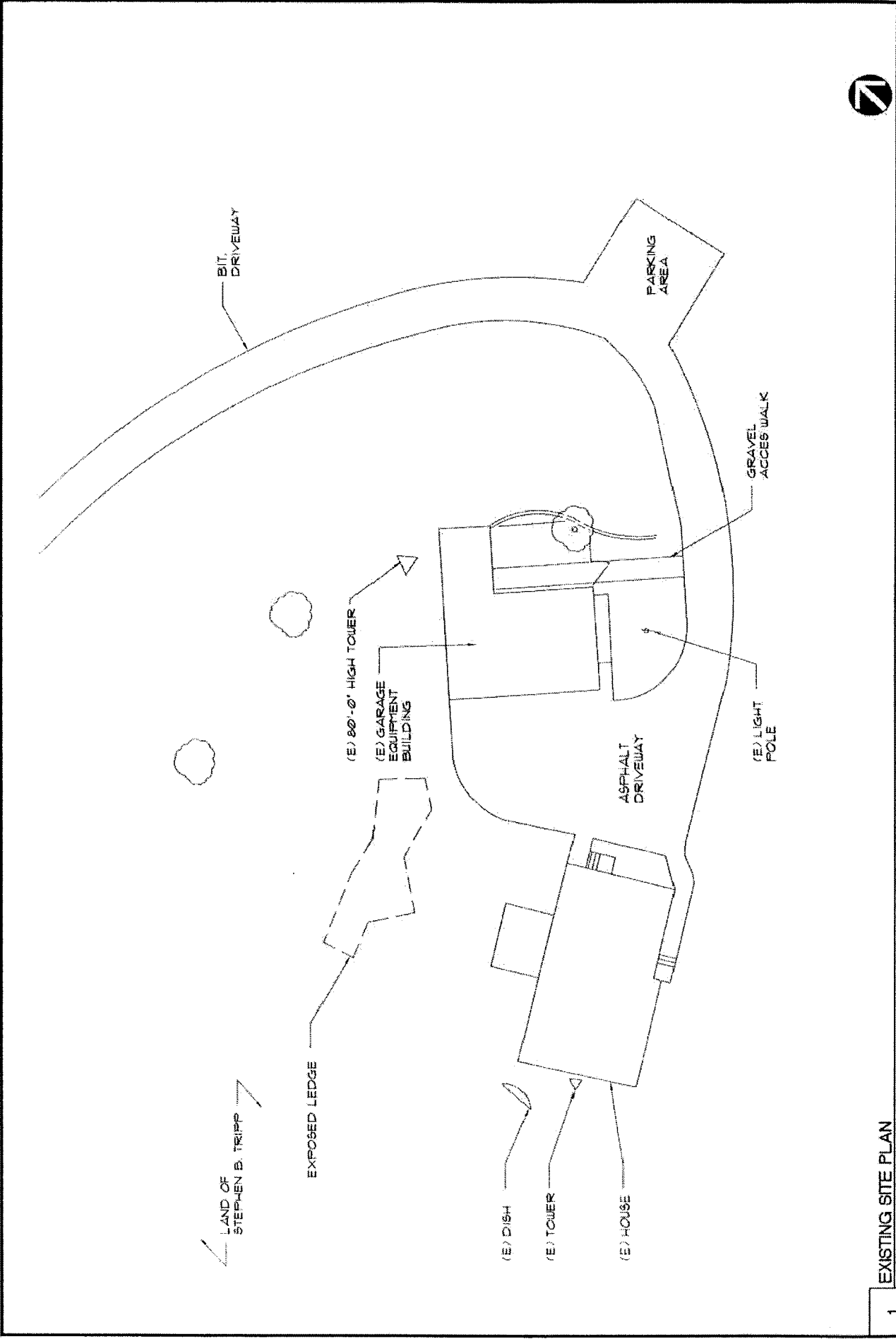
1  
TOWER ELEVATION  
1'-20'-0"

