ROBINSON & COLE LLP

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

EM-VER-057-021220

December 20, 2002

***Via Hand Delivery***

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



**Re: Notice of Exempt Modification**
**Bruce Golf Course**
**1323 King Street**
**Greenwich, Connecticut**

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to modify its antenna configuration on the existing Greenwich Police Department tower at the Bruce Memorial Golf Course off King Street in Greenwich, Connecticut. Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for activity that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j 72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Greenwich First Selectman, Richard Bergstresser.

The existing tower off King Street is currently shared by Municipal Emergency Service's and Cellco. Cellco's facility consists of eight (8) antennas, (six (6) panel antennas attached to the tower at the 98-foot level, one (1) whip antenna at the 100-foot level, one (1) whip antenna at the 96-foot level) and a single-story equipment shelter near the base of the tower. To improve system performance, Cellco now intends to replace and reconfigure its six (6) panel-type antennas at the 98-foot level on the tower (see attached project plans). There are no changes proposed to the whip antennas or the ground mounted structures or equipment.

The planned modifications to the King Street facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the overall height of the existing tower. Cellco's replacement antennas will be mounted at the 98-foot level on the 100-foot tower.

2. The modifications to Cellco's antenna configuration does not effect any ground level equipment or structure and therefore will not require an extension of facility boundaries.

3. The proposed antenna modification will not increase the noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not change radio frequency (RF) power density levels at the facility. Updated power density calculations are therefore not provided.

Also attached is an engineer's certification that the tower can support Cellco's proposed modifications.

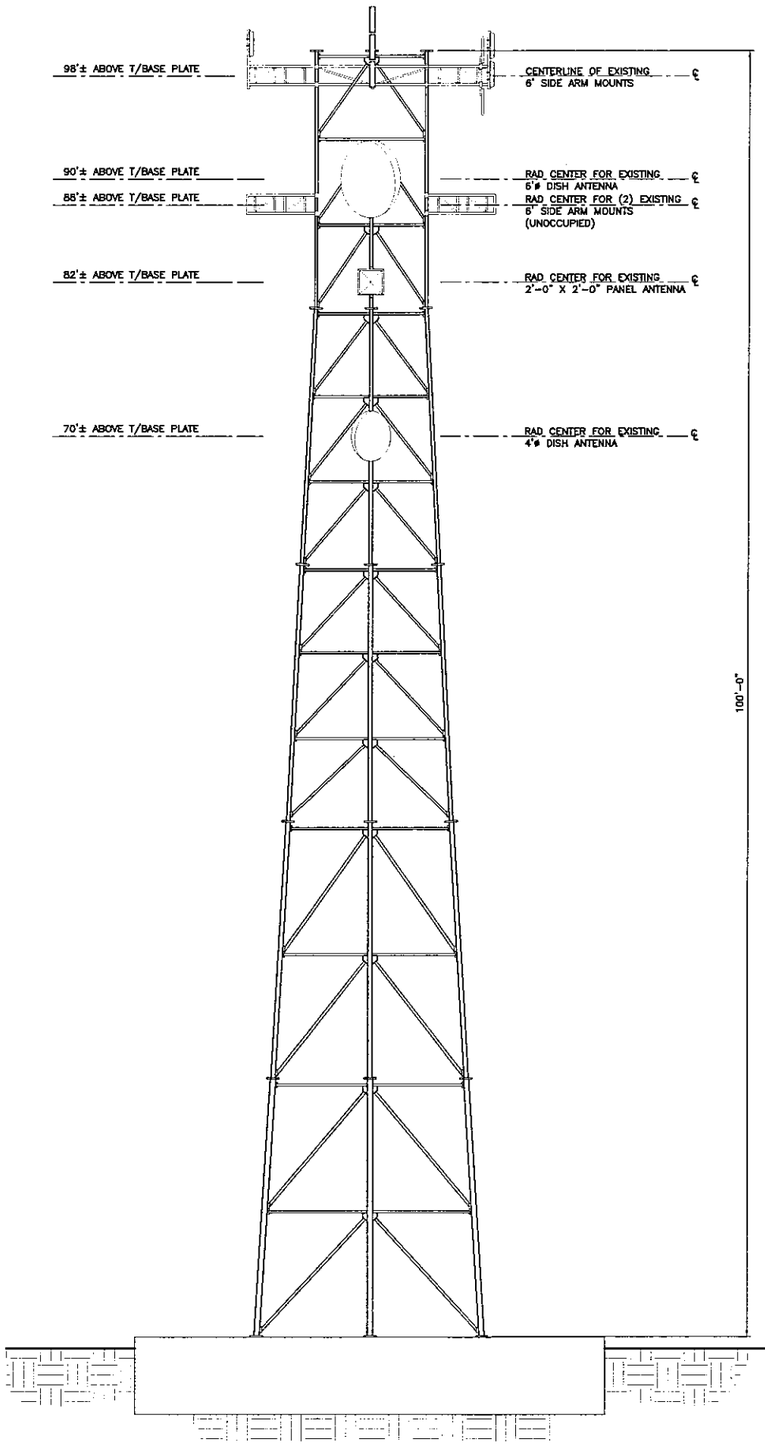
For the foregoing reasons, Cellco respectfully submits that the proposed modification of its antenna configuration at the Greenwich facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

