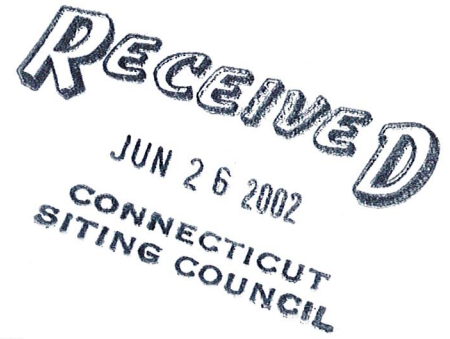
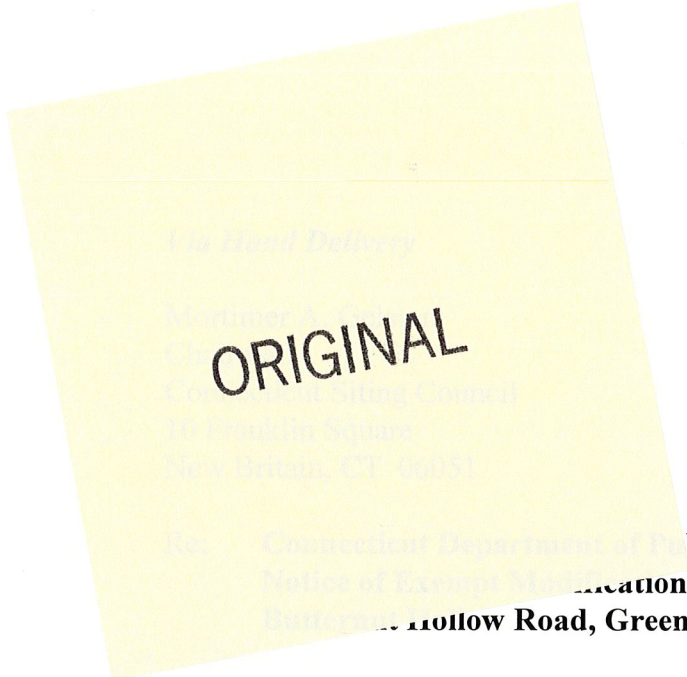


280 Trumbull Street  
Hartford, CT 06103-3597  
Main (860) 275-8200  
Fax (860) 275-8299  
kbaldwin@rc.com  
Direct (860) 275-8345

June 26, 2002



ORIGINAL

Public Safety Tower

Butternut Hollow Road, Greenwich, Connecticut

Dear Mr. Gelston:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to modify its antenna configuration on the existing "facility" tower off Butternut Hollow Road in Greenwich, Connecticut. Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction 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 V. Bergstresser.

The tower is owned and operated by the Connecticut Department of Public Safety - Connecticut State Police (DPS). Cellco's existing facility consists of six (6) panel-type antennas attached at the 130-foot level on the DPS tower. Cellco equipment currently occupies a room within the existing multi-carrier equipment shelter located near the base of the tower. (The tower is also shared by the DPS, Cingular, AT&T, VoiceStream and Sprint, however, no changes are proposed to any antennas other than Cellco's). Cellco intends to install an additional six (6) panel antennas on the same platform at the 130-foot level on the tower. There are no changes proposed to Cellco's ground mounted structures or equipment. (See Project Plans behind Tab 1).

The planned modifications to the Greenwich 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 antennas will be mounted at the 130-foot level on the 180-foot tower.

HART1-1019386-1



Law Offices

BOSTON

HARTFORD

NEW LONDON

STAMFORD

GREENWICH

NEW YORK

www.rc.com

# ROBINSON & COLE<sup>LLP</sup>

Mortimer A. Gelston

June 26, 2002

Page 2

2. The proposed antenna modification 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 six (6) additional antennas does not result in an increase in the existing radio frequency (RF) power density levels at the facility. Updated RF power density calculations were however, performed by the DPS and are attached behind Tab 2 to this filing.

The proposed modifications will require the structural reinforcement of the tower. In an effort to reduce the overall environmental effect of these modifications, Cellco and the DPS have chosen to reinforce the existing tower using the Towertek Industries Stack-N-Bolt Tower Reinforcing System. The Towertek Industries' structural analysis, detailing the method of structural reinforcement, is attached behind Tab 3. As illustrated on the first several pages of the analysis, the Towertek system essentially involves the construction of a steel lattice structure inside the existing tower. The existing steel tower framework, shown in orange, is attached to the new lattice structure at varying intervals. The tower foundation will also be reinforced for structural stability. This tower reinforcement effort will reduce the impact of the proposed modifications by allowing the tower structure to remain in the same location. Existing vegetation to the east and south will remain undisturbed.

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

Sincerely,



Kenneth C. Baldwin

KCB/kmd

Attachments

cc: Richard V. Bergstresser, Greenwich First Selectman  
Sandy M. Carter (w/o enc.)

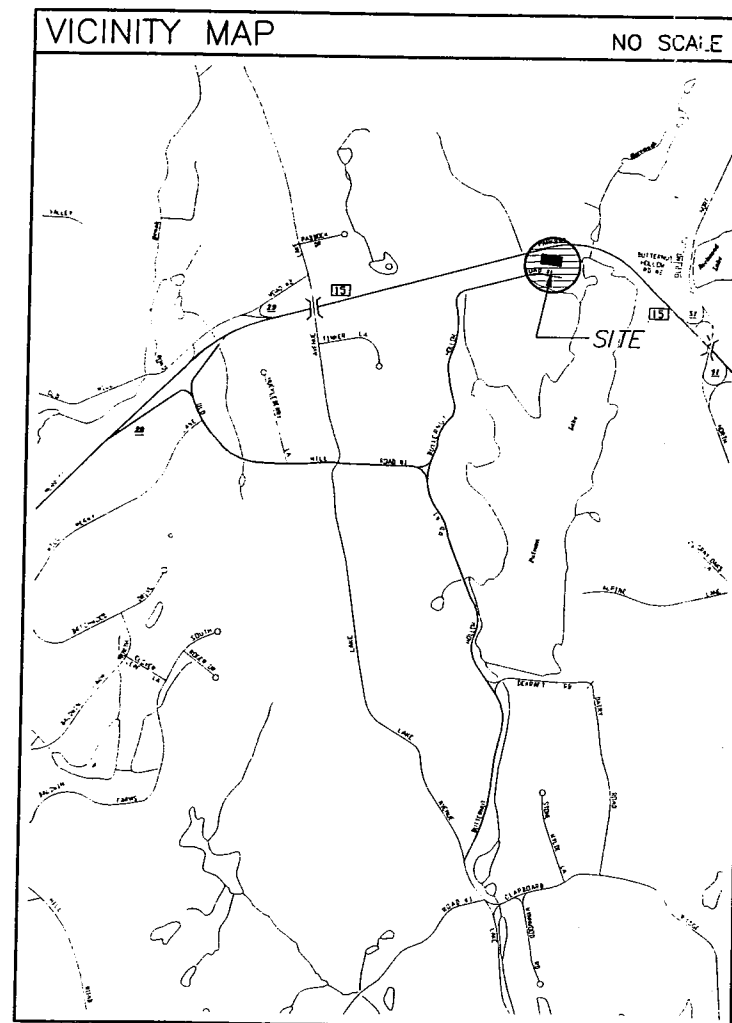


CELLCO PARTNERSHIP  
DBA

**verizon wireless**

# BUTTERNUT HOLLOW

BUTTERNUT HOLLOW ROAD  
GREENWICH, CONNECTICUT



## PROJECT SUMMARY

**SITE NAME:** BUTTERNUT HOLLOW

**SITE ADDRESS:** BUTTERNUT HOLLOW ROAD  
GREENWICH, CONNECTICUT

**CONTACT PERSON:** CELLCO PARTNERSHIP DBA  
VERIZON WIRELESS  
SANDY CARTER  
(860) 803-8219

**GOVERNING CODE:** CONNECTICUT STATE BUILDING  
AND LIFE SAFETY CODE

**APPLICANT:** CELLCO PARTNERSHIP DBA  
VERIZON WIRELESS  
99 EAST RIVER DRIVE  
EAST HARTFORD, CT 06108

**ARCHITECT:** URS CORPORATION A.E.S.  
795 BROOK STREET, BLDG 5  
ROCKY HILL, CT 06067

**SURVEY:** URS CORPORATION A.E.S.  
500 ENTERPRISE DRIVE  
ROCKY HILL, CT 06067

## LEGEND

SYMBOL	DESCRIPTION
	SECTION OR DETAIL NUMBER SHEET WHERE DETAIL/SECTION OCCURS
	ELEVATION NUMBER SHEET WHERE ELEVATION OCCURS

## ABBREVIATIONS

MIN. MINIMUM  
V.I.F. VERIFY IN FIELD  
O.C. ON CENTER  
PSF POUND/SQUARE FOOT  
TYP. TYPICAL  
FT. FEET  
SQ.FT. SQUARE FEET  
N/A NOT APPLICABLE

## SHEET INDEX

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET - GENERAL NOTES AND LEGENDS
S-1	SURVEY
SC-1	SITE PLAN
SC-2	SITE PLAN AND TOWER ELEVATION

CELLCO PARTNERSHIP  
DBA  
**verizon wireless**

A&E FIRM  
**URS CORPORATION A/E/S**  
795 BROOK STREET, BLDG 5  
ROCKY HILL, CONNECTICUT  
1-(880)-529-8882

A&E SEAL

PROJECT NO: F302063.03/F03

DRAWN BY: CTJ

CHECKED BY:

ISSUED FOR  
04-08-02 REVIEW

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OTHER THAN THAT WHICH  
RELATES TO VERIZON WIRELESS  
IS STRICTLY PROHIBITED.

**BUTTERNUT HOLLOW**

BUTTERNUT HOLLOW ROAD  
GREENWICH, CONNECTICUT

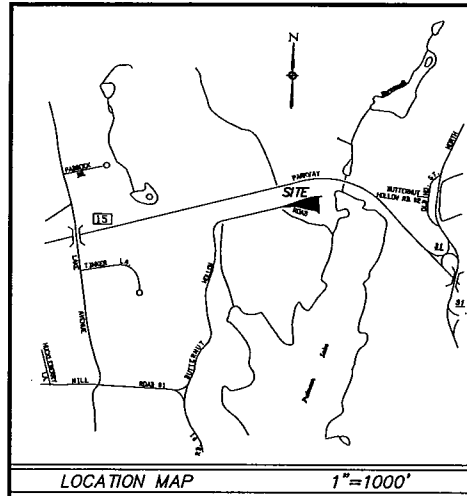
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DATE: 04-08-02

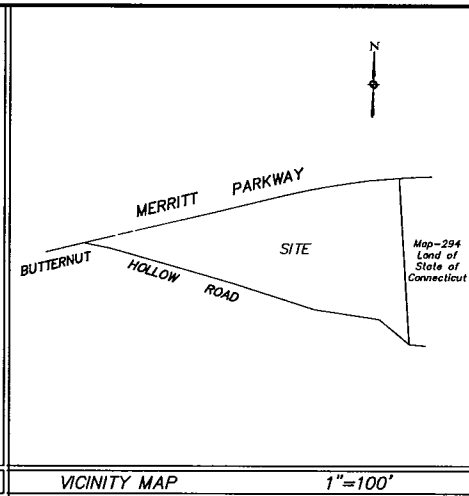
DRAWING 1 OF 4

TITLE SHEET-  
GENERAL NOTES  
AND LEGENDS

T-1



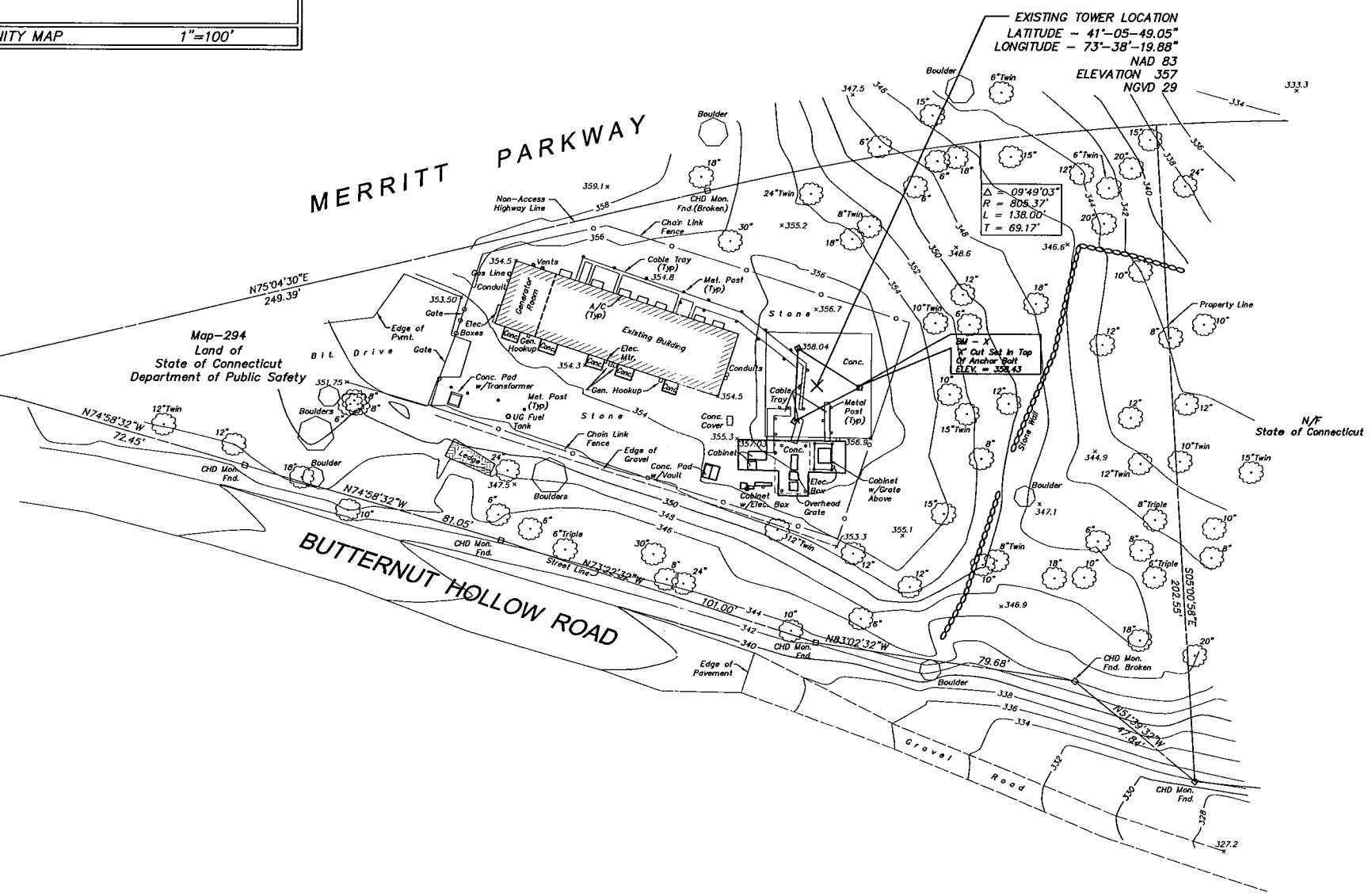
LOCATION MAP 1"=1000'



VICINITY MAP 1"=100'



**LEGEND**

- NOTES:**
- THIS SURVEY AND MAP HAS BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THRU 20-300b-20, AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1998. THE TYPE OF SURVEY IS A BOUNDARY AND TOPOGRAPHIC SURVEY. THE BOUNDARY DETERMINATION CATEGORY IS A RESURVEY. THE HORIZONTAL AND VERTICAL ACCURACY CONFORMS TO CLASS A-2 & V-2 ACCURACY.
  - BEARINGS REFER TO THE CONNECTICUT COORDINATE SYSTEM BASED UPON CGS MONUMENTS TM 48 & 6050 HOLDING THE FOLLOWING PUBLISHED COORDINATE VALUES:  
CGS TM 48 N 95,370.28 E 346,705.90 CGS 6050 N 97,622.23 E 359,585.27
  - ELEVATIONS REFER TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 BASED UPON CGS BENCH MARK 1009 HOLDING THE PUBLISHED ELEVATION OF 332.94.
  - REFERENCE IS MADE TO THE FOLLOWING MAPS:
    - "PROPERTY OF THE STATE OF CONNECTICUT, DEPARTMENT OF PUBLIC SAFETY, DIVISION OF STATE POLICE, SITE 74 GREENWICH", BY GREINER, SCALE 1"=20', DATED MAY 1991, REVISED 10-29-93.
    - "EXISTING CONDITIONS SURVEY TOWER SITE, BUTTERNUT HOLLOW ROAD, GREENWICH, CONNECTICUT PREPARED FOR BELL ATLANTIC NYNEX MOBILE", BY GREINER, SCALE 1"=20', DATED AUGUST 1996.
    - "EXISTING CONDITIONS SURVEY TOWER SITE, BUTTERNUT HOLLOW ROAD, GREENWICH, CONNECTICUT PREPARED FOR AT&T WIRELESS PCS, INC.", BY URS GREINER WOODWARD CLYDE, SCALE 1"=20', DATED SEPTEMBER 1999.
  - THE PARCEL IS COMPRISED OF A PORTION OF THE PROPERTY ACQUIRED BY THE STATE OF CONNECTICUT IN VOLUME 303, PAGE 19 OF THE GREENWICH LAND RECORDS AND IS SUBJECT TO CERTAIN COVENANTS AS DESCRIBED THEREIN EXCEPTING THAT CERTAIN COVENANT THAT WAS RELEASED AS DESCRIBED IN VOLUME 316, PAGE 156 OF SAID LAND RECORDS. A PORTION OF THE PROPERTY WAS RELEASED TO THE TOWN OF GREENWICH FOR BUTTERNUT HOLLOW ROAD AS DESCRIBED IN VOLUME 385, PAGE 358 OF SAID LAND RECORDS.
  - ALL RIGHTS OF INGRESS AND EGRESS ARE SPECIFICALLY DENIED, DIRECTLY TO AND FROM THE MERRITT PARKWAY AND THE PROPERTY SUBJECT TO COVENANTS ALL AS DESCRIBED IN A STATE AGENCY TRANSFER OF CONTROL AGREEMENT DATED MARCH 25, 1991.
  - UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND OTHER DATA SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES, GOVERNMENTAL AGENCIES AND/OR OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO URS CORPORATION AND THE EXISTENCE, SIZE AND LOCATION OF ALL SUCH FEATURES MUST BE DETERMINED AND VERIFIED IN THE FIELD BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-1455.

PARTIAL BOUNDARY AND TOPOGRAPHIC SURVEY  
 LAND OF  
**THE STATE OF CONNECTICUT**  
 BUTTERNUT HOLLOW ROAD  
 GREENWICH, CONNECTICUT  
 PREPARED FOR  
**VERIZON WIRELESS PCS, INC.**



TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON		Embossed seal	
MICHAEL G. VILNES, L.S. LICENSE NO. 14206		URS	
TRUE AND VALID COPIES OF THIS MAP OR PLAN MUST BEAR THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ABOVE NAMED LAND SURVEYOR. UNAUTHORIZED REPRODUCTION OR ALTERATION IS FORBIDDEN.		Surveying and Mapping by: URS Corporation A E S 500 Enterprise Drive, Suite 300 Rocky Hill, Connecticut 06067-4002 Tel. (860) 928-8882	
Scale: 1" = 20'	Date: FEBRUARY 2002	Project #	F3-00002063.03 00F01
Field book # 1538-3	Crew Chief F.S. & F.R.	Drawn by	Checked by
Search # 3255	Drawn by K.COOLBETH	Checked by	Rep File # T132-19C



CELLCO PARTNERSHIP  
DBA  
  
verizon wireless

A&E FIRM  
**URS CORPORATION AES**  
795 BROOK STREET, BLDG 5  
ROCKY HILL, CONNECTICUT  
1-(860)-529-8882

A&E SEAL

PROJECT NO: F302063.03/F03

DRAWN BY: CTJ

CHECKED BY:

ISSUED FOR  
04-08-02 REVIEW

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**BUTTERNUT HOLLOW**

BUTTERNUT HOLLOW ROAD  
GREENWICH, CONNECTICUT

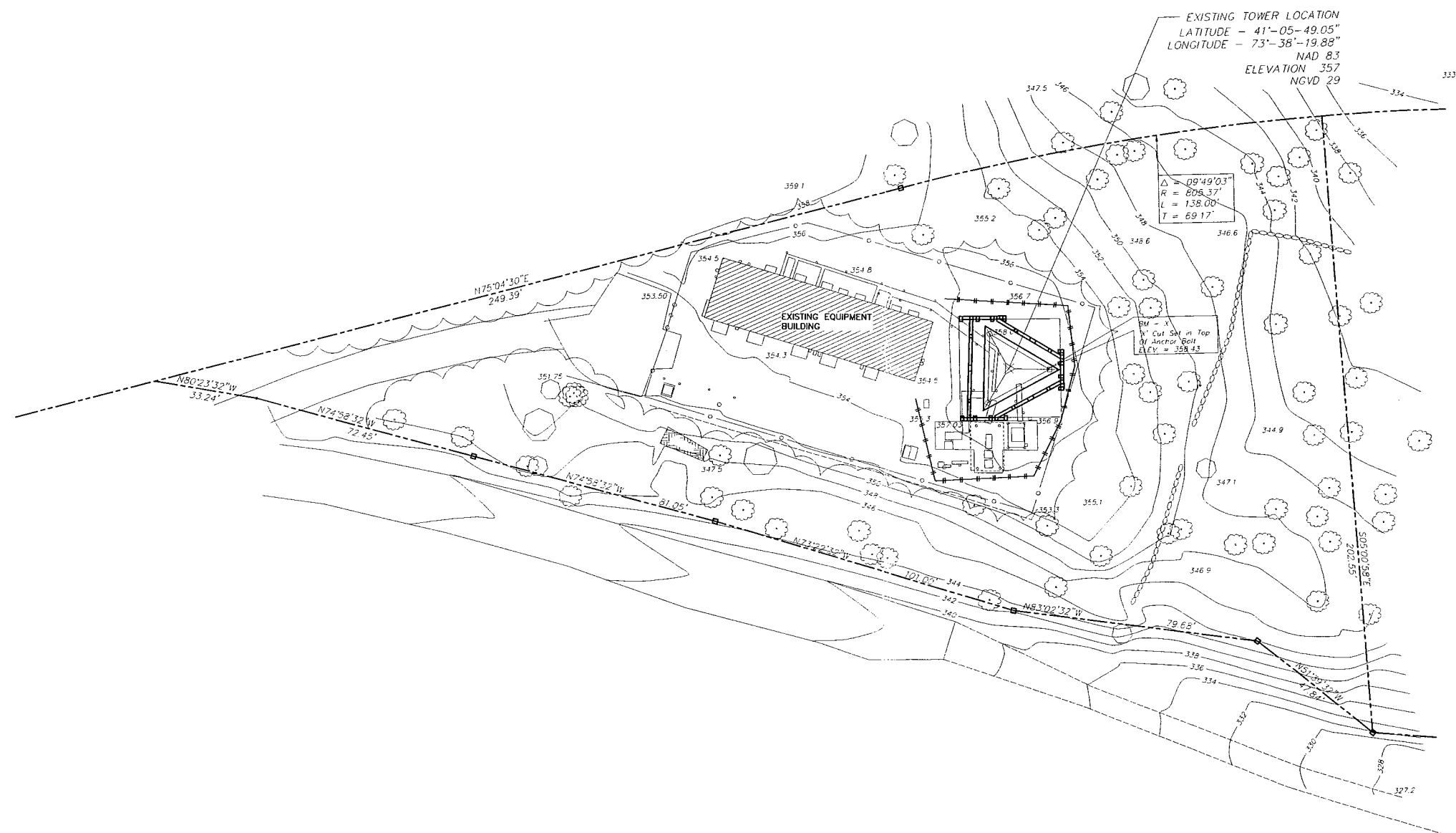
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DATE: 04-08-02

