

HPC Wireless Services

46 Mill Plain Rd.

Floor 2

Danbury, CT, 06811

P.: 203.797.1112



ORIGINAL

August 15, 2012

RECEIVED
AUG 16 2012CONNECTICUT
SITING COUNCILVIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: New Cingular Wireless PCS, LLC – Exempt Modification
130 Vernon Road, Bolton, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of Bolton.

AT&T plans to modify the existing wireless communications facility owned by Mountaintop Enterprises and located at 130 Vernon Road, Bolton (coordinates 41°-48'-10" N, 72°-26'-30" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report reflecting the modification to AT&T's operations at the site.

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

1. AT&T will install new boom mounts, relocate six (6) existing UMTS/GSM antennas and add three (3) LTE panel antennas at a center line of approximately 164'. Six (6) RRHs (remote radio heads) will be placed behind the antennas, and a surge

arrestor will be mounted on the tower leg. AT&T will also place a DC power and fiber run from the equipment to the antennas along the existing coaxial cable run. These changes will not extend the height of the approximately 280' structure.

2. AT&T will place related equipment in its existing equipment shelter, and will mount a new GPS antenna on an existing ice bridge. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 1.21%; the combined site operations will result in a total power density of approximately 47.24%.

Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,



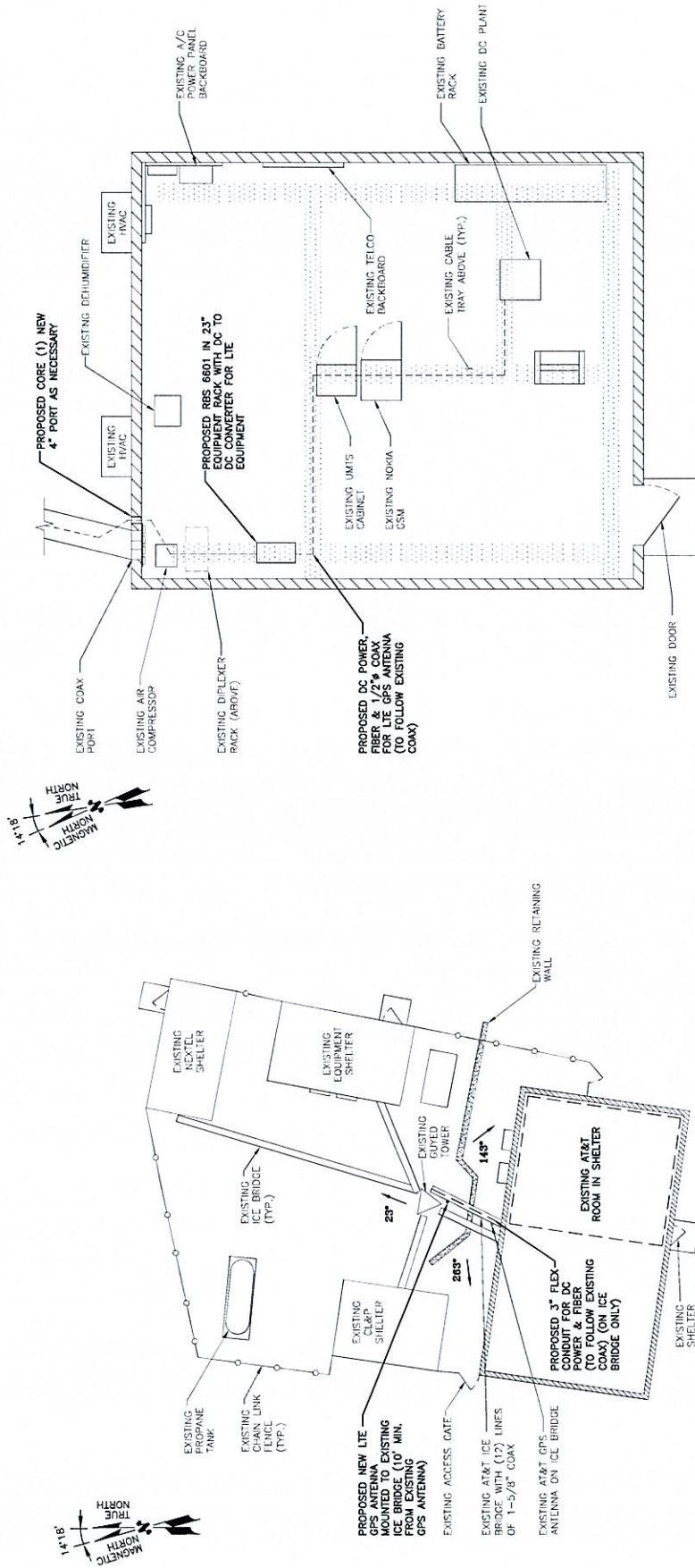
Jennifer Young Gaudet

Attachments

cc: Honorable Robert R. Morra, First Selectman, Town of Bolton
Mountaintop Enterprises (underlying property owner)

NOTE:
AN ANALYSIS FOR THE CAPACITY
OF THE EXISTING STRUCTURES
TO SUPPORT THE PROPOSED
EQUIPMENT SHALL BE DETERMINED
PRIOR TO CONSTRUCTION.

NOTE:
REFER TO THE FINAL RF DATA
SHEET FOR FINAL ANTENNA
SETTINGS.



COMPOUND PLAN
SCALE: 1/8"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

EQUIPMENT PLAN
SCALE: 3/8"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

Hudson Design Group, Inc.
1000 GORHAM STREET
N. ANDOVER, MA 01861
TEL: (978) 452-5500
FAX: (978) 228-5504

NEXLINK
a Unitel Global Services company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

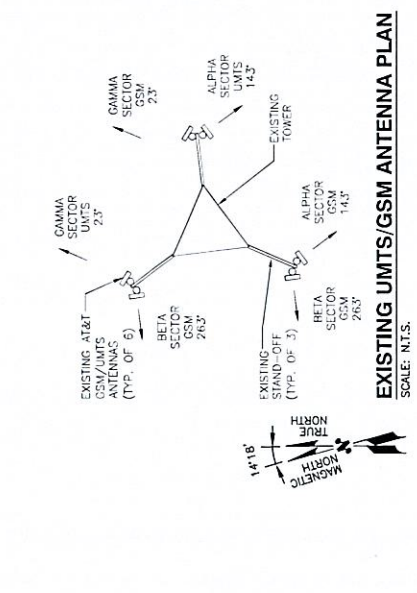
SITE NUMBER: CT1069
SITE NAME: BOLTON
130 VERNON ROAD
BOLTON, CT 06043
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

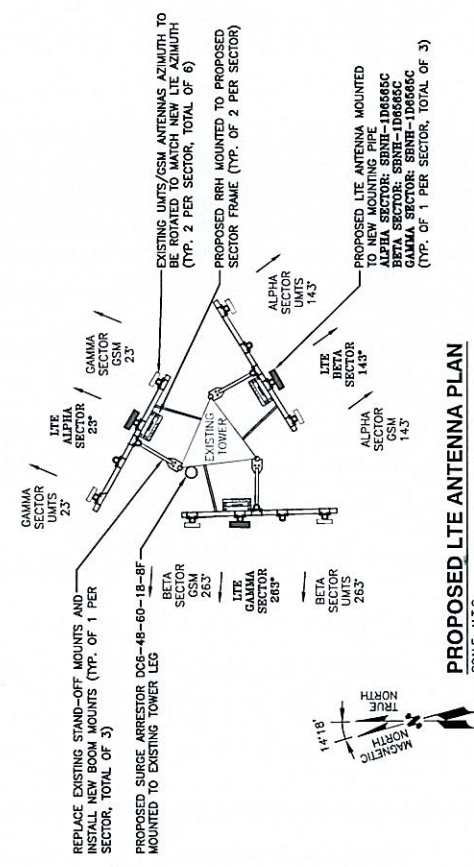
AT&T			
NO.	DATE	REVISIONS	BY
2	06/06/13	CONSTRUCTION REVISED	DC-IPM
1	04/16/13	ISSUED FOR CONSTRUCTION	DC-IPM
0	02/27/13	ISSUED FOR REVIEW	DC-IPM
NO.	DATE	REVISIONS	BY
1	02/27/13	ISSUED FOR REVIEW	DC-IPM
0	02/27/13	ISSUED FOR REVIEW	DC-IPM
SCALE	AS SHOWN	DESIGNED BY: DC	DRAWN BY: DB
JOB NUMBER	1069.01	DRAWING NUMBER	A-1
REV			2

NOTE:
REFER TO THE FINAL RF DATA
SHEET FOR FINAL ANTENNA
SETTINGS.