**cingular** WIRELESS

**ERICSSON**

**CH2M HILL**  
869 WEST BRUN MAWR  
CHICAGO, ILLINOIS 60631

CINGULAR WIRELESS	
2 07-05-06	ISSUED FOR SUBMITTAL
1 05-08-06	ISSUED FOR USC REVIEW
NO. DATE	REVISION DESCRIPTION
SCALE: 1"=20'-0"	CHECKED BY: JZ
	DRAWN BY: RR
	BY: CHK/APP'D
	DRAWING NUMBER
	2188
	0
	REV
	SITE NAME: GULFORD
	23 WAINE ROAD WALLINGFORD, CT. 06492
	SITE # : 2188



1 EXISTING SITE PLAN  
NTS.

				CINGULAR WIRELESS	
				SITE # 2188 SITE NAME CLUBFORD 23 WAYNE ROAD WALLINGFORD, CT 06482	DRAWING NUMBER 2188
NO. DATE REVISION DESCRIPTION		CHECKED BY: JZ DRAWN BY: RR		SCALE: N.T.S.	
2	27-05-08	ISSUED FOR SUBMITTAL		FR	JZ
1	05-08-08	ISSUED FOR CSC REVIEW		RR	JZ

---

# DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF EXISTING 80' SELF SUPPORTING LATTICE TOWER FOR NEW ANTENNA ARRANGEMENT

Cingular Site #2168  
23 Wayne Road  
Wallingford, Connecticut

---

*prepared for*

**CH2MHILL**

8619 West Bryn Mawr, Suite 615  
Chicago, IL 60631



Cingular Wireless  
580 Main Street  
Bolton, MA 01740

*prepared by*



URS CORPORATION  
500 ENTERPRISE DR, SUITE 3B  
ROCKY HILL, CT 06067  
TEL. 860-529-8882

36922928.00008  
CH2-018

Revision 1 June 27, 2006

## **TABLE OF CONTENTS**

- 1. EXECUTIVE SUMMARY**
- 2. INTRODUCTION**
- 3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS**
- 4. FINDINGS AND EVALUATION**
- 5. CONCLUSIONS AND RECOMMENDATIONS**
- 6. DRAWINGS AND DATA**
  - **RISA TOWER INPUT / OUTPUT SUMMARY**
  - **RISA TOWER FEEDLINE DISTRIBUTION**
  - **RISA TOWER FEEDLINE PLAN**
  - **RISA TOWER DETAILED OUTPUT**
  - **ANCHOR BOLT ANALYSIS**
  - **FOUNDATION ANALYSIS**

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 80' self supporting lattice tower located at 23 Wayne Road in Wallingford, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for wind velocity of 85 mph (fastest mile) and 74 mph (fastest mile) concurrent with 1/2" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report. The proposed Cingular modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
<b>Remove:</b> (3) existing antennas (6) existing 1 1/4" coax cables and existing pipe mast	Cingular Blue (Existing)	@ 87'
<b>Remove:</b> (6) existing antennas (3) existing 7/8" coax cables and (3) Standoff Mounts		
<b>Install:</b> (3) Powerwave 7770.00 antennas and (6) Powerwave LGP21401 TMA's on the existing (3) Flush Mounts with (6) existing 7/8" coax cables.	Cingular (Proposed)	@ 78'

The results of the analysis indicate that the tower structure, anchor bolts, and foundation are in compliance with the proposed loading conditions. **The tower is considered structurally adequate with the wind load classification specified above and all the existing and proposed antenna loading.**

The installation of (6) Powerwave 7770.00 antennas and (12) Powerwave LGP21401 TMA's on the existing (3) Flush Mounts and the existing (3) Standoff Mounts with (9) existing 7/8" coax cables and (3) new 7/8" coax cables was also investigated. The tower was found to be adequate; however, the foundation did not comply with Section 3108.4.2 of the 2005 Connecticut State Building Code.