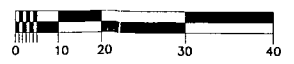
DRAWING 2 OF 4

SITE PLAN

SC-1



1 SITE PLAN  
SC-1 SCALE: 1" = 20'-0"



ISSUED FOR	
04-08-02	REVIEW

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**BUTTERNUT HOLLOW**

BUTTERNUT HOLLOW ROAD  
GREENWICH, CONNECTICUT

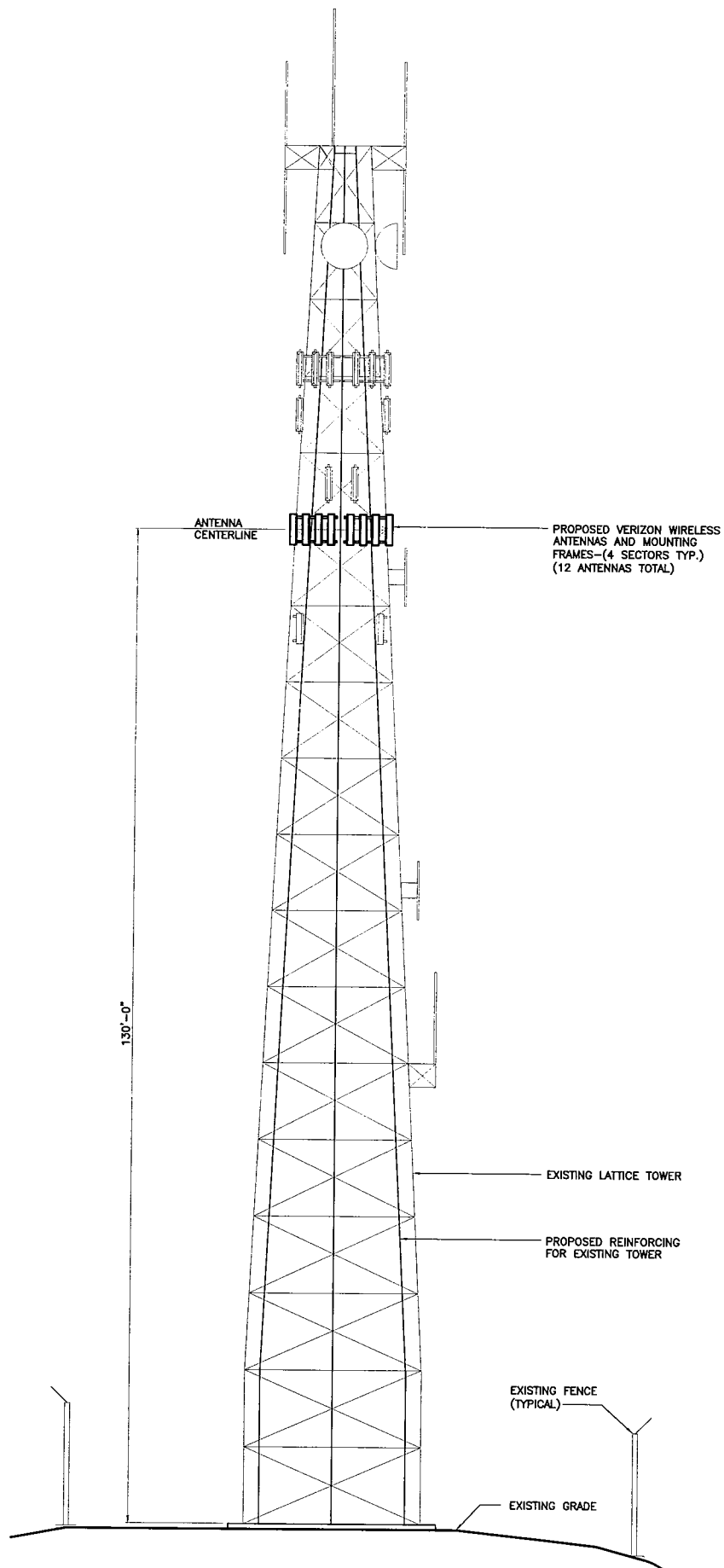
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DATE: 04-08-02

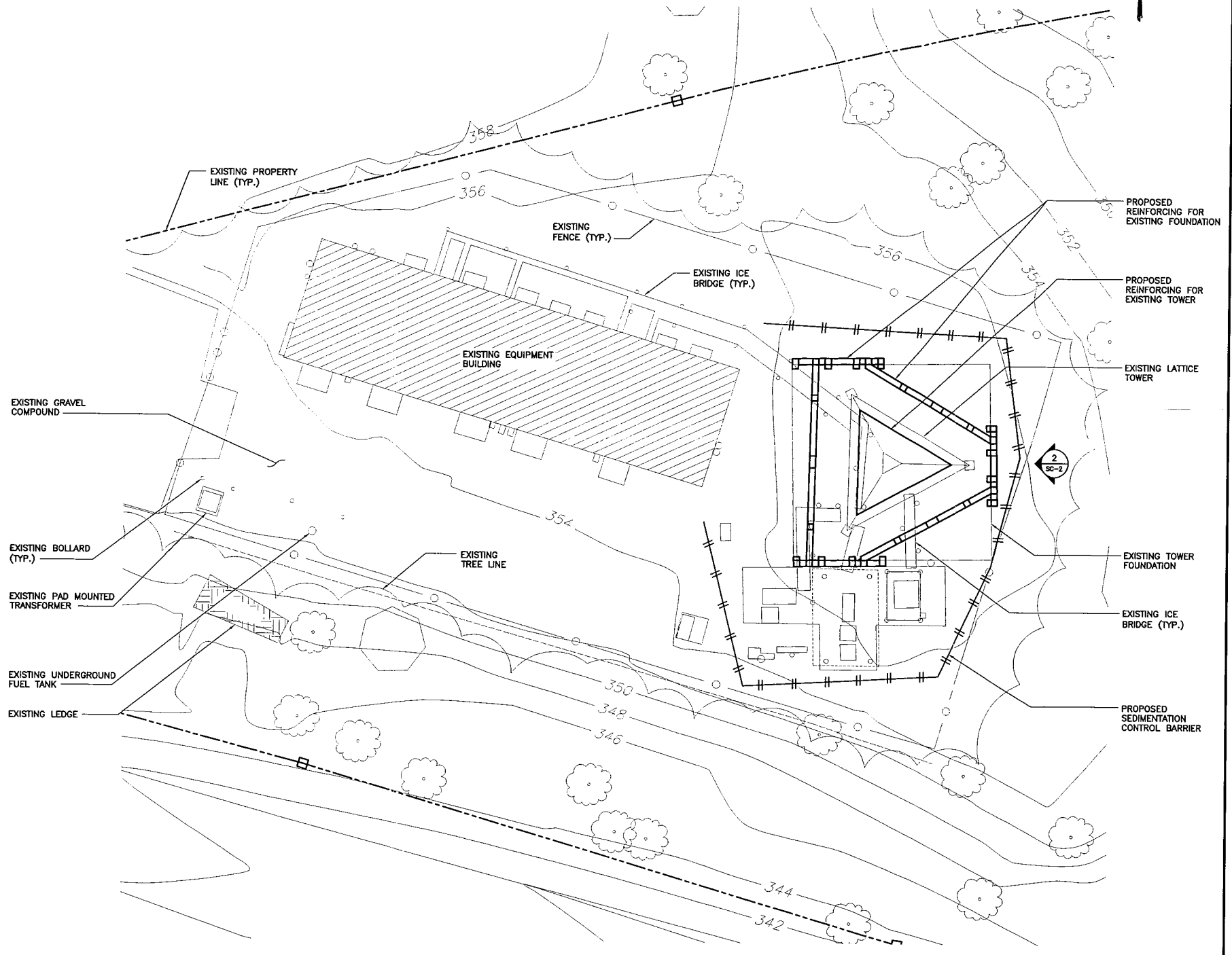
DRAWING 3 OF 4

**SITE PLAN AND  
TOWER ELEVATION**

**SC-2**



**2 TOWER ELEVATION**  
SCALE: 1" = 10'-0"  
0 5 10 20 30



**1 COMPOUND PLAN**  
SCALE: 1" = 10'-0"  
0 5 10 20 30

POWER DENSITY ANALYSIS

=====

POWER DENSITY (% OF MAX. EXPOSURE VS DISTANCE FROM THE TOWER BASE

-----  
SITE NAME: GREENWICH PREPARED BY: D.P.S.  
TOWER HEIGHT: 180 FEET ON DATE: 06-11-2002  
-----

DISTANCE (FEET)	POWER DENSITY (% OF MAX. EXPOSURE)
-----	-----
0	15.8172
50	13.7972
100	10.5158
150	7.6213
200	5.5332
250	4.1050
300	3.1402
350	2.4642
400	2.0135
450	1.7084
500	1.4667
550	1.2707
600	1.1095
650	0.9756
700	0.8634
750	0.7686
800	0.6880
850	0.6190
900	0.5595
950	0.5080
1000	0.4631
1050	0.4237
1100	0.3890
1150	0.3584
1200	0.3337
1250	0.3132

RADIO/ANTENNA SYSTEMS DATA

=====

SITE NAME:  
TOWER HEIGHT:

GREENWICH  
180 FEET

PREPARED BY:  
ON DATE:

D.P.S.  
06-11-2002

No	OPERATING FREQUENCY (MHz)	TRANSMIT POWER (WATTS)	ANTENNA				ERP (W)
			HEIGHT (FEET)	TYPE	VERTICAL SIZE (FT)	GAIN (dB)	
1	867.5000	5 x 25	180	WHIP WITH REFLECTOR	11	9.0	993
2	822.5000	0	164	WHIP WITH REFLECTOR	11	9.0	0
3	867.5000	5 x 25	180	WHIP	11	9.0	993
4	822.5000	0	164	WHIP	11	9.0	0
5	867.5000	5 x 14	180	WHIP	3	3.0	144
6	822.5000	0	174	WHIP	4	6.0	0
7	18700.0000	1	177	SOLID DISH W/RADOME	6	48.5	43550
8	47.3000	100	180	WHIP	18	0.0	100
9	154.1000	0	165	WHIP	9	3.0	0
10	869.0000	9 x 9	130	PANEL ANTENNA	4	13.5	1800
11	869.0000	10 x 4	130	PANEL ANTENNA	4	13.5	1000
12	869.0000	9 x 9	130	PANEL ANTENNA	4	13.5	1800
13	869.0000	10 x 4	130	PANEL ANTENNA	4	13.5	1000
14	869.0000	9 x 9	130	PANEL ANTENNA	4	13.5	1800
15	869.0000	10 x 4	130	PANEL ANTENNA	4	13.5	1000
16	928.0000	5	145	WHIP	16	10.0	50
17	158.0000	100	135	WHIP	22	5.0	316
18	37.5000	100	130	SINGLE DIPOLE	15	0.0	100
19	944.0000	5	165	GRID DISH	6	22.6	555
20	450.0000	100	150	WHIP	8	5.0	316
21	47.8600	100	130	SINGLE DIPOLE	12	0.0	100
22	1957.5000	0	105	PANEL ANTENNA	4	15.0	0
23	1957.5000	33 x 2	105	PANEL ANTENNA	4	15.0	2442
24	1957.5000	0	105	PANEL ANTENNA	4	15.0	0
25	1957.5000	0	105	PANEL ANTENNA	4	15.0	0
26	1957.5000	33 x 2	105	PANEL ANTENNA	4	15.0	2442
27	1957.5000	0	105	PANEL ANTENNA	4	15.0	0
28	1957.5000	0	105	PANEL ANTENNA	4	15.0	0
29	1957.5000	33 x 2	105	PANEL ANTENNA	4	15.0	2442
30	1957.5000	0	105	PANEL ANTENNA	4	15.0	0



POWER DENSITY ANALYSIS

=====

AT THE TOWER BASE, FOR EACH RADIO/ANTENNA SYSTEM

-----

SITE NAME: GREENWICH  
TOWER HEIGHT: 180 FEET

PREPARED BY: D.P.S.  
ON DATE: 06-11-2002

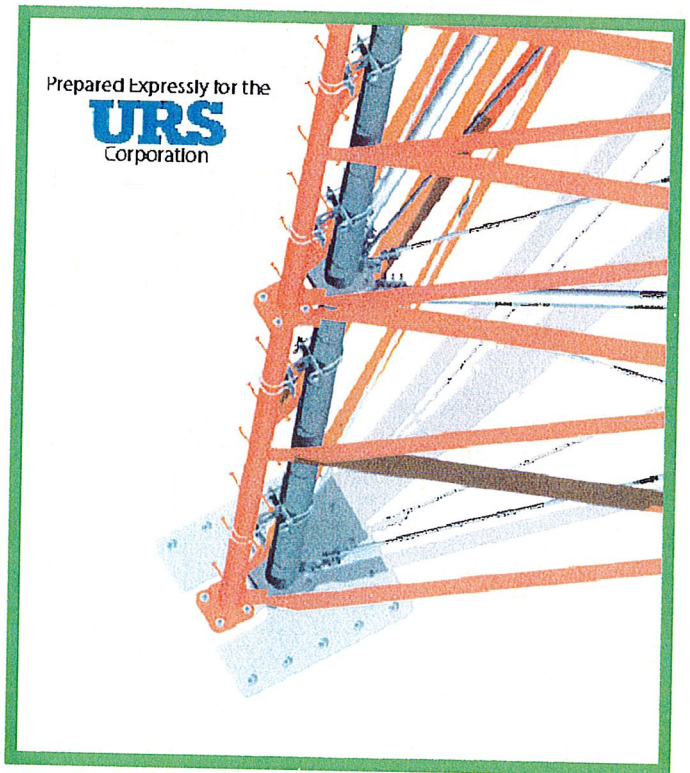
No	OPERATING FREQUENCY (MHz)	EIRP (WATTS)	DISTANCE TO BASE OF TOWER (FEET)	MAXIMUM PERMISSIBLE EXPOSURE (MW/SQ-CM)	AT THE BASE OF THE TOWER	
					POWER DENSITY (MW/SQ-CM)	PERCENT OF MAX. EXPOSURE
1	867.5000	1629	186	0.578	0.0016212	0.2805
2	822.5000	0	170	0.548	0.0000000	0.0000
3	867.5000	1629	186	0.578	0.0016212	0.2805
4	822.5000	0	170	0.548	0.0000000	0.0000
5	867.5000	236	182	0.578	0.0002456	0.0425
6	822.5000	0	176	0.548	0.0000000	0.0000
7	18700.0000	71447	177	1.000	0.0008093	0.0809
8	47.3000	164	189	0.200	0.0001573	0.0786
9	154.1000	0	170	0.200	0.0000000	0.0000
10	869.0000	2953	130	0.579	0.0059842	1.0335
11	869.0000	1641	130	0.579	0.0033245	0.5742
12	869.0000	2953	130	0.579	0.0059842	1.0335
13	869.0000	1641	130	0.579	0.0033245	0.5742
14	869.0000	2953	130	0.579	0.0059842	1.0335
15	869.0000	1641	130	0.579	0.0033245	0.5742
16	928.0000	82	153	0.618	0.0001200	0.0194
17	158.0000	519	146	0.200	0.0008335	0.4168
18	37.5000	164	138	0.200	0.0002972	0.1486
19	944.0000	910	165	0.629	0.0000073	0.0012
20	450.0000	519	154	0.300	0.0007492	0.2497
21	47.8600	164	136	0.200	0.0003038	0.1519
22	1957.5000	0	105	1.000	0.0000000	0.0000
23	1957.5000	4006	105	1.000	0.0124447	1.2445
24	1957.5000	0	105	1.000	0.0000000	0.0000
25	1957.5000	0	105	1.000	0.0000000	0.0000
26	1957.5000	4006	105	1.000	0.0124447	1.2445
27	1957.5000	0	105	1.000	0.0000000	0.0000
28	1957.5000	0	105	1.000	0.0000000	0.0000



# TOWERTEK INDUSTRIES

Communications Tower Reinforcing Systems

Analysis of the Butternut Hollow Tower  
Depicting the Tower as Reinforced with the  
Stack-N-Bolt Tower Reinforcing System  
Revision 1, Feb 14, 2002



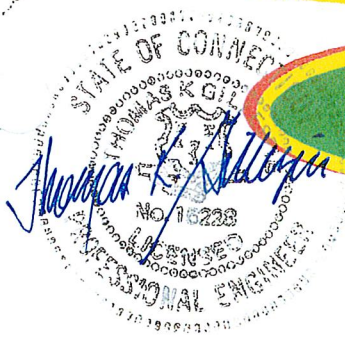
Stack-N-Bolt

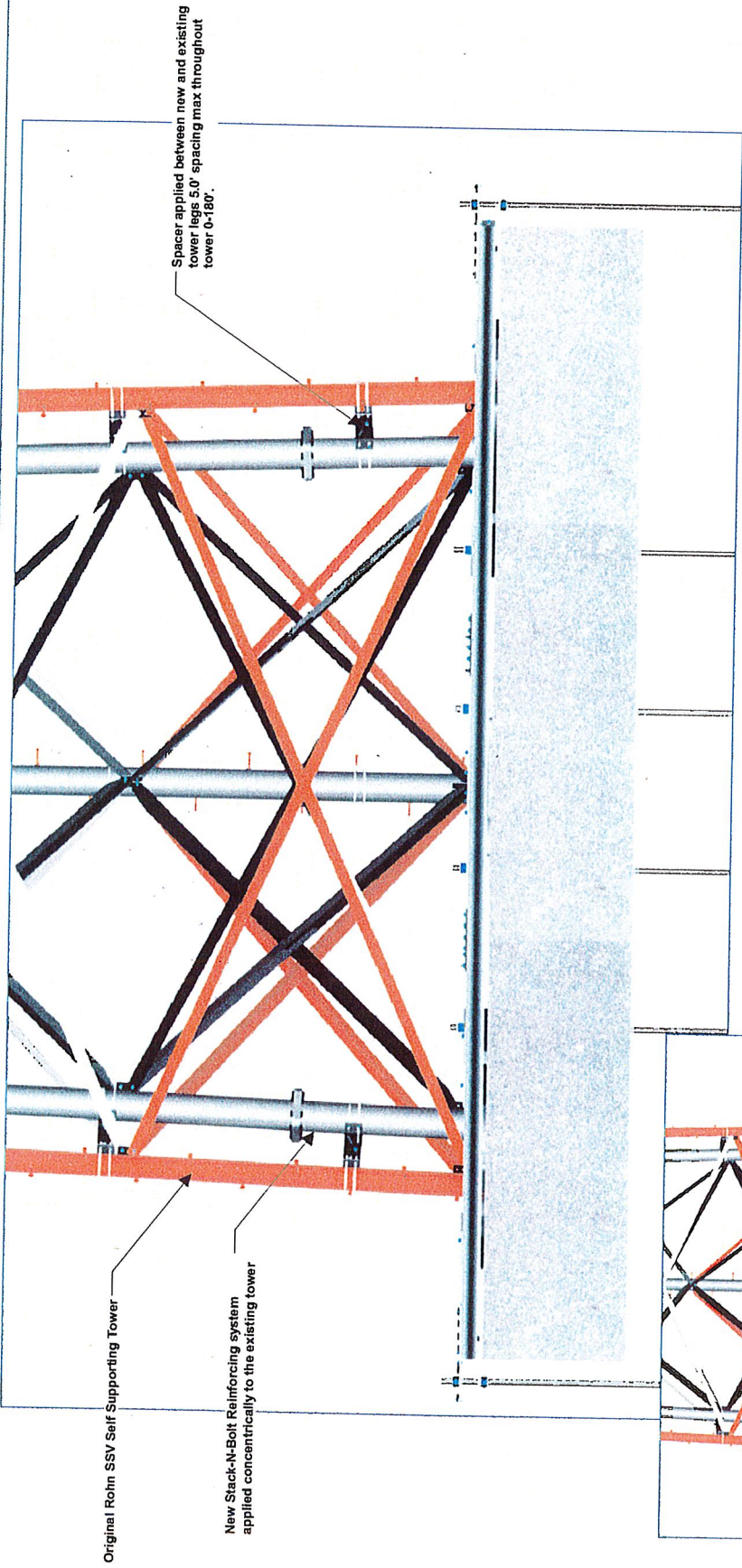
MonoStar

RigidStar

Arkitek

Towertek Industries Inc  
3325 Hollywood Boulevard, Suite 4C  
Hollywood, Florida. 3302  
Phone 954.966.818  
Fax 954.923.975  
[www.towertekindustries.com](http://www.towertekindustries.com)





Original Rohn SSV Self Supporting Tower

New Stack-N-Bolt Reinforcing system applied concentrically to the existing tower

Spacer applied between new and existing tower legs 5.0' spacing max throughout tower 0-180'.

West Elevation Showing Proposed Reinforcing on Existing Tower & Foundation  
Scale: NTS

General Notes

1. See Individual Section Assembly Drawings for Part Numbers and section assembly details.
2. Fabrication drawings if referenced are for shop use only.
3. Tower Designs are in accordance with approved national standard ANSI TIA/EIA 222B-F.
4. Tower designs are in accordance with the CSP specifications.
5. Tower erection and dismantling to be performed by qualified and experienced personnel.
6. All antenna installations must be grounded in accordance with local and national codes.
7. All steel components hot dipped galvanized after fabrication.
8. "Anco" type locknuts are provided and are to be used on all tower bolts.

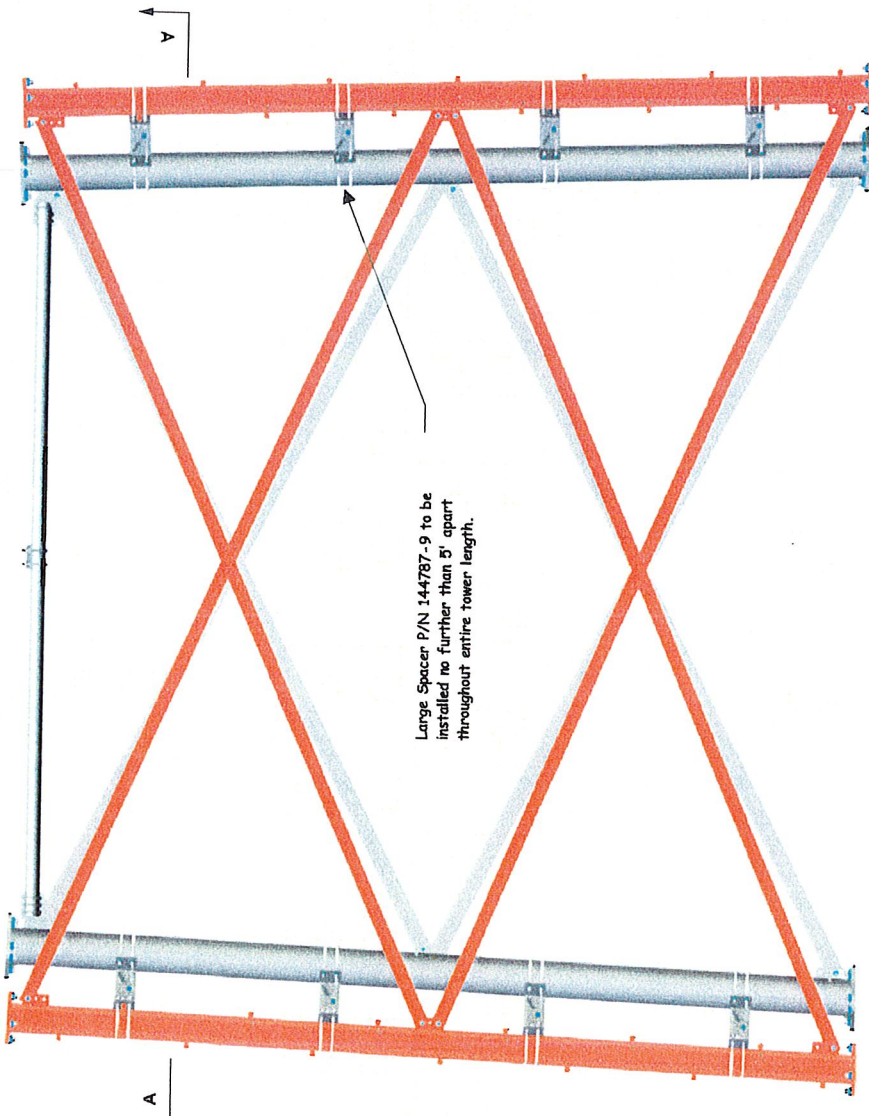


Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
located in  
Greenwich, Connecticut

Drawings Exclusively Prepared for  
**URS**  
URS Corporation AES  
100 Water Street  
Rocky Hill, CT 06067

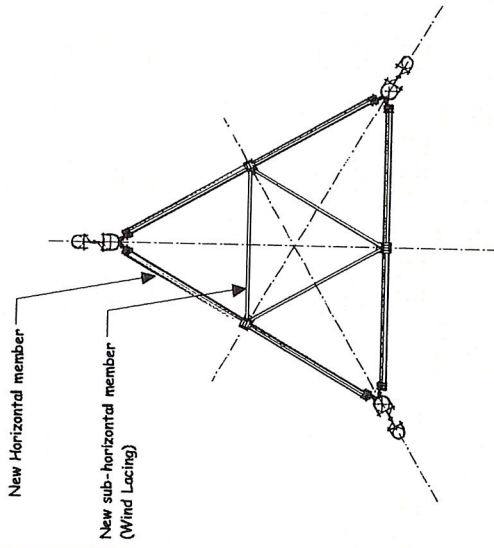


<b>TOWERTEK</b> Industries Inc. Stack-N-Bolt Tower Reinforcing Existing Rohn SSV		Revision: Address items #7 & 8 to sheet.	Scale:	Rev: <b>1</b>	Sheet
		Drawn By: JJ	Checked By: RAK	Apprv By: KD	<b>1</b>



Large Spacer P/N 144787-9 to be installed no further than 5' apart throughout entire tower length.