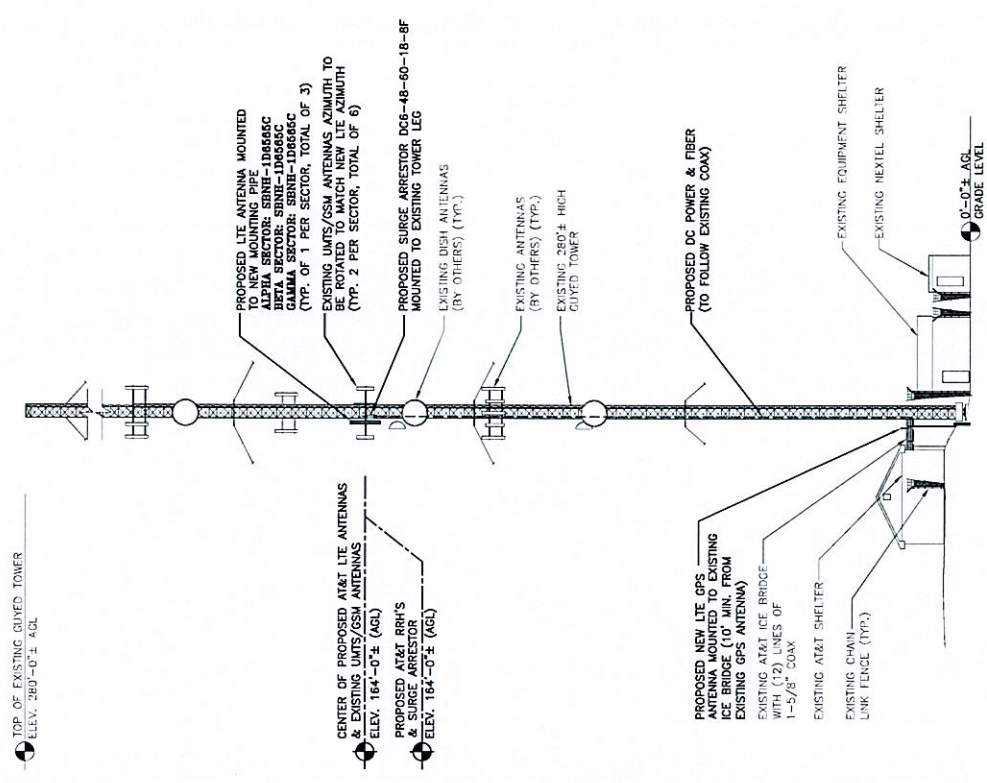
NOTE:
AN ANALYSIS FOR THE CAPACITY
OF THE EXISTING STRUCTURES
TO SUPPORT THE PROPOSED
EQUIPMENT SHALL BE DETERMINED
PRIOR TO CONSTRUCTION.



EXISTING UMTS/GSM ANTENNA PLAN
SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN
SCALE: N.T.S.



EAST ELEVATION
SCALE: 1/16"=1'-0"

 H D G Hudson Design Group 100 W. 10th Street, Suite 200 N. Andover, MA 01845 TEL: 978-335-5533 FAX: 978-335-5586										 NEXLINK GLOBAL SERVICES a Unitek Global Services company 800 MARSHALL PHELPS ROAD, UNIT# 2A WINDSOR, CT 06095										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										 at&t 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 HARTFORD COUNTY										SITE NUMBER: CT1069 SITE NAME: BOLTON 130 VERNON ROAD BOLTON, CT 06032 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DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 280' GUYED TOWER AND ITS FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

Site I.D #: CT1069
Site Name: Bolton
Address: 130 Vernon Road
Bolton, Connecticut

prepared for



AT&T Mobility

500 Enterprise
Drive, Suite 3A
Rocky Hill, CT 06067

prepared by



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

36939370
MTS-007

July 26, 2012

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1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 280' guyed lattice tower located at 130 Vernon Road in Bolton, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code which requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1) and the TIA/EIA-222-F standard for a wind velocity of 85 mph (fastest mile). The wind speed from the TIA/EIA-222-F governs the design at 85 mph (fastest mile) and 74 mph (fastest mile) concurrent with ½" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report. The proposed AT&T modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: Existing Mounts Install: (3) Andrew 12' Sector Frames, Part Number SF-U12-3-72 (3) SBNH-1D6565C Panel Antennas (6) Ericsson RRUs (1) Surge Suppressor (1) 3" Flex Conduit with 3 Fiber & 6 DC	AT&T	164'

Note: Existing AT&T antennas, TMAs and diplexers shall be relocated to new mounts.

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

This analysis is based on:

- 1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
- 2) Geotechnical information taken from report by Dr. Clarence Welti, P.E., P.C. Geotechnical Engineering dated February 13, 1991.
- 3) Tower geometry, structural member sizes and foundation information taken from structural analysis performed by L&R Communications, Limited, L&R File No. 92-43-023, signed and sealed October 16, 1992.
- 4) Structural analysis performed by LeBlanc Communications Inc., File No. 4180105, signed and sealed February 4, 1998.
- 5) Structural analysis prepared by Paul J. Ford and Company, Job No. 36500-16, dated December 6, 2000.
- 6) Structural analysis performed by URS Corp for Cingular Wireless, Job No. F3-00002292.58 signed and sealed August 15, 2002.
- 7) Structural analysis performed by URS Corp for Cingular Wireless, Job No. 36911793 signed and sealed September 19, 2002.
- 8) Structural analysis performed by URS Corp for Verizon Wireless, Job No. VZ1-127 / 36930618, signed and sealed January 27, 2005.

1. **EXECUTIVE SUMMARY (continued)**

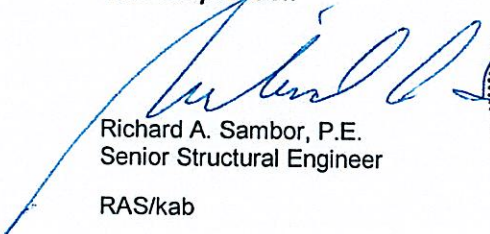
- 8) Structural analysis performed by URS Corp for Verizon Wireless, Job No. VZ1-127 / 36930618, signed and sealed January 27, 2005.
- 9) Structural analysis performed by URS Corp for Cingular/AT&T, Job No. SAI-045 / 36924835, signed and sealed March 30, 2009.
- 10) Structural analysis performed by URS Corp for WMRQ, Job No. 36923441, signed and sealed July 9, 2009.
- 11) Structural analysis performed by URS Corp for WBMW, Job No. 36924402, signed and sealed July 14, 2010.
- 12) Antenna loading and coaxial cable locations taken from tower inspection report prepared by Northeast Towers, Inc., dated July 13, 2012.
- 13) Proposed AT&T antennas taken from RFDS, revision V01, dated March 6, 2012, received by URS via email on July 24, 2012.
- 14) Antenna and mount configuration as specified on the inventory page following this Executive Summary.

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

If you should have any questions, please call.

Sincerely,

URS Corporation


Richard A. Sambor, P.E.
Senior Structural Engineer

RAS/kab



cc: CF/Book – URS

2. INTRODUCTION

The subject tower is located at 130 Vernon Road in Bolton, Connecticut. The structure is a 280' guyed lattice tower. The inventory is summarized in the table below:

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
10' Omnidirectional Antenna	Not in Operation	3' Standoff	284'	1-1/4"
FM Antenna	WMRQ (Existing)	5' Standoff	289'	7/8"
Kathrein MF-950B Grid Antenna	WBMV (Existing)	Leg Mounted	280'	1-1/4"
14' Whip antenna	Unknown (Existing)	3' Standoff	260'	1-1/4" (shared with dipole)
ASPA-711 Dipole Antenna	Unknown (Existing)	1' Standoff	260'	1-1/4" (shared with whip)
(9) DB844H90E-XY Panel antenna	Nextel (Existing)	Boom Mount	226'	(9) 1-5/8"
8' Dish with Radome	Unknown (Existing)	Leg Mount	212'-6"	(1) EW60
8' Dish with Radome	Unknown (Existing)	Leg Mount	204'-6"	(1) EW60
6' Dish with Radome	Unknown (Existing)	Leg Mount	204'-6"	(1) EW60
(2) EMS RR90-17-02DP Panel Antennas	AT&T (Existing)	T-Arm	180'-6"	(4) 1-5/8"
None	Not in Operation	6' Standoff	180'-6"	N/A
(6) Powerwave 7770 Panel Antennas (6) LGP21401 TMAs (12) LGP21901 Diplexers	AT&T (Existing)	Shared with Below	164'	(12) 1-5/8"
(3) SBNH-1D6565C Panel Antennas (6) Ericsson RRUs (1) Surge Suppressor	AT&T (Proposed)	(3) Andrew 12' Sector Frames, (SF-U12-3-72)	164'	(1) 3" Flex Conduit with 3 Fiber & 6 DC
6.5' Dish with Radome	Unknown (Existing)	Leg Mount	153'	(1) EW60
5.5' Dish with Radome	Unknown (Existing)	Leg Mount	153'	(1) EW60
22' Whip Antenna	Unknown (Existing)	6' Standoff	132'	(1) 1-1/4"
12' Dipole	Unknown (Existing)	6' Standoff	132'	(1) 1-1/4"
12.5' Omni	Not in Operation	1.5' Standoff	125'	Dead Line
1' Yagi	Not in Operation	Leg Mount	124'-6"	N/A
(6) Andrews DB844H105ESX and (4) Andrews 948F85T2E-M (Alpha and Beta Sectors Only)	Verizon (Existing)	(2) T-Arms	121'	(6) 1-1/4" (4) 1-5/8"
4' Dish with Radome	Unknown (Existing)	Leg Mount	113'	(1) EW-90
9' Dish with Radome	Unknown (Existing)	Leg Mount	104'-6"	(1) EW-60

Note: There are several items on the tower which are either unused or not functional and the carriers are not known at this time. These items are identified in the inventory.

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

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

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

The Connecticut State Building Code requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1). The TIA/EIA-222-F requires a basic wind speed of 85 mph fastest mile. In this case the wind speed from the TIA/EIA-222-F governs the design.

The analysis was conducted using TNX Tower 6.0. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

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

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

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

4. FINDINGS AND EVALUATION

Stresses on the tower structure were evaluated to compare with allowable stresses in accordance with AISC. The calculated stresses under the proposed loading were within the allowable limits (see table below). Detailed analysis and calculations for the proposed load condition are provided in section 6 of this report.