This analysis is based on:

- 1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
- 2) Tower geometry and structural member sizes taken from a tower report prepared by Pirod, Inc, job number A-111743, dated September 14, 1995.
- 3) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower and connections. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

URS Corporation

*Richard A. Sambor*  
 Richard A. Sambor, P.E.  
 Manager Facilities Design



RAS/jek

cc: AA, DR, IA, CF/Book – URS

## 2. INTRODUCTION

The subject tower is located at 23 Wayne Road in Wallingford, Connecticut. The structure is a 80' self supporting lattice tower designed and manufactured Pirod, Inc.

The inventory is summarized in the table below:

<i>Antenna Type</i>	<i>Carrier</i>	<i>Mount</i>	<i>Antenna Centerline Elevation</i>	<i>Cable</i>
(3) Powerwave 7770.00 antennas and (6) Powerwave LGP21401 TMA's	Cingular (proposed)	(3) Flush Mounts	78'	(6) existing 7/8" coax cables
(1) 4' Dish	Verizon (existing)	Dish Mount	73'	(1) EW52 coax cables
(1) 7' omni antenna and (1) 4' omni antenna	(existing)	Standoff Mount	65'	(4) 7/8" coax cables
(1) 8' omni antenna	(existing)	Standoff Mount	65'	(1) 7/8" coax cable
(1) 4' Dish	Verizon (existing)	Dish Mount	65'	(1) EW52 coax cables
(2) PG1N0F-0091-011 omni antennas and (1) PG1D0F-0091-011 omni antenna	PageNet (existing)	(3) Standoff Mounts	55'	(3) 7/8" coax cables
(1) PD320 antenna	(existing)	Leg Mount	48'	(1) 7/8" coax cable

\*Omni/Whip antenna elevations are at the base of the antenna.

This structural analysis of the communications tower was performed by URS Corporation (URS) for CH2Mhill/Cingular Wireless. The purpose of this analysis was to investigate the structural integrity of the existing tower with its existing and proposed antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

### **3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS**

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F—Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction—Allowable Stress Design (ASD).

The analysis was conducted using RISA Tower 4.5. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 85 mph (fastest mile) Wind Load (without ice) + Tower Dead Load  
Load Condition 2 = 74 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Please note that wind pressure is a function of velocity squared. Under Load Condition 2, a 25 percent reduction in wind pressure is allowed by code to account for the unlikelihood of the full wind pressure and ice load occurring at the same time. The same results may be achieved by utilizing a lower wind pressure without taking the 25 percent reduction, as shown above.

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

### **4. FINDINGS AND EVALUATION**

Stresses on the tower structure were evaluated to compare with allowable stresses in accordance with AISC. The calculated stresses under the proposed loading were within the allowable stresses. Detailed analysis and calculations for the proposed load condition are provided in section 6 of this report. The anchor bolts and foundation were also found to be within allowable limits.



## 5. CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis indicate that the tower structure, anchor bolts, and foundation are in compliance with the proposed loading conditions. **The tower is structurally adequate under the wind load classification specified above and the proposed antenna loadings.**

The installation of (6) Powerwave 7770.00 antennas and (12) Powerwave LGP21401 TMA's on the existing (3) Flush Mounts and the existing (3) Standoff Mounts with (9) existing 7/8" coax cables and (3) new 7/8" coax cables was also investigated. The tower was found to be adequate; however, the foundation did not comply with Section 3108.4.2 of the 2005 Connecticut State Building Code.

### **Limitations/Assumptions:**

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations were properly constructed to support original design loads as specified in the original design documents.
10. All coaxial cable is installed as specified in Section 6 of this report.