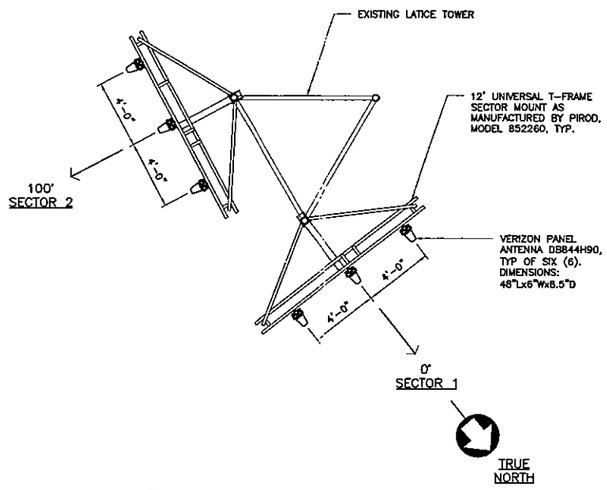
Kenneth C. Baldwin

KCB

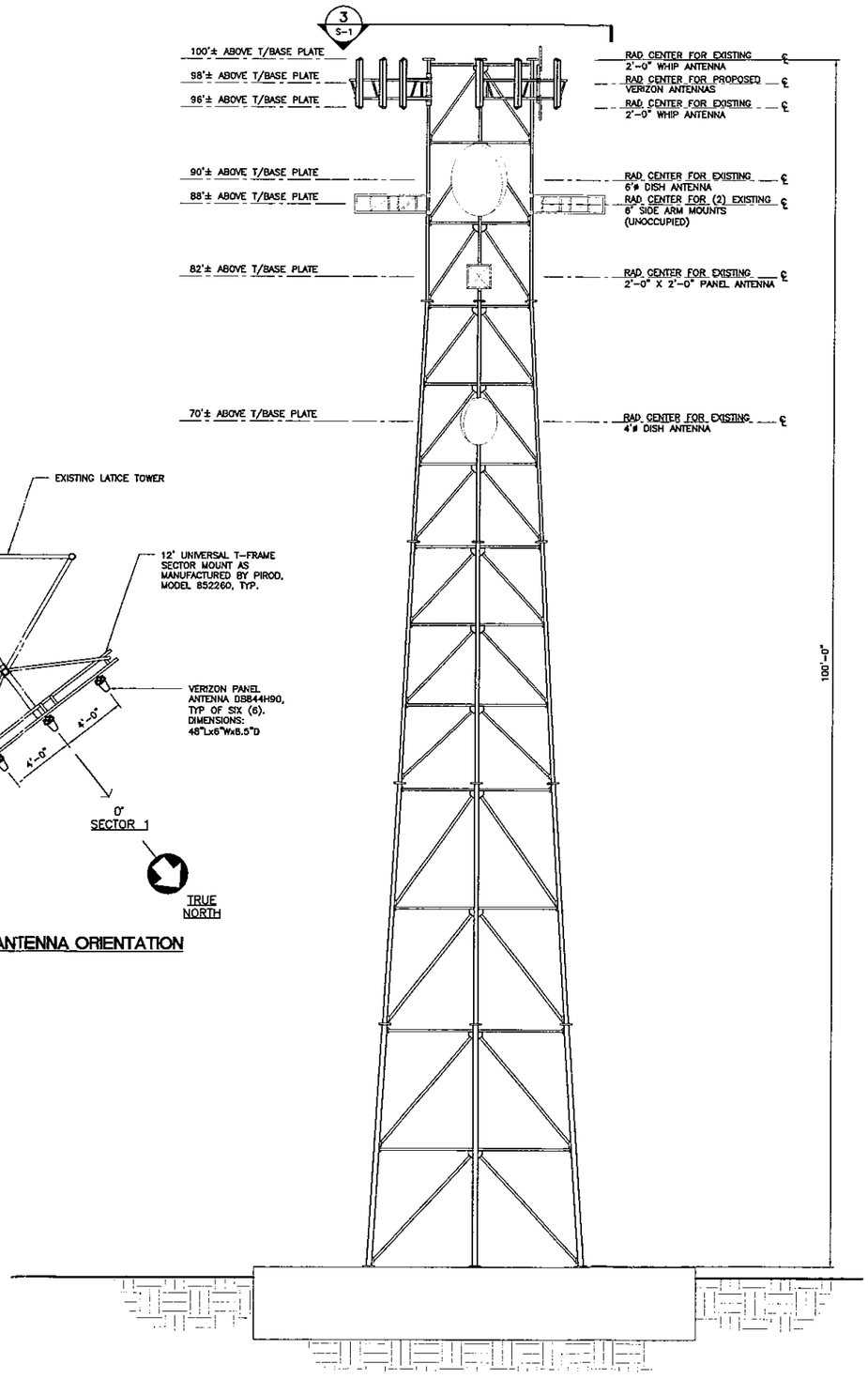
cc: Richard Bergstresser, Greenwich First Selectman
Sandy M. Carter




1 S-1 **EXISTING TOWER ELEVATION**
SCALE: 3/16" = 1'-0"




3 S-1 **SECTION - ANTENNA ORIENTATION**
NOT TO SCALE




2 S-1 **PROPOSED TOWER ELEVATION**
SCALE: 3/16" = 1'-0"

| REVISIONS | | |
|---|---|---|
| 00 | 11/18/02 | SITING COUNCIL |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Cellco Partnership
d.b.a. verizon wireless