COMPONENT (SECTION NO.)	CONTROLLING COMPONENT / ELEVATION	STRESS RATIO (% CAPACITY)	PASS/FAIL
Legs (T12)	40'-60'	90.6%	Pass
Diagonal (T1)	260'-280'	75.4%	Pass
Top Girt (T1)	260'-280'	7.4%	Pass
Sec. Horizontal (T12)	40'-60'	11.5%	Pass
Guy A (T11)	60'-80'	95.9%	Pass
Guy B (T11)	60'-80'	91.8%	Pass
Guy C (T8)	120'-140'	97.1%	Pass
Top Guy Pull-Off (T8)	120'-140'	27.8%	Pass
Bottom Guy Pull-Off (T8)	120'-140'	12.8%	Pass
Torque Arm Top (T5)	180'-200'	27.4%	Pass
Torque Arm Bottom (T5)	180'-200'	53.3%	Pass
Foundation	Guy Anchor Shear	99.2%	Pass

5. CONCLUSIONS AND RECOMMENDATIONS

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

Limitations/Assumptions:

This report is based on the following:

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

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

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

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

Ongoing and Periodic Inspection and Maintenance:

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

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

6. DRAWINGS AND DATA

TNX TOWER INPUT/OUTPUT SUMMARY

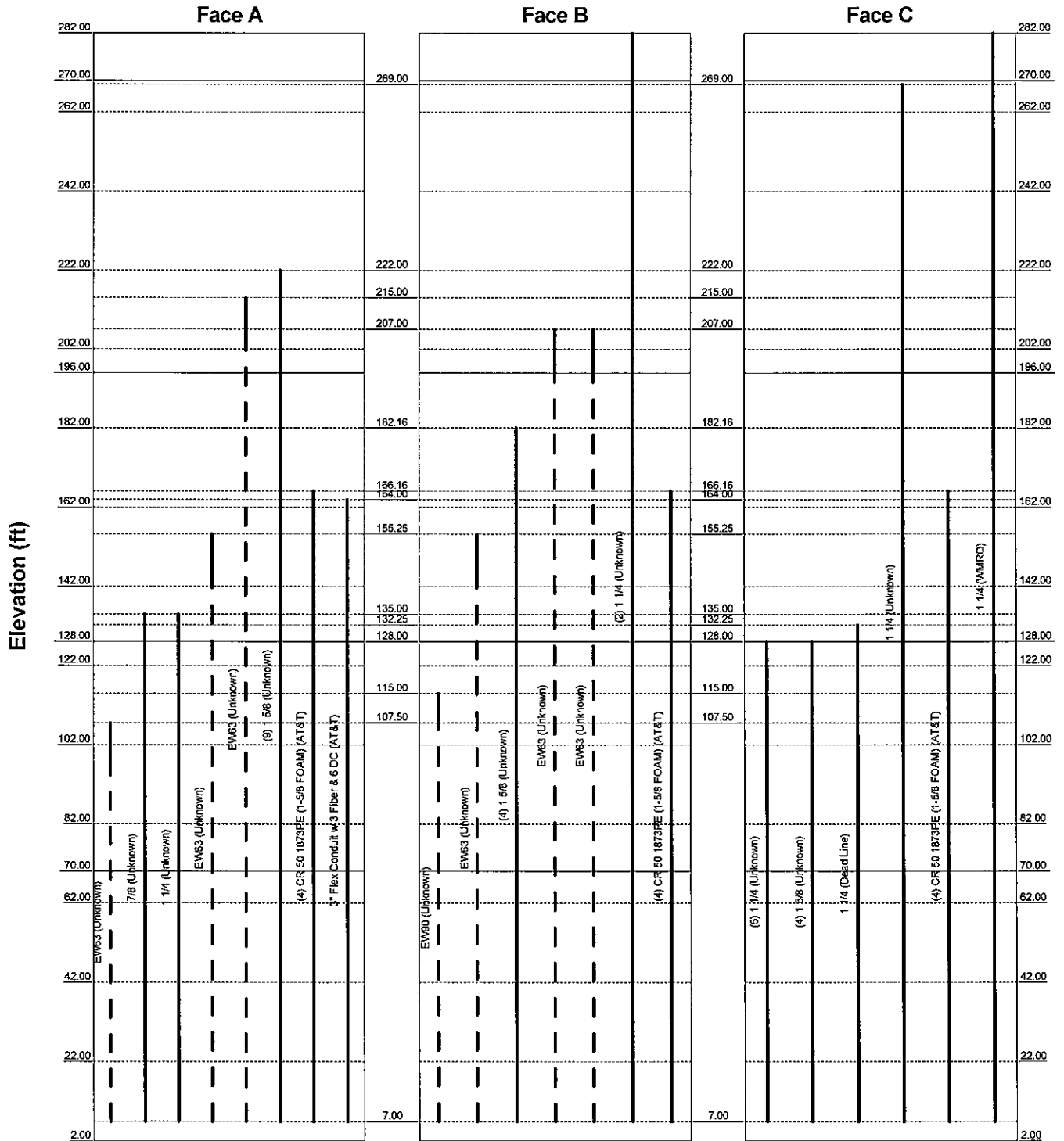
Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26	T27	T28	T29	T30	T31	T32	T33	T34	T35	T36	T37	T38	T39	T40	T41	T42	T43	T44	T45	T46	T47	T48	T49	T50	T51	T52	T53	T54	T55	T56	T57	T58	T59	T60	T61	T62	T63	T64	T65	T66	T67	T68	T69	T70	T71	T72	T73	T74	T75	T76	T77	T78	T79	T80	T81	T82	T83	T84	T85	T86	T87	T88	T89	T90	T91	T92	T93	T94	T95	T96	T97	T98	T99	T100	T101	T102	T103	T104	T105	T106	T107	T108	T109	T110	T111	T112	T113	T114	T115	T116	T117	T118	T119	T120	T121	T122	T123	T124	T125	T126	T127	T128	T129	T130	T131	T132	T133	T134	T135	T136	T137	T138	T139	T140	T141	T142	T143	T144	T145	T146	T147	T148	T149	T150	T151	T152	T153	T154	T155	T156	T157	T158	T159	T160	T161	T162	T163	T164	T165	T166	T167	T168	T169	T170	T171	T172	T173	T174	T175	T176	T177	T178	T179	T180	T181	T182	T183	T184	T185	T186	T187	T188	T189	T190	T191	T192	T193	T194	T195	T196	T197	T198	T199	T200	T201	T202	T203	T204	T205	T206	T207	T208	T209	T210	T211	T212	T213	T214	T215	T216	T217	T218	T219	T220	T221	T222	T223	T224	T225	T226	T227	T228	T229	T230	T231	T232	T233	T234	T235	T236	T237	T238	T239	T240	T241	T242	T243	T244	T245	T246	T247	T248	T249	T250	T251	T252	T253	T254	T255	T256	T257	T258	T259	T260	T261	T262	T263	T264	T265	T266	T267	T268	T269	T270	T271	T272	T273	T274	T275	T276	T277	T278	T279	T280	T281	T282	T283	T284	T285	T286	T287	T288	T289	T290	T291	T292	T293	T294	T295	T296	T297	T298	T299	T300	T301	T302	T303	T304	T305	T306	T307	T308	T309	T310	T311	T312	T313	T314	T315	T316	T317	T318	T319	T320	T321	T322	T323	T324	T325	T326	T327	T328	T329	T330	T331	T332	T333	T334	T335	T336	T337	T338	T339	T340	T341	T342	T343	T344	T345	T346	T347	T348	T349	T350	T351	T352	T353	T354	T355	T356	T357	T358	T359	T360	T361	T362	T363	T364	T365	T366	T367	T368	T369	T370	T371	T372	T373	T374	T375	T376	T377	T378	T379	T380	T381	T382	T383	T384	T385	T386	T387	T388	T389	T390	T391	T392	T393	T394	T395	T396	T397	T398	T399	T400	T401	T402	T403	T404	T405	T406	T407	T408	T409	T410	T411	T412	T413	T414	T415	T416	T417	T418	T419	T420	T421	T422	T423	T424	T425	T426	T427	T428	T429	T430	T431	T432	T433	T434	T435	T436	T437	T438	T439	T440	T441	T442	T443	T444	T445	T446	T447	T448	T449	T450	T451	T452	T453	T454	T455	T456	T457	T458	T459	T460	T461	T462	T463	T464	T465	T466	T467	T468	T469	T470	T471	T472	T473	T474	T475	T476	T477	T478	T479	T480	T481	T482	T483	T484	T485	T486	T487	T488	T489	T490	T491	T492	T493	T494	T495	T496	T497	T498	T499	T500	T501	T502	T503	T504	T505	T506	T507	T508	T509	T510	T511	T512	T513	T514	T515	T516	T517	T518	T519	T520	T521	T522	T523	T524	T525	T526	T527	T528	T529	T530	T531	T532	T533	T534	T535	T536	T537	T538	T539	T540	T541	T542	T543	T544	T545	T546	T547	T548	T549	T550	T551	T552	T553	T554	T555	T556	T557	T558	T559	T560	T561	T562	T563	T564	T565	T566	T567	T568	T569	T570	T571	T572	T573	T574	T575	T576	T577	T578	T579	T580	T581	T582	T583	T584	T585	T586	T587	T588	T589	T590	T591	T592	T593	T594	T595	T596	T597	T598	T599	T600	T601	T602	T603	T604	T605	T606	T607	T608	T609	T610	T611	T612	T613	T614	T615	T616	T617	T618	T619	T620	T621	T622	T623	T624	T625	T626	T627	T628	T629	T630	T631	T632	T633	T634	T635	T636	T637	T638	T639	T640	T641	T642	T643	T644	T645	T646	T647	T648	T649	T650	T651	T652	T653	T654	T655	T656	T657	T658	T659	T660	T661	T662	T663	T664	T665	T666	T667	T668	T669	T670	T671	T672	T673	T674	T675	T676	T677	T678	T679	T680	T681	T682	T683	T684	T685	T686	T687	T688	T689	T690	T691	T692	T693	T694	T695	T696	T697	T698	T699	T700	T701	T702	T703	T704	T705	T706	T707	T708	T709	T710	T711	T712	T713	T714	T715	T716	T717	T718	T719	T720	T721	T722	T723	T724	T725	T726	T727	T728	T729	T730	T731	T732	T733	T734	T735	T736	T737	T738	T739	T740	T741	T742	T743	T744	T745	T746	T747	T748	T749	T750	T751	T752	T753	T754	T755	T756	T757	T758	T759	T760	T761	T762	T763	T764	T765	T766	T767	T768	T769	T770	T771	T772	T773	T774	T775	T776	T777	T778	T779	T780	T781	T782	T783	T784	T785	T786	T787	T788	T789	T790	T791	T792	T793	T794	T795	T796	T797	T798	T799	T800	T801	T802	T803	T804	T805	T806	T807	T808	T809	T810	T811	T812	T813	T814	T815	T816	T817	T818	T819	T820	T821	T822	T823	T824	T825	T826	T827	T828	T829	T830	T831	T832	T833	T834	T835	T836	T837	T838	T839	T840	T841	T842	T843	T844	T845	T846	T847	T848	T849	T850	T851	T852	T853	T854	T855	T856	T857	T858	T859	T860	T861	T862	T863	T864	T865	T866	T867	T868	T869	T870	T871	T872	T873	T874	T875	T876	T877	T878	T879	T880	T881	T882	T883	T884	T885	T886	T887	T888	T889	T890	T891	T892	T893	T894	T895	T896	T897	T898	T899	T900	T901	T902	T903	T904	T905	T906	T907	T908	T909	T910	T911	T912	T913	T914	T915	T916	T917	T918	T919	T920	T921	T922	T923	T924	T925	T926	T927	T928	T929	T930	T931	T932	T933	T934	T935	T936	T937	T938	T939	T940	T941	T942	T943	T944	T945	T946	T947	T948	T949	T950	T951	T952	T953	T954	T955	T956	T957	T958	T959	T960	T961	T962	T963	T964	T965	T966	T967	T968	T969	T970	T971	T972	T973	T974	T975	T976	T977	T978	T979	T980	T981	T982	T983	T984	T985	T986	T987	T988	T989	T990	T991	T992	T993	T994	T995	T996	T997	T998	T999	T1000	T1001	T1002	T1003	T1004	T1005	T1006	T1007	T1008	T1009	T1010	T1011	T1012	T1013	T1014	T1015	T1016	T1017	T1018	T1019	T1020	T1021	T1022	T1023	T1024	T1025	T1026	T1027	T1028	T1029	T1030	T1031	T1032	T1033	T1034	T1035	T1036	T1037	T1038	T1039	T1040	T1041	T1042	T1043	T1044	T1045	T1046	T1047	T1048	T1049	T1050	T1051	T1052	T1053	T1054	T1055	T1056	T1057	T1058	T1059	T1060	T1061	T1062	T1063	T1064	T1065	T1066	T1067	T1068	T1069	T1070	T1071	T1072	T1073	T1074	T1075	T1076	T1077	T1078	T1079	T1080	T1081	T1082	T1083	T1084	T1085	T1086	T1087	T1088	T1089	T1090	T1091	T1092	T1093	T1094	T1095	T1096	T1097	T1098	T1099	T1100	T1101	T1102	T1103	T1104	T1105	T1106	T1107	T1108	T1109	T1110	T1111	T1112	T1113	T1114	T1115	T1116	T1117	T1118	T1119	T1120	T1121	T1122	T1123	T1124	T1125	T1126	T1127	T1128	T1129	T1130	T1131	T1132	T1133	T1134	T1135	T1136	T1137	T1138	T1139	T1140	T1141	T1142	T1143	T1144	T1145	T1146	T1147	T1148	T1149	T1150	T1151	T1152	T1153	T1154	T1155	T1156	T1157	T1158	T1159	T1160	T1161	T1162	T1163	T1164	T1165	T1166	T1167	T1168	T1169	T1170	T1171	T1172	T1173	T1174	T1175	T1176	T1177	T1178	T1179	T1180	T1181	T1182	T1183	T1184	T1185	T1186	T1187	T1188	T1189	T1190	T1191	T1192	T1193	T1194	T1195	T1196	T1197	T1198	T1199	T1200	T1201	T1202	T1203	T1204	T1205	T1206	T1207	T1208	T1209	T1210	T1211	T1212	T1213	T1214	T1215	T1216	T1217	T1218	T1219	T1220	T1221	T1222	T1223	T1224	T1225	T1226	T1227	T1228	T1229	T1230	T1231	T1232	T1233	T1234	T1235	T1236	T1237	T1238	T1239	T1240	T1241	T1242	T1243	T1244	T1245	T1246	T1247	T1248	T1249	T1250	T1251	T1252	T1253	T1254	T1255	T1256	T1257	T1258	T1259	T1260	T1261	T1262	T1263	T1264	T1265	T1266	T1267	T1268	T1269	T1270	T1271	T1272	T1273	T1274	T1275	T1276	T1277	T1278	T1279	T1280	T1281	T1282	T1283	T1284	T1285	T1286	T1287	T1288	T1289	T1290	T1291	T1292	T1293	T1294	T1295	T1296	T1297	T1298	T1299	T1300	T1301	T1302	T1303	T1304	T1305	T1306	T1307	T1308	T1309	T1310	T1311	T1312	T1313	T1314	T1315	T1316	T1317	T1318	T1319	T1320	T1321	T1322	T1323	T1324	T1325	T1326	T1327	T1328	T1329	T1330	T1331	T1332	T1333	T1334	T1335	T1336	T1337	T1338	T1339	T1340	T1341	T1342	T1343	T1344	T1345	T1346	T1347	T1348	T1349	T1350	T1351	T1352	T1353	T1354	T1355	T1356	T1357	T1358	T1359	T1360	T1361	T1362	T1363	T1364	T1365	T1366	T1367	T1368	T1369	T1370	T1371	T1372	T1373	T1374	T1375	T1376	T1377	T1378	T1379	T1380	T1381	T1382	T1383	T1384	T1385	T1386	T1387	T1388	T1389	T1390	T1391	T1392	T1393	T1394	T1395	T1396	T1397	T1398	T1399	T1400	T1401	T1402	T1403	T1404	T1405	T1406	T1407	T1408	T1409	T1410	T1411	T1412	T1413	T1414	T1415	T1416	T1417	T1418	T1419	T1420	T1421	T1422	T1423	T1424	T1425	T1426	T1427	T1428	T1429	T1430	T1431	T1432	T1433	T1434	T1435	T1436	T1437	T1438	T1439	T1440	T1441	T1442	T1443	T1444	T1445	T1446	T1447	T1448	T1449	T1450	T1451	T1452	T1453	T1454	T1455	T1456	T1457	T1458	T1459	T1460	T1461	T1462	T1463	T1464	T1465	T1466	T1467	T1468	T1469	T1470	T1471	T1472	T1473	T1474	T1475	T1476	T1477	T1478	T1479	T1480	T1481	T1482	T1483	T1484	T1485	T1486	T1487	T1488	T1489	T1490	T1491	T1492	T1493	T1494	T1495</
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TNX TOWER FEEDLINE DISTRIBUTION