URS is not responsible for any modifications completed prior to or hereafter in which URS is not or was not directly involved. Modifications include but are not limited to:

- A. Adding antennas
- B. Removing/replacing antennas
- C. Adding coaxial cables

URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact URS. URS disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

### **Ongoing and Periodic Inspection and Maintenance:**

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

22 June 2006

Honorable William W. Dickinson, Jr.  
Mayor, Town of Wallingford  
45 S. Main Street  
Wallingford, CT 06492

**RE: Notice of Exempt Modification – Existing Cingular  
Telecommunications Tower Facility at 23 Wayne Road,  
Wallingford, Connecticut**

Dear Mr. Dickinson:

New Cingular Wireless PCS, LLC (“Cingular”) proposes to remove and replace telecommunications antennas and associated equipment located on an existing tower at the above-referenced location. The facility is now controlled and operated by Cingular whose corporate office is located at 500 Enterprise Drive, Rocky Hill, CT 06067.

**Proposed Modifications**

Cingular proposes to remove the existing antennas and replace them with a total of three (3) new antennas, located at an existing centerline height of approximately 78’ above ground level. Cingular will keep the existing coaxial cables and remove the existing tower mounted amplifiers and replace them with six (6) new units, located at the same height as the antennas.

In summary, the final antenna configuration at 23 Wayne Road will include:

- 6 antennas,
- 12 coaxial cables, and
- 12 tower mounted amplifiers.

A structural evaluation has demonstrated that the tower will be structurally capable of supporting the proposed Cingular telecommunications equipment once the proposed modifications are complete.

*James Nelson Kise, AIA/AICP/PP*

*James Bennett Straw, AIA*

*Harvey D. Kolodner, MBA*

*John R. Gibbons, AIA/AICP*

*Philip E. Scott, RA*

*Suzanna Barucco*

*LaVern Browne*

*Katherine E. Cowing, LEED*

*Johnette Davies*

*Petar D. Glumac, Ph.D.*

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*Marian Maxfield Hull, AICP/PP*

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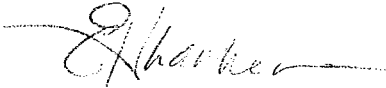
**Statutory Considerations**

The proposed work will not affect the height of the existing structure, nor will it alter the existing property boundaries. Furthermore, the proposed work will not increase noise levels at the facility's site boundary by six (6) decibels or more. Operation of additional antennas will not increase the radio frequency electromagnetic radiation power density, measured at the tower base, to or above the standard adopted by the State of Connecticut and the Federal Communications Commission.

A Notice of Exempt Modification has been filed with the Connecticut Siting Council (CSC) as required by the Regulations of Connecticut State Agencies (RCSA), Section 16-50j-73. Please accept this letter as notification to the Town of Wallingford under Section 16-50j-73 that the proposed work constitutes an exempt modification pursuant to RCSA Section 16-50j-72(b)(2).

Should you have any questions or require additional information about the plans or the CSC's procedures, please do not hesitate to contact me (215.790.1050 ext. 138) or Mr. Derek Phelps, Executive Director, Connecticut Siting Council (860.827.2935).

Sincerely,



Elizabeth H. Lankenau, AICP  
Planner

## **Specifications for Proposed New Equipment**

---

**Ericsson RBS Equipment Cabinet  
Powerwave 7770 Antenna  
Powerwave LGP 214nn Tower Mounted Amplifier**

# 3 Dimensions

This section describes the physical characteristics of the RBS: dimensions, weight, and color.