Natcomm, LLC - Engineering Consultants
Natcomm, LLC
63-2 North Branford Road
Branford, Connecticut 06405
Tel. (203) 488-0580
Fax (203) 488-8587
Consulting Engineers - Project Management
Civil - Structural - Mechanical - Electrical


PROFESSIONAL ENGINEER SEAL

**BRUCE GOLF COURSE**

1323 KING STREET
GREENWICH, CT 06483

| | |
|---|---|
| PROJECT NO: | 02601 |
| DRAWN BY: | DMD |
| CHECKED BY: | AAJ |
| SCALE: | AS NOTED |
| DATE: | 11/18/02 |

ELEVATIONS AND ANTENNA ORIENTATIONS

**S-1**
DWG. 1 OF 1

F:\DATA\NATCOMM\Proj-Dir\02601\CD\02601CGS.dwg, S-1

# WALKER ENGINEERING, INC.

8451 DUNWOODY PLACE
NORTHRIDGE 400, BLDG. 8
DUNWOODY, GA 30350
(770) 641-7306 FAX (770) 587-2196

CIVIL • STRUCTURAL
N 33° 59' 13.6" W 84° 20' 26.8"


Mr. **Al Janeiro**
**Natcomm, LLC**
63-2 North Branford Road
Branford, CT 06405

12/11/02
**02601CS**
**Bruce Golf Course**

Sub: Structural Analysis of 100-ft Rohn SST
1300 King Street, Greenwich, CT

Dear Mr. Janeiro:

Walker Engineering has performed a Level-Two finite element, P-Δ structural re-analysis of the above subject tower in accordance with your Authorization for Services for the addition of the ***Verizon Wireless*** proposed antennas outlined below. This analysis consists of determining the forces on the tower caused by existing, proposed, and future loads. The existing, proposed, and future loads were provided by your office.

The subject tower is a 100-ft, three face, self-supporting tower, designed and manufactured by Rohn, Inc. in 1993. The tower manufacturer's drawings, Rohn, Inc. Eng. File No. 29307JC, dated 04/23/93, were provided by your office. The tower geometry, member sizes, and foundation design loads were obtained from these data and are assumed to be accurate. The tower has also been assumed to be in good condition and capable of supporting its original full design capacity.

Our analysis was performed in accordance with TIA/EIA-222-**F** for an 85 mph[1] base windload, and 75% of the base windload with ½" radial ice, as specified by Natcomm, LLC.

**Existing, future, and proposed loads consist of the following:**

**at 98 ft** ***Verizon (Proposed)***: ***Six proposed DB844H90*** panel antennas on two proposed T-Frame mounts (copy attached), fed by six proposed 1-5/8"Ø coax cables. ***Note:*** *The six existing panel antennas on the existing standoff mounts* ***shall*** *be removed and are not included in this analysis.*

[1] The minimum windspeed specified by EIA-222-F for Fairfield County, CT is 85 mph.

at 98 ft — Existing: One omni antenna (Rad Center = 100-ft) on an existing Verizon side arm mount, fed by one RG-6 coax cable.

at 98 ft — Existing: One inverted omni antenna (Rad Center = 96-ft) on an existing Verizon side arm mount, fed by one 7/8"Ø coax cable.

***Note:*** *The above existing omni antennas may require relocation to the proposed Verizon Wireless mounts.*

at 90 ft — Existing: One Andrew 6-ft HP dish antenna fed by one 7/8"Ø coax cable.

at 88 ft — Existing: Two empty side arm mounts.

at 82 ft — Existing: One 2'X2' panel antenna on a tower leg mount, fed by one RG-6 and one RG-59 coax cables.

at 70 ft — Existing: One Andrew 4-ft HP dish antenna fed by one EW90 waveguide line.

**Note:** The analysis ***assumes*** that the coax cables (existing, future, and proposed) are installed on the tower per the *Elevation and Cable Plan Drawing EL-1, Walker Engineering Job No. 0210-351, dated 10/09/02.* Additional waveguide ladders may be required. *Please notify the undersigned prior to altering the cable routing configuration or if the coax configuration is different than the following chart.* Placement of small cables for beacons, ground rods, etc. are not critical.

| | **Existing:** | **Proposed/Future:** |
|---|---|---|
| Face A: | 1ea 7/8"Ø to 98'<br>1ea RG-6 to 98'<br>1ea 7/8"Ø to 90'<br>1ea RG-6 to 82'<br>1ea RG-59 to 82'<br>1ea EW90 to 70' | 6ea 1-5/8"Ø to 98' **(Verizon)** |
| Face B: | None | None |
| Face C: | None | None |

**Tower Summary:**

This analysis shows that the subject tower **is adequate** to support the existing, future, and proposed loads.

A copy of the full analysis is enclosed. A summary of the controlling load cases is provided below:

| Tower Element | Elevation | CSI[2] |
|---|---|---|
| Legs | 0-ft to 100-ft | 0.37 |
| Bracing | 0-ft to 100-ft | 0.29 |

**Foundation Summary:**

The forces at the base of the tower are less than the original design loads. The existing tower foundation **is adequate** to support the existing, future, and proposed loads.