Feedline Distribution Chart

2' - 282'

Round Flat App In Face App Out Face Truss Leg



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991			Job: 280' Guyed Tower Project: 130 Vernon Rd Bolton, CT Client: AT&T Code: TIA/EIA-222-F Path: P:\08\ERI Files\280' Guyed Tower Bolton CT.en			Drawn by: kevin_barker Date: 07/24/12 App'd: Scale: NTS Dwg No: E-7		
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TNX TOWER FEEDLINE PLAN

URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991		Job: 280' Guyed Tower Project: 130 Vernon Rd Bolton, CT Client: AT&T Drawn by: kevin baker App'd: Code: TIA/EIA-222-F Date: 07/24/12 Scale: NTS Path: P:\08\ERI Files\280' Guyed Tower Bolton, CT.eri Dwg No. E-7	
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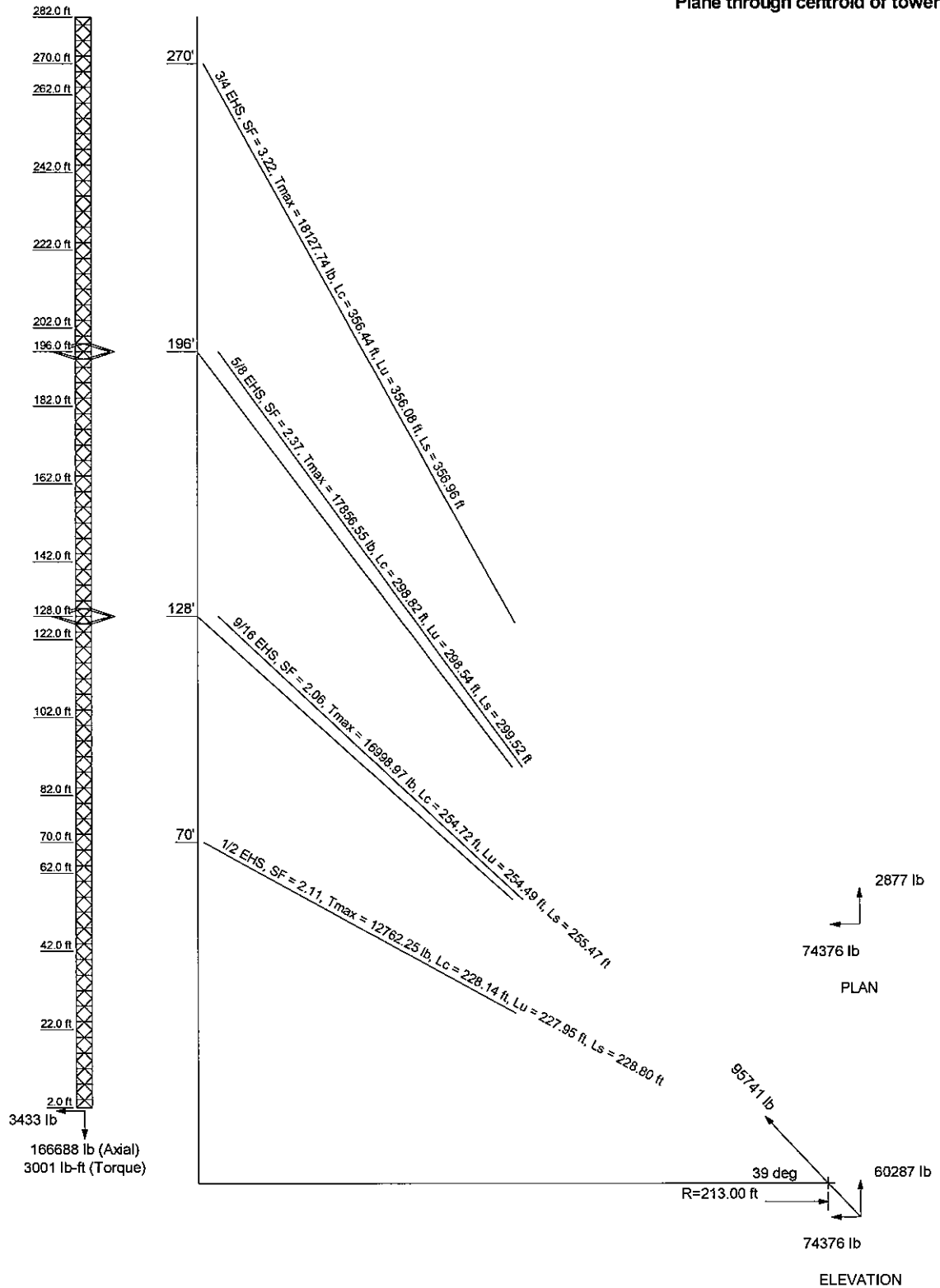
GUY TENSIONS AND TOWER REACTIONS