Table 1 The RBS Dimensions

Unit	Dimensions (mm)
Height	1626
Width	1300
Depth	710
Depth including door	926

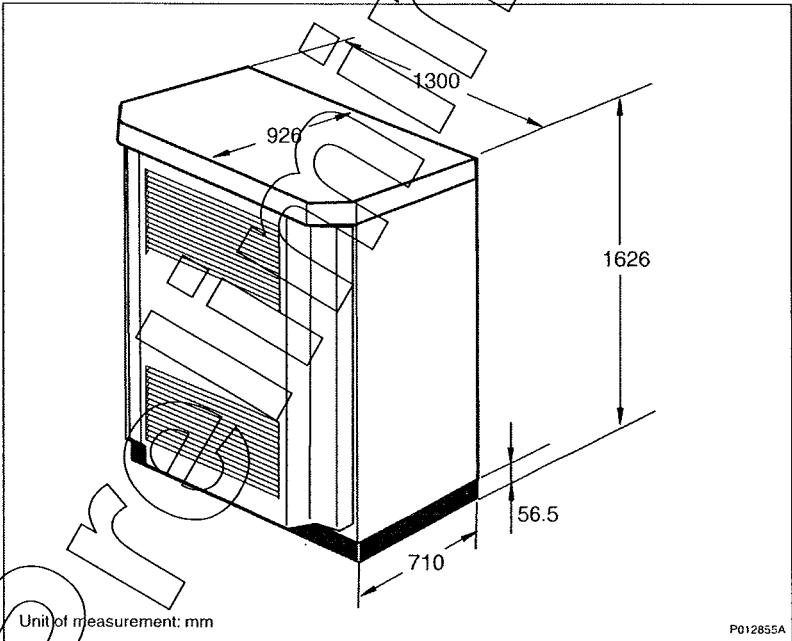


Figure 2 RBS 3106 Dimensions

The RBS weight is shown in the table below.

Table 2 The RBS Weight

Unit	Weight (kg)
RBS fully equipped excluding batteries	560
RBS fully equipped including batteries	850
RBS fully equipped including batteries and future expansion of hardware (not yet available)	875
Installation frame	12

The RBS color is shown in the table below.

Table 3 The RBS Color

Color	Color Standard
Grey	RAL 7035
Green	NCS 8010-G 10 Y

Preliminary

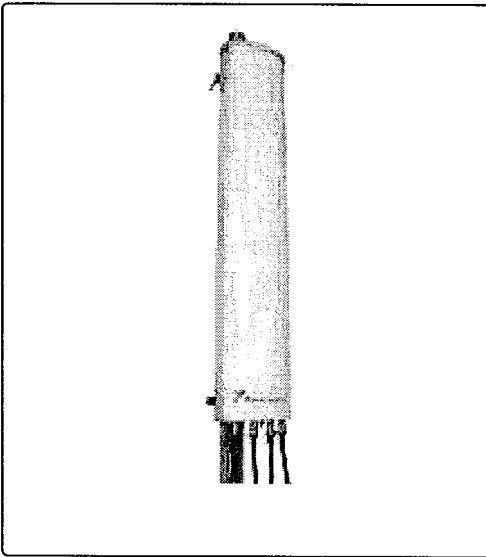
# Dual Broadband Antenna

90° 1.4 m MET Antenna

806-960/1710-2170 MHz

Part Number: 7770.00	Horizontal Beamwidth: 90° Gain: 13.5/16 dBi	Electrical Downtilt: Adjustable Connector Type: 7/16 female
-------------------------	------------------------------------------------	----------------------------------------------------------------

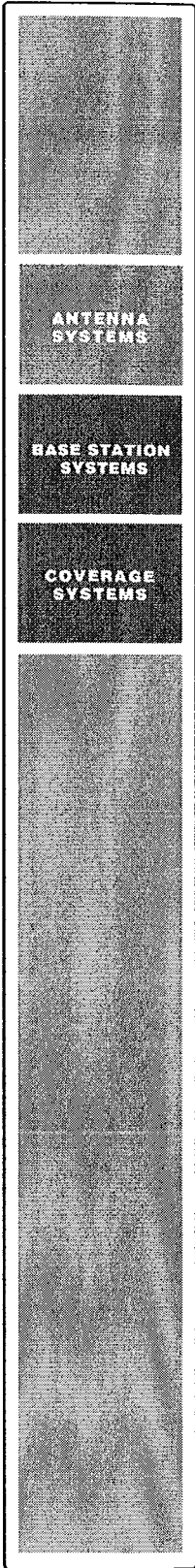
The Powerwave dual band dual polarized broadband antenna has individual adjustable electrical downtilt per band (upgradeable to Remote Electrical Tilt (RET)). Four connector ports allow separate tilts on each frequency band and ensure the use of diversity concepts. The phase shifter technology, based on a patented sliding dielectric, minimizes intermodulation distortion and maximizes efficiency. The slant +/- 45° dual polarization system provides the independent fading signals needed for achieving top-quality coverage via diversity concepts. The Powerwave Broadband antenna design is based on a patented stacked aperture-coupled patch technology, which provides high isolation performance and a wide VSWR bandwidth. The antennas have superior radiation patterns due to a unique reflector design which provides a very small variation of the -3dB horizontal beam width over the frequency band as well as a high front-to-back ratio.