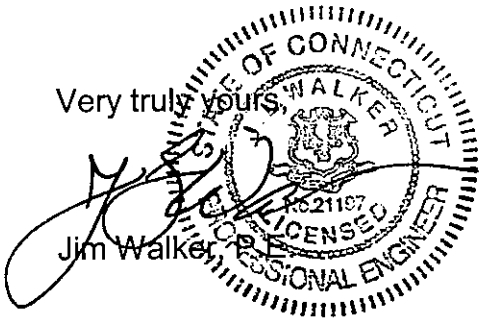
| Foundation Loads | Original[3] Design | Existing/ Proposed | % of Design |
|---|---|---|---|
| O.T. Moment (OTM) | 1,811.1 k-ft | 769.2 k-ft | 43 % |
| Max Compression/Leg | 133.0 k | 54.1 k | 41 % |
| Max Tension/Leg | 113.1 k | 46.9 k | 42 % |
| Total Shear | 29.3 k | 12.9 k | 44 % |

As future loads are installed, the tower should be re-evaluated on a case-by-case basis.

The analysis is based on information provided to this office by Natcomm, LLC. If the existing conditions are different than the information in this report, Walker Engineering should be contacted for resolution of any issues.

Walker Engineering appreciates the opportunity to be of service in this matter. Please do not hesitate to give me a call if you have any questions or comments.

Very truly yours,

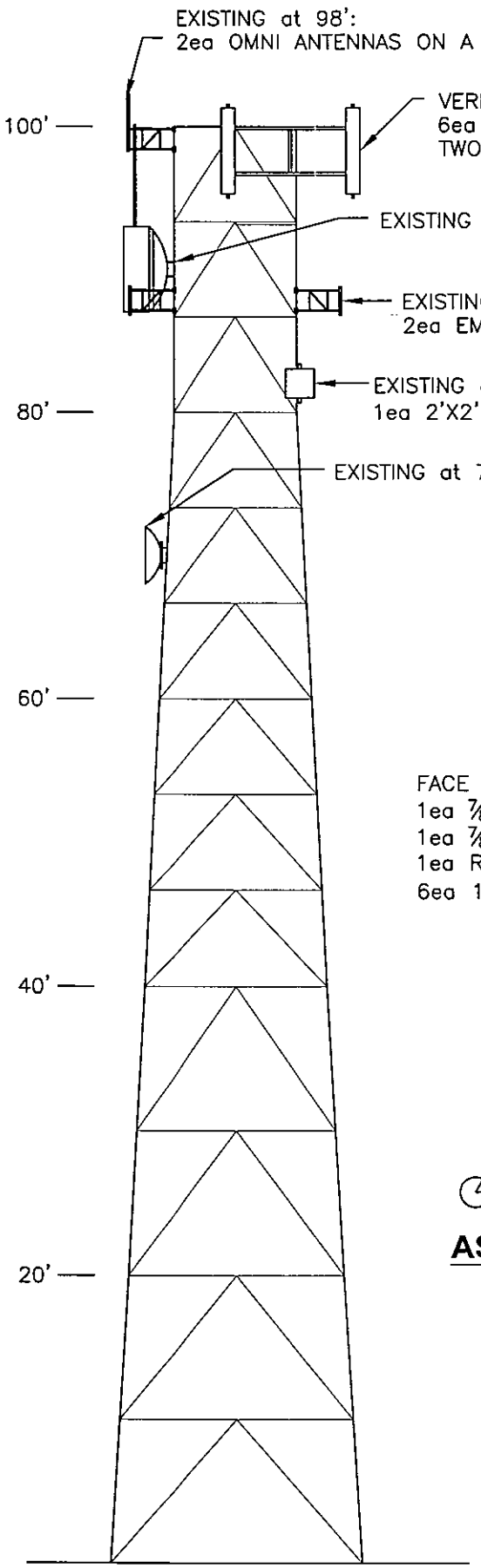



Jim Walker, P.E.

encl

[2] **"Combined Stress Index"** Ratio of calculated loads verses total allowable loads; should be less than, or equal to, 1.00.

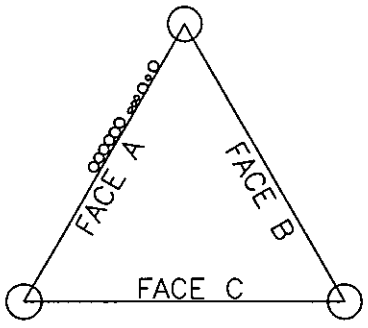
[3] Original foundation loads were taken from ROHN Drawing No.: B931633R1, dated 04/23/93.