Guy Tensions and Tower Reactions

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Maximum Values

Anchor 'C' @ 213 ft Azimuth 240 deg Elev -17.5 ft
Plane through centroid of tower



URS Corporation		Job: 280' Guyed Tower	
500 Enterprise Drive, Suite 3B		Project: 130 Vernon Rd Bolton, CT	
Rocky Hill, CT 06067		Client: AT&T	Drawn by: kevin barker App'd:
Phone: (860) 529-8882		Code: TIA/EIA-222-F	Date: 07/24/12 Scale: NTS
FAX: (860) 529-3991		Path: P:\08ERI Files\280' Guyed Tower Bolton, CT.erl	Dwg No. E-6

TNX TOWER DETAILED OUTPUT

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page 1 of 58
	Project	130 Vernon Rd Bolton, CT	Date 16:57:35 07/24/12
	Client	AT&T	Designed by kevin_barker

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 282.00 ft above the ground line.

The base of the tower is set at an elevation of 2.00 ft above the ground line.

The face width of the tower is 4.00 ft at the top and 4.00 ft at the base.

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

The following design criteria apply:

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

Pressures are calculated at each section.

Safety factor used in guy design is 2.

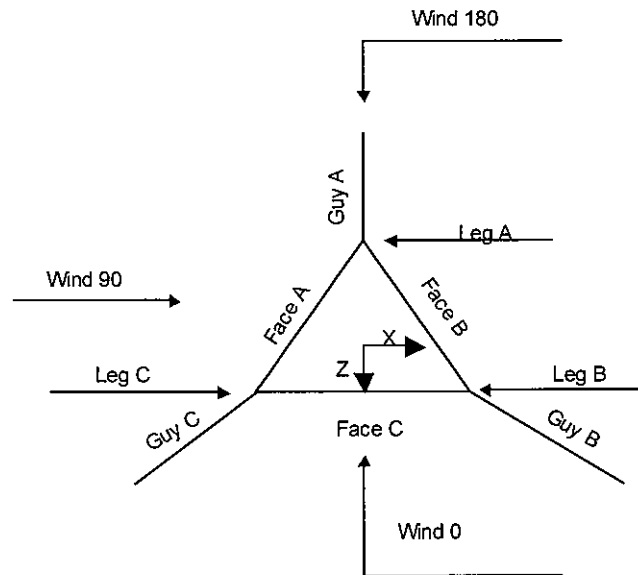
Stress ratio used in tower member design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

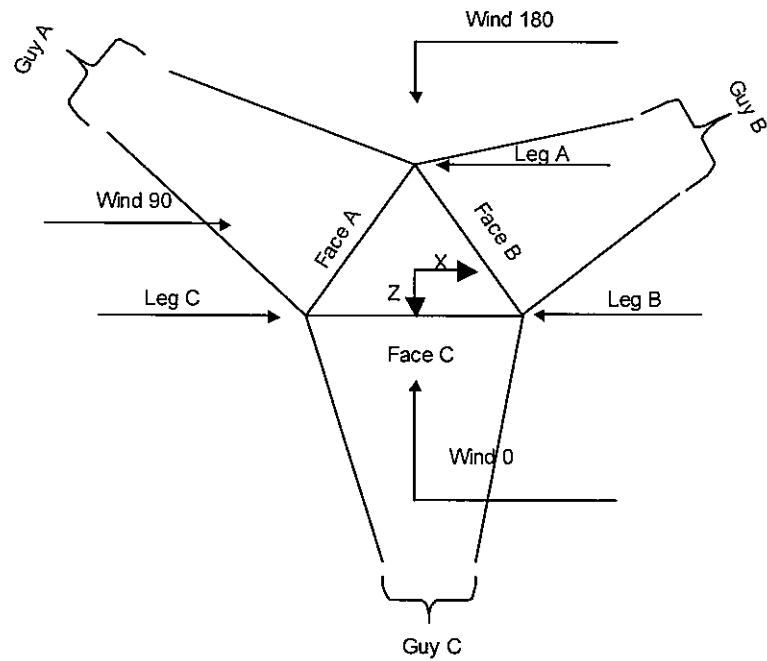
Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	✓ Assume Rigid Index Plate	✓ Calculate Redundant Bracing Forces
Use Moment Magnification	✓ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
✓ Use Code Stress Ratios	✓ Use Clear Spans For KL/r	✓ SR Leg Bolts Resist Compression
✓ Use Code Safety Factors - Guys	✓ Retension Guys To Initial Tension	✓ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	✓ Use Azimuth Dish Coefficients	✓ Consider Feedline Torque
Use Special Wind Profile	✓ Project Wind Area of Appurt.	Include Angle Block Shear Check
✓ Include Bolts In Member Capacity	✓ Autocalc Torque Arm Areas	Poles
✓ Leg Bolts Are At Top Of Section	✓ SR Members Have Cut Ends	Include Shear-Torsion Interaction
✓ Secondary Horizontal Braces Leg	✓ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		

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Corner & Starmount Guyed Tower

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Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	282.00-262.00			4.00	1	20.00
T2	262.00-242.00			4.00	1	20.00
T3	242.00-222.00			4.00	1	20.00
T4	222.00-202.00			4.00	1	20.00
T5	202.00-182.00			4.00	1	20.00
T6	182.00-162.00			4.00	1	20.00
T7	162.00-142.00			4.00	1	20.00
T8	142.00-122.00			4.00	1	20.00
T9	122.00-102.00			4.00	1	20.00
T10	102.00-82.00			4.00	1	20.00
T11	82.00-62.00			4.00	1	20.00
T12	62.00-42.00			4.00	1	20.00
T13	42.00-22.00			4.00	1	20.00
T14	22.00-2.00			4.00	1	20.00

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Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	282.00-262.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T2	262.00-242.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T3	242.00-222.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T4	222.00-202.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T5	202.00-182.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T6	182.00-162.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T7	162.00-142.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T8	142.00-122.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T9	122.00-102.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T10	102.00-82.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T11	82.00-62.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T12	62.00-42.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T13	42.00-22.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T14	22.00-2.00	4.00	CX Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 282.00-262.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 262.00-242.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 242.00-222.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 222.00-202.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T5 202.00-182.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T6 182.00-162.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 162.00-142.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 142.00-122.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T9 122.00-102.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T10 102.00-82.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 82.00-62.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 62.00-42.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 42.00-22.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 22.00-2.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)

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Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 282.00-262.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 282.00-262.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 262.00-242.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 242.00-222.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 222.00-202.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 202.00-182.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 182.00-162.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 162.00-142.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 142.00-122.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 122.00-102.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 102.00-82.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 82.00-62.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 62.00-42.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 42.00-22.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 22.00-2.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 282.00-262.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

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	Client	Designed by
	AT&T	kevin_barker

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
T2	0.00	0.0000	A36	1	1	1	36.0000	36.0000
262.00-242.00			(36 ksi)					
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000
242.00-222.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
222.00-202.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
202.00-182.00			(36 ksi)					
T6	0.00	0.0000	A36	1	1	1	36.0000	36.0000
182.00-162.00			(36 ksi)					
T7	0.00	0.0000	A36	1	1	1	36.0000	36.0000
162.00-142.00			(36 ksi)					
T8	0.00	0.0000	A36	1	1	1	36.0000	36.0000
142.00-122.00			(36 ksi)					
T9	0.00	0.0000	A36	1	1	1	36.0000	36.0000
122.00-102.00			(36 ksi)					
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000
102.00-82.00			(36 ksi)					
T11	0.00	0.0000	A36	1	1	1	36.0000	36.0000
82.00-62.00			(36 ksi)					
T12	0.00	0.0000	A36	1	1	1	36.0000	36.0000
62.00-42.00			(36 ksi)					
T13	0.00	0.0000	A36	1	1	1	36.0000	36.0000
42.00-22.00			(36 ksi)					
T14 22.00-2.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1	No	No	1	0.5	1	1	1	1	1	1
282.00-262.00				0.5	1	1	1	1	1	1
T2	No	No	1	0.5	1	1	1	1	1	1
262.00-242.00				0.5	1	1	1	1	1	1
T3	No	No	1	0.5	1	1	1	1	1	1
242.00-222.00				0.5	1	1	1	1	1	1
T4	No	No	1	0.5	1	1	1	1	1	1
222.00-202.00				0.5	1	1	1	1	1	1
T5	No	No	1	0.5	1	1	1	1	1	1
202.00-182.00				0.5	1	1	1	1	1	1
T6	No	No	1	0.5	1	1	1	1	1	1
182.00-162.00				0.5	1	1	1	1	1	1
T7	No	No	1	0.5	1	1	1	1	1	1
162.00-142.00				0.5	1	1	1	1	1	1
T8	No	No	1	0.5	1	1	1	1	1	1
142.00-122.00				0.5	1	1	1	1	1	1
T9	No	No	1	0.5	1	1	1	1	1	1
122.00-102.00				0.5	1	1	1	1	1	1
T10	No	No	1	0.5	1	1	1	1	1	1
102.00-82.00				0.5	1	1	1	1	1	1