**Key Benefits**

- Excellent broad- and multi-band capabilities
- Polarization purity makes good diversity gain
- Excellent pattern performance and high gain over frequency
- High passive intermodulation performance
- Light, slim and robust design

## Preliminary



806-960/1710-2170 MHz

# Dual Broadband Antenna

## Electrical Specifications (Preliminary)

Frequency band (MHz)	806-960	1710-2170
Gain, $\pm 0.5$ dB (dBi)	13.5	16.0
Polarization	Dual linear $\pm 45^\circ$	
Nominal Impedance (Ohm)	50	
VSWR	1.5:1	1.5:1
Isolation between inputs (dB)	30	30
Isolation between inputs (dB)	40	
Inter band isolation (dB)	40	
Horizontal -3 dB beamwidth	$85 \pm 5^\circ$	$85 \pm 5^\circ$
Tracking, Horizontal plane, $\pm 60^\circ$ (dB)	$< 2.0$	
Tracking, Horizontal plane, $\pm 60^\circ$ (dB)	$< 2.0$	
Electrical downtilt range (adjustable)	$0^\circ$ to $10^\circ$	$0^\circ$ to $8^\circ$
Vertical -3 dB beamwidth	$14.3 \pm 2.0^\circ$	$6.6 \pm 1^\circ$
Sidelobe suppression, Vertical 1 st upper (dB)	$> 17, 16, 15$ $x=0, 5, 10^\circ$ MET	$> 17, 16, 15$ $x=0, 4, 8^\circ$ MET
Vertical beam squint	$< 0.8^\circ$	$< 0.5^\circ$
First null-fill (dB)	$< -25$	$< -25$
Front-to-back ratio (dB)	$> 25$	$> 27$
Front-to-back ratio, total power (dB)	$> 20$	$> 23$
IM3, 2Tx@43dBm (dBc)	$< -153$	
IM3, 2Tx@43dBm (dBc)		$< -153$
IM7, 2Tx@43dBm (dBc)		$< -160$
Power Handling, Average per input (W)	400	250
Power Handling, Average total (W)	800	500

All specifications are subject to change without notice.  
Contact your Powerwave representative for complete performance data.

## Mechanical Specifications

Connector Type	4 x 7/16 DIN female
Connector Position	Bottom
Dimensions, HxWxD	1408mm x 280mm x 125mm (55"x11"x5")
Weight Including Brackets	15.8 kg (35 lbs)
Wind Load, Frontal, 42m/s Cd=1	435N (98 lbf)
Survival Wind Speed (m/s)	70 (156mph)
Lightning Protection	DC grounded
Radome Material	GRP
Radome Color	Light Gray
Mounting	Pre-mounted Standard Brackets
Packing Size	1550mm x 355mm x 255mm (61"x14"x10")

Corporate Headquarters  
Powerwave Technologies, Inc.  
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Santa Ana, CA 92705 USA  
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Fax: 714-466-5800  
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Fax: +852 2575 4860