TOWER ELEVATION VIEW

FACE A:

| | |
|---|---|
| 1ea 7/8" TO 98' | 1ea RG-6 TO 98' |
| 1ea 7/8" TO 90' | 1ea RG-6 TO 82' |
| 1ea RG-59 TO 82' | 1ea EW90 TO 70' |
| 6ea 1 5/8" TO 98' (VERIZON PROPOSED) | |




**ASSUMED CABLE PLAN**

WALKER ENGINEERING INCORPORATED
8451 Dunwoody Place, Northridge 400, Bldg. 8, Dunwoody, GA 30350
(770) 641-7306 FAX: (770) 587-2196 www.walkerengineer.com

| REV. | DATE | BY |
|---|---|---|
| 1 | 12/11/02 | bhe |

ENGINEER: LDC
DRAWN BY: LDC
CHECKED BY: BHE
ORIG. ISSUE DATE: 10/09/02

SITE NAME: BRUCE GOLF COURSE
SITE No: 02.601
JOB No: 0210-351

NATCOMM, LLC.
100ft SELF-SUPPORTING TOWER
TOWER ELEVATION & CABLE PLAN

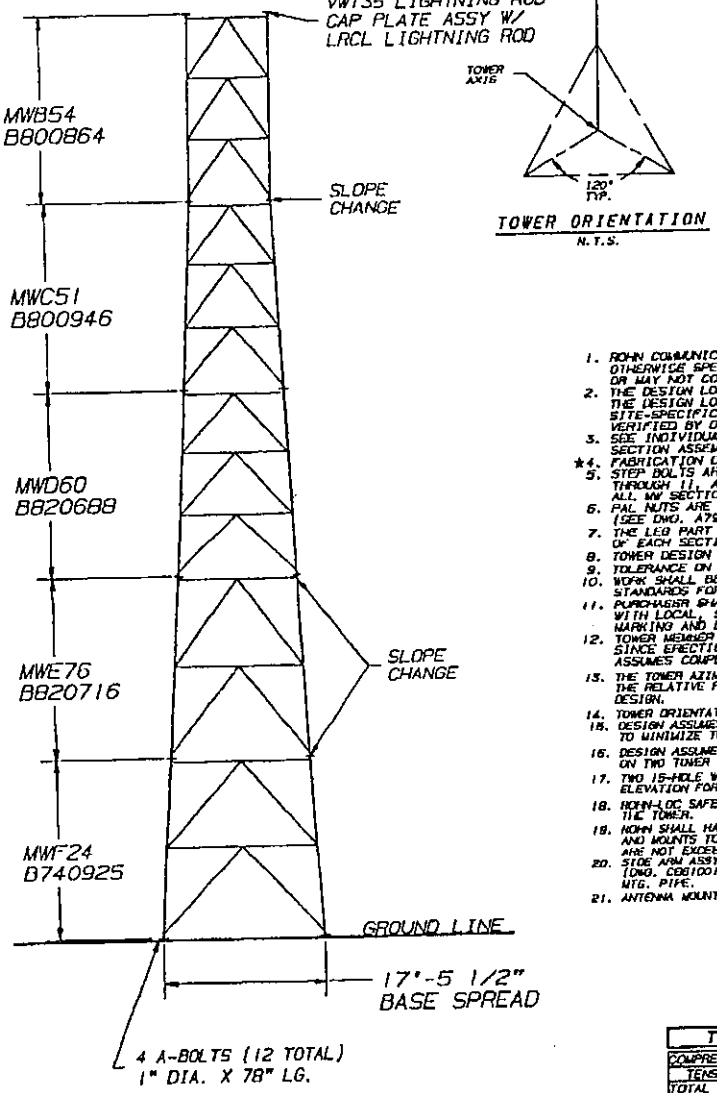
1300 KING STREET
GREENWICH, CT



ACAD FILE: S:\PROJ\NATCOMM\DWGS\NATCOMM-9

SCALE: NONE

SHEET No.: EL-1




## TOWER DESIGN LOADING

DESIGN WIND LOAD PER ANSI/EIA-222-E-1991, 90 MPH
BASIC WIND SPEED WITH 1/2" RADIAL ICE CONCURRENT

THIS TOWER IS DESIGNED TO SUPPORT THE FOLLOWING LOADS:

| ELEVATION (FT.) | ANTENNA TYPE | E.P.A. (SF) |
|---|---|---|
| 98 | 6-DXL410C-4R18D & 2-P010017 ON 3-6' SIDE ARMS W/(2) TIE-BACKS | 89.0 TOTAL 36.6 |
| 97 | 1-6' DIA. H.P. DISH (12G) | 22.3 TOTAL |
| 90 | D6583 & D6505 ON 2-6' SIDE ARMS | 36.6 |
| 89 | 1-6' DIA. H.P. DISH (12G) | 89.0 |
| 83 | 6-SRL410C-4R18D & 2-P010017 ON 3-6' SIDE ARMS | TOTAL 36.6 |
| 65 | 1-6' DIA. H.P. DISH (12G) | |

NOTE: ANTENNA AZIMUTH IS SHOWN IN DEGREES WITHIN TIE (BRACKETS)