Reinforced Tower Section (Typical)  
Scale: 1:30



Section AA (Typical)  
Scale: 1:75

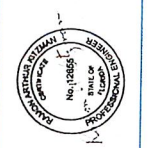
**Tower Notes**

1. New angle sub-horizontal members (wind lacing) used on all sections T1-T9.
2. New primary horizontal members used on all sections T1-T9.



Drawings Exclusively Prepared for  
**URS**  
 URS Corporation, AES  
 795 Brook Street  
 Building 5  
 Rocky Hill, CT 06067

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
 located in  
 Greenwich, Connecticut



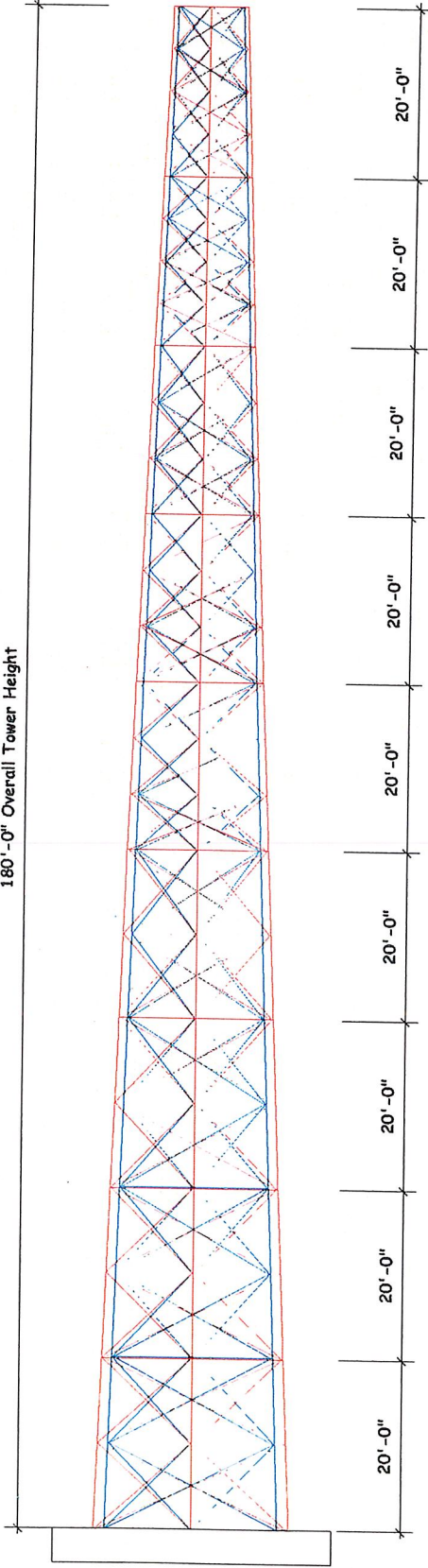
**TOWERTEK**  
 Industries Inc.

Tower Modification Details

Scale:  
 Drawn By: JJ  
 Checked By: RAK  
 Apprv By: KD

Rev:  
 Sheet  
 2

180'-0" Overall Tower Height

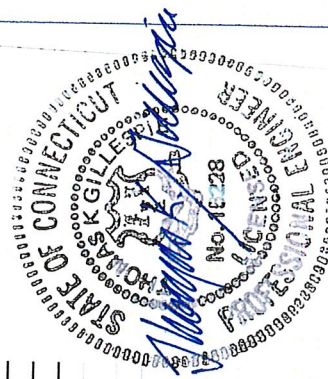


Modified Tower Component Schedule

Section Name	Spread Dimensions		Tower Leg Dia.		Tower Braces		Horizontal	Wind Lacing	Brace Bolts	
	Upper	Lower	Parent	SNB	Parent	SNB			Parent	SNB
T1	8.67	10.24	P3-33	P3-437	L1.75x1.75x3/16	L2x2x5/16	P3.425	L2x2x1/4	N/A	5/8
T2	10.24	11.81	P3.5-318	P4-494	L2x2x3/16	L2x2x1/4	P3.425	L2x2x1/4	N/A	5/8
T3	11.81	13.39	P4-337	P4-494	L2.5x2.5x3/16	L2.5x2.5x5/16	P3.425	L2x2x1/4	N/A	5/8
T4	13.39	14.96	P5-258	P5-375	L2.5x2.5x3/16	L2.5x2.5x5/16	P3.425	L2x2x1/4	N/A	5/8
T5	14.96	16.53	P5.5-375	P6-562	L3x3x5/16	L3x3x1/2	P4.494	2.5x2.5x3/16	N/A	3/4
T6	16.53	18.11	P6-375	P6-562	L3.5x3.5x3/8	L4x4x1/2	P4.494	2.5x2.5x3/16	N/A	3/4
T7	18.11	19.68	P6-432	P8-5	L4x4x3/8	L4x4x5/8	P4.494	2.5x2.5x3/16	N/A	3/4
T8	19.68	21.25	P6-432	P8-5	L4x4x3/8	L4x4x5/8	P4.494	2.5x2.5x3/16	N/A	3/4
T9	21.25	22.83	P8-322	P10-5	L4x4x1/2	L5x5x5/8	P4.494	2.5x2.5x3/16	N/A	3/4
Base Plate	10 Anchor Bolts per Base Plate Assj (20 Total) 1-1/4" x 36 embedment into existing slab P10 Williams RSt1									A325

**Tower Design Note**

Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standards  
 Tower is also designed for a 90 mph basic wind with 0.50 in radial ice.

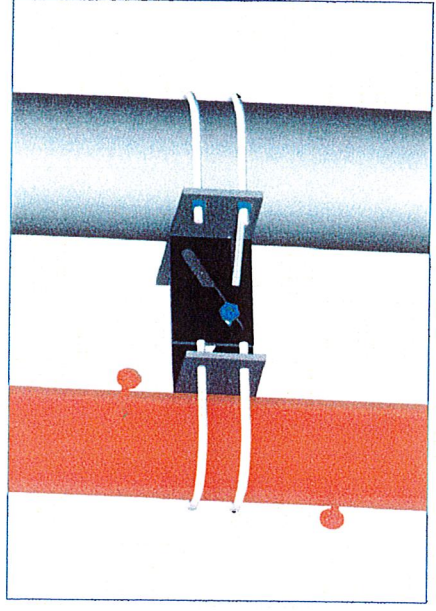
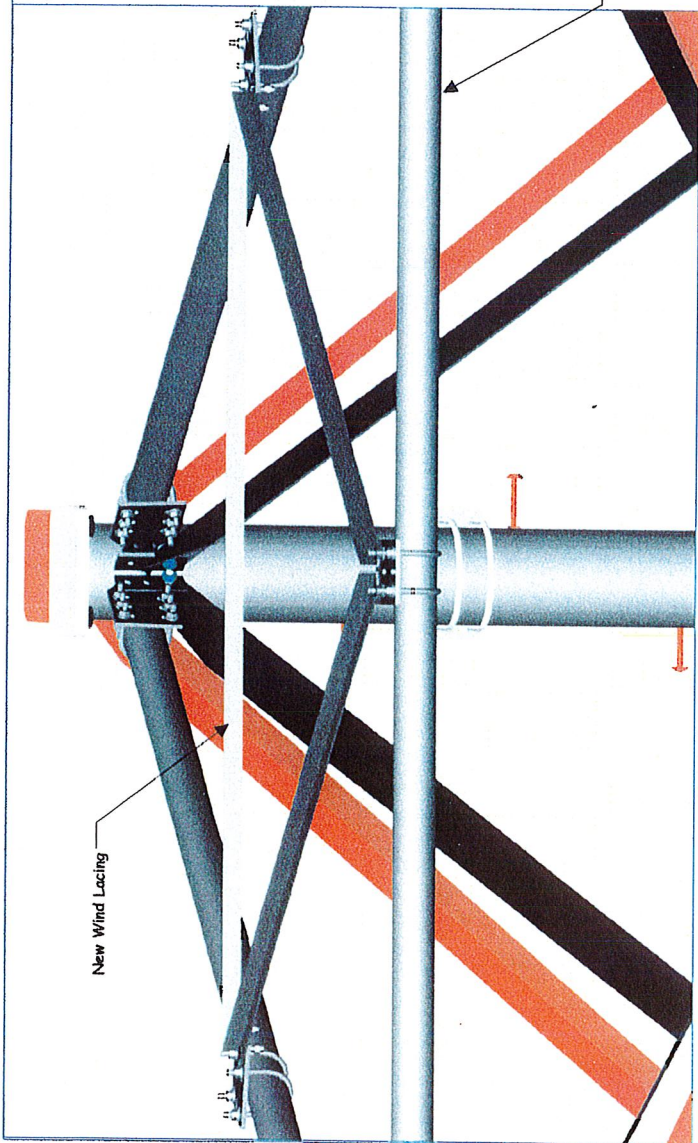


Drawings Exclusively Prepared for  
**URS**  
 155 Corporate Park  
 795 Brook Street  
 Rocky Hill, CT 06067

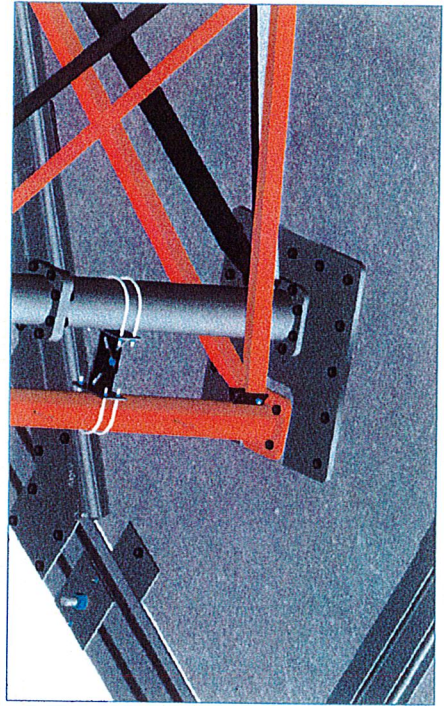
Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
 located in  
 Greenwich, Connecticut

**TOWERTEK**  
 Industries Inc.

Scale: \_\_\_\_\_  
 Drawn By: JJ  
 Checked By: RAK  
 Apprv By: KD  
 Rev: \_\_\_\_\_



Typical Leg Spacer Assembly  
Scale: NTS



Base Plate Assembly  
Scale: NTS

Typical Horizontal & Wind Lacing Detail  
Scale: NTS



Drawings Exclusively Prepared for  
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 URS Corporation NES  
 Building 5 Jinet  
 Rocky Hill, CT 06067

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
 located in  
 Greenwich, Connecticut

Stack-N-Bolt Details

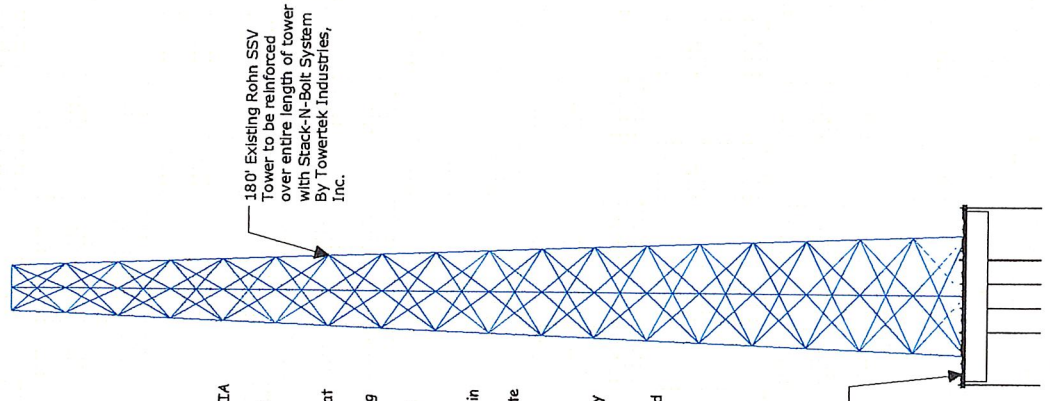


Scale:	Drawn By: JJ	Checked By: RAK	Rev:	Sheet
			Apprv By: KD	4

Existing 32' - 6" x 32' - 6" x 4' concrete mat foundation

New tie-down assemblies c/w rock anchoring devices installed at 3 locations. See detail "Tie-Down Assy"

Connecting hold-down assembly "A". See detail "Hold-Down Assemblies"

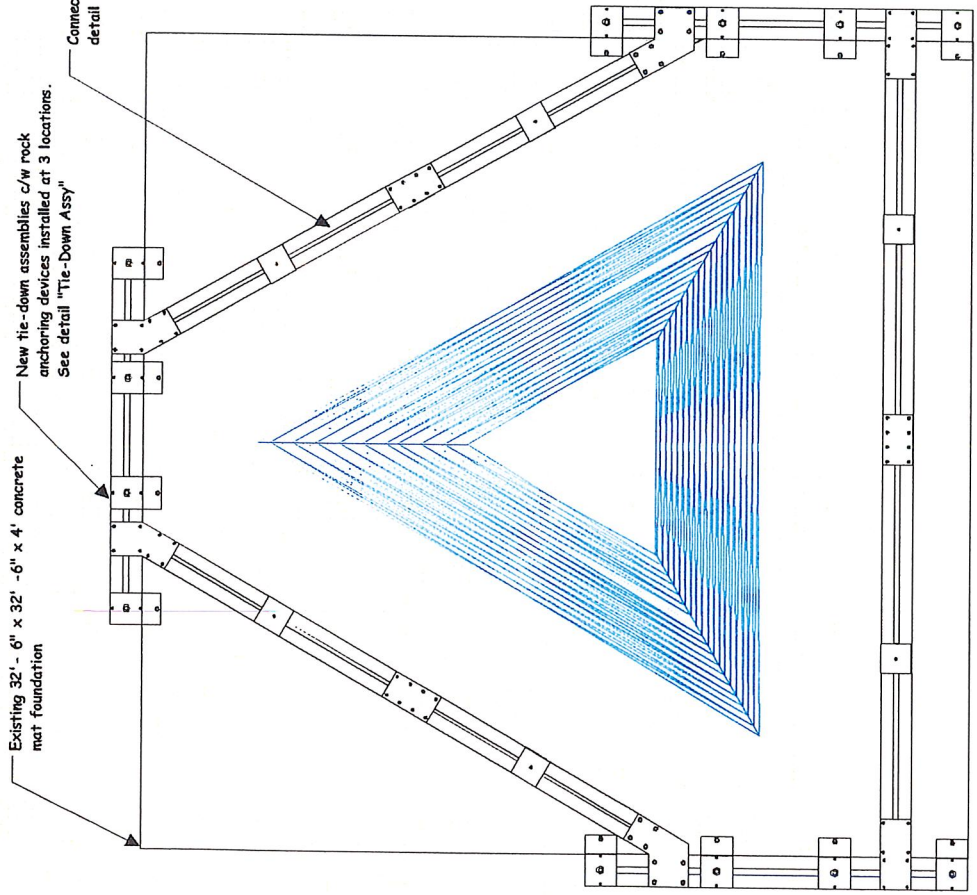


West Elevation  
Scale: 1"=20'

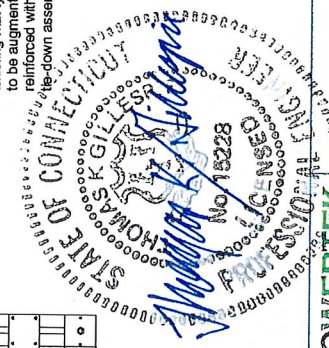
Existing mat type foundation to be augmented and reinforced with rock anchor tie-down assemblies

Foundation Notes

1. Foundation Designs are in accordance with ANSI TIA/ETIA 222R-F
2. Assuming accuracy within geotechnical reports provided by customer.
3. Foundation designs assume field inspections will be performed by the purchaser's representative to verify that construction materials, installation methods and design parameters are acceptable based on the conditions existing at the site.
4. Work shall be in accordance with local codes and safety regulations unless otherwise noted.
5. Anchor bolts shall meet or exceed the requirements of ASTM A354 grade BC and shall be installed and tightened in accordance with provided installation documentation.
6. Concrete materials shall conform to the appropriate state requirements for exposed structural concrete.
7. Welding is prohibited on any materials, anchor bolts, or structural members supplied by Towertek Industries.
8. Foundation designs assume soil parameters as supplied by customer's geotechnical report are correct and accurate.
9. Foundation installation shall be supervised by personnel specifically knowledgeable in the materials and devices used with the foundation types.



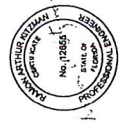
Top View Mat Mat Foundation  
Scale: 1:50



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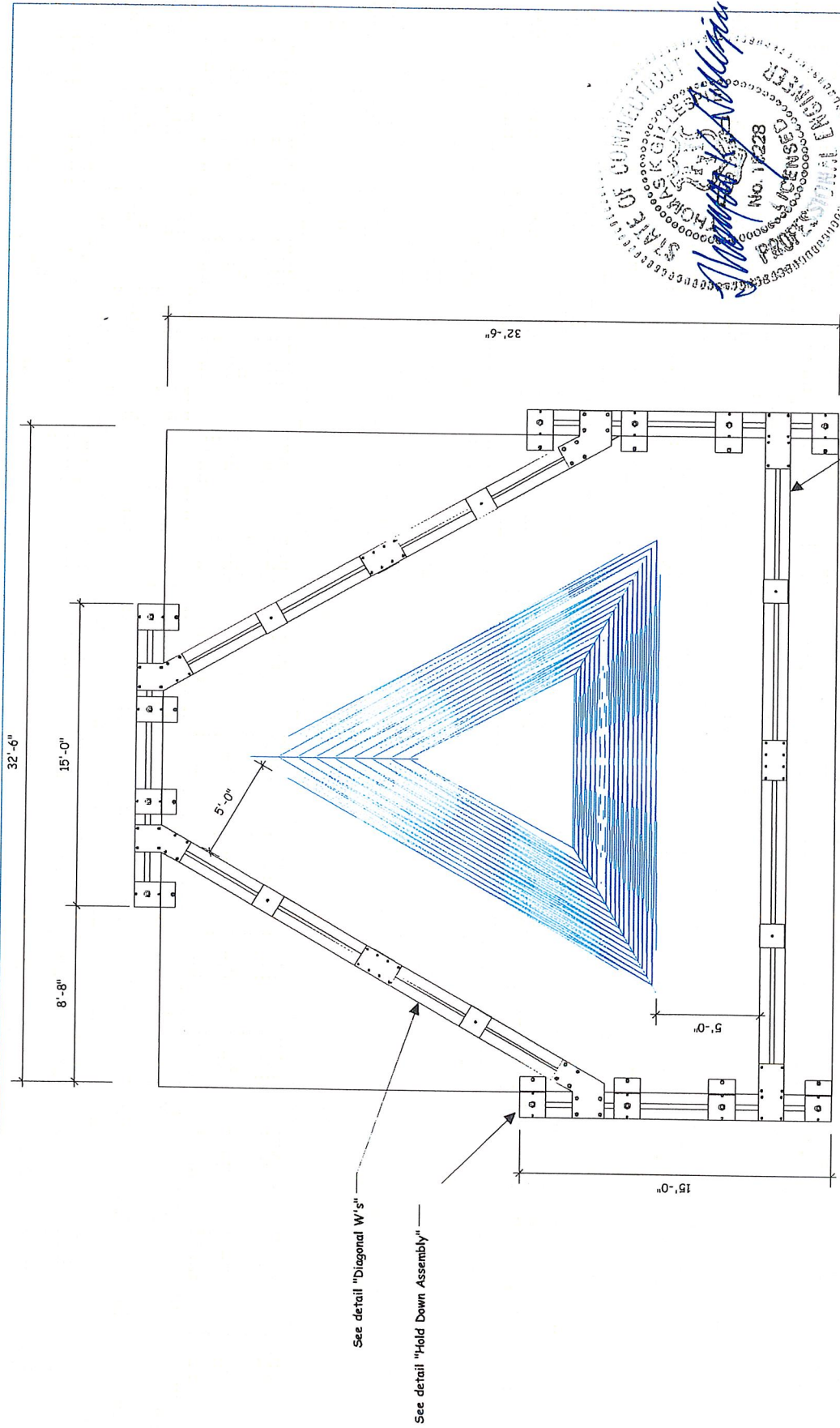
Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
located in  
Greenwich, Connecticut

Drawings Exclusively Prepared for  
**URS**  
URS Corporation AES  
Building Street  
Rocky Hill, CT 06867



Scale:	Drawn By: JJ	Checked By: RAK	Apprv By: KD	Sheet
				<b>5</b>





Top View  
Scale: 1:50  
See detail "Horizontal W's"

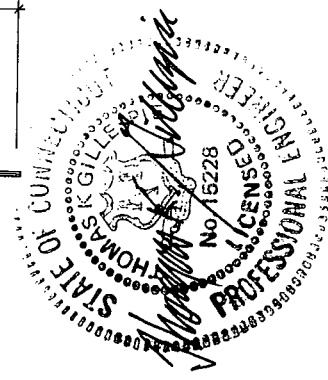
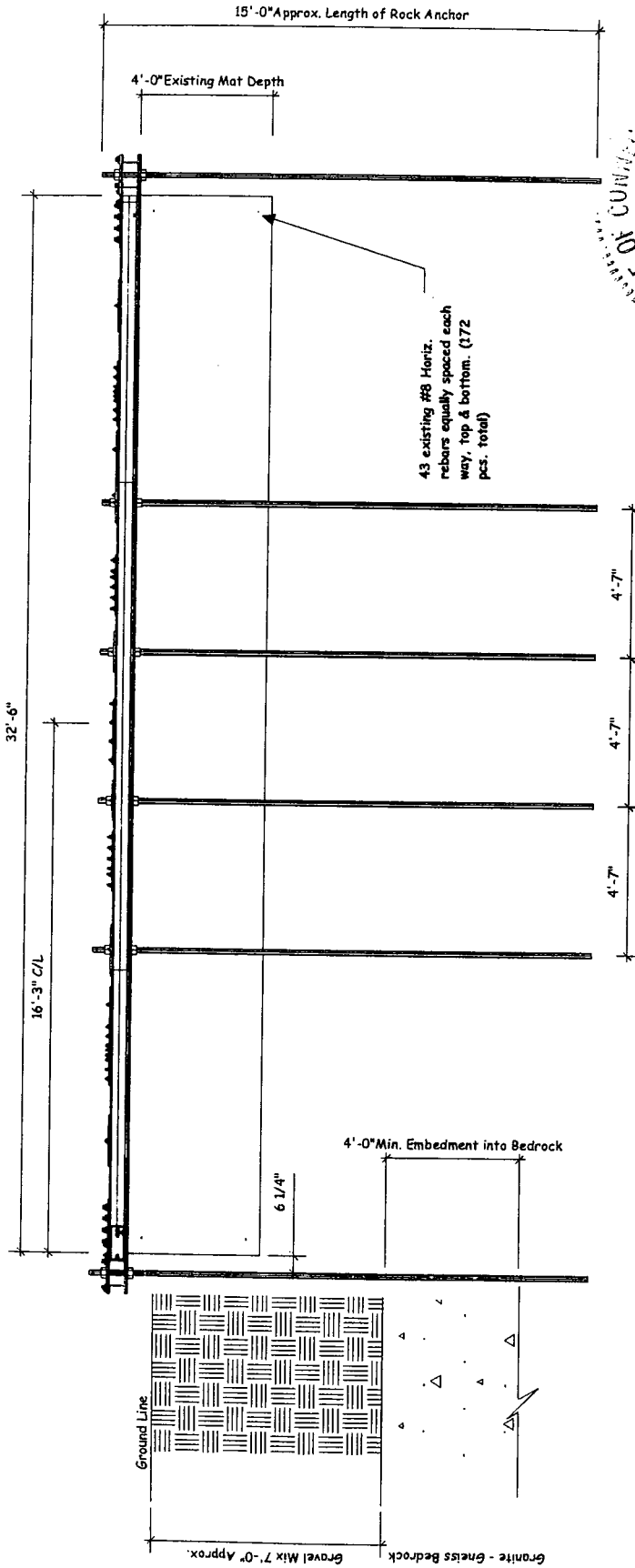
See detail "Diagonal W's"  
See detail "Hold Down Assembly"

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
located in  
Greenwich, Connecticut

Drawings Exclusively Prepared for  
**URS**  
URS Corporation MS  
1000 Main Street  
Bridgewater, CT 06607



<b>TOWERTEK</b> Industries Inc.	Mat Foundation Augmentation with Tie Down Assemblies	Scale: Drawn By: JJ	Checked By: RAK	Apprv By: KD	Sheet <b>6</b>



East Elevation

Scale: 1:35

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
 located in  
 Greenwich, Connecticut

Drawings Exclusively Prepared for  
**URS**  
 URS Corporation A/S  
 295 Bank Street  
 Rocky Hill, CT 06067



<b>TOWERTEK</b> Industries Inc.		Mat Foundation Details	Scale: Drawn By: JJ	Checked By: RAK	Rev: Apprv By: KO	Sheet 7
------------------------------------	--	------------------------	------------------------	-----------------	----------------------	------------

3/4" x 10" Embedment Williams Concrete Anchors P/N R44M066AC1RVA13 (4 per "Hold Down" Assy.)