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COVERAGE AND CAPABILITY

TECHNOLOGY LEADERSHIP

GLOBAL PARTNER

INTEGRATED SOLUTIONS

QUALITY AND RELIABILITY



# Tower Mounted Amplifier

Dual Band 1900 MHz with 850 MHz Bypass

1900/850 MHz

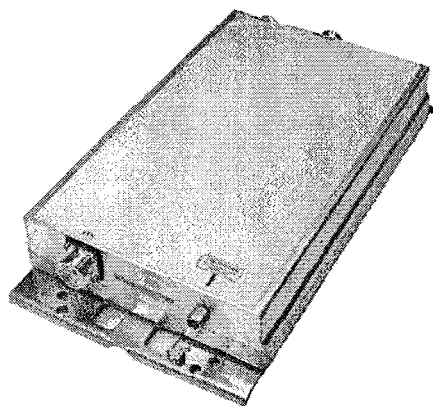
Part Number:  
LGP 214nn

Up-link: 1850-1910 MHz  
Down-link: 1930-1990 MHz  
Bypass: 824-894 MHz

Gain: 12 dB  
Noise Figure: < 1.7 dB

The Powerwave® TMA-DD 1900/850 is a dual band Tower Mounted Amplifier (TMA) to be installed near the antenna. Deployed in an AMPS, GSM, GPRS, EDGE and CDMA network it will increase capacity and coverage as well as extend the battery life time for the handsets. The TMA System will provide enhanced coverage and improved up-link signal quality. Appropriate for new rollouts by optimizing coverage with a reduced number of BTSs or as an upgrade to existing BTSs for enhancing the existing coverage.

Extended band TMA facilitates simplified logistics, especially when the frequency bands are scattered. The unit comprises of high Q band-pass filters, dual balanced low noise amplifiers with circuits for active bias, supervision, alarms and lightning protection circuit. The Powerwave patented design with all active components integrated within the filter body provides an extremely reliable, compact and lightweight TMA solution. The vented enclosure design is employed to prevent the effect of condensation, thereby guaranteeing long, reliable, maintenance-free service in all environmental conditions. These TMAs offer an easy to install, maintenance free, cost effective solution for coverage enhancement and increased quality in mobile communication networks.



## Key Benefits:

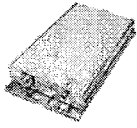
- 850 MHz Bypass
- Improved Network Quality
- Increased Coverage
- State of the Art Performance
- Excellent Power Handling
- Low Tx Loss
- Exceptional Reliability

ANTENNA  
SYSTEMS

BASE STATION  
SYSTEMS

COVERAGE  
SYSTEMS

# Tower Mounted Amplifier



1900/850 MHz

## Technical Specifications

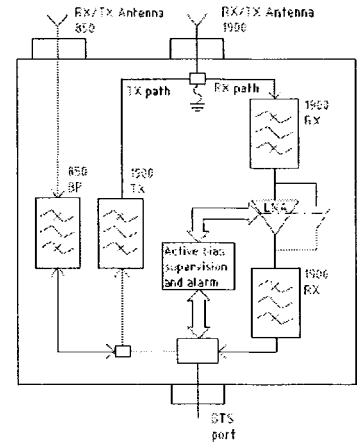
Product Number	LGP214nn	
850 MHz	Bypass (MHz)	824-894
	Return loss* (dB)	> 20
	Insertion loss* (dB)	< 0.3
1900 MHz		
Up-link	Frequency range, full band (60 MHz)	1850-1910
	Nominal gain (dB)	12
	Return loss* (dB)	> 20
	Noise figure* (dB)	< 1.7
	Output 3rd order Intercept Point* (dBm)	> +23
Down-link	Frequency range, full band (60 MHz)	1930-1990
	Insertion loss* (dB)	< 0.6
	Return loss* (dB)	> 20
Intermodulation	2 Tx@x43 dBm (dBC)	<-158
Alarm Functionality	Two levels, individually supervised LNAs	
Power Consumption	@12 VDC	1.2 W

\* Typical

All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

## Mechanical Specifications

Size, W x H x D (without mounting plate)	235 x 366 x 66 mm (9.2 x 14.4 x 2.6 in)
Weight	6.4 kg (14.1 lbs)
Color	Off white (NCS 1502-R)
Housing	Aluminum
RF-connectors	DIN 7/16 female.
Mounting kit	Mounting kit for pole and wall is included
Temperature range	-40 °C to +65 °C (-40 °F to +149 °F)
MTBF	>1 million hours
Safety	UL 60 950
Ingress protection, IP 65	EN 60 529
Environmental	ETS 300 019
EMC	FCC Part 15