## REFERENCE DRAWINGS

DRAWING REVISION NO. LATEST REVISION

| QUAN. | PART NO. | DESCRIPTION | DWG. NO. |
|---|---|---|---|
| N/A | REF. | GROUTING & DRAINAGE DETAIL | B691111 |
| N/A | REF. | STEP BOLT DETAIL | B651264 |
| 3 | BGKB | GROUNDING DETAIL | C751105 |
| N/A | REF. | FOUNDATION & ANCHOR TOLERANCE | AB10214 |
| N/A | REF. | ANCHOR BOLT TEMPLATE INSTALLATION | B750521 |
| 3 | VL28T | ANCHOR BOLT TEMPLATE FAB. (TOP) ★ | B740973 |
| 3 | VL28B | ANCHOR BOLT TEMPLATE FAB. (BOTTOM) ★ | B740975 |
| N/A | ABL454 | ANCHOR BOLT LAYOUT | C820710 |
| N/A | REF. | FOUNDATION DETAIL | AB31328,1-3 |
| N/A | REF. | LIGHTNING ROD CAP PLATE ASSEMBLY AT TOP | B770400 |
| 1 | VW135 | ANCHOR BOLTS | N/A |
| 12 | 1X78AB | BOLT ASSEMBLY INSTALLATION | A790135 |
| N/A | REF. | COPPER LIGHTNING ROD | N/A |
| 1 | LRCL | ROHN-LOC SAFETY MELT AND CLAMP | C741234 |
| 1 | RLBELTM | ROHN-LOC TOP POST ASSY | C741234 |
| 1 | RLTPA2 | ROHN-LOC CABLE RESTRAINT ASSY | C741234 |
| 4 | RLCRA2 | ROHN-LOC BOTTOM BRACKET ASSY | C741234 |
| 1 | RLBMA6 | ROHN-LOC CABLE | C741234 |
| 1 | RLC100 | 15-HOLE WAVEGUIDE LADDER ASSY | C901819 |
| 8 | WL20F154RD | 16-HOLE WAVEGUIDE LADDER ASSY | C901819 |
| 2 | WL16F164RD | WAVEGUIDE LADDER CLAMP ASSY | C901819 |
| 26 | WT3080A | 6' SIDE ARM ASSY AT 90°± | C820358 |
| 2 | SA628PL | 6' SIDE ARM ASSEMBLY AT TOP | C861001 (REF.) |
| 3 | SA628PH 2TBR | LEG DISH MOUNT ASSY AT 65°± | C800119 |
| 1 | T30UM | TIE-BACK ASSY AT 65°± | D820142 |
| 1 | VY2811A | TIE-BACK TUBE AT 65°± | D820142 |
| 1 | TMT4L11 | U-BOLT KIT ASSY AT 65°± | D825113 |
| 1 | UKKIT4 | | |

## GENERAL NOTES

1. ROHN COMMUNICATION TOWER DESIGNS CONFORM TO E.I.A.-222-E UNLESS OTHERWISE SPECIFIED (UNDER TOWER DESIGN LOADING). TOWER DESIGN MAY OR MAY NOT CONFORM TO LOCAL, STATE OR FEDERAL REQUIREMENTS.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA WAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/EIA-222-E AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. SEE INDIVIDUAL SECTION ASSEMBLY DRAWINGS FOR PART NUMBERS AND SECTION ASSEMBLY DETAILS.
★4. FABRICATION DRAWINGS, IF REFERENCED, ARE FOR SHOP USE ONLY.
5. STEP BOLTS ARE PROVIDED ON ONE LEG ONLY FOR SECTIONS 6 THROUGH 11, AND ALL THREE LEGS FOR SECTIONS 12 THROUGH 18 AND ALL NW SECTIONS.
6. PAL NUTS ARE PROVIDED FOR ALL TOWER AND ANCHOR BOLTS (SEE DWG. A790135).
7. THE LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG OF EACH SECTION.
8. TOWER DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
9. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
10. WORK SHALL BE IN ACCORDANCE WITH E.I.A.-222-E, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES."
11. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
12. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
13. THE TOWER AZIMUTH SHOWN IS A RELATIVE AZIMUTH USED TO ESTABLISH THE RELATIVE POSITION OF ANTENNAS WITH RESPECT TO THE TOWER FOR DESIGN.
14. TOWER ORIENTATION DETERMINED BY OTHERS.
15. DESIGN ASSUMES 'SRL', 'PD' & 'DB' TYPE ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE.
16. DESIGN ASSUMES WAVEGUIDES AND WAVEGUIDE LADDERS ARE EQUALLY DISTRIBUTED ON TWO TOWER FACES.
17. TWO 15-HOLE WAVEGUIDE LADDERS ARE PROVIDED FROM 10'± TO 100'± ELEVATION FOR SNAP-ON HANGERS.
18. ROHN-LOC SAFETY DEVICE IS PROVIDED FOR CLIMBING THE ENTIRE HEIGHT OF THE TOWER.
19. ROHN SHALL HAVE THE OPTION TO REVIEW FINAL DISH LOCATIONS, AZIMUTHS AND MOUNTS TO VERIFY THAT ASSUMED TORQUE VALUES AND LOCAL STRESSES ARE NOT EXCEEDED.
20. SIDE ARM ASSY. P/N SA628PL2T6B IS THE SAME AS P/N SA628PL2TB (DWG. C861001) EXCEPT 1-KH2229 MTG. PIPE REPLACES 1-KHZ75 MTG. PIPE.
21. ANTENNA MOUNTS ARE PROVIDED BY OTHERS EXCEPT AS NOTED.