2" R1H Hollow Core "Sph Lock" Rock Belts (15' Long)

15 x 15 x 1/2" Thrust Plate (Top)

15 x 24 x 1/2" Thrust Plate (Bottom)

(Qty2) - W6x25x15' "I" Beams

3/4" x 10" Embedment Williams Concrete Anchors P/N R44M066AC1RVA13 (4 per "Hold Down" Assy.)



Hold Down Details-Top View  
Scale 1:20

Hold Down Details-Side View  
Scale 1:20

Drawings Exclusively Prepared for

**URS**  
URS Corporation, AEC  
295 Brook Street  
P.O. Box 111000  
Boston, MA 02111

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
located in  
Greenwich, Connecticut

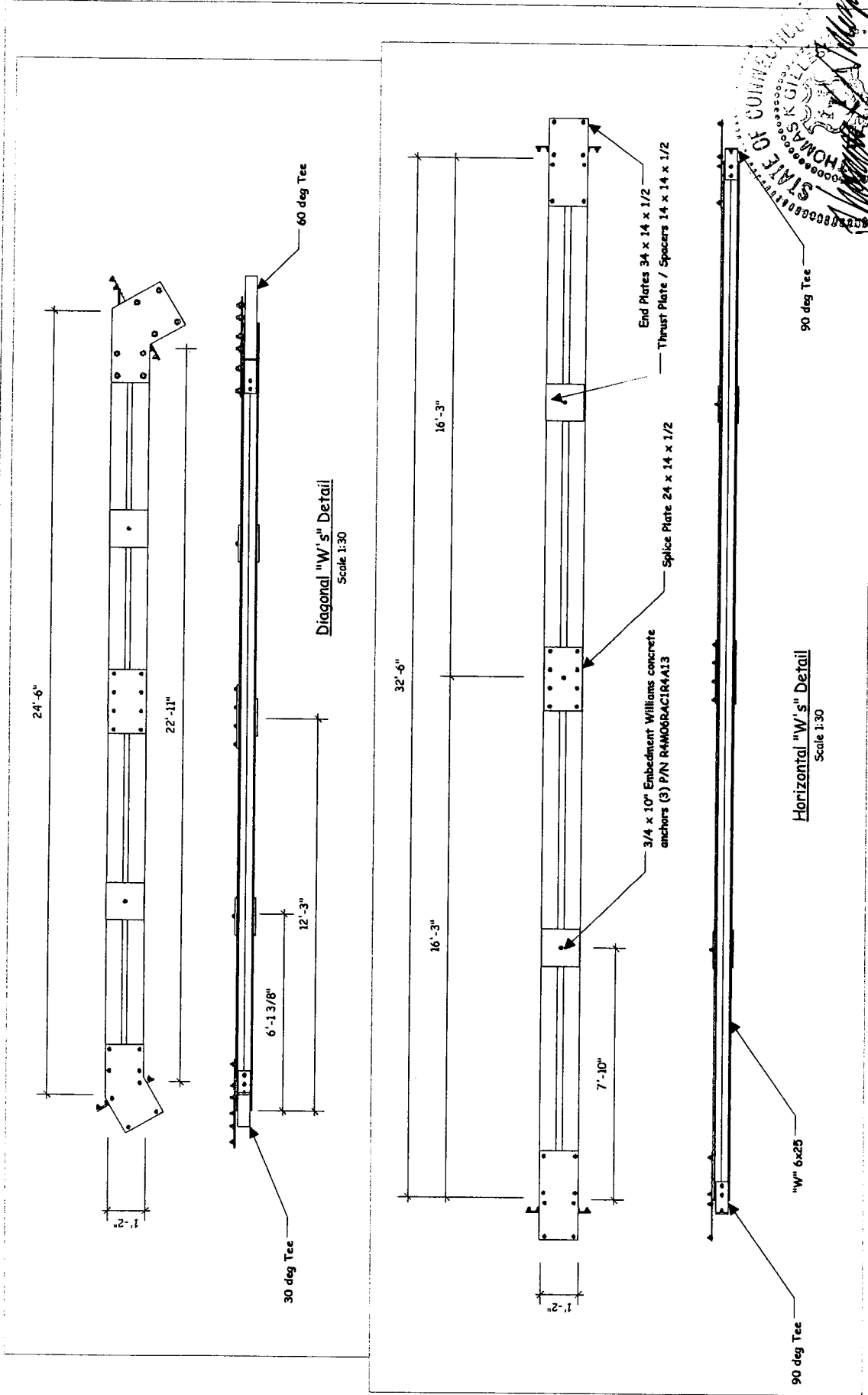
**TOWERTEK**  
Industries Inc.

Hold Down Details

Scale:  
Drawn By: JJ

Checked By: RAK

Rev:  
Apprv By: KD  
Sheet  
8



Checked By: RAK  
 Drawn By: JJ  
 Scale: 1/8" = 1'-0"  
 Sheet 9

Scale: 1/8" = 1'-0"  
 Drawn By: JJ

W Details

**TOWERTEK**  
 Industries Inc.

Tower Reinforcement & Foundation Modification of  
**Butternut Hollow CSP Tower**  
 located in  
 Greenwich, Connecticut

Drawings Exclusively Prepared for  
**URS**  
 295 South Street, 4th Floor  
 Rocky Hill, CT 06067

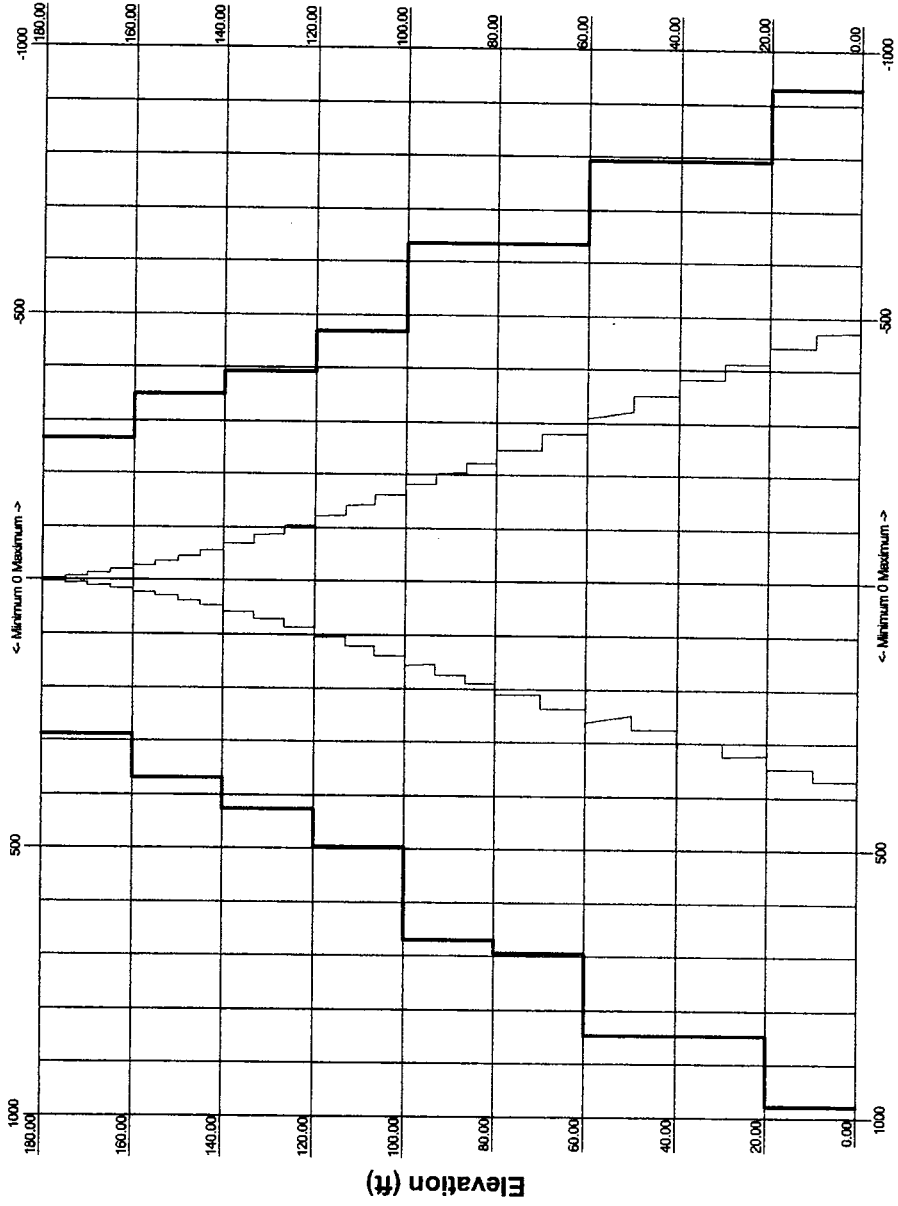




Leg Compression (K)

90 mph/90 mph 0.5000 in ice

Leg Capacity ———



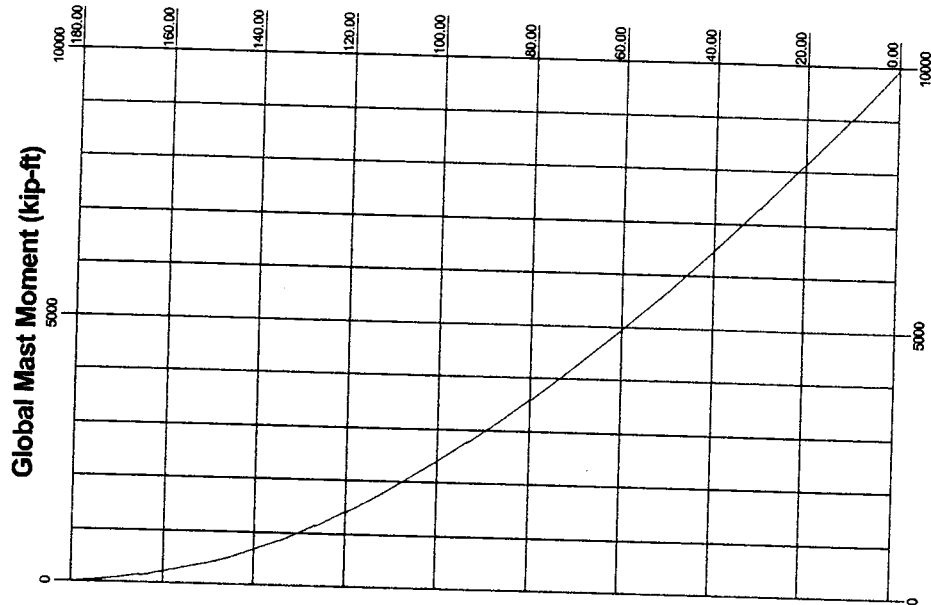
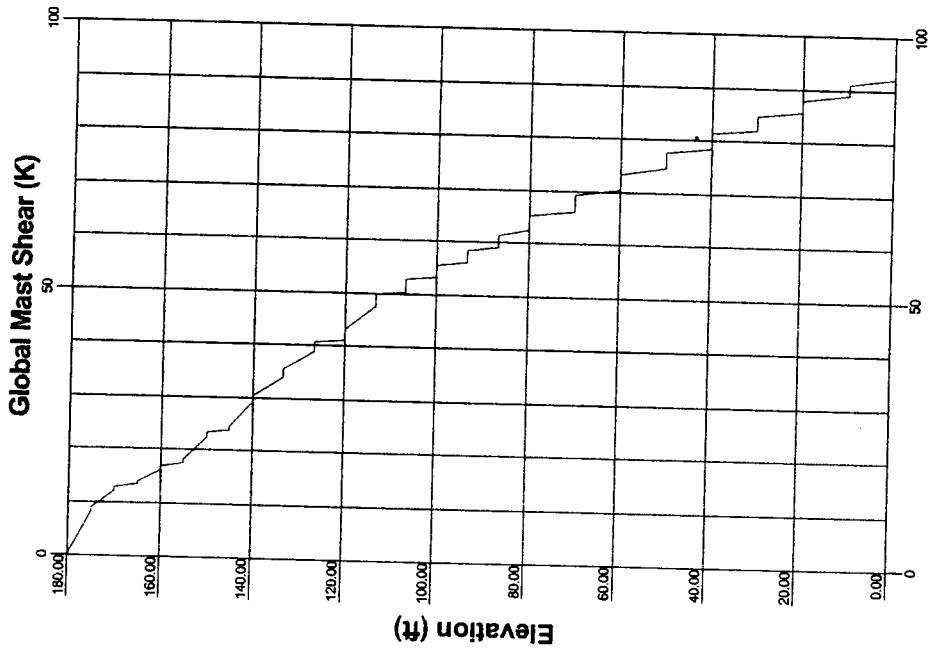
<b>Job:</b> Butternut Hollow CSP Tower	
<b>Project:</b> Reinforced Model (150%)	
<b>Client:</b> URS Corp. Connecticut	
<b>Code:</b> TIA/EIA-222-F	
<b>Path:</b> C:\Documents and Settings\default\Desktop\Butternut\Supplemental Documentation\Butternut (Reinforced).er	
<b>Drawn by:</b> Kerry Donnelly	<b>App't:</b>
<b>Date:</b> 02/14/02	<b>Scale:</b> NTS
	<b>Dwg No.:</b> E-3

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

90 mph/90 mph 0.5000 in ice

Maximum Values  
 Mx \_\_\_\_\_ Mz \_\_\_\_\_

Vx \_\_\_\_\_ Vz \_\_\_\_\_



**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

Job: **Butternut Hollow CSP Tower**  
 Project: **Reinforced Model (150%)**  
 Client: **URS Corp. Connecticut**  
 Code: **TIA/EIA-222-F**  
 Path: **C:\Documents and Settings\default\Butternut\Supplemental Documentation\Butternut (Reinforced).er**

Drawn by: **Kerry Donnelly**  
 Date: **02/14/02**  
 App'd: \_\_\_\_\_  
 Scale: **NTS**  
 Dwg No: **E-4**







<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	<b>Job</b> Butternut Hollow CSP Tower	<b>Page</b> 1 of 35
	<b>Project</b> Reinforced Model (150%)	<b>Date</b> 09:08:23 02/14/02
	<b>Client</b> URS Corp. Connecticut	<b>Designed by</b> Kerry Donnelly

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.

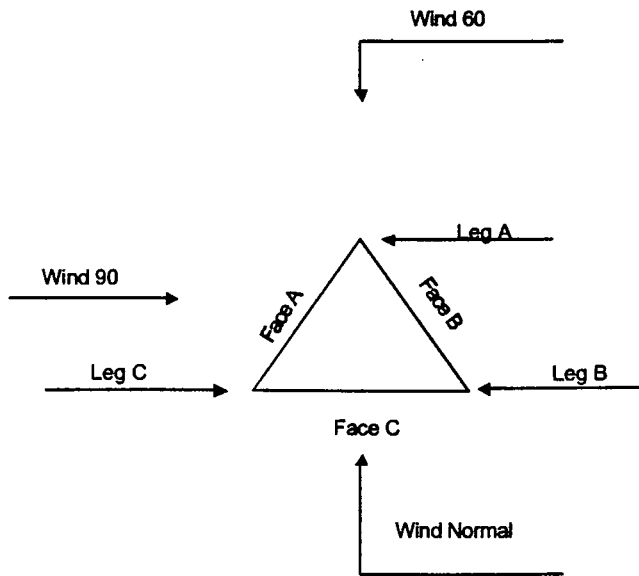
The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 8.67 ft at the top and 22.83 ft at the base.

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

The following design criteria apply:

- Basic wind speed of 90 mph .
- Nominal ice thickness of 0.5000 in .
- Ice density of 56 pcf .
- A wind speed of 90 mph is used in combination with ice.
- A non-linear (P-delta) analysis was used .
- Pressures are calculated at each section .
- Stress ratio used in tower member design is 1.333



**Triangular Tower**

## Tower Section Geometry

Tower Section	Tower Elevation	Section Width	Number of Sections	Section Length	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals
	ft	ft		ft	ft			
T1	180-160	8.67	1	20.00	5.00	X Brace	No	No
T2	160-140	10.24	1	20.00	5.00	X Brace	No	No
T3	140-120	11.82	1	20.00	6.67	X Brace	No	No

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@hellsouth.net	<b>Job</b> Butternut Hollow CSP Tower	<b>Page</b> 2 of 35
	<b>Project</b> Reinforced Model (150%)	<b>Date</b> 09:08:23 02/14/02
	<b>Client</b> URS Corp. Connecticut	<b>Designed by</b> Kerry Donnelly

Tower Section	Tower Elevation	Section Width	Number of Sections	Section Length	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals
	ft	ft		ft	ft			
T4	120-100	13.39	1	20.00	6.67	X Brace	No	No
T5	100-80	14.96	1	20.00	6.67	X Brace	No	No
T6	80-60	16.54	1	20.00	10.00	X Brace	No	No
T7	60-40	18.11	1	20.00	10.00	X Brace	No	No
T8	40-20	19.68	1	20.00	10.00	X Brace	No	No
T9	20-0	21.26	1	20.00	10.00	X Brace	No	No

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg F <sub>y</sub>	Diagonal Type	Diagonal Size	Diagonal F <sub>y</sub>
ft			ksi			ksi
T1 180-160	Pipe	THP3-3-T3-.437	50	Double Angle	THL1.75-1.75-3/16-T2-2-1/4	36
T2 160-140	Pipe	THP3.5-3.18-T4.5-438	50	Double Angle	THL2-2-3/16-T2-2-5/16	36
T3 140-120	Pipe	THP4-337-T4-494	50	Double Angle	THL2.5-2.5-3/16-T2.5-2.5-5/16	36
T4 120-100	Pipe	THP5-258-T5-375	50	Double Angle	THL2.5-2.5-3/16-T2.5-2.5-5/16	36
T5 100-80	Pipe	THP5.5-375-T6-562	50	Double Angle	THL3-3-5/16-T3-3-1/2	36
T6 80-60	Pipe	THP6-375-T6-562	50	Double Angle	THL3.5-3.5-3/8(4-4-5)	36
T7 60-40	Pipe	THP6-432-T8-5	50	Double Angle	THL4-4-3/8(4-4-5/8)	36
T8 40-20	Pipe	THP6-432-T8-5	50	Double Angle	THL4-4-3/8(4-4-5/8)	36
T9 20-0	Pipe	TP8-322-T10-5	50	Double Angle	THL4-4-1/2-(5-5-5/8)	36

### Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt F <sub>y</sub>	Bottom Girt Type	Bottom Girt Size	Bottom Girt F <sub>y</sub>
ft			ksi			ksi
T1 180-160	Pipe	P3x.425	36	Flat Bar		36
T2 160-140	Pipe	P3x.425	36	Flat Bar		36
T3 140-120	Pipe	P3x.425	36	Flat Bar		36
T4 120-100	Pipe	P3x.425	36	Flat Bar		36
T5 100-80	Pipe	P4x.494	36	Flat Bar		36
T6 80-60	Pipe	P4x.494	36	Flat Bar		36
T7 60-40	Pipe	P4x.494	36	Flat Bar		36
T8 40-20	Pipe	P4x.494	36	Flat Bar		36
T9 20-0	Pipe	P4x.494	36	Flat Bar		36

### Tower Section Geometry (cont'd)

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal F <sub>y</sub>	Inner Bracing Type	Inner Bracing Size	Inner Bracing F <sub>y</sub>
ft			ksi			ksi
T1 180-160	Solid Round		36	Single Angle	L2x2x1/4	36
T2 160-140	Solid Round		36	Single Angle	L2x2x1/4	36

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	3 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal $F_y$	Inner Bracing Type	Inner Bracing Size	Inner Bracing $F_y$
ft			ksi			ksi
T3 140-120	Solid Round		36	Single Angle	L2x2x1/4	36
T4 120-100	Solid Round		36	Single Angle	L2x2x1/4	36
T5 100-80	Solid Round		36	Single Angle	L2x2x1/4	36
T6 80-60	Solid Round		36	Single Angle	L2x2x1/4	36
T7 60-40	Solid Round		36	Single Angle	L2x2x1/4	36
T8 40-20	Solid Round		36	Single Angle	L2x2x1/4	36
T9 20-0	Solid Round		36	Single Angle	L2x2x1/4	36

## Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Adjust. Factor $A_f$	Adjust. Factor $A_r$	Weight Mult.	Legs	K Factors <sup>1</sup>								
							X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Inner Brace	Truss Leg X Brace	Truss Leg Z Brace	
							X Y	X Y	X Y	X Y	X Y	X Y	X Y	X Y	
T1 180-160	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T2 160-140	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T3 140-120	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T4 120-100	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T5 100-80	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T6 80-60	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T7 60-40	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T8 40-20	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85
T9 20-0	0.00	0.0000	1	1	1	1	1	1	1	1	1	1	1	0.5	0.85