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## **Specifications for Existing Antennas**

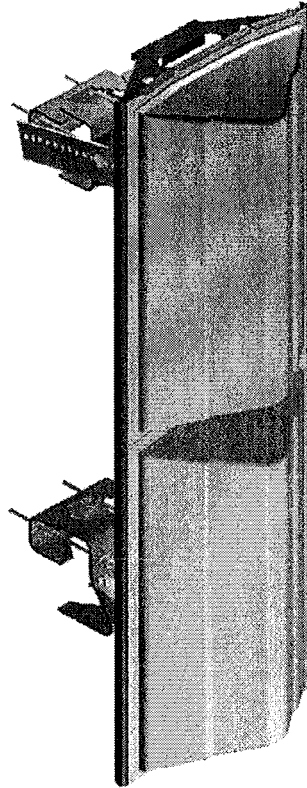
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**DUO4-8670**



*Directing our energies for you.*

## Dual Band Antenna DUO1417-8686



86 & 86 Azimuth Beams  
15 & 7 Elevation Beams  
14.0 & 16.0 dBi Gain

- PCS & Cellular in One Package
- Independent Control of Electrical Beam Downtilt
- High Power Handling Capability
- Anti-Corrosion Design for Superb IM Performance
- Available With Optional Internal Dual Band Combiner



Directing our energies for you.

# Dual Band Antenna DUO1417- 8686

## Electrical Specifications

Frequency Range  
Gain  
Electrical Downtilt Options  
VSWR  
VSWR (with -i option)  
Front-to-Back at Horizon  
Upper Side Lobe Suppression  
Elevation Beam (3-dB Points)  
Azimuth Beam (3-dB Points)  
Polarization  
Impedance  
Power Input Rating  
Intermodulation Specification

## Cellular

806-900 MHz  
14.0 dBi  
0, 2, 4 or 6 Degrees  
1.35:1 Maximum  
1.40:1 Maximum  
> 25 dB  
< -17 dB  
15 Degrees  
86 Degrees  
Vertical  
50 Ohms  
500 CW  
<-110dBm at 2x10W

## PCS

1850-1990 MHz  
16.0 dBi  
0 or 4 Degrees  
1.35:1 Maximum  
1.40:1 Maximum  
> 30 dB  
< -18 dB  
7 Degrees  
86 Degrees  
Vertical  
50 Ohms  
200 CW  
<-110dBm at 2x10W

## Mechanical Specifications

Input Connectors (female)  
Antenna Dimensions  
Antenna Weight  
Antenna Weight (w/opt. 'i')  
Bracket Weight  
Lightning Protection  
RF Distribution

Two Back Mounted 7/16 DIN (Silver Finish)  
48.4 x 14 x 9 Inches (10.7" deep with option 'i')  
20.3 lbs  
32.0 lbs  
10.5 lbs  
Direct Ground  
Cellular: Silver Plated Brass  
PCS: Printed Microstrip Substrate  
Ultra High-Strength Luran  
UV Stabilized, ASTM D1925  
ASTM D570, 0.45%  
MIL-STD-810E  
150 mph  
124 lbs  
2.54 sq-ft. (c=2)  
Fits 2.5 to 3 Inch Schedule 40 Pipe  
0-12 Degrees in 1 Degree Increments  
Hot Dip Galvanized Steel/Stainless Steel

Radome  
Weatherability  
Radome Water Absorption  
Environmental  
Wind Survival  
Front Wind Load at 100 mph  
Front Flat Plate Equivalent  
Mounting Brackets  
Mechanical Downtilt Range  
Clamps/Bolts

## Ordering Information

Model  
DUO1417- 8686-xy  
  
DUO1417-8686-xyi

Options  
x=Electrical Downtilt at 800 MHz in Degrees (0, 2, 4 or 6)  
y=Electrical Downtilt at 1900 MHz in Degrees (0 or 4)  
i=Dual Band Combiner included as an internal device