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Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T11	No	No	1	0.5	1	1	1	1	1	1
82.00-62.00				0.5	1	1	1	1	1	1
T12	No	No	1	0.5	1	1	1	1	1	1
62.00-42.00				0.5	1	1	1	1	1	1
T13	No	No	1	0.5	1	1	1	1	1	1
42.00-22.00				0.5	1	1	1	1	1	1
T14	No	No	1	0.5	1	1	1	1	1	1
22.00-2.00				0.5	1	1	1	1	1	1

¹Note: 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 ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
282.00-262.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
262.00-242.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
242.00-222.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
222.00-202.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
202.00-182.00														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
182.00-162.00														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
162.00-142.00														
T8	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
142.00-122.00														
T9	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
122.00-102.00														
T10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
102.00-82.00														
T11	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
82.00-62.00														
T12	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
62.00-42.00														
T13	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
42.00-22.00														
T14	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
22.00-2.00														

Guy Data

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Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L _n	Anchor Radius	Anchor Azimuth Adj. °	Anchor Elevation	End Fitting Efficiency %
ft			lb		ksi	plf	ft	ft		ft	%
270	EHS	A 3/4	5830.00	10%	19000	1.155	366.92	219.00	0.0000	-26.50	100%
		B 3/4	5830.00	10%	19000	1.155	343.34	205.00	0.0000	-7.50	100%
		C 3/4	5830.00	10%	19000	1.155	356.13	213.00	0.0000	-17.50	100%
196	EHS	A 5/8	3799.04	8.96%	21000	0.813	309.24	219.00	0.0000	-26.50	100%
		B 5/8	4240.00	10%	21000	0.813	285.85	205.00	0.0000	-7.50	100%
		C 5/8	4240.00	10%	21000	0.813	298.58	213.00	0.0000	-17.50	100%
128	EHS	A 9/16	3500.00	10%	21000	0.671	264.60	219.00	0.0000	-26.50	100%
		B 9/16	3500.00	10%	21000	0.671	242.28	205.00	0.0000	-7.50	100%
		C 9/16	3500.00	10%	21000	0.671	254.52	213.00	0.0000	-17.50	100%
70	EHS	A 1/2	3497.00	13%	21000	0.517	236.95	219.00	0.0000	-26.50	100%
		B 1/2	2690.00	10%	21000	0.517	216.83	205.00	0.0000	-7.50	100%
		C 1/2	2690.00	10%	21000	0.517	227.96	213.00	0.0000	-17.50	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
270	Corner						
196	Torque Arm	14.00	15.0000	Wing	A36 (36 ksi)	Single Angle	L4x4x3/8
128	Torque Arm	14.00	15.0000	Wing	A36 (36 ksi)	Single Angle	L4x4x3/8
70	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
270.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
196.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L4x4x3/8
128.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L4x4x3/8
70.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	

Guy Data (cont'd)

Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft

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Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft
270	423.80	396.56	411.33		12.97	11.38	12.23	
					6.2 sec/pulse	5.8 sec/pulse	6.0 sec/pulse	
196	251.41	232.40	242.75		10.00	7.69	8.38	
					5.5 sec/pulse	4.8 sec/pulse	5.0 sec/pulse	
128	177.55	162.57	170.78		6.62	5.56	6.13	
					4.4 sec/pulse	4.1 sec/pulse	4.3 sec/pulse	
70	122.50	112.10	117.85		4.13	4.49	4.96	
					3.5 sec/pulse	3.7 sec/pulse	3.8 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
270	No	No			1	1	1	1
196	No	No	1	1	1	1	1	1
128	No	No	1	1	1	1	1	1
70	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
270	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75
	A325N				A325N				A325N			
196	0.0000	0	0.0000	1	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75
	A325N				A325N				A325N			
128	0.0000	0	0.0000	1	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75
	A325N				A325N				A325N			
70	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75	0.6250	0	0.0000	0.75
	A325N				A325N				A325N			

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _s psf	q _s Ice psf	Ice Thickness in
270	A	121.75	27	20	0.5000
	B	131.25	27	21	0.5000
	C	126.25	27	20	0.5000
196	A	84.75	24	18	0.5000
	B	94.25	25	19	0.5000
	C	89.25	25	18	0.5000
128	A	50.75	21	16	0.5000
	B	60.25	22	16	0.5000

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Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
70	C	55.25	21	16	0.5000
	A	21.75	18	14	0.5000
	B	31.25	18	14	0.5000
	C	26.25	18	14	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F _x lb	F _y lb	F _z lb	M _x lb-ft	M _y lb-ft	M _z lb-ft
270	A	53.8396	6172.14 5830.00	0.00	5056.62	-3539.19	-11677.76	0.00	0.00
	B	53.8550	6150.21 5830.00	3058.49	5035.14	1765.82	5814.08	0.00	-10070.28
	C	53.7647	6161.75 5830.00	-3067.94	5041.58	1771.28	5821.51	-0.00	10083.15
196			Sum:	-9.45	15133.33	-2.10	-42.17	-0.00	12.87
	A	45.9725	3979.87 3799.12	-87.94	2922.02	-2700.63	-11809.19	19259.85	-20454.12
	A	45.9725	3979.87 3799.12	87.94	2922.02	-2700.63	-11809.19	-19259.85	20454.12
	B	45.3427	4405.30 4240.00	2681.71	3190.78	1426.19	25790.79	21675.98	0.00
	B	45.3427	4405.30 4240.00	2575.97	3190.78	1609.33	-12895.39	-21675.98	-22335.48
	C	45.5998	4413.42 4240.00	-2568.71	3212.45	1600.04	-12982.98	21581.64	22487.18
	C	45.5998	4413.42 4240.00	-2670.04	3212.45	1424.55	25965.96	-21581.64	0.00
			Sum:	18.93	18650.51	658.85	2259.99	0.00	151.71
128	A	35.6920	3603.58 3500.00	-93.86	2160.85	-2882.31	-8732.96	20555.51	-15125.93
	A	35.6920	3603.58 3500.00	93.86	2160.85	-2882.31	-8732.96	-20555.51	15125.93
	B	33.9744	3590.84 3500.00	2595.29	2062.43	1380.23	16670.40	20977.44	0.00
	B	33.9744	3590.84 3500.00	2492.96	2062.43	1557.47	-8335.20	-20977.44	-14436.99
	C	34.8348	3597.55 3500.00	-2471.78	2112.36	1539.66	-8537.01	20767.23	14786.53
	C	34.8348	3597.55 3500.00	-2569.28	2112.36	1370.79	17074.02	-20767.23	0.00
			Sum:	47.18	12671.27	83.53	-593.71	0.00	349.54
	A	24.0051	3546.83 3497.00	0.00	1493.97	-3216.84	-3450.18	0.00	0.00
70	B	20.9247	2730.03 2690.00	2191.72	1023.84	1265.39	1182.23	0.00	-2047.69
	C	22.5532	2735.20 2690.00	-2169.04	1099.25	1252.29	1269.30	-0.00	2198.49
			Sum:	22.68	3617.06	-699.16	-998.64	0.00	150.81

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Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
270	A	53.8396	8569.71 8001.40	0.00	7040.78	-4885.42	-16259.98	0.00	0.00
	B	53.8550	8517.80 7985.91	4212.49	6992.34	2432.08	8074.06	0.00	-13984.68
	C	53.7647	8546.06 7995.00	-4230.94	7011.94	2442.74	8096.69	-0.00	14023.88
196			Sum:	-18.45	21045.06	-10.60	-89.23	-0.00	39.20
	A	45.9725	5905.34 5571.82	-129.72	4357.49	-3983.53	-17610.59	28408.99	-30502.43
	A	45.9725	5905.34 5571.82	129.72	4357.49	-3983.53	-17610.59	-28408.99	30502.43
	B	45.3427	6291.82 5986.80	3807.91	4581.01	2025.13	37027.84	30778.96	0.00
	B	45.3427	6291.82 5986.80	3657.77	4581.01	2285.18	-18513.92	-30778.96	-32067.05
	C	45.5998	6317.07 5997.06	-3654.53	4622.53	2276.39	-18681.74	30704.35	32357.72
	C	45.5998	6317.07 5997.06	-3798.68	4622.53	2026.72	37363.47	-30704.35	0.00
128			Sum:	12.47	27122.06	646.35	1974.48	0.00	290.66
	A	35.6920	5222.87 5019.11	-135.30	3161.98	-4154.75	-12778.98	29630.05	-22133.85
	A	35.6920	5222.87 5019.11	135.30	3161.98	-4154.75	-12778.98	-29630.05	22133.85
	B	33.9744	5177.55 4998.85	3723.86	3002.97	1980.43	24272.69	30099.57	0.00
	B	33.9744	5177.55 4998.85	3577.03	3002.97	2234.74	-12136.34	-30099.57	-21020.76
	C	34.8348	5202.53 5010.64	-3556.03	3084.56	2215.04	-12466.10	29876.84	21591.91
	C	34.8348	5202.53 5010.64	-3696.30	3084.56	1972.09	24932.19	-29876.84	0.00
70			Sum:	48.55	18499.01	92.80	-955.52	0.00	571.15
	A	24.0051	4811.01 4702.30	0.00	2068.48	-4343.64	-4776.95	0.00	0.00
	B	20.9247	4010.66 3923.33	3207.50	1538.83	1851.85	1776.89	0.00	-3077.66
	C	22.5532	4035.40 3936.80	-3186.50	1657.13	1839.72	1913.49	-0.00	3314.27
			Sum:	21.00	5264.44	-652.07	-1086.57	0.00	236.61