<sup>1</sup>Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

## Tower Section Geometry (cont'd)

Tower Elevation	Tension Area Factors						Connection Offsets							
	Legs		Inner Members				Diagonals				K-Bracing			
			Single Angle		Double Angle		Vert.		Horiz.		Vert.		Horiz.	
	Net Width	U	Net Width	U	Net Width	U	Top	Top	Bot.	Bot.	Top	Top	Bot.	Bot.
ft	in	in	in	in	in	in	in	in	in	in	in	in	in	
T1 180-160	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 160-140	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 140-120	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 120-100	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 100-80	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 80-60	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 60-40	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

# ERITower

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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	4 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Tower Elevation  ft	Tension Area Factors						Connection Offsets								
	Legs		Inner Members				Diagonals				K-Bracing				
	Net Width Deduct in	U	Single Angle		Double Angle		Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	
			Net Width Deduct in	U	Net Width Deduct in	U									
T8 40-20	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T9 20-0	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000

## Feed Line/Linear Appurtenances Treated As Structural Components

Description	Face	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	A	Ar (CfAe)	173.00 - 10.00	2	2	1.9800	1.9800		1.04
7/8	A	Ar (CfAe)	173.00 - 10.00	1	1	1.5000	1.1100		0.54
1 5/8	A	Ar (CfAe)	145.00 - 10.00	6	6	1.9800	1.9800		1.04
1 5/8	A	Ar (CfAe)	136.00 - 10.00	12	12	1.9800	1.9800		1.04
7/8	A	Ar (CfAe)	120.00 - 10.00	1	1	1.5000	1.1100		0.54
1 5/8	B	Ar (CfAe)	178.00 - 10.00	2	2	1.9800	1.9800		1.04
1 1/4	B	Ar (CfAe)	178.00 - 10.00	1	1	1.5500	1.5500		0.66
7/8	B	Ar (CfAe)	178.00 - 10.00	2	2	1.5000	1.1100		0.54
1 5/8	B	Ar (CfAe)	130.00 - 10.00	12	12	1.9800	1.9800		1.04
1 5/8	B	Ar (CfAe)	117.00 - 10.00	6	6	1.9800	1.9800		1.04
1/2	B	Ar (CfAe)	62.00 - 10.00	1	1	1.5000	0.5800		0.25
1 1/4	B	Ar (CfAe)	151.00 - 10.00	5	5	1.5500	1.5500		0.66
7/8	B	Ar (CfAe)	170.50 - 10.00	1	1	1.5000	1.1100		0.54
3/8	B	Ar (CfAe)	176.00 - 10.00	2	2	1.5000	0.3750		0.21
3/8	C	Ar (CfAe)	167.00 - 10.00	2	2	1.5000	0.3750		0.21
1/4	C	Ar (CfAe)	167.00 - 10.00	4	4	1.5000	0.2500		0.14
7/8	C	Ar (CfAe)	160.00 - 10.00	2	2	1.5000	1.1100		0.54
1 1/4	C	Ar (CfAe)	151.00 - 10.00	4	4	1.5500	1.5500		0.66
7/8	C	Ar (CfAe)	145.00 - 10.00	1	1	1.5000	1.1100		0.54
7/8	C	Ar (CfAe)	113.00 - 10.00	1	1	1.5000	1.1100		0.54
7/8	C	Ar (CfAe)	84.00 - 10.00	1	1	1.5000	1.1100		0.54
1/2	C	Ar (CfAe)	60.00 - 10.00	1	1	1.5000	0.5800		0.25
7/8	C	Ar (CfAe)	55.00 - 10.00	1	1	1.5000	1.1100		0.54
7/8	C	Ar (CfAe)	163.50 - 10.00	1	1	1.5000	1.1100		0.54
1 5/8	C	Ar (CfAe)	176.00 - 10.00	1	1	1.9800	1.9800		1.04

## Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>I</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>I</sub> Out Face ft <sup>2</sup>	Weight K
T1	180-160	A	5.492	0.000	0.000	0.000	0.03
		B	13.566	0.000	0.000	0.000	0.08
		C	3.985	0.000	0.000	0.000	0.03
T2	160-140	A	13.400	0.000	0.000	0.000	0.08
		B	23.087	0.000	0.000	0.000	0.13
		C	17.913	0.000	0.000	0.000	0.10
T3	140-120	A	59.930	0.000	0.000	0.000	0.38
		B	48.700	0.000	0.000	0.000	0.29
		C	23.950	0.000	0.000	0.000	0.14

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	5 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
T4	120-100	A	69.700	0.000	0.000	0.000	0.44
		B	85.330	0.000	0.000	0.000	0.52
		C	25.153	0.000	0.000	0.000	0.14
T5	100-80	A	69.700	0.000	0.000	0.000	0.44
		B	88.300	0.000	0.000	0.000	0.54
		C	26.170	0.000	0.000	0.000	0.15
T6	80-60	A	69.700	0.000	0.000	0.000	0.44
		B	88.397	0.000	0.000	0.000	0.54
		C	27.650	0.000	0.000	0.000	0.16
T7	60-40	A	69.700	0.000	0.000	0.000	0.44
		B	89.267	0.000	0.000	0.000	0.54
		C	30.004	0.000	0.000	0.000	0.17
T8	40-20	A	69.700	0.000	0.000	0.000	0.44
		B	89.267	0.000	0.000	0.000	0.54
		C	30.467	0.000	0.000	0.000	0.17
T9	20-0	A	34.850	0.000	0.000	0.000	0.22
		B	44.633	0.000	0.000	0.000	0.27
		C	15.233	0.000	0.000	0.000	0.09

## Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_A A_A$ In Face ft <sup>2</sup>	$C_A A_A$ Out Face ft <sup>2</sup>	Weight K
T1	180-160	A	0.500	8.742	0.000	0.000	0.000	0.09
		B	0.500	24.608	0.000	0.000	0.000	0.22
		C	0.500	9.110	0.000	0.000	0.000	0.07
T2	160-140	A	0.500	20.900	0.000	0.000	0.000	0.21
		B	0.500	41.004	0.000	0.000	0.000	0.37
		C	0.500	38.663	0.000	0.000	0.000	0.31
T3	140-120	A	0.500	90.930	0.000	0.000	0.000	0.93
		B	0.500	80.367	0.000	0.000	0.000	0.76
		C	0.500	48.950	0.000	0.000	0.000	0.40
T4	120-100	A	0.500	106.367	0.000	0.000	0.000	1.08
		B	0.500	135.497	0.000	0.000	0.000	1.33
		C	0.500	51.236	0.000	0.000	0.000	0.42
T5	100-80	A	0.500	106.367	0.000	0.000	0.000	1.08
		B	0.500	139.967	0.000	0.000	0.000	1.37
		C	0.500	53.170	0.000	0.000	0.000	0.44
T6	80-60	A	0.500	106.367	0.000	0.000	0.000	1.08
		B	0.500	140.230	0.000	0.000	0.000	1.37
		C	0.500	55.983	0.000	0.000	0.000	0.46
T7	60-40	A	0.500	106.367	0.000	0.000	0.000	1.08
		B	0.500	142.600	0.000	0.000	0.000	1.39
		C	0.500	61.254	0.000	0.000	0.000	0.51
T8	40-20	A	0.500	106.367	0.000	0.000	0.000	1.08
		B	0.500	142.600	0.000	0.000	0.000	1.39
		C	0.500	62.133	0.000	0.000	0.000	0.51
T9	20-0	A	0.500	53.183	0.000	0.000	0.000	0.54
		B	0.500	71.300	0.000	0.000	0.000	0.70
		C	0.500	31.067	0.000	0.000	0.000	0.26

## Feed Line Shielding

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	<b>Job</b> Butternut Hollow CSP Tower	<b>Page</b> 6 of 35
	<b>Project</b> Reinforced Model (150%)	<b>Date</b> 09:08:23 02/14/02
	<b>Client</b> URS Corp. Connecticut	<b>Designed by</b> Kerry Donnelly

Section	Elevation	Face	$A_R$	$A_{R, Ice}$	$A_F$	$A_{F, Ice}$
	ft		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>
T1	180-160	A	0.080	0.164	0.414	0.880
		B	0.198	0.461	1.024	2.476
		C	0.058	0.171	0.301	0.917
T2	160-140	A	0.195	0.392	0.981	2.041
		B	0.337	0.769	1.691	4.003
		C	0.261	0.725	1.312	3.775
T3	140-120	A	0.874	1.705	4.239	8.146
		B	0.710	1.507	3.444	7.200
		C	0.349	0.918	1.694	4.385
T4	120-100	A	1.016	1.994	4.815	9.307
		B	1.244	2.541	5.895	11.856
		C	0.367	0.961	1.738	4.483
T5	100-80	A	1.307	2.438	5.677	10.589
		B	1.656	3.208	7.192	13.934
		C	0.491	1.218	2.132	5.293
T6	80-60	A	1.307	2.438	5.366	9.554
		B	1.657	3.214	6.806	12.596
		C	0.518	1.283	2.129	5.028
T7	60-40	A	1.307	2.438	5.258	9.361
		B	1.674	3.268	6.734	12.550
		C	0.563	1.404	2.263	5.391
T8	40-20	A	1.307	2.438	5.172	9.208
		B	1.674	3.268	6.624	12.345
		C	0.571	1.424	2.261	5.379
T9	20-0	A	0.653	1.219	3.189	5.516
		B	0.837	1.634	4.085	7.395
		C	0.286	0.712	1.394	3.222

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	$C_{A1}$ Front	$C_{A1}$ Side	Weight	
			Horz	Lateral Vert						ft <sup>2</sup>
			ft	deg	ft					
DB314	C	None			0.0000	180.00	No Ice	2.87	4.60	0.05
							1/2" Ice	3.18	5.21	0.09
							1" Ice	3.52	5.84	0.13
							2" Ice	4.27	7.16	0.23
							4" Ice	5.88	10.14	0.54
PD1110	A	From Leg	72.00	0.0000	180.00	No Ice	3.52	3.52	0.02	
						1/2" Ice	4.89	4.89	0.03	
						1" Ice	6.27	6.27	0.05	
						2" Ice	9.06	9.06	0.09	
						4" Ice	13.86	13.86	0.25	
Scala OGT9-806N	B	From Leg	72.00	0.0000	180.00	No Ice	1.31	1.31	0.01	
						1/2" Ice	1.99	1.99	0.02	
						1" Ice	2.44	2.44	0.04	
						2" Ice	3.27	3.27	0.08	
						4" Ice	5.03	5.03	0.22	
Scala OGT9-806N	C	From Leg	72.00	0.0000	180.00	No Ice	1.31	1.31	0.01	
						1/2" Ice	1.99	1.99	0.02	
						1" Ice	2.44	2.44	0.04	
						2" Ice	3.27	3.27	0.08	
						4" Ice	5.03	5.03	0.22	
Control Box Amp	B	From Leg	0.00	0.0000	178.00	No Ice	1.40	1.40	0.05	

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	7 of 35
	Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight	
			Horz	Lateral Vert						deg
				0.00			1/2" Ice	1.56	1.56	0.07
				0.00			1" Ice	1.73	1.73	0.08
							2" Ice	2.09	2.09	0.13
							4" Ice	2.92	2.92	0.25
DB S806M-XT	C	From Leg	72.00	0.0000	173.00		No Ice	0.57	0.57	0.08
			0.00				1/2" Ice	1.16	1.16	0.09
			0.00				1" Ice	1.71	1.71	0.09
							2" Ice	2.43	2.43	0.12
							4" Ice	3.98	3.98	0.24
Scala OGT9-806NU	B	From Leg	72.00	0.0000	173.00		No Ice	1.31	1.31	0.01
			0.00				1/2" Ice	1.99	1.99	0.02
			0.00				1" Ice	2.44	2.44	0.04
							2" Ice	3.27	3.27	0.08
							4" Ice	5.03	5.03	0.22
Scala OGT9-806NU	C	From Leg	72.00	0.0000	173.00		No Ice	1.31	1.31	0.01
			0.00				1/2" Ice	1.99	1.99	0.02
			0.00				1" Ice	2.44	2.44	0.04
							2" Ice	3.27	3.27	0.08
							4" Ice	5.03	5.03	0.22
16" x 16" Generic Panel GPD	B	None		0.0000	167.00		No Ice	2.49	0.32	0.10
							1/2" Ice	2.70	0.43	0.11
							1" Ice	2.92	0.56	0.13
							2" Ice	3.39	0.85	0.16
							4" Ice	4.42	1.52	0.27
16" x 16" Generic Panel GPD	B	None		0.0000	167.00		No Ice	2.49	0.32	0.10
							1/2" Ice	2.70	0.43	0.11
							1" Ice	2.92	0.56	0.13
							2" Ice	3.39	0.85	0.16
							4" Ice	4.42	1.52	0.27
DB 809K-YP	A	None		0.0000	160.00		No Ice	2.17	2.17	0.03
							1/2" Ice	3.46	3.46	0.05
							1" Ice	4.76	4.76	0.07
							2" Ice	7.42	7.42	0.15
							4" Ice	10.90	10.90	0.40
DB 809K-YP	A	None		0.0000	160.00		No Ice	2.17	2.17	0.03
							1/2" Ice	3.46	3.46	0.05
							1" Ice	4.76	4.76	0.07
							2" Ice	7.42	7.42	0.15
							4" Ice	10.90	10.90	0.40
(6) Allgon 7120-16	A	From Face	36.00	0.0000	151.00		No Ice	3.99	5.76	0.02
			0.00				1/2" Ice	4.39	6.18	0.05
			0.00				1" Ice	4.79	6.60	0.10
							2" Ice	5.62	7.48	0.20
							4" Ice	7.38	9.33	0.46
(6) Allgon 7120-16	B	From Face	36.00	0.0000	151.00		No Ice	3.99	5.76	0.02
			0.00				1/2" Ice	4.39	6.18	0.05
			0.00				1" Ice	4.79	6.60	0.10
							2" Ice	5.62	7.48	0.20
							4" Ice	7.38	9.33	0.46
(6) Allgon 7120-16	C	From Face	36.00	0.0000	151.00		No Ice	3.99	5.76	0.02
			0.00				1/2" Ice	4.39	6.18	0.05
			0.00				1" Ice	4.79	6.60	0.10
							2" Ice	5.62	7.48	0.20
							4" Ice	7.38	9.33	0.46
PD 1167	A	From Leg	12.00	0.0000	146.00		No Ice	1.39	1.39	0.08
			0.00				1/2" Ice	2.33	2.33	0.09
			0.00				1" Ice	3.30	3.30	0.11





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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	9 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight
			Horz	Lateral					
			ft	ft	deg	ft	ft <sup>2</sup>	ft <sup>2</sup>	K
(6) DB 980	A	From Face	36.00	0.0000	117.00	No Ice	3.90	2.29	0.01
			0.00			1/2" Ice	4.28	2.65	0.03
			0.00			1" Ice	4.66	3.02	0.06
						2" Ice	5.46	3.79	0.12
						4" Ice	7.39	5.40	0.32
(6) DB 980	B	From Face	36.00	0.0000	117.00	No Ice	3.90	2.29	0.01
			0.00			1/2" Ice	4.28	2.65	0.03
			0.00			1" Ice	4.66	3.02	0.06
						2" Ice	5.46	3.79	0.12
						4" Ice	7.39	5.40	0.32
(6) DB 980	C	From Face	36.00	0.0000	117.00	No Ice	3.90	2.29	0.01
			0.00			1/2" Ice	4.28	2.65	0.03
			0.00			1" Ice	4.66	3.02	0.06
						2" Ice	5.46	3.79	0.12
						4" Ice	7.39	5.40	0.32
PD 1142	A	From Leg	12.00	0.0000	114.00	No Ice	0.94	0.94	0.01
			0.00			1/2" Ice	2.20	2.20	0.02
			0.00			1" Ice	3.48	3.48	0.04
						2" Ice	6.10	6.10	0.10
						4" Ice	10.04	10.04	0.32
PD 654	A	From Leg	0.00	0.0000	84.00	No Ice	7.56	7.56	0.08
			0.00			1/2" Ice	10.34	10.34	0.13
			0.00			1" Ice	13.14	13.14	0.21
						2" Ice	18.79	18.79	0.40
						4" Ice	30.28	30.28	1.01
GPS	A	From Leg	36.00	0.0000	62.00	No Ice	0.25	0.25	0.00
			0.00			1/2" Ice	0.37	0.37	0.00
			0.00			1" Ice	0.50	0.50	0.01
						2" Ice	0.79	0.79	0.02
						4" Ice	1.52	1.52	0.07
GPS	C	From Leg	36.00	0.0000	62.00	No Ice	0.25	0.25	0.00
			0.00			1/2" Ice	0.37	0.37	0.00
			0.00			1" Ice	0.50	0.50	0.01
						2" Ice	0.79	0.79	0.02
						4" Ice	1.52	1.52	0.07
DB 225K Yagi	A	None		0.0000	55.00	No Ice	3.21	1.00	30.00
						1/2" Ice	3.50	1.20	35.00
						1" Ice	3.79	1.40	40.00
						2" Ice	4.37	1.80	50.00
						4" Ice	5.53	2.60	70.00
Sector Gate Boom Assy Voicestream	A	From Leg	0.00	0.0000	136.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
						2" Ice	16.69	16.69	0.38
						4" Ice	26.41	26.41	0.62
Sector Gate Boom Assy Voicestream	B	From Leg	0.00	0.0000	136.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
						2" Ice	16.69	16.69	0.38
						4" Ice	26.41	26.41	0.62
Sector Gate Boom Assy Voicestream	C	From Leg	0.00	0.0000	136.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
						2" Ice	16.69	16.69	0.38
						4" Ice	26.41	26.41	0.62
Sector Gate Boom Assy Cingular	A	From Leg	0.00	0.0000	151.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20

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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	10 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight
			Horz	Lateral Vert					
			ft	deg	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
			0.00						
Sector Gate Boom Assy Cingular	B	From Leg	0.00	0.0000	151.00	1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
Sector Gate Boom Assy Cingular	C	From Leg	0.00	0.0000	151.00	2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
Sector Gate Boom Assy Verizon	A	From Leg	0.00	0.0000	130.00	4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
Sector Gate Boom Assy Verizon	B	From Leg	0.00	0.0000	130.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
Sector Gate Boom Assy Verizon	C	From Leg	0.00	0.0000	130.00	1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
Sector Gate Boom Assy Sprint	A	From Leg	0.00	0.0000	117.00	1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
Sector Gate Boom Assy Sprint	B	From Leg	0.00	0.0000	117.00	2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
Sector Gate Boom Assy Sprint	C	From Leg	0.00	0.0000	117.00	4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
Sector Gate Boom Assy AT&T	A	From Leg	0.00	0.0000	145.00	No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
Sector Gate Boom Assy AT&T	B	From Leg	0.00	0.0000	145.00	1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
Sector Gate Boom Assy AT&T	C	From Leg	0.00	0.0000	145.00	1" Ice	11.83	11.83	0.26
			0.00			2" Ice	16.69	16.69	0.38
			0.00			4" Ice	26.41	26.41	0.62
			0.00			No Ice	6.97	6.97	0.14
			0.00			1/2" Ice	9.40	9.40	0.20
			0.00			1" Ice	11.83	11.83	0.26

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	11 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement		C <sub>AA</sub>	C <sub>AA</sub>	Weight
			Horz	Lateral				Front	Side	
			ft	ft	deg	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
41" Standoff	A	From Leg	0.00	0.00	0.0000	55.00	4" Ice	26.41	26.41	0.62
							No Ice	1.52	1.52	0.04
							1/2" Ice	2.10	2.10	0.06
							1" Ice	2.68	2.68	0.08
							2" Ice	3.84	3.84	0.12
35" Standoff	C	From Leg	0.00	0.00	0.0000	60.00	4" Ice	6.16	6.16	0.20
							No Ice	1.81	1.80	0.03
							1/2" Ice	2.44	2.44	0.05
							1" Ice	3.07	3.08	0.07
							2" Ice	4.33	4.36	0.11
36" Standoff	B	From Leg	0.00	0.00	0.0000	62.00	4" Ice	6.85	6.92	0.19
							No Ice	1.22	1.22	0.02
							1/2" Ice	1.83	1.83	0.03
							1" Ice	2.68	2.68	0.08
							2" Ice	3.84	3.84	0.12
6' Standoff	A	From Leg	0.00	0.00	0.0000	84.00	4" Ice	6.16	6.16	0.20
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
1' Standoff	A	From Leg	0.00	0.00	0.0000	114.00	4" Ice	19.40	19.40	0.30
							No Ice	1.36	1.36	0.01
							1/2" Ice	1.83	1.83	0.02
							1" Ice	2.30	2.30	0.03
							2" Ice	3.24	3.24	0.05
1' Standoff	A	From Leg	0.00	0.00	0.0000	146.00	4" Ice	5.12	5.12	0.09
							No Ice	1.36	1.36	0.01
							1/2" Ice	1.83	1.83	0.02
							1" Ice	2.30	2.30	0.03
							2" Ice	3.24	3.24	0.05
6' Standoff	A	From Leg	0.00	0.00	0.0000	180.00	4" Ice	5.12	5.12	0.09
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
6' Standoff	A	From Leg	0.00	0.00	0.0000	173.00	4" Ice	19.40	19.40	0.30
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
6' Standoff	B	From Leg	0.00	0.00	0.0000	180.00	4" Ice	19.40	19.40	0.30
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
6' Standoff	B	From Leg	0.00	0.00	0.0000	173.00	4" Ice	19.40	19.40	0.30
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
6' Standoff	C	From Leg	0.00	0.00	0.0000	180.00	4" Ice	19.40	19.40	0.30
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18
6' Standoff	C	From Leg	0.00	0.00	0.0000	173.00	4" Ice	19.40	19.40	0.30
							No Ice	4.92	4.92	0.06
							1/2" Ice	6.73	6.73	0.09
							1" Ice	8.54	8.54	0.12
							2" Ice	12.16	12.16	0.18

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 Hollywood, Florida 33021  
 Phone: 954-966-8182  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	12 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment deg	Placement ft	C <sub>A</sub> A <sub>1</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>1</sub> Side ft <sup>2</sup>	Weight K
			Horz Lateral ft	Vert ft					
			0.00			1/2" Ice	6.73	6.73	0.09
			0.00			1" Ice	8.54	8.54	0.12
						2" Ice	12.16	12.16	0.18
						4" Ice	19.40	19.40	0.30

## Discrete Forces - Equivalent Torsional Loads

Section Elevation	Wind Direction	Offset From Centroid ft	Type	Placement ft	Torsion No-Ice kip-ft/ft	Torsion With Ice kip-ft/ft
T1 180-160	Normal	0.00	Conc	180	0.00	0.00
	Wind 60	0.00	Conc	180	0.00	0.00
	Wind 90	-77.01	Conc	180	-10.24	-14.21
	Normal	66.69	Conc	180	3.29	5.00
	Wind 60	66.69	Conc	180	-3.29	-5.00
	Wind 90	38.50	Conc	180	1.90	2.89
	Normal	-66.69	Conc	180	-3.29	-5.00
	Wind 60	-66.69	Conc	180	3.29	5.00
	Wind 90	38.50	Conc	180	1.90	2.89
	Normal	4.41	Conc	178	0.23	0.26
	Wind 60	4.41	Conc	178	-0.23	-0.26
	Wind 90	2.55	Conc	178	0.13	0.15
	Normal	-66.96	Conc	173	-1.42	-2.89
	Wind 60	-66.96	Conc	173	1.42	2.89
	Wind 90	38.66	Conc	173	0.82	1.67
	Normal	66.96	Conc	173	3.27	4.97
	Wind 60	66.96	Conc	173	-3.27	-4.97
	Wind 90	38.66	Conc	173	1.89	2.87
	Normal	-66.96	Conc	173	-3.27	-4.97
	Wind 60	-66.96	Conc	173	3.27	4.97
	Wind 90	38.66	Conc	173	1.89	2.87
	Normal	0.00	Conc	180	0.00	0.00
	Wind 60	0.00	Conc	180	0.00	0.00
	Wind 90	-5.01	Conc	180	-0.93	-1.27
	Normal	0.00	Conc	173	0.00	0.00
	Wind 60	0.00	Conc	173	0.00	0.00
	Wind 90	-5.32	Conc	173	-0.98	-1.34
	Normal	4.34	Conc	180	0.80	1.10
	Wind 60	4.34	Conc	180	-0.80	-1.10
	Wind 90	2.50	Conc	180	0.46	0.64
	Normal	4.61	Conc	173	0.85	1.16
	Wind 60	4.61	Conc	173	-0.85	-1.16
	Wind 90	2.66	Conc	173	0.49	0.67
	Normal	-4.34	Conc	180	-0.80	-1.10
	Wind 60	-4.34	Conc	180	0.80	1.10
	Wind 90	2.50	Conc	180	0.46	0.64
	Normal	-4.61	Conc	173	-0.85	-1.16
	Wind 60	-4.61	Conc	173	0.85	1.16
	Wind 90	2.66	Conc	173	0.49	0.67
T2 160-140	Normal	-33.91	Conc	151	-29.17	-32.04
	Wind 60	-33.91	Conc	151	29.17	32.04