## TOWER REACTIONS

| | |
|---|---|
| COMPRESSION | 133.0 KIPS |
| TENSION | 113.1 KIPS |
| TOTAL SHEAR | 29.3 KIPS |
| O.T.M. | 1811.1 FT-KIPS |

TOWER SITE: BRUCE GOLF COURSE

| No. | Revision Description | Date | By | Ckd | Appd |
|---|---|---|---|---|---|
| R1 | REVISED FOUNDATION DWG. | 6/14/93 | CSR | JC | TS |



ROHN

| | By | Date |
|---|---|---|
| Scale: NONE | | |
| Drawn: | CSR | 4/20/93 |
| Checked: | MM | 4/21/93 |
| App. Engr.: | TS | 4/21/93 |
| App. Sales: | JC | 4/23/93 |

Title:
# 100' SSMW TOWER ASSEMBLY FOR BELL ATLANTIC METRO MOBILE

ENG. FILE: 29307JC | DRAWING NO.: B931633R1

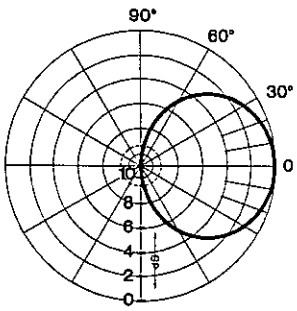
# DB844H90(E)- { -SX: 806-896 MHz -SY: 870-960 MHz

dB Director®

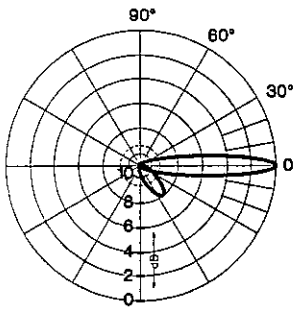
12 dBd, 90°, Directional Log Periodic Antenna

| Model Number | DB844H90-SX/SY | DB844H90E-SX/SY |
|---|---|---|
| Termination | Type N-Female | 7/16 DIN |
| Frequency Range | -SX: 806-896 MHz<br>-SY: 870-960 MHz | |
| Gain | 12 dBd (14.1 dBi) | |
| VSWR | < 1.5:1 | |
| Beamwidth (3dB from max) | Horizontal: 90° ± 5°<br>Vertical: 15° ± 1° | |
| Front to Back Ratio | > 40 dB | |
| Polarization | Vertical | |
| Max. Input Power | 500 Watts | |
| Application | Cellular, Trunking, GSM | |
| Weight | 10 lbs (4.5 kg) | |
| Wind Area | 2 ft² (0.19 m²) | |
| Wind Load | 80 lbf (356N) 35.9 kp (at 100 mph) | |
| Max. Wind Speed | 125 mph (200 km/h) | |
| Material | Radiators: Brass<br>Back Panel: Pass. Aluminum<br>Radome: ABS<br>Mounting Hdw: Galvanized Steel | |
| Color | Normal: Gray | |
| Mounting | DB380 pipe mount kit (max. 3.5" OD), included. | |
| Downtilt Brackets (Optional) | DB5083 | |
| Weather Protection | Fully protected by metal and ABS. | |
| Lightning Protection | All metal parts grounded. | |
| Packing Size | 59" x 10" x 15" (150 x 25 x 38 cm) | |
| Shipping Weight | 26 lbs (12 kg) | |

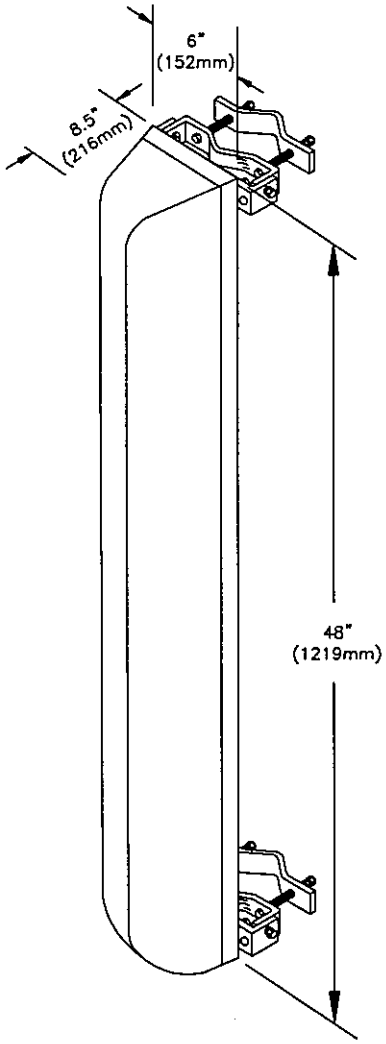
## Antenna Patterns



Horizontal



Vertical




12 dBd (14.1 dBi) Gain Directional Log Periodic Antenna with 90° horizontal 3 dB beamwidth for -SX: 806-896 MHz or -SY: 870-960 MHz.

Specifications are for reference only. 099089-023-A 2/99


**DECIBEL PRODUCTS**

A Division of Allen Telecom Inc.