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
270	A	53.8396	6172.14 5830.00	0.00	5056.62	-3539.19	-11677.76	0.00	0.00
	B	53.8550	6150.21	3058.49	5035.14	1765.82	5814.08	0.00	-10070.28

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
196	C	53.7647	5830.00						
			6161.75	-3067.94	5041.58	1771.28	5821.51	-0.00	10083.15
			5830.00						
	A	45.9725	Sum:	-9.45	15133.33	-2.10	-42.17	-0.00	12.87
			3979.87	-87.94	2922.02	-2700.63	-11809.19	19259.85	-20454.12
			3799.12						
	A	45.9725	3979.87	87.94	2922.02	-2700.63	-11809.19	-19259.85	20454.12
			3799.12						
	B	45.3427	4405.30	2681.71	3190.78	1426.19	25790.79	21675.98	0.00
			4240.00						
128	B	45.3427	4405.30	2575.97	3190.78	1609.33	-12895.39	-21675.98	-22335.48
			4240.00						
	C	45.5998	4413.42	-2568.71	3212.45	1600.04	-12982.98	21581.64	22487.18
			4240.00						
	C	45.5998	4413.42	-2670.04	3212.45	1424.55	25965.96	-21581.64	0.00
			4240.00						
	A	35.6920	Sum:	18.93	18650.51	658.85	2259.99	0.00	151.71
			3603.58	-93.86	2160.85	-2882.31	-8732.96	20555.51	-15125.93
			3500.00						
	A	35.6920	3603.58	93.86	2160.85	-2882.31	-8732.96	-20555.51	15125.93
3500.00									
70	B	33.9744	3590.84	2595.29	2062.43	1380.23	16670.40	20977.44	0.00
			3500.00						
	B	33.9744	3590.84	2492.96	2062.43	1557.47	-8335.20	-20977.44	-14436.99
			3500.00						
	C	34.8348	3597.55	-2471.78	2112.36	1539.66	-8537.01	20767.23	14786.53
			3500.00						
	C	34.8348	3597.55	-2569.28	2112.36	1370.79	17074.02	-20767.23	0.00
			3500.00						
	A	24.0051	Sum:	47.18	12671.27	83.53	-593.71	0.00	349.54
			3546.83	0.00	1493.97	-3216.84	-3450.18	0.00	0.00
3497.00									
B	20.9247	2730.03	2191.72	1023.84	1265.39	1182.23	0.00	-2047.69	
		2690.00							
C	22.5532	2735.20	-2169.04	1099.25	1252.29	1269.30	-0.00	2198.49	
		2690.00							
		Sum:	22.68	3617.06	-699.16	-998.64	0.00	150.81	

Guy-Tensioning Information

Temperature At Time Of Tensioning																
Guy Elevation ft	H ft	Y ft	0 F		20 F		40 F		60 F		80 F		100 F		120 F	
			Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft
270	A	216.69	296.50	6599	11.49	6339	11.95	6083	12.44	5830	12.97	5582	13.53	5338	14.13	5100
	B	202.69	277.50	6609	10.06	6346	10.47	6086	10.91	5830	11.38	5578	11.88	5330	12.42	5087
	C	210.69	287.50	6606	10.82	6344	11.26	6085	11.73	5830	12.23	5579	12.76	5333	13.34	5092
196	A	215.07	222.50	4603	8.29	4328	8.80	4060	9.37	3799	10.00	3548	10.70	3306	11.46	3078
	B	201.08	203.50	5106	6.41	4813	6.79	4524	7.22	4240	7.69	3963	8.22	3694	8.81	3435
	C	209.08	213.50	5091	7.00	4803	7.42	4518	7.88	4240	8.38	3968	8.95	3705	9.57	3451
128	A	215.07	154.50	4445	5.23	4123	5.63	3807	6.09	3500	6.62	3203	7.22	2920	7.91	2653
	B	201.08	135.50	4499	4.34	4159	4.69	3825	5.09	3500	5.56	3185	6.10	2884	6.73	2601
	C	209.08	145.50	4472	4.81	4141	5.19	3816	5.63	3500	6.13	3195	6.71	2903	7.37	2629
70	A	216.69	96.50	4471	3.23	4142	3.49	3817	3.78	3497	4.13	3183	4.53	2877	5.01	2582
	B	202.69	77.50	3671	3.29	3336	3.62	3008	4.02	2690	4.49	2386	5.06	2100	5.74	1840
	C	210.69	87.50	3642	3.67	3316	4.03	2998	4.45	2690	4.96	2396	5.56	2120	6.28	1868

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Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
EW63 (Unknown)	A	Yes	Af (CfAe)	107.50 - 7.00	-2.0000	-0.43	1	1	1.5742	1.5742	5.0668	0.51
EW90 (Unknown)	B	Yes	Af (CfAe)	115.00 - 7.00	-2.0000	0.4	1	1	0.9869	0.9869	3.2550	0.32
1 1/4 (Unknown)	C	Yes	Ar (CfAe)	128.00 - 7.00	-4.0000	-0.12	6	3	1.5500	1.5500		0.66
1 5/8 (Unknown)	C	Yes	Ar (CfAe)	128.00 - 7.00	-5.0000	0.05	4	2	1.9800	1.9800		1.04
1 1/4 (Unknown)	C	Yes	Ar (CfAe)	132.25 - 7.00	-2.0000	-0.25	1	1	1.5500	1.5500		0.66
(Dead Line) 7/8	A	Yes	Ar (CfAe)	135.00 - 7.00	-2.0000	-0.39	1	1	1.1100	1.1100		0.54
1 1/4 (Unknown)	A	Yes	Ar (CfAe)	135.00 - 7.00	-2.0000	-0.35	1	1	1.5500	1.5500		0.66
EW63 (Unknown)	B	Yes	Af (CfAe)	155.25 - 7.00	-2.0000	0.35	1	1	1.5742	1.5742	5.0668	0.51
EW63 (Unknown)	A	Yes	Af (CfAe)	155.25 - 7.00	-2.0000	-0.31	1	1	1.5742	1.5742	5.0668	0.51
1 5/8 (Unknown)	B	Yes	Ar (CfAe)	182.16 - 7.00	-2.0000	0.15	4	4	1.9800	1.9800		1.04
EW63 (Unknown)	B	Yes	Af (CfAe)	207.00 - 7.00	-2.0000	-0.05	1	1	1.5742	1.5742	5.0668	0.51
EW63 (Unknown)	B	Yes	Af (CfAe)	207.00 - 7.00	-2.0000	-0.15	1	1	1.5742	1.5742	5.0668	0.51
EW63 (Unknown)	A	Yes	Af (CfAe)	215.00 - 7.00	-2.0000	-0.28	1	1	1.5742	1.5742	5.0668	0.51
1 5/8 (Unknown)	A	Yes	Ar (CfAe)	222.00 - 7.00	-2.0000	0.1	9	9	1.9800	1.9800		1.04
1 1/4 (Unknown)	C	Yes	Ar (CfAe)	269.00 - 7.00	-2.0000	0.3	1	1	1.5500	1.5500		0.66
1 1/4 (Unknown)	B	Yes	Ar (CfAe)	282.00 - 7.00	-2.0000	-0.35	2	2	1.5500	1.5500		0.66
CR 50 1873PE (1-5/8 FOAM) (AT&T)	A	Yes	Ar (CfAe)	166.16 - 7.00	-5.0000	0	4	4	1.9800	1.9800		0.83
CR 50 1873PE (1-5/8 FOAM) (AT&T)	B	Yes	Ar (CfAe)	166.16 - 7.00	-5.0000	0	4	4	1.9800	1.9800		0.83
CR 50 1873PE (1-5/8 FOAM) (AT&T)	C	Yes	Ar (CfAe)	166.16 - 7.00	-5.0000	0.2	4	2	1.9800	1.9800		0.83
1 1/4 (WMRQ)	C	Yes	Ar (CfAe)	282.00 - 7.00	-2.0000	0.35	1	1	1.5500	1.5500		0.66
3" Flex Conduit w 3 Fiber & 6 DC (AT&T)	A	Yes	Ar (CfAe)	164.00 - 7.00	0.0000	0.4	1	1	3.0000	3.0000		3.00