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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	13 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Wind Direction	Offset From Centroid	Type	Placement	Torsion No-Ice	Torsion With Ice
ft		ft		ft	kip-ft/ft	kip-ft/ft
	Wind 90	-19.58	Conc	151	-16.84	-18.50
	Normal	33.91	Conc	151	29.17	32.04
	Wind 60	33.91	Conc	151	-29.17	-32.04
	Wind 90	-19.58	Conc	151	-16.84	-18.50
	Normal	0.00	Conc	151	0.00	0.00
	Wind 60	0.00	Conc	151	0.00	0.00
	Wind 90	39.16	Conc	151	33.68	36.99
	Normal	0.00	Conc	146	0.00	0.00
	Wind 60	0.00	Conc	146	0.00	0.00
	Wind 90	-18.55	Conc	146	-0.91	-1.54
	Normal	0.00	Conc	145	0.00	0.00
	Wind 60	0.00	Conc	145	0.00	0.00
	Wind 90	-18.60	Conc	145	-18.08	-19.90
	Normal	16.10	Conc	145	15.66	17.23
	Wind 60	16.10	Conc	145	-15.66	-17.23
	Wind 90	9.30	Conc	145	9.04	9.95
	Normal	-16.10	Conc	145	-15.66	-17.23
	Wind 60	-16.10	Conc	145	15.66	17.23
	Wind 90	9.30	Conc	145	9.04	9.95
	Normal	0.00	Conc	151	0.00	0.00
	Wind 60	0.00	Conc	151	0.00	0.00
	Wind 90	-6.32	Conc	151	-1.58	-2.13
	Normal	5.48	Conc	151	1.37	1.85
	Wind 60	5.48	Conc	151	-1.37	-1.85
	Wind 90	3.16	Conc	151	0.79	1.07
	Normal	-5.48	Conc	151	-1.37	-1.85
	Wind 60	-5.48	Conc	151	1.37	1.85
	Wind 90	3.16	Conc	151	0.79	1.07
	Normal	0.00	Conc	145	0.00	0.00
	Wind 60	0.00	Conc	145	0.00	0.00
	Wind 90	-6.60	Conc	145	-1.63	-2.20
	Normal	5.71	Conc	145	1.41	1.90
	Wind 60	5.71	Conc	145	-1.41	-1.90
	Wind 90	3.30	Conc	145	0.82	1.10
	Normal	-5.71	Conc	145	-1.41	-1.90
	Wind 60	-5.71	Conc	145	1.41	1.90
	Wind 90	3.30	Conc	145	0.82	1.10
	Normal	0.00	Conc	146	0.00	0.00
	Wind 60	0.00	Conc	146	0.00	0.00
	Wind 90	-6.55	Conc	146	-0.32	-0.43
	Normal	0.00	Conc	136	0.00	0.00
	Wind 60	0.00	Conc	136	0.00	0.00
	Wind 90	-7.00	Conc	136	-4.25	-4.66
	Normal	6.07	Conc	136	3.68	4.04
	Wind 60	6.07	Conc	136	-3.68	-4.04
	Wind 90	3.50	Conc	136	2.13	2.33
	Normal	-6.07	Conc	136	-3.68	-4.04
	Wind 60	-6.07	Conc	136	3.68	4.04
	Wind 90	3.50	Conc	136	2.13	2.33
	Normal	-34.33	Conc	130	-19.31	-21.42
	Wind 60	-34.33	Conc	130	19.31	21.42
	Wind 90	-19.82	Conc	130	-11.15	-12.37
	Normal	34.33	Conc	130	19.31	21.42
	Wind 60	34.33	Conc	130	-19.31	-21.42
	Wind 90	-19.82	Conc	130	-11.15	-12.37
	Normal	0.00	Conc	130	0.00	0.00
	Wind 60	0.00	Conc	130	0.00	0.00
	Wind 90	39.64	Conc	130	22.29	24.74

T3 140-120

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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	14 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Wind Direction	Offset From Centroid	Type	Placement	Torsion No-Ice	Torsion With Ice
ft		ft		ft	kip-ft/ft	kip-ft/ft
	Normal	0.00	Conc	136	0.00	0.00
	Wind 60	0.00	Conc	136	0.00	0.00
	Wind 90	-7.00	Conc	136	-1.70	-2.29
	Normal	6.07	Conc	136	1.47	1.99
	Wind 60	6.07	Conc	136	-1.47	-1.99
	Wind 90	3.50	Conc	136	0.85	1.15
	Normal	-6.07	Conc	136	-1.47	-1.99
	Wind 60	-6.07	Conc	136	1.47	1.99
	Wind 90	3.50	Conc	136	0.85	1.15
	Normal	0.00	Conc	130	0.00	0.00
	Wind 60	0.00	Conc	130	0.00	0.00
	Wind 90	-7.28	Conc	130	-1.74	-2.35
	Normal	6.30	Conc	130	1.51	2.04
	Wind 60	6.30	Conc	130	-1.51	-2.04
	Wind 90	3.64	Conc	130	0.87	1.18
	Normal	-6.30	Conc	130	-1.51	-2.04
	Wind 60	-6.30	Conc	130	1.51	2.04
	Wind 90	3.64	Conc	130	0.87	1.18
T4 120-100	Normal	6.70	Conc	120	0.49	0.78
	Wind 60	6.70	Conc	120	-0.49	-0.78
	Wind 90	3.87	Conc	120	0.28	0.45
	Normal	0.00	Conc	120	0.00	0.00
	Wind 60	0.00	Conc	120	0.00	0.00
	Wind 90	-7.73	Conc	120	-0.24	-0.57
	Normal	-34.58	Conc	117	-26.97	-29.61
	Wind 60	-34.58	Conc	117	26.97	29.61
	Wind 90	-19.97	Conc	117	-15.57	-17.09
	Normal	34.58	Conc	117	26.97	29.61
	Wind 60	34.58	Conc	117	-26.97	-29.61
	Wind 90	-19.97	Conc	117	-15.57	-17.09
	Normal	0.00	Conc	117	0.00	0.00
	Wind 60	0.00	Conc	117	0.00	0.00
	Wind 90	39.93	Conc	117	31.15	34.19
	Normal	0.00	Conc	114	0.00	0.00
	Wind 60	0.00	Conc	114	0.00	0.00
	Wind 90	-20.00	Conc	114	-0.62	-1.46
	Normal	0.00	Conc	117	0.00	0.00
	Wind 60	0.00	Conc	117	0.00	0.00
	Wind 90	-7.87	Conc	117	-1.83	-2.47
	Normal	6.81	Conc	117	1.58	2.14
	Wind 60	6.81	Conc	117	-1.58	-2.14
	Wind 90	3.93	Conc	117	0.91	1.23
	Normal	-6.81	Conc	117	-1.58	-2.14
	Wind 60	-6.81	Conc	117	1.58	2.14
	Wind 90	3.93	Conc	117	0.91	1.23
	Normal	0.00	Conc	114	0.00	0.00
	Wind 60	0.00	Conc	114	0.00	0.00
	Wind 90	-8.00	Conc	114	-0.36	-0.49
T5 100-80	Normal	0.00	Conc	84	0.00	0.00
	Wind 60	0.00	Conc	84	0.00	0.00
	Wind 90	-9.37	Conc	84	-2.15	-2.94
	Normal	0.00	Conc	84	0.00	0.00
	Wind 60	0.00	Conc	84	0.00	0.00
	Wind 90	-9.37	Conc	84	-1.40	-1.91
T6 80-60	Normal	0.00	Conc	62	0.00	0.00
	Wind 60	0.00	Conc	62	0.00	0.00
	Wind 90	-46.36	Conc	62	-0.32	-0.48
	Normal	-40.15	Conc	62	-0.28	-0.41

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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	15 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Wind Direction	Offset From Centroid	Type	Placement	Torsion No-Ice	Torsion With Ice
ft		ft		ft	kip-ft/ft	kip-ft/ft
T7 60-40	Wind 60	-40.15	Conc	62	0.28	0.41
	Wind 90	23.18	Conc	62	0.16	0.24
	Normal	8.98	Conc	62	0.30	0.46
	Wind 60	8.98	Conc	62	-0.30	-0.46
	Wind 90	5.18	Conc	62	0.18	0.26
	Normal	0.00	Conc	55	0.00	0.00
	Wind 60	0.00	Conc	55	0.00	0.00
	Wind 90	-10.68	Conc	55	-0.44	-0.60
	Normal	-9.06	Conc	60	-0.45	-0.61
	Wind 60	-9.06	Conc	60	0.45	0.61
	Wind 90	5.23	Conc	60	0.26	0.35

## Dishes

Description	Face or Leg	Dish Type	Offset Type	Offset Distance	Azimuth Adjustment	Elevation	Outside Diameter	Aperture Area	Weight
				ft	deg	ft	ft	ft <sup>2</sup>	K
6' Grid (Gabriel GLF6-940)	C	Grid	From Leg	0.60	Worst	163.50	6.00	No Ice	0.10
								1/2" Ice	0.12
								1" Ice	80.00
								2" Ice	100.00
								4" Ice	140.00
4' HP c/w Hypalon Shroud	C	Paraboloid w/Shroud (HP)	From Leg	0.60	Worst	170.50	4.00	No Ice	0.17
								1/2" Ice	0.19
								1" Ice	0.21
								2" Ice	0.25
								4" Ice	0.33
6' HP c/w F/G Radome	C	Paraboloid w/Radome	From Leg	0.60	Worst	176.00	6.00	No Ice	0.32
								1/2" Ice	0.37
								1" Ice	0.42
								2" Ice	0.52
								4" Ice	0.72
6' HP c/w Hypalon Shroud	B	Paraboloid w/Shroud (HP)	From Leg	0.60	Worst	170.50	6.00	No Ice	0.32
								1/2" Ice	0.37
								1" Ice	0.42
								2" Ice	0.52
								4" Ice	0.72
6' HP w/o Radome	B	Paraboloid w/o Radome	From Leg	0.60	Worst	180.00	6.00	No Ice	0.30
								1/2" Ice	0.37
								1" Ice	0.44
								2" Ice	0.58
								4" Ice	0.86
6' HP w/o Radome	A	Paraboloid w/o Radome	From Leg	0.60	Worst	180.00	6.00	No Ice	0.30
								1/2" Ice	0.37
								1" Ice	0.44
								2" Ice	0.58
								4" Ice	0.86
6' HP w/o Radome	C	Paraboloid w/o Radome	From Leg	0.60	Worst	180.00	6.00	No Ice	0.30
								1/2" Ice	0.37
								1" Ice	0.44
								2" Ice	0.58
								4" Ice	0.86



# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	16 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

## Dish Forces - Equivalent Torsional Loads

Section Elevation	Wind Direction	Offset From Centroid	Type	Placement	Torsion No-Ice	Torsion With Ice
ft		ft		ft	kip-ft	kip-ft
T1 180-160	Normal	-5.50	Conc	163.5	-3.39	-9.77
	Wind 60	-5.50	Conc	163.5	3.39	9.77
	Wind 90	3.18	Conc	163.5	1.96	5.64
	Normal	-5.23	Conc	170.5	-3.08	-3.21
	Wind 60	-5.23	Conc	170.5	3.08	3.21
	Wind 90	3.02	Conc	170.5	1.78	1.85
	Normal	-5.01	Conc	176	-4.59	-4.72
	Wind 60	-5.01	Conc	176	4.59	4.72
	Wind 90	2.89	Conc	176	2.65	2.72
	Normal	5.23	Conc	170.5	6.93	7.13
	Wind 60	5.23	Conc	170.5	-6.93	-7.13
	Wind 90	3.02	Conc	170.5	4.00	4.11
	Normal	4.85	Conc	180	8.62	8.86
	Wind 60	4.85	Conc	180	-8.62	-8.86
	Wind 90	2.80	Conc	180	4.98	5.12
	Normal	0.00	Conc	180	0.00	0.00
	Wind 60	0.00	Conc	180	0.00	0.00
	Wind 90	-5.61	Conc	180	-9.95	-10.23
	Normal	-4.85	Conc	180	-8.62	-8.86
	Wind 60	-4.85	Conc	180	8.62	8.86
Wind 90	2.80	Conc	180	4.98	5.12	

## Tower Pressures - No Ice

$$G_H = 1.121$$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>d</sub> A <sub>A</sub> In Face	C <sub>d</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 180-160	170.00	1.597	33	200.809	A	13.266	31.128	23.357	52.61	0.000	0.000
					B	12.657	39.084		45.14		
					C	13.380	29.642		54.29		
T2 160-140	150.00	1.541	32	234.778	A	14.564	44.385	28.363	48.11	0.000	0.000
					B	13.855	53.931		41.84		
					C	14.234	48.831		44.97		
T3 140-120	130.00	1.48	31	267.078	A	13.037	92.327	30.031	28.50	0.000	0.000
					B	13.831	81.261		31.58		
					C	15.581	56.872		41.45		
T4 120-100	110.00	1.411	29	302.091	A	14.206	109.495	37.125	30.01	0.000	0.000
					B	13.126	124.897		26.90		
					C	17.284	65.597		44.79		
T5 100-80	90.00	1.332	28	335.224	A	19.290	114.115	40.458	30.33	0.000	0.000
					B	17.775	132.366		26.95		
					C	22.836	71.401		42.93		
T6 80-60	70.00	1.24	26	367.525	A	20.732	116.342	42.127	30.73	0.000	0.000
					B	19.292	134.688		27.36		
					C	23.969	75.081		42.53		
T7 60-40	50.00	1.126	23	403.370	A	22.663	125.676	50.886	34.30	0.000	0.000

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	17 of 35
	Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>d</sub> A <sub>A</sub> In Face	C <sub>d</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T8 40-20	30.00	1	21	434.836	B	21.187	144.875		30.64		
					C	25.658	86.724		45.28		
					A	24.609	126.184	50.886	33.75	0.000	0.000
T9 20-0	10.00	1	21	473.183	B	23.157	145.383		30.19		
					C	27.520	87.686		44.17		
					A	36.399	106.341	64.650	45.29	0.000	0.000
					B	35.503	115.941		42.69		
					C	38.194	87.092		51.60		

### Tower Pressure - With Ice

$$G_H = 1.121$$

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>d</sub> A <sub>A</sub> In Face	C <sub>d</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 180-160	170.00	1.597	33	202.477	A	17.362	38.305	26.694	47.95	0.000	0.000
					B	15.765	53.873		38.33		
					C	17.325	38.665		47.68		
T2 160-140	150.00	1.541	32	236.446	A	18.686	55.830	31.699	42.54	0.000	0.000
					B	16.724	75.557		34.35		
					C	16.952	73.259		35.14		
T3 140-120	130.00	1.48	31	268.746	A	13.736	126.758	33.368	23.75	0.000	0.000
					B	14.682	116.393		25.46		
					C	17.497	85.566		32.38		
T4 120-100	110.00	1.411	29	303.759	A	14.786	149.574	40.462	24.62	0.000	0.000
					B	12.237	178.158		21.25		
					C	19.610	95.477		35.16		
T5 100-80	90.00	1.332	28	336.892	A	19.927	154.157	43.795	25.16	0.000	0.000
					B	16.582	186.987		21.51		
					C	25.223	102.180		34.38		
T6 80-60	70.00	1.24	26	369.193	A	20.894	156.509	45.463	25.63	0.000	0.000
					B	17.852	189.596		21.92		
					C	25.419	107.280		34.26		
T7 60-40	50.00	1.126	23	405.038	A	23.214	165.970	54.223	28.66	0.000	0.000
					B	20.025	201.373		24.49		
					C	27.184	121.891		36.37		
T8 40-20	30.00	1	21	436.504	A	25.536	166.591	54.223	28.22	0.000	0.000
					B	22.400	201.994		24.16		
					C	29.366	123.371		35.50		
T9 20-0	10.00	1	21	474.851	A	39.350	129.111	67.987	40.36	0.000	0.000
					B	37.471	146.813		36.89		
					C	41.644	107.502		45.58		

### Tower Forces - No Ice - Wind Normal (180)

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>G</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T1 180-160	0.14	3.15	A	0.221	2.527	0.595	1	1	31.786	3.25	162.53	B

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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	18 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T2 160-140	0.32	4.09	B	0.258	2.415	0.604	1	1	36.259	3.91	195.38	B
			C	0.214	2.549	0.593	1	1	30.970			
			A	0.251	2.434	0.602	1	1	41.290			
T3 140-120	0.80	3.92	B	0.289	2.326	0.613	1	1	46.888	5.21	260.41	A
			C	0.269	2.383	0.607	1	1	43.864			
			A	0.395	2.075	0.649	1	1	72.991			
T4 120-100	1.10	4.47	B	0.356	2.158	0.635	1	1	65.403	6.28	314.01	B
			C	0.271	2.375	0.608	1	1	50.133			
			A	0.409	2.046	0.656	1	1	85.982			
T5 100-80	1.12	9.93	B	0.457	1.962	0.676	1	1	97.615	6.53	326.72	B
			C	0.274	2.366	0.608	1	1	57.192			
			A	0.398	2.068	0.651	1	1	93.553			
T6 80-60	1.13	9.58	B	0.448	1.977	0.672	1	1	106.766	6.32	315.84	B
			C	0.281	2.347	0.61	1	1	66.412			
			A	0.373	2.12	0.641	1	1	95.300			
T7 60-40	1.15	11.87	B	0.419	2.028	0.66	1	1	108.122	6.21	310.64	B
			C	0.27	2.38	0.607	1	1	69.546			
			A	0.368	2.131	0.639	1	1	102.967			
T8 40-20	1.15	12.40	B	0.412	2.041	0.656	1	1	116.289	5.69	284.45	B
			C	0.279	2.354	0.61	1	1	78.524			
			A	0.347	2.179	0.631	1	1	104.273			
T9 20-0	0.58	15.66	B	0.388	2.089	0.647	1	1	117.164	5.61	280.72	B
			C	0.265	2.393	0.606	1	1	80.640			
			A	0.302	2.292	0.616	1	1	101.948			
Sum Weight:	7.49	75.06	C	0.32	2.244	0.622	1	1	107.647			
			C	0.265	2.394	0.606	1	1	90.950			
								OTM	4074.36 kip-ft	49.01		

## Tower Forces - No Ice - Wind 60 (0)

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T1 180-160	0.14	3.15	A	0.221	2.527	0.595	0.8	1	29.132	3.02	151.18	B
			B	0.258	2.415	0.604	0.8	1	33.727			
			C	0.214	2.549	0.593	0.8	1	28.294			
T2 160-140	0.32	4.09	A	0.251	2.434	0.602	0.8	1	38.377	3.68	183.83	B
			B	0.289	2.326	0.613	0.8	1	44.117			
			C	0.269	2.383	0.607	0.8	1	41.018			
T3 140-120	0.80	3.92	A	0.395	2.075	0.649	0.8	1	70.384	5.02	251.11	A
			B	0.356	2.158	0.635	0.8	1	62.637			
			C	0.271	2.375	0.608	0.8	1	47.016			
T4 120-100	1.10	4.47	A	0.409	2.046	0.656	0.8	1	83.141	6.11	305.56	B
			B	0.457	1.962	0.676	0.8	1	94.990			
			C	0.274	2.366	0.608	0.8	1	53.735			
T5 100-80	1.12	9.93	A	0.398	2.068	0.651	0.8	1	89.695	6.32	315.84	B
			B	0.448	1.977	0.672	0.8	1	103.211			
			C	0.281	2.347	0.61	0.8	1	61.845			
T6 80-60	1.13	9.58	A	0.373	2.12	0.641	0.8	1	91.154	6.09	304.57	B
			B	0.419	2.028	0.66	0.8	1	104.264			
			C	0.27	2.38	0.607	0.8	1	64.752			
T7 60-40	1.15	11.87	A	0.368	2.131	0.639	0.8	1	98.434	5.99	299.32	B

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	19 of 35
	<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
	<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T8 40-20	1.15	12.40	B	0.412	2.041	0.656	0.8	1	112.052	5.46	273.20	B
			C	0.279	2.354	0.61	0.8	1	73.392			
			A	0.347	2.179	0.631	0.8	1	99.351			
T9 20-0	0.58	15.66	B	0.388	2.089	0.647	0.8	1	112.533	5.24	262.21	B
			C	0.265	2.393	0.606	0.8	1	75.136			
			A	0.302	2.292	0.616	0.8	1	94.669			
Sum Weight:	7.49	75.06	B	0.32	2.244	0.622	0.8	1	100.546			
			C	0.265	2.394	0.606	0.8	1	83.312			
								OTM	3901.24	46.94		
									kip-ft			

### Tower Forces - No Ice - Wind 90

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T1 180-160	0.14	3.15	A	0.221	2.527	0.595	0.85	1	29.796	3.08	154.02	B
			B	0.258	2.415	0.604	0.85	1	34.360			
			C	0.214	2.549	0.593	0.85	1	28.963			
T2 160-140	0.32	4.09	A	0.251	2.434	0.602	0.85	1	39.106	3.73	186.72	B
			B	0.289	2.326	0.613	0.85	1	44.810			
			C	0.269	2.383	0.607	0.85	1	41.729			
T3 140-120	0.80	3.92	A	0.395	2.075	0.649	0.85	1	71.036	5.07	253.43	A
			B	0.356	2.158	0.635	0.85	1	63.328			
			C	0.271	2.375	0.608	0.85	1	47.796			
T4 120-100	1.10	4.47	A	0.409	2.046	0.656	0.85	1	83.851	6.15	307.67	B
			B	0.457	1.962	0.676	0.85	1	95.646			
			C	0.274	2.366	0.608	0.85	1	54.600			
T5 100-80	1.12	9.93	A	0.398	2.068	0.651	0.85	1	90.659	6.37	318.56	B
			B	0.448	1.977	0.672	0.85	1	104.100			
			C	0.281	2.347	0.61	0.85	1	62.987			
T6 80-60	1.13	9.58	A	0.373	2.12	0.641	0.85	1	92.191	6.15	307.39	B
			B	0.419	2.028	0.66	0.85	1	105.228			
			C	0.27	2.38	0.607	0.85	1	65.951			
T7 60-40	1.15	11.87	A	0.368	2.131	0.639	0.85	1	99.567	6.04	302.15	B
			B	0.412	2.041	0.656	0.85	1	113.111			
			C	0.279	2.354	0.61	0.85	1	74.675			
T8 40-20	1.15	12.40	A	0.347	2.179	0.631	0.85	1	100.581	5.52	276.01	B
			B	0.388	2.089	0.647	0.85	1	113.691			
			C	0.265	2.393	0.606	0.85	1	76.512			
T9 20-0	0.58	15.66	A	0.302	2.292	0.616	0.85	1	96.489	5.34	266.84	B
			B	0.32	2.244	0.622	0.85	1	102.321			
			C	0.265	2.394	0.606	0.85	1	85.221			
Sum Weight:	7.49	75.06						OTM	3944.52	47.46		
									kip-ft			