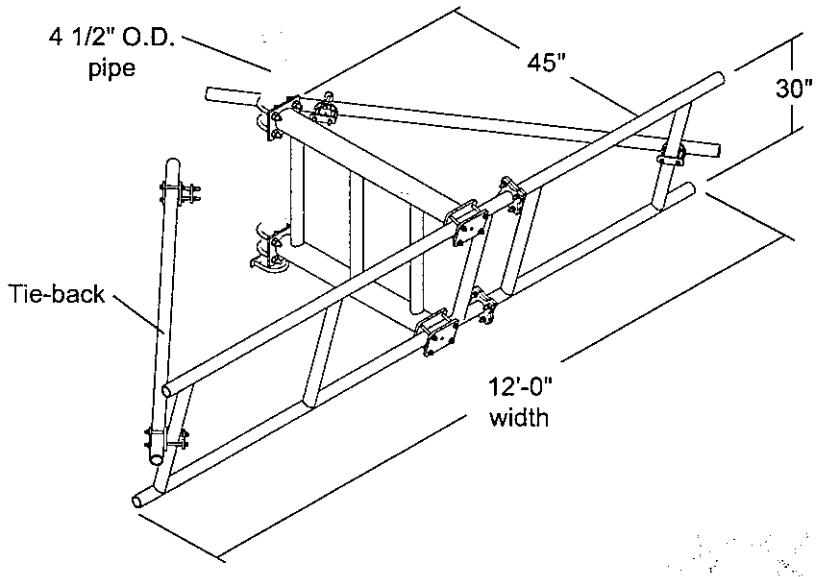
8635 Stemmons Freeway • P. O. Box 569610 • Dallas, Texas 75356-9610

214 / 631-0310 • Fax: 214 / 631-4706

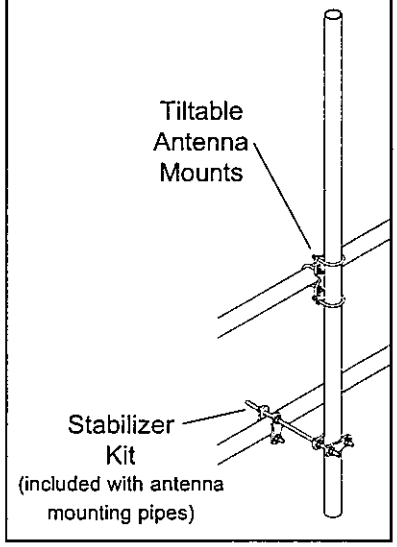
# 12' Universal T-Frame Sector Mount

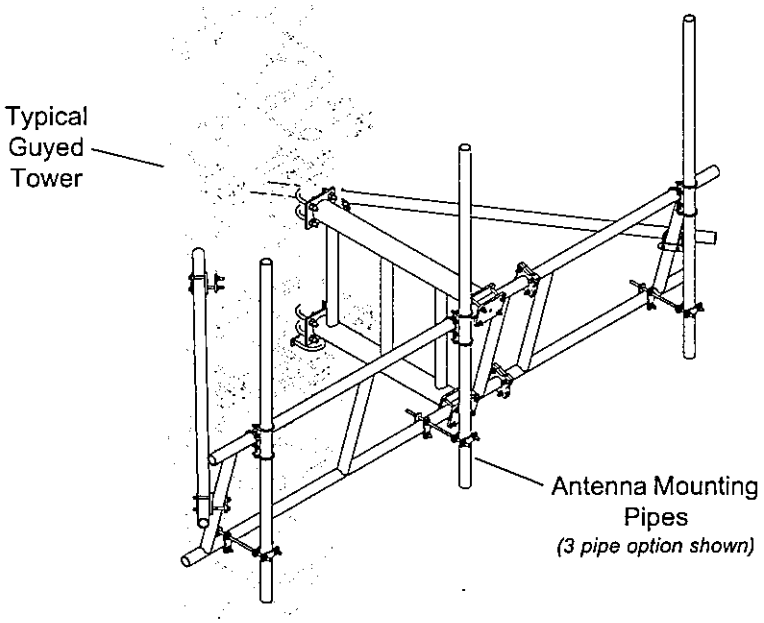
(Dwg. # 151017 Rev. A / 10/10/2000)

**Versatile antenna mounting to new or existing towers**




**12' T-Frame Options**




**PiRod's 12' Universal T-Frames fit on a variety of different tower types and sizes. Contact PiRod parts department for assistance.**

***(877) GO-PIROD***

**NOTE:** 4 1/2" O.D. Pipemount not included

| 12' Universal T-Frame Ordering Information | Part Number | Catalog List Price |
|---|---|---|
| 12' Universal T-Frame for 4 1/2" O.D. pipemount (no antenna mounting pipes included) | 852260 | $800.00 |
| 12' Universal T-Frame for 4 1/2" O.D. pipemount (includes 2 - 84" antenna mounting pipes) | 852261 | $1,040.00 |
| 12' Universal T-Frame for 4 1/2" O.D. pipemount (includes 3 - 84" antenna mounting pipes) | 852262 | $1,160.00 |
| 12' Universal T-Frame for 4 1/2" O.D. pipemount (includes 4 - 84" antenna mounting pipes) | 852263 | $1,280.00 |

| 12' Universal T-Frame | Weight (lbs.) | Area 0" Ice* (CaAc) | Area with 1/2" Ice* (CaAc) |
|---|---|---|---|
| 12' Universal T-Frame | 465 no ice / 600 with 1/2" ice | 13.6 ft² | 18.4 ft² |

*All areas presented are computed in accordance with ANSI/TIA/EIA-222-F 1996.
**All areas do not include cross arms, pipemounts or antenna mounting pipes.
***All of the above information, including but not limited to: prices, areas, dimensions, is subject to change without notice.

PiROD INC.
1545 Pidco Drive, P.O. Box 128, Plymouth, IN 46563 • Phone (219) 936-4221 • Fax (219) 936-6796 • www.pirod.com