### Tower Forces - With Ice - Wind Normal (180)

# ERITower

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 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	20 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T1 180-160	0.38	4.44	A	0.275	2.365	0.609	1	1	40.672	4.03	201.75	B
			B	0.344	2.186	0.63	1	1	49.723			
			C	0.277	2.36	0.609	1	1	40.872			
T2 160-140	0.89	5.58	A	0.315	2.256	0.621	1	1	53.337	4.90	245.04	B
			B	0.39	2.084	0.648	1	1	65.661			
			C	0.382	2.102	0.644	1	1	64.149			
T3 140-120	2.09	5.51	A	0.523	1.872	0.709	1	1	103.656	6.67	333.66	A
			B	0.488	1.916	0.691	1	1	95.147			
			C	0.383	2.098	0.645	1	1	72.687			
T4 120-100	2.83	6.27	A	0.541	1.852	0.719	1	1	122.377	8.77	438.58	B
			B	0.627	1.79	0.77	1	1	149.484			
			C	0.379	2.107	0.643	1	1	81.022			
T5 100-80	2.90	12.16	A	0.517	1.879	0.706	1	1	128.789	8.81	440.53	B
			B	0.604	1.801	0.756	1	1	157.984			
			C	0.378	2.109	0.643	1	1	90.918			
T6 80-60	2.92	11.86	A	0.481	1.927	0.688	1	1	128.533	8.26	413.04	B
			B	0.562	1.833	0.731	1	1	156.451			
			C	0.359	2.15	0.636	1	1	93.637			
T7 60-40	2.98	14.37	A	0.467	1.946	0.681	1	1	136.283	8.00	399.95	B
			B	0.547	1.847	0.722	1	1	165.493			
			C	0.368	2.131	0.639	1	1	105.083			
T8 40-20	2.99	15.03	A	0.44	1.99	0.669	1	1	136.953	7.21	360.42	B
			B	0.514	1.882	0.705	1	1	164.760			
			C	0.35	2.172	0.632	1	1	107.391			
T9 20-0	1.49	19.02	A	0.355	2.161	0.634	1	1	121.231	6.43	321.36	B
			B	0.388	2.088	0.647	1	1	132.432			
			C	0.314	2.259	0.62	1	1	108.329			
Sum Weight:	19.47	94.23						OTM	5305.15 kip-ft	63.09		

## Tower Forces - With Ice - Wind 60 (0)

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K							ft <sup>2</sup>	K	plf	
T1 180-160	0.38	4.44	A	0.275	2.365	0.609	0.8	1	37.200	3.78	188.95	B
			B	0.344	2.186	0.63	0.8	1	46.570			
			C	0.277	2.36	0.609	0.8	1	37.407			
T2 160-140	0.89	5.58	A	0.315	2.256	0.621	0.8	1	49.600	4.65	232.56	B
			B	0.39	2.084	0.648	0.8	1	62.316			
			C	0.382	2.102	0.644	0.8	1	60.758			
T3 140-120	2.09	5.51	A	0.523	1.872	0.709	0.8	1	100.909	6.50	324.82	A
			B	0.488	1.916	0.691	0.8	1	92.210			
			C	0.383	2.098	0.645	0.8	1	69.187			
T4 120-100	2.83	6.27	A	0.541	1.852	0.719	0.8	1	119.420	8.63	431.40	B
			B	0.627	1.79	0.77	0.8	1	147.036			
			C	0.379	2.107	0.643	0.8	1	77.100			
T5 100-80	2.90	12.16	A	0.517	1.879	0.706	0.8	1	124.804	8.63	431.28	B
			B	0.604	1.801	0.756	0.8	1	154.668			
			C	0.378	2.109	0.643	0.8	1	85.873			
T6 80-60	2.92	11.86	A	0.481	1.927	0.688	0.8	1	124.355	8.07	403.62	B
			B	0.562	1.833	0.731	0.8	1	152.880			
			C	0.359	2.15	0.636	0.8	1	88.553			

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	21 of 35
	Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K	e						ft <sup>2</sup>	K	plf	
T7 60-40	2.98	14.37	A	0.467	1.946	0.681	0.8	1	131.640	7.81	390.27	B
			B	0.547	1.847	0.722	0.8	1	161.488			
			C	0.368	2.131	0.639	0.8	1	99.646			
T8 40-20	2.99	15.03	A	0.44	1.99	0.669	0.8	1	131.845	7.01	350.62	B
			B	0.514	1.882	0.705	0.8	1	160.280			
			C	0.35	2.172	0.632	0.8	1	101.517			
T9 20-0	1.49	19.02	A	0.355	2.161	0.634	0.8	1	113.361	6.06	303.17	B
			B	0.388	2.088	0.647	0.8	1	124.938			
			C	0.314	2.259	0.62	0.8	1	100.000			
Sum Weight:	19.47	94.23						OTM	5136.38 kip-ft	61.13		

### Tower Forces - With Ice - Wind 90

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	R <sub>R</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	K	K	e						ft <sup>2</sup>	K	plf	
T1 180-160	0.38	4.44	A	0.275	2.365	0.609	0.85	1	38.068	3.84	192.15	B
			B	0.344	2.186	0.63	0.85	1	47.358			
			C	0.277	2.36	0.609	0.85	1	38.273			
T2 160-140	0.89	5.58	A	0.315	2.256	0.621	0.85	1	50.534	4.71	235.68	B
			B	0.39	2.084	0.648	0.85	1	63.152			
			C	0.382	2.102	0.644	0.85	1	61.606			
T3 140-120	2.09	5.51	A	0.523	1.872	0.709	0.85	1	101.595	6.54	327.03	A
			B	0.488	1.916	0.691	0.85	1	92.944			
			C	0.383	2.098	0.645	0.85	1	70.062			
T4 120-100	2.83	6.27	A	0.541	1.852	0.719	0.85	1	120.159	8.66	433.19	B
			B	0.627	1.79	0.77	0.85	1	147.648			
			C	0.379	2.107	0.643	0.85	1	78.080			
T5 100-80	2.90	12.16	A	0.517	1.879	0.706	0.85	1	125.800	8.67	433.59	B
			B	0.604	1.801	0.756	0.85	1	155.497			
			C	0.378	2.109	0.643	0.85	1	87.134			
T6 80-60	2.92	11.86	A	0.481	1.927	0.688	0.85	1	125.399	8.12	405.97	B
			B	0.562	1.833	0.731	0.85	1	153.773			
			C	0.359	2.15	0.636	0.85	1	89.824			
T7 60-40	2.98	14.37	A	0.467	1.946	0.681	0.85	1	132.801	7.85	392.69	B
			B	0.547	1.847	0.722	0.85	1	162.489			
			C	0.368	2.131	0.639	0.85	1	101.005			
T8 40-20	2.99	15.03	A	0.44	1.99	0.669	0.85	1	133.122	7.06	353.07	B
			B	0.514	1.882	0.705	0.85	1	161.400			
			C	0.35	2.172	0.632	0.85	1	102.986			
T9 20-0	1.49	19.02	A	0.355	2.161	0.634	0.85	1	115.329	6.15	307.72	B
			B	0.388	2.088	0.647	0.85	1	126.811			
			C	0.314	2.259	0.62	0.85	1	102.082			
Sum Weight:	19.47	94.23						OTM	5178.57 kip-ft	61.62		

### Discrete Forces - No Ice

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	22 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section Elevation ft	Add Weight K	z ft	K <sub>z</sub>	q <sub>z</sub> psf	G <sub>H</sub>	C <sub>dAc</sub> ft <sup>2</sup>	t <sub>z</sub> in	F <sub>c</sub> K
180	0.05	180.00	1.624	34	1.121	2.87		0.11
180	0.02	180.00	1.624	34	1.121	3.52		0.13
180	0.01	180.00	1.624	34	1.121	1.31		0.05
180	0.01	180.00	1.624	34	1.121	1.31		0.05
178	0.05	178.00	1.619	34	1.121	1.40		0.05
173	0.08	173.00	1.605	33	1.121	0.57		0.02
173	0.01	173.00	1.605	33	1.121	1.31		0.05
173	0.01	173.00	1.605	33	1.121	1.31		0.05
167	0.10	167.00	1.589	33	1.121	2.49		0.09
167	0.10	167.00	1.589	33	1.121	2.49		0.09
160	0.03	160.00	1.570	33	1.121	2.17		0.08
160	0.03	160.00	1.570	33	1.121	2.17		0.08
151	0.12	151.00	1.544	32	1.121	23.96		0.86
151	0.12	151.00	1.544	32	1.121	23.96		0.86
151	0.12	151.00	1.544	32	1.121	23.96		0.86
146	0.08	146.00	1.529	32	1.121	1.39		0.05
145	0.06	145.00	1.526	32	1.121	27.41		0.97
145	0.06	145.00	1.526	32	1.121	27.41		0.97
145	0.06	145.00	1.526	32	1.121	27.41		0.97
136	0.08	136.00	1.499	31	1.121	17.42		0.61
136	0.08	136.00	1.499	31	1.121	17.42		0.61
136	0.08	136.00	1.499	31	1.121	17.42		0.61
130	0.06	130.00	1.480	31	1.121	16.36		0.56
130	0.06	130.00	1.480	31	1.121	16.36		0.56
130	0.06	130.00	1.480	31	1.121	16.36		0.56
120	0.03	120.00	1.446	30	1.121	2.17		0.07
120	0.01	120.00	1.446	30	1.121	0.94		0.03
117	0.06	117.00	1.436	30	1.121	23.37		0.78
117	0.06	117.00	1.436	30	1.121	23.37		0.78
117	0.06	117.00	1.436	30	1.121	23.37		0.78
114	0.01	114.00	1.425	30	1.121	0.94		0.03
84	0.08	84.00	1.306	27	1.121	7.56		0.23
62	0.00	62.00	1.197	25	1.121	0.25		0.01
62	0.00	62.00	1.197	25	1.121	0.25		0.01
55	30.00	55.00	1.157	24	1.121	3.21		0.09
136	0.14	136.00	1.499	31	1.121	6.97		0.24
136	0.14	136.00	1.499	31	1.121	6.97		0.24
136	0.14	136.00	1.499	31	1.121	6.97		0.24
151	0.14	151.00	1.544	32	1.121	6.97		0.25
151	0.14	151.00	1.544	32	1.121	6.97		0.25
151	0.14	151.00	1.544	32	1.121	6.97		0.25
130	0.14	130.00	1.480	31	1.121	6.97		0.24
130	0.14	130.00	1.480	31	1.121	6.97		0.24
130	0.14	130.00	1.480	31	1.121	6.97		0.24
117	0.14	117.00	1.436	30	1.121	6.97		0.23
117	0.14	117.00	1.436	30	1.121	6.97		0.23
117	0.14	117.00	1.436	30	1.121	6.97		0.23
145	0.14	145.00	1.526	32	1.121	6.97		0.25
145	0.14	145.00	1.526	32	1.121	6.97		0.25
145	0.14	145.00	1.526	32	1.121	6.97		0.25
55	0.04	55.00	1.157	24	1.121	1.52		0.04
60	0.03	60.00	1.186	25	1.121	1.81		0.05
62	0.02	62.00	1.197	25	1.121	1.22		0.03
84	0.06	84.00	1.306	27	1.121	4.92		0.15
114	0.01	114.00	1.425	30	1.121	1.36		0.05
146	0.01	146.00	1.529	32	1.121	1.36		0.05
180	0.06	180.00	1.624	34	1.121	4.92		0.19
173	0.06	173.00	1.605	33	1.121	4.92		0.18
180	0.06	180.00	1.624	34	1.121	4.92		0.19

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

Job	Butternut Hollow CSP Tower	Page	23 of 35
Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section Elevation ft	Add Weight K	z ft	K <sub>c</sub>	q <sub>c</sub> psf	G <sub>H</sub>	C <sub>A</sub> A <sub>c</sub> ft <sup>2</sup>	t <sub>c</sub> in	F <sub>c</sub> K
173	0.06	173.00	1.605	33	1.121	4.92		0.18
180	0.06	180.00	1.624	34	1.121	4.92		0.19
173	0.06	173.00	1.605	33	1.121	4.92		0.18
Sum Weight:	34.48					OTM	2471.25 kip-ft	17.83

## Discrete Forces - With Ice

Section Elevation ft	Add Weight K	z ft	K <sub>c</sub>	q <sub>c</sub> psf	G <sub>H</sub>	C <sub>A</sub> A <sub>c</sub> ft <sup>2</sup>	t <sub>c</sub> in	F <sub>c</sub> K
180	0.09	180.00	1.624	34	1.121	3.18	0.5000	0.12
180	0.03	180.00	1.624	34	1.121	4.89	0.5000	0.18
180	0.02	180.00	1.624	34	1.121	1.99	0.5000	0.08
180	0.02	180.00	1.624	34	1.121	1.99	0.5000	0.08
178	0.07	178.00	1.619	34	1.121	1.56	0.5000	0.06
173	0.09	173.00	1.605	33	1.121	1.16	0.5000	0.04
173	0.02	173.00	1.605	33	1.121	1.99	0.5000	0.07
173	0.02	173.00	1.605	33	1.121	1.99	0.5000	0.07
167	0.11	167.00	1.589	33	1.121	2.70	0.5000	0.10
167	0.11	167.00	1.589	33	1.121	2.70	0.5000	0.10
160	0.05	160.00	1.570	33	1.121	3.46	0.5000	0.13
160	0.05	160.00	1.570	33	1.121	3.46	0.5000	0.13
151	0.32	151.00	1.544	32	1.121	26.32	0.5000	0.94
151	0.32	151.00	1.544	32	1.121	26.32	0.5000	0.94
151	0.32	151.00	1.544	32	1.121	26.32	0.5000	0.94
146	0.09	146.00	1.529	32	1.121	2.33	0.5000	0.08
145	0.20	145.00	1.526	32	1.121	30.17	0.5000	1.07
145	0.20	145.00	1.526	32	1.121	30.17	0.5000	1.07
145	0.20	145.00	1.526	32	1.121	30.17	0.5000	1.07
136	0.20	136.00	1.499	31	1.121	19.10	0.5000	0.67
136	0.20	136.00	1.499	31	1.121	19.10	0.5000	0.67
136	0.20	136.00	1.499	31	1.121	19.10	0.5000	0.67
130	0.21	130.00	1.480	31	1.121	18.15	0.5000	0.62
130	0.21	130.00	1.480	31	1.121	18.15	0.5000	0.62
130	0.21	130.00	1.480	31	1.121	18.15	0.5000	0.62
120	0.05	120.00	1.446	30	1.121	3.46	0.5000	0.12
120	0.02	120.00	1.446	30	1.121	2.20	0.5000	0.07
117	0.18	117.00	1.436	30	1.121	25.66	0.5000	0.86
117	0.18	117.00	1.436	30	1.121	25.66	0.5000	0.86
117	0.18	117.00	1.436	30	1.121	25.66	0.5000	0.86
114	0.02	114.00	1.425	30	1.121	2.20	0.5000	0.07
84	0.13	84.00	1.306	27	1.121	10.34	0.5000	0.31
62	0.00	62.00	1.197	25	1.121	0.37	0.5000	0.01
62	0.00	62.00	1.197	25	1.121	0.37	0.5000	0.01
55	35.00	55.00	1.157	24	1.121	3.50	0.5000	0.09
136	0.20	136.00	1.499	31	1.121	9.40	0.5000	0.33
136	0.20	136.00	1.499	31	1.121	9.40	0.5000	0.33
136	0.20	136.00	1.499	31	1.121	9.40	0.5000	0.33
151	0.20	151.00	1.544	32	1.121	9.40	0.5000	0.34
151	0.20	151.00	1.544	32	1.121	9.40	0.5000	0.34
151	0.20	151.00	1.544	32	1.121	9.40	0.5000	0.34
130	0.20	130.00	1.480	31	1.121	9.40	0.5000	0.32
130	0.20	130.00	1.480	31	1.121	9.40	0.5000	0.32
130	0.20	130.00	1.480	31	1.121	9.40	0.5000	0.32
117	0.20	117.00	1.436	30	1.121	9.40	0.5000	0.31



<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	24 of 35
	Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section Elevation ft	Add Weight K	z ft	K <sub>c</sub>	q <sub>s</sub> psf	G <sub>H</sub>	C <sub>d</sub> A <sub>c</sub> ft <sup>2</sup>	t <sub>s</sub> in	F <sub>c</sub> K
117	0.20	117.00	1.436	30	1.121	9.40	0.5000	0.31
117	0.20	117.00	1.436	30	1.121	9.40	0.5000	0.31
145	0.20	145.00	1.526	32	1.121	9.40	0.5000	0.33
145	0.20	145.00	1.526	32	1.121	9.40	0.5000	0.33
145	0.20	145.00	1.526	32	1.121	9.40	0.5000	0.33
55	0.06	55.00	1.157	24	1.121	2.10	0.5000	0.06
60	0.05	60.00	1.186	25	1.121	2.44	0.5000	0.07
62	0.03	62.00	1.197	25	1.121	1.83	0.5000	0.05
84	0.09	84.00	1.306	27	1.121	6.73	0.5000	0.20
114	0.02	114.00	1.425	30	1.121	1.83	0.5000	0.06
146	0.02	146.00	1.529	32	1.121	1.83	0.5000	0.07
180	0.09	180.00	1.624	34	1.121	6.73	0.5000	0.25
173	0.09	173.00	1.605	33	1.121	6.73	0.5000	0.25
180	0.09	180.00	1.624	34	1.121	6.73	0.5000	0.25
173	0.09	173.00	1.605	33	1.121	6.73	0.5000	0.25
180	0.09	180.00	1.624	34	1.121	6.73	0.5000	0.25
173	0.09	173.00	1.605	33	1.121	6.73	0.5000	0.25
Sum Weight:	43.12					OTM	2962.86 kip-ft	21.34

### Dish Forces - No Ice

Section Elevation ft	Dish Type	Add Weight K	K <sub>c</sub>	A <sub>d</sub> ft <sup>2</sup>	C <sub>d</sub>	q <sub>s</sub> psf	t <sub>s</sub> in	F <sub>c</sub> K
163.50	Grid	0.10	1.580	28.27	0.00152	33		0.62
170.50	Paraboloid w/Shroud (HP)	0.17	1.599	12.57	0.00323	33		0.59
176.00	Paraboloid w/Radome	0.32	1.613	28.27	0.00221	33		0.92
170.50	Paraboloid w/Shroud (HP)	0.32	1.599	28.27	0.00323	33		1.33
180.00	Paraboloid w/o Radome	0.30	1.624	28.27	0.00426	34		1.78
180.00	Paraboloid w/o Radome	0.30	1.624	28.27	0.00426	34		1.78
180.00	Paraboloid w/o Radome	0.30	1.624	28.27	0.00426	34		1.78
Sum Weight:		1.81				OTM	1546.95 kip-ft	8.77

### Dish Forces - With Ice

Section Elevation ft	Dish Type	Add Weight K	K <sub>c</sub>	A <sub>d</sub> ft <sup>2</sup>	C <sub>d</sub>	q <sub>s</sub> psf	t <sub>s</sub> in	F <sub>c</sub> K
163.50	Grid	0.12	1.580	29.07	0.00426	33	0.5000	1.78
170.50	Paraboloid w/Shroud (HP)	0.19	1.599	13.10	0.00323	33	0.5000	0.61
176.00	Paraboloid w/Radome	0.37	1.613	29.07	0.00221	33	0.5000	0.94
170.50	Paraboloid w/Shroud (HP)	0.37	1.599	29.07	0.00323	33	0.5000	1.36
180.00	Paraboloid w/o Radome	0.37	1.624	29.07	0.00426	34	0.5000	1.83
180.00	Paraboloid w/o Radome	0.37	1.624	29.07	0.00426	34	0.5000	1.83
180.00	Paraboloid w/o Radome	0.37	1.624	29.07	0.00426	34	0.5000	1.83
Sum Weight:		2.16				OTM	1778.90 kip-ft	10.17

### Force Totals

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	25 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Load Case	Sum of Forces K	Total Weight K	Sum of Torques kip-ft	Sum of Offset Weight Overturning Moments, M, kip-ft	Sum of Offset Weight Overturning Moments, M, kip-ft	Sum of Wind Overturning Moments kip-ft
Leg Weight		28.72				
Bracing Weight		46.35				
Total Member Self-Weight		75.06				
Wind Normal	75.61	118.85	-5.26	2.68	6.40	8092.57
Wind 60	73.53	118.85	5.26	2.68	6.40	7919.45
Wind 90	74.05	118.85	2.79	2.68	6.40	7962.73
Member Ice		19.16				
Wind Normal - Ice	94.59	158.98	-13.00	2.98	7.03	10046.91
Wind 60 - Ice	92.64	158.98	13.00	2.98	7.03	9878.14
Wind 90 - Ice	93.13	158.98	4.34	2.98	7.03	9920.33

## Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Ice+Temp
3	Dead+ Wind 90+Ice+Temp

## Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	3	15.34	0.47	-0.03
			Max. Compression	3	-21.04	1.16	-0.47
			Max. Mx	3	-21.04	1.16	-0.47
			Max. My	3	3.63	-0.76	0.65
			Max. Vy	3	0.91	-0.76	-0.29
			Max. Vx	3	0.91	-0.76	-0.29
		Diagonal	Max Tension	3	5.65	0.00	0.00
			Max. Compression	3	-5.70	0.00	0.00
			Max. Mx	3	2.15	-0.03	0.41
			Max. My	3	1.66	-0.03	0.42
			Max. Vy	3	-0.03	-0.03	0.41
			Max. Vx	3	0.09	0.00	0.00
		Top Girt	Max Tension	3	0.90	0.00	0.00
			Max. Compression	3	-1.00	0.00	0.00
			Max. Mx	2	-0.06	0.15	0.00
T2	160 - 140	Leg	Max. Vy	2	-0.07	0.00	0.00
			Max Tension	3	45.67	1.04	0.17
			Max. Compression	3	-56.93	1.90	-0.53
			Max. Mx	3	-56.93	1.90	-0.53
			Max. My	3	-4.98	0.07	1.02
			Max. Vy	3	1.34	-1.42	-0.46
		Diagonal	Max. Vx	3	1.24	-0.08	-0.18
			Max Tension	3	9.25	0.00	0.00
			Max. Compression	3	-9.34	0.00	0.00
			Max. Mx	3	4.25	-0.05	0.33
			Max. My	3	-6.06	-0.03	0.54
			Max. Vy	3	-0.04	-0.05	0.33
		Max. Vx	3	-0.10	-0.03	0.54	

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<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft		
T3	140 - 120	Top Girt	Max Tension	3	0.27	0.00	0.00		
			Max. Compression	3	-0.20	0.00	0.00		
			Max. Mx	2	0.03	0.22	0.00		
		Leg	Max. Vy	2	-0.08	0.00	0.00		
			Max Tension	3	87.37	0.98	-0.43		
			Max. Compression	3	-105.18	3.04	-0.60		
			Max. Mx	3	56.54	-3.04	-1.03		
			Max. My	3	-7.54	-0.07	2.38		
			Max. Vy	3	1.20	-3.04	-1.03		
			Max. Vx	3	-0.96	-0.00	1.86		
			Diagonal	Max Tension	3	12.73	0.00	0.00	
				Max. Compression	3	-12.90	0.00	0.00	
		Max. Mx		3	12.55	-0.07	0.05		
		T4	120 - 100	Top Girt	Max. My	3	-11.84	-0.04	0.41
					Max. Vy	3	-0.04	-0.07	0.05
Max. Vx	3				-0.06	-0.04	0.41		
Leg	Max Tension			3	0.79	0.00	0.00		
	Max. Compression			3	-0.55	0.00	0.00		
	Max. Mx			2	0.12	0.29	0.00		
	Max. Vy			2	-0.10	0.00	0.00		
	Max Tension			3	138.28	1.85	-0.72		
	Max. Compression			3	-162.67	10.26	-3.63		
	Max. Mx			3	-162.67	10.26	-3.63		
	Max. My			3	-11.73	0.25	6.40		
	Max. Vy			3	-1.94	10.26	-3.63		
Diagonal	Max. Vx			3	-1.15	-0.03	2.49		
	Max Tension			3	14.97	0.00	0.00		
	Max. Compression			3	-14.96	0.00	0.00		
	Max. Mx	3	5.94	-0.08	0.30				
	Max. My	3	-13.49	-0.05	0.37				
	Max. Vy	3	-0.05	-0.08	-0.11				
T5	100 - 80	Top Girt	Max. Vx	3	-0.05	-0.05	0.37		
			Max Tension	3	0.91	0.00	0.00		
			Max. Compression	3	-0.65	0.00	0.00		
		Leg	Max. Mx	2	0.13	0.37	0.00		
			Max. Vy	2	-0.11	0.00	0.00		
			Max Tension	3	189.93	-0.58	-1.26		
			Max. Compression	3	-223.52	8.11	-0.66		
			Max. Mx	3	-223.52	8.11	-0.66		
			Max. My	3	-12.88	0.15	4.86		
Max. Vy	3		-1.33	8.11	-0.66				
Max. Vx	3		0.51	-0.23	2.74				
T6	80 - 60		Diagonal	Max Tension	3	16.52	0.00	0.00	
		Max. Compression		3	-17.02	0.00	0.00		
		Max. Mx		3	6.44	-0.26	0.30		
		Leg	Max. My	3	-16.42	-0.12	1.01		
			Max. Vy	3	-0.13	-0.26	-0.23		
			Max. Vx	3	-0.13	-0.12	1.01		
			Top Girt	Max Tension	3	1.34	0.00	0.00	
				Max. Compression	3	-1.12	0.00	0.00	
				Max. Mx	2	0.12	0.68	0.00	
Diagonal	Max. Vy		2	0.18	0.00	0.00			
	Max Tension		3	236.85	1.12	-3.93			
	Max. Compression		3	-279.55	10.20	0.10			
	Max. Mx	3	-279.55	10.20	0.10				
	Max. My	3	-19.19	-0.66	10.25				
	Max. Vy	3	-1.43	10.20	0.10				

# ERITower

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Job	Butternut Hollow CSP Tower	Page	27 of 35
Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T7	60 - 40	Top Girt	Max. Compression	3	-19.69	0.00	0.00			
			Max. Mx	3	7.87	-0.53	1.19			
			Max. My	3	-18.00	-0.11	2.10			
			Max. Vy	3	0.17	-0.53	1.19			
			Max. Vx	3	-0.23	-0.11	2.10			
			Max Tension	3	3.97	0.00	0.00			
		Leg	60 - 40	Max. Compression	3	-3.18	0.00	0.00		
					2	0.40	0.83	0.00		
					2	0.20	0.00	0.00		
				Max Tension	3	275.25	-2.18	-6.20		
					3	-352.09	13.27	0.02		
					3	-352.09	13.27	0.02		
					3	-36.04	-1.83	14.86		
					3	-1.64	13.27	0.02		
					3	-1.94	-1.83	14.86		
				Diagonal	60 - 40	Max Tension	3	20.33	0.00	0.00
							3	-21.39	0.00	0.00
							3	8.07	-0.62	0.90
						Max. Compression	3	-18.70	-0.20	1.51
							3	0.21	-0.62	0.90
							3	-0.15	-0.20	1.51
				Top Girt	60 - 40	Max Tension	3	5.15	0.00	0.00
							3	-4.53	0.00	0.00
							2	0.33	0.99	0.00
Max. Compression	2	-0.22	0.00			0.00				
	3	323.96	-1.76			-6.60				
	3	-412.94	16.51			-0.18				
T8	40 - 20	Leg	Max. Compression	3	-412.94	16.51	-0.18			
				3	-41.98	-1.80	15.63			
				3	-1.99	16.51	-0.18			
			Max Tension	3	-1.92	-1.80	15.63			
				3	20.99	0.00	0.00			
				3	-21.93	0.00	0.00			
		Diagonal	40 - 20	Max. Compression	3	8.39	-0.69	0.86		
					3	-19.70	-0.25	1.34		
					3	-0.22	-0.65	-1.30		
				Max Tension	3	-0.13	-0.25	1.34		
					3	6.48	0.00	0.00		
					3	-4.65	0.00	0.00		
		T9	20 - 0	Leg	Max. Compression	2	0.93	1.17	0.00	
						2	-0.24	0.00	0.00	
						3	369.35	-8.64	-12.72	
					Max Tension	3	-471.47	3.81	-0.39	
						3	346.06	-13.75	-14.04	
						3	-48.48	-2.41	28.24	
Diagonal	20 - 0			Max. Compression	3	0.92	-13.75	-14.04		
					3	-3.16	-2.41	28.24		
					3	23.28	0.00	0.00		
				Max Tension	3	-24.54	0.00	0.00		
					3	7.22	-1.13	1.28		
					3	23.08	-1.02	-2.03		
Top Girt	20 - 0	Max. Compression	3	0.32	-1.13	1.28				
			3	0.18	0.00	0.00				
			3	6.28	0.00	0.00				
		Max Tension	3	-4.97	0.00	0.00				
			2	0.67	1.37	0.00				
			2	0.26	0.00	0.00				

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	28 of 35
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	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

## Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	2	53.38	4.00	-2.31
	Max. H <sub>x</sub>	2	53.38	4.00	-2.31
	Max. H <sub>y</sub>	3	-382.58	-40.60	20.84
	Min. Vert	3	-382.58	-40.60	20.84
	Min. H <sub>x</sub>	3	-382.58	-40.60	20.84
	Min. H <sub>y</sub>	2	53.38	4.00	-2.31
Leg B	Max. Vert	3	488.72	-48.40	-25.39
	Max. H <sub>x</sub>	1	39.40	-3.04	-1.75
	Max. H <sub>y</sub>	1	39.40	-3.04	-1.75
	Min. Vert	1	39.40	-3.04	-1.75
	Min. H <sub>x</sub>	3	488.72	-48.40	-25.39
	Min. H <sub>y</sub>	3	488.72	-48.40	-25.39
Leg A	Max. Vert	2	52.84	-0.01	4.61
	Max. H <sub>x</sub>	1	39.48	-0.01	3.50
	Max. H <sub>y</sub>	2	52.84	-0.01	4.61
	Min. Vert	1	39.48	-0.01	3.50
	Min. H <sub>x</sub>	3	52.84	-4.13	4.55
	Min. H <sub>y</sub>	1	39.48	-0.01	3.50

## Tower Mast Reaction Summary

Load Combination	Torsion kip-ft	Shear K	Vertical K	Overturning kip-ft
Dead Only	0.00	0.00	118.85	6.93
Dead+Ice+Temp	0.00	0.00	158.98	7.63
Dead+Wind 90+Ice+Temp	4.38	93.13	158.98	9945.93

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-118.85	0.00	-0.00	118.85	0.00	0.000%
2	0.00	-158.98	0.00	-0.00	158.98	0.00	0.000%
3	93.13	-158.98	0.00	-93.13	158.98	0.00	0.000%

## Maximum Tower Deflections

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt deg	Twist deg
T1	180 - 160	10.640	3	0.4178	0.0304
T2	160 - 140	8.746	3	0.4130	0.0280
T3	140 - 120	6.899	3	0.3896	0.0177

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<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt deg	Twist deg
T4	120 - 100	5.131	3	0.3492	0.0090
T5	100 - 80	3.527	3	0.2966	0.0026
T6	80 - 60	2.291	3	0.2427	0.0013
T7	60 - 40	1.321	3	0.1803	0.0008
T8	40 - 20	0.617	3	0.1225	0.0005
T9	20 - 0	0.171	3	0.0590	0.0002

## Critical Deflections and Radius of Curvature

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt deg	Twist deg	Radius of Curvature ft
180.00	6' HP w/o Radome	3	10.640	0.4178	0.0304	377979
180.00	6' HP w/o Radome	3	10.640	0.4178	0.0304	377979
180.00	6' HP w/o Radome	3	10.640	0.4178	0.0304	377979
180.00	DB314	3	10.640	0.4178	0.0304	377979
180.00	PD1110	3	10.640	0.4178	0.0304	377979
180.00	Scala OGT9-806N	3	10.640	0.4178	0.0304	377979
180.00	Scala OGT9-806N	3	10.640	0.4178	0.0304	377979
180.00	6' Standoff	3	10.640	0.4178	0.0304	377979
180.00	6' Standoff	3	10.640	0.4178	0.0304	377979
180.00	6' Standoff	3	10.640	0.4178	0.0304	377979
178.00	Control Box Amp	3	10.450	0.4177	0.0304	377979
176.00	6' HP c/w F/G Radome	3	10.260	0.4176	0.0304	377979
173.00	DB S806M-XT	3	9.974	0.4174	0.0303	269986
173.00	6' Standoff	3	9.974	0.4174	0.0303	269986
173.00	Scala OGT9-806NU	3	9.974	0.4174	0.0303	269986
173.00	6' Standoff	3	9.974	0.4174	0.0303	269986
173.00	Scala OGT9-806NU	3	9.974	0.4174	0.0303	269986
173.00	6' Standoff	3	9.974	0.4174	0.0303	269986
170.50	6' HP c/w Hypalon Shroud	3	9.737	0.4170	0.0301	198937
170.50	4' HP c/w Hypalon Shroud	3	9.737	0.4170	0.0301	198937
167.00	16" x 16" Generic Panel GPD	3	9.406	0.4162	0.0297	145377
167.00	16" x 16" Generic Panel GPD	3	9.406	0.4162	0.0297	145377
163.50	6' Grid (Gabriel GLF6-940	3	9.075	0.4149	0.0290	114606
160.00	DB 809K-YP	3	8.746	0.4130	0.0280	96215
160.00	DB 809K-YP	3	8.746	0.4130	0.0280	96215
151.00	(6) Allgon 7120-16	3	7.907	0.4049	0.0239	75178
151.00	(6) Allgon 7120-16	3	7.907	0.4049	0.0239	75178
151.00	(6) Allgon 7120-16	3	7.907	0.4049	0.0239	75178
151.00	Sector Gate Boom Assy Cingular	3	7.907	0.4049	0.0239	75178
151.00	Sector Gate Boom Assy Cingular	3	7.907	0.4049	0.0239	75178
151.00	Sector Gate Boom Assy Cingular	3	7.907	0.4049	0.0239	75178
146.00	PD 1167	3	7.446	0.3986	0.0211	67511
146.00	1' Standoff	3	7.446	0.3986	0.0211	67511
145.00	(6) Allgon 7184-14	3	7.354	0.3972	0.0205	66161
145.00	(6) Allgon 7184-14	3	7.354	0.3972	0.0205	66161
145.00	Sector Gate Boom Assy AT&T	3	7.354	0.3972	0.0205	66161
145.00	Sector Gate Boom Assy AT&T	3	7.354	0.3972	0.0205	66161
145.00	Sector Gate Boom Assy AT&T	3	7.354	0.3972	0.0205	66161
145.00	(6) Allgon 7184-14	3	7.354	0.3972	0.0205	66161
136.00	(4) EMS RR901702DP	3	6.538	0.3827	0.0157	56417
136.00	(4) EMS RR901702DP	3	6.538	0.3827	0.0157	56417
136.00	Sector Gate Boom Assy	3	6.538	0.3827	0.0157	56417
	Voicestream					
136.00	Sector Gate Boom Assy	3	6.538	0.3827	0.0157	56417

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<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt deg	Twist deg	Radius of Curvature ft
136.00	Voicestream Sector'd Gate Boom Assy	3	6.538	0.3827	0.0157	56417
136.00	Voicestream (4) EMS RR901702DP	3	6.538	0.3827	0.0157	56417
130.00	Sector'd Gate Boom Assy Verizon	3	6.004	0.3713	0.0130	51612
130.00	Sector'd Gate Boom Assy Verizon	3	6.004	0.3713	0.0130	51612
130.00	(6) DB 844	3	6.004	0.3713	0.0130	51612
130.00	(6) DB 844	3	6.004	0.3713	0.0130	51612
130.00	(6) DB 844	3	6.004	0.3713	0.0130	51612
130.00	Sector'd Gate Boom Assy Verizon	3	6.004	0.3713	0.0130	51612
120.00	PD 1142	3	5.131	0.3492	0.0090	39864
120.00	DB 809K-YP	3	5.131	0.3492	0.0090	39864
117.00	Sector'd Gate Boom Assy Sprint	3	4.875	0.3418	0.0078	29589
117.00	Sector'd Gate Boom Assy Sprint	3	4.875	0.3418	0.0078	29589
117.00	(6) DB 980	3	4.875	0.3418	0.0078	29589
117.00	(6) DB 980	3	4.875	0.3418	0.0078	29589
117.00	(6) DB 980	3	4.875	0.3418	0.0078	29589
117.00	Sector'd Gate Boom Assy Sprint	3	4.875	0.3418	0.0078	29589
114.00	1' Standoff	3	4.622	0.3341	0.0067	22179
114.00	PD 1142	3	4.622	0.3341	0.0067	22179
84.00	PD 654	3	2.513	0.2541	0.0013	18324
84.00	6' Standoff	3	2.513	0.2541	0.0013	18324
62.00	GPS	3	1.406	0.1864	0.0009	17083
62.00	GPS	3	1.406	0.1864	0.0009	17083
62.00	36" Standoff	3	1.406	0.1864	0.0009	17083
60.00	35" Standoff	3	1.321	0.1803	0.0008	16881
55.00	41" Standoff	3	1.120	0.1656	0.0007	17511
55.00	DB 225K Yagi	3	1.120	0.1656	0.0007	17511

## Non-Linear Convergence Results

Load Combination.	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	5	0.00000001	0.00000001

## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Controlling Element	% Capacity	Pass Fail
T1	180 - 160	Leg	THP3-3-T3-.437	1	5.3	Pass
		Leg	THP3-3-T3-.437	2	7.9	Pass
		Leg	THP3-3-T3-.437	3	0.8	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	7	16.7	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	8	21.6	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	9	8.7	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	10	5.0	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	11	6.7	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	12	6.8	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	13	14.4	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	14	17.8	Pass

# ERITower

**Towertek Industries, Inc.**  
 3325 Hollywood Blvd., Ste 401  
 Hollywood, Florida 33021  
 Phone: 954-966-8182  
 FAX: towertek@bellsouth.net

<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	31 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section No.	Elevation ft	Component Type	Size	Controlling Element	% Capacity	Pass Fail
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	15	7.6	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	16	4.7	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	17	6.0	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	18	6.2	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	19	10.4	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	20	12.6	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	21	7.4	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	22	4.4	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	23	5.5	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	24	6.2	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	25	6.5	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	26	7.6	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	27	7.3	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	28	4.5	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	29	5.4	Pass
		Diagonal	THL1.75-1.75-3/16-T2-2-1/4	30	6.1	Pass
		Top Girt	P3x.425	4	0.2	Pass
		Top Girt	P3x.425	5	1.3	Pass
		Top Girt	P3x.425	6	0.8	Pass
T2	160 - 140	Leg	THP3.5-318-T4.5-438	31	12.2	Pass
		Leg	THP3.5-318-T4.5-438	32	16.4	Pass
		Leg	THP3.5-318-T4.5-438	33	1.9	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	37	23.0	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	38	35.2	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	39	17.0	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	40	8.3	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	41	13.0	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	42	11.0	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	43	19.8	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	44	28.7	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	45	12.9	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	46	6.6	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	47	9.8	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	48	8.9	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	49	16.5	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	50	23.0	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	51	9.3	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	52	5.2	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	53	7.5	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	54	6.7	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	55	15.3	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	56	20.7	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	57	7.9	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	58	4.6	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	59	6.5	Pass
		Diagonal	THL2-2-3/16-T2-2-5/16	60	5.8	Pass
		Top Girt	P3x.425	34	0.2	Pass
		Top Girt	P3x.425	35	0.2	Pass
		Top Girt	P3x.425	36	0.3	Pass
T3	140 - 120	Leg	THP4-337-T4-494	61	20.5	Pass
		Leg	THP4-337-T4-494	62	26.8	Pass
		Leg	THP4-337-T4-494	63	2.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	67	40.2	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	68	55.2	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	69	27.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	70	15.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	71	22.1	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	72	20.0	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	73	38.1	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	74	49.5	Pass



<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	Job	Butternut Hollow CSP Tower	Page	32 of 35
	Project	Reinforced Model (150%)	Date	09:08:23 02/14/02
	Client	URS Corp. Connecticut	Designed by	Kerry Donnelly

Section No.	Elevation ft	Component Type	Size	Controlling Element	% Capacity	Pass Fail
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	75	23.0	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	76	15.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	77	20.5	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	78	17.9	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	79	32.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	80	41.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	81	20.9	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	82	11.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	83	15.4	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	84	16.2	Pass
		Top Girt	P3x.425	64	0.2	Pass
		Top Girt	P3x.425	65	0.7	Pass
		Top Girt	P3x.425	66	1.0	Pass
T4	120 - 100	Leg	THP5-258-T5-375	85	27.8	Pass
		Leg	THP5-258-T5-375	86	34.8	Pass
		Leg	THP5-258-T5-375	87	3.4	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	91	44.3	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	92	69.5	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	93	35.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	94	18.9	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	95	30.1	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	96	22.6	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	97	47.3	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	98	69.6	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	99	32.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	100	21.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	101	31.9	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	102	22.5	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	103	42.8	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	104	61.0	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	105	31.2	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	106	16.9	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	107	24.7	Pass
		Diagonal	THL2.5-2.5-3/16-T2.5-2.5-5/16	108	21.7	Pass
		Top Girt	P3x.425	88	0.3	Pass
		Top Girt	P3x.425	89	0.8	Pass
		Top Girt	P3x.425	90	1.5	Pass
T5	100 - 80	Leg	THP5.5-375-T6-562	109	28.4	Pass
		Leg	THP5.5-375-T6-562	110	35.3	Pass
		Leg	THP5.5-375-T6-562	111	3.5	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	115	13.9	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	116	20.6	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	117	12.0	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	118	5.5	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	119	8.6	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	120	7.9	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	121	13.7	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	122	18.8	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	123	8.4	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	124	7.0	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	125	9.4	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	126	6.3	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	127	14.0	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	128	19.3	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	129	10.6	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	130	5.6	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	131	7.9	Pass
		Diagonal	THL3-3-5/16-T3-3-1/2	132	7.6	Pass
		Top Girt	P4x.494	112	0.3	Pass
		Top Girt	P4x.494	113	0.8	Pass

# ERITower

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 Hollywood, Florida 33021  
 Phone: 954-966-8182  
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<b>Job</b>	Butternut Hollow CSP Tower	<b>Page</b>	33 of 35
<b>Project</b>	Reinforced Model (150%)	<b>Date</b>	09:08:23 02/14/02
<b>Client</b>	URS Corp. Connecticut	<b>Designed by</b>	Kerry Donnelly

Section No.	Elevation ft	Component Type	Size	Controlling Element	% Capacity	Pass Fail		
T6	80 - 60	Top Girt	P4x.494	114	1.3	Pass		
		Leg	THP6-375-T6-562	133	34.1	Pass		
		Leg	THP6-375-T6-562	134	44.1	Pass		
		Leg	THP6-375-T6-562	135	4.5	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	139	14.2	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	140	17.7	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	141	10.2	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	142	5.9	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	143	7.5	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	144	8.2	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	145	13.6	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	146	16.3	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	147	9.6	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	148	5.5	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	149	6.6	Pass		
		Diagonal	THL3.5-3.5-3/8(4-4-5)	150	8.0	Pass		
		Top Girt	P4x.494	136	0.3	Pass		
		Top Girt	P4x.494	137	2.2	Pass		
		Top Girt	P4x.494	138	4.4	Pass		
		T7	60 - 40	Leg	THP6-432-T8-5	151	32.5	Pass
Leg	THP6-432-T8-5			152	44.5	Pass		
Leg	THP6-432-T8-5			153	6.5	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			157	12.6	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			158	17.3	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			159	10.4	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			160	5.1	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			161	7.4	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			162	7.4	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			163	11.7	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			164	15.3	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			165	9.3	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			166	4.5	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			167	6.2	Pass		
Diagonal	THL4-4-3/8(4-4-5/8)			168	7.1	Pass		
Top Girt	P4x.494			154	0.4	Pass		
Top Girt	P4x.494			155	2.9	Pass		
Top Girt	P4x.494			156	7.5	Pass		
T8	40 - 20			Leg	THP6-432-T8-5	169	38.2	Pass
				Leg	THP6-432-T8-5	170	52.2	Pass
		Leg	THP6-432-T8-5	171	7.5	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	175	13.0	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	176	19.2	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	177	11.5	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	178	5.3	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	179	8.1	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	180	7.7	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	181	12.3	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	182	17.4	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	183	10.4	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	184	4.9	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	185	7.2	Pass		
		Diagonal	THL4-4-3/8(4-4-5/8)	186	7.4	Pass		
		Top Girt	P4x.494	172	0.7	Pass		
		Top Girt	P4x.494	173	3.6	Pass		
		Top Girt	P4x.494	174	9.0	Pass		
		T9	20 - 0	Leg	TP8-322-T10-5	187	37.8	Pass
				Leg	TP8-322-T10-5	188	50.8	Pass
Leg	TP8-322-T10-5			189	7.4	Pass		
Diagonal	THL4-4-1/2-(5-5-5/8)			193	11.2	Pass		
Diagonal	THL4-4-1/2-(5-5-5/8)			194	13.9	Pass		

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	<b>Job</b> Butternut Hollow CSP Tower	<b>Page</b> 34 of 35
	<b>Project</b> Reinforced Model (150%)	<b>Date</b> 09:08:23 02/14/02
	<b>Client</b> URS Corp. Connecticut	<b>Designed by</b> Kerry Donnelly

Section No.	Elevation ft	Component Type	Size	Controlling Element	% Capacity	Pass Fail
		Diagonal	THL4-4-1/2-(5-5-5/8)	195	9.7	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	196	3.6	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	197	4.7	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	198	7.7	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	199	9.7	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	200	11.4	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	201	6.2	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	202	4.5	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	203	5.4	Pass
		Diagonal	THL4-4-1/2-(5-5-5/8)	204	5.3	Pass
		Top Girt	P4x.494	190	0.5	Pass
		Top Girt	P4x.494	191	3.5	Pass
		Top Girt	P4x.494	192	11.3	Pass
					<b>Summary</b>	
				Leg	52.2	Pass
				Diagonal	69.6	Pass
				Top Girt	11.3	Pass
				<b>RATING =</b>	<b>69.6</b>	<b>Pass</b>

## Element Map

Section No.	Section Elevation ft	Component Type	Element List
T1	180-160	Leg	1-3
		Diagonal	7-30
		Top Girt	4-6
T2	160-140	Leg	31-33
		Diagonal	37-60
		Top Girt	34-36
T3	140-120	Leg	61-63
		Diagonal	67-84
		Top Girt	64-66
T4	120-100	Leg	85-87
		Diagonal	91-108
		Top Girt	88-90
T5	100-80	Leg	109-111
		Diagonal	115-132
		Top Girt	112-114
T6	80-60	Leg	133-135
		Diagonal	139-150
		Top Girt	136-138
T7	60-40	Leg	151-153
		Diagonal	157-168
		Top Girt	154-156
T8	40-20	Leg	169-171
		Diagonal	175-186
		Top Girt	172-174
T9	20-0	Leg	187-189
		Diagonal	193-204
		Top Girt	190-192
			Total number of elements: 204

<b>ERITower</b>  <b>Towertek Industries, Inc.</b> 3325 Hollywood Blvd., Ste 401 Hollywood, Florida 33021 Phone: 954-966-8182 FAX: towertek@bellsouth.net	<b>Job</b> Butternut Hollow CSP Tower	<b>Page</b> 35 of 35
	<b>Project</b> Reinforced Model (150%)	<b>Date</b> 09:08:23 02/14/02
	<b>Client</b> URS Corp. Connecticut	<b>Designed by</b> Kerry Donnelly

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Program Version 1.0.76.0 - 12/17/2001 File:C:/Documents and Settings/default/Desktop/Butternut/Supplemental Documentation/Butternut (Reinforced).eri