Feed Line/Linear Appurtenances Section Areas

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight lb
T1	282.00-262.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	3.488	0.000	0.000	0.000	17.82
T2	262.00-242.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	5.167	0.000	0.000	0.000	26.40
T3	242.00-222.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	5.167	0.000	0.000	0.000	26.40
T4	222.00-202.00	A	29.700	1.705	0.000	0.000	193.83
		B	5.167	1.312	0.000	0.000	31.50
		C	5.167	0.000	0.000	0.000	26.40
T5	202.00-182.00	A	29.700	2.624	0.000	0.000	197.40
		B	5.272	5.247	0.000	0.000	47.47
		C	5.167	0.000	0.000	0.000	26.40
T6	182.00-162.00	A	32.946	2.624	0.000	0.000	217.21
		B	21.112	5.247	0.000	0.000	143.81
		C	6.539	0.000	0.000	0.000	40.21
T7	162.00-142.00	A	47.900	4.362	0.000	0.000	330.56
		B	31.567	6.986	0.000	0.000	203.16
		C	11.767	0.000	0.000	0.000	92.80
T8	142.00-122.00	A	50.782	5.247	0.000	0.000	349.60
		B	31.567	7.871	0.000	0.000	206.60
		C	17.396	0.000	0.000	0.000	148.29
T9	122.00-102.00	A	52.333	5.969	0.000	0.000	360.81
		B	31.567	8.940	0.000	0.000	210.76
		C	28.700	0.000	0.000	0.000	268.40
T10	102.00-82.00	A	52.333	7.871	0.000	0.000	368.20
		B	31.567	9.516	0.000	0.000	213.00
		C	28.700	0.000	0.000	0.000	268.40
T11	82.00-62.00	A	52.333	7.871	0.000	0.000	368.20
		B	31.567	9.516	0.000	0.000	213.00
		C	28.700	0.000	0.000	0.000	268.40
T12	62.00-42.00	A	52.333	7.871	0.000	0.000	368.20
		B	31.567	9.516	0.000	0.000	213.00
		C	28.700	0.000	0.000	0.000	268.40
T13	42.00-22.00	A	52.333	7.871	0.000	0.000	368.20
		B	31.567	9.516	0.000	0.000	213.00
		C	28.700	0.000	0.000	0.000	268.40
T14	22.00-2.00	A	39.250	5.903	0.000	0.000	276.15
		B	23.675	7.137	0.000	0.000	159.75
		C	21.525	0.000	0.000	0.000	201.30

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight lb
T1	282.00-262.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		8.500	0.000	0.000	0.000	76.49
		C		5.737	0.000	0.000	0.000	51.63
T2	262.00-242.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		8.500	0.000	0.000	0.000	76.49
		C		8.500	0.000	0.000	0.000	76.49
T3	242.00-222.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		8.500	0.000	0.000	0.000	76.49
		C		8.500	0.000	0.000	0.000	76.49
T4	222.00-202.00	A	0.500	44.700	2.428	0.000	0.000	484.11

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	15 of 58
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	Client	AT&T	Designed by	kevin_barker

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight lb
T5	202.00-182.00	B	0.500	8.500	1.867	0.000	0.000	95.12
		C		8.500	0.000	0.000	0.000	76.49
		A		44.700	3.735	0.000	0.000	497.15
T6	182.00-162.00	B	0.500	8.659	7.470	0.000	0.000	152.66
		C		8.500	0.000	0.000	0.000	76.49
		A		49.499	3.735	0.000	0.000	546.45
T7	162.00-142.00	B	0.500	32.499	7.470	0.000	0.000	394.44
		C		10.566	0.000	0.000	0.000	115.51
		A		71.233	6.209	0.000	0.000	812.20
T8	142.00-122.00	B	0.500	48.233	9.944	0.000	0.000	567.70
		C		18.433	0.000	0.000	0.000	264.09
		A		76.282	7.470	0.000	0.000	869.44
T9	122.00-102.00	B	0.500	48.233	11.204	0.000	0.000	580.28
		C		27.416	0.000	0.000	0.000	413.85
		A		79.000	8.497	0.000	0.000	903.74
T10	102.00-82.00	B	0.500	48.233	12.996	0.000	0.000	597.45
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T11	82.00-62.00	B	0.500	48.233	13.960	0.000	0.000	606.69
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T12	62.00-42.00	B	0.500	48.233	13.960	0.000	0.000	606.69
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T13	42.00-22.00	B	0.500	48.233	13.960	0.000	0.000	606.69
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T14	22.00-2.00	B	0.500	48.233	13.960	0.000	0.000	606.69
		C		45.367	0.000	0.000	0.000	736.20
		A		59.250	8.403	0.000	0.000	698.07
		B		36.175	10.470	0.000	0.000	455.02
		C		34.025	0.000	0.000	0.000	552.15

Feed Line Shielding

Section	Elevation ft	Face	A_R ft ²	A_R Ice ft ²	A_F ft ²	A_F Ice ft ²
T1	282.00-262.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.152	0.334	0.549
		C	0.180	0.777	0.225	0.371
T2	262.00-242.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.116	0.269	0.443
		C	0.266	1.116	0.269	0.443
T3	242.00-222.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.116	0.269	0.443
		C	0.266	1.116	0.269	0.443
T4	222.00-202.00	A	0.000	0.989	6.262	11.335
		B	0.000	0.222	1.292	2.541
		C	0.000	0.177	1.030	2.029
T5	202.00-182.00	A	0.000	1.429	7.523	13.326
		B	0.000	0.503	2.448	4.689
		C	0.000	0.248	1.202	2.312
T6	182.00-162.00	A	1.834	7.064	1.853	2.802
		B	1.359	5.395	1.373	2.140
		C	0.337	1.388	0.341	0.550
T7	162.00-142.00	A	2.695	10.291	2.722	4.082

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	Client	AT&T	Designed by	kevin_barker

Section	Elevation	Face	A_R	$A_{R_{Ice}}$	A_F	$A_{F_{Ice}}$
	ft		ft ²	ft ²	ft ²	ft ²
T8	142.00-122.00	B	1.988	7.834	2.008	3.107
		C	0.607	2.421	0.613	0.960
		A	0.000	2.475	13.040	23.084
		B	0.000	1.782	9.178	16.621
T9	122.00-102.00	C	0.000	0.800	4.048	7.458
		A	0.000	1.849	11.625	21.185
		B	0.000	1.318	8.077	15.098
		C	0.000	0.945	5.723	10.828
T10	102.00-82.00	A	3.104	12.064	3.136	4.785
		B	2.118	8.459	2.140	3.355
		C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
T11	82.00-62.00	B	2.118	8.459	2.140	3.355
		C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
		B	2.118	8.459	2.140	3.355
T12	62.00-42.00	C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
		B	2.118	8.459	2.140	3.355
		C	1.480	5.957	1.495	2.363
T13	42.00-22.00	A	3.104	12.064	3.136	4.785
		B	2.118	8.459	2.140	3.355
		C	1.480	5.957	1.495	2.363
		A	2.328	9.048	2.352	3.589
T14	22.00-2.00	B	1.589	6.344	1.605	2.516
		C	1.110	4.468	1.121	1.772

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	$CP_{X_{Ice}}$	$CP_{Z_{Ice}}$
	ft	in	in	in	in
T1	282.00-262.00	-0.8168	-1.0593	-0.7564	-0.9810
T2	262.00-242.00	-1.2562	-0.7857	-1.1616	-0.7265
T3	242.00-222.00	-1.2562	-0.7857	-1.1616	-0.7265
T4	222.00-202.00	-2.4029	-2.6664	-2.4653	-2.7234
T5	202.00-182.00	-1.9857	-2.5538	-2.0502	-2.5800
T6	182.00-162.00	-1.1101	-3.2125	-1.0722	-2.9579
T7	162.00-142.00	-1.2902	-3.2299	-1.2446	-2.9806
T8	142.00-122.00	-1.0701	-1.8609	-1.1311	-1.7933
T9	122.00-102.00	-1.0026	-1.1243	-1.0510	-1.0055
T10	102.00-82.00	-1.3271	-1.1539	-1.2773	-0.9570
T11	82.00-62.00	-1.3271	-1.1539	-1.2773	-0.9570
T12	62.00-42.00	-1.3271	-1.1539	-1.2773	-0.9570
T13	42.00-22.00	-1.3271	-1.1539	-1.2773	-0.9570
T14	22.00-2.00	-1.2163	-1.0575	-1.1577	-0.8674

Discrete Tower Loads

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	17 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{A/A} Front ft ²	C _{A/A} Side ft ²	Weight lb
(3) DB844H105ESX w/Mount Pipe (Verizon)	A	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 3.58 1/2" Ice 4.20	5.63 6.73	35.55 77.48
(3) DB844H105ESX w/Mount Pipe (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 3.58 1/2" Ice 4.20	5.63 6.73	35.55 77.48
6'8"x4" Pipe Mount (Verizon)	A	From Leg	0.50 0.00 0.00	0.0000	121.00	No Ice 2.60 1/2" Ice 3.01	2.60 3.01	72.00 93.13
6'8"x4" Pipe Mount (Verizon)	B	From Leg	0.50 0.00 0.00	0.0000	121.00	No Ice 2.60 1/2" Ice 3.01	2.60 3.01	72.00 93.13
(2) 948F85T2E-M (Verizon)	A	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 4.43 1/2" Ice 4.81	3.73 4.10	50.00 81.84
(2) 948F85T2E-M (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 4.43 1/2" Ice 4.81	3.73 4.10	50.00 81.84
14' Dipole (Unknown)	C	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice 2.80 1/2" Ice 4.22	2.80 4.22	75.00 97.50
6' Stand-off (Unknown)	C	From Leg	3.00 0.00 0.00	0.0000	132.00	No Ice 1.20 1/2" Ice 1.40	4.50 5.50	75.00 125.00
2.5" x 22' Whip (Unknown)	A	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice 5.51 1/2" Ice 7.77	5.51 7.77	150.30 191.34
6' Stand-off (Unknown)	A	From Leg	3.00 0.00 0.00	0.0000	132.00	No Ice 1.20 1/2" Ice 1.40	4.50 5.50	75.00 125.00
RR90-17-02DP w/Mount Pipe (AT&T)	A	From Leg	3.50 5.00 0.00	0.0000	181.50	No Ice 4.91 1/2" Ice 5.57	3.64 4.70	43.55 81.64
RR90-17-02DP w/Mount Pipe (AT&T)	B	From Leg	3.50 5.00 0.00	0.0000	181.50	No Ice 4.91 1/2" Ice 5.57	3.64 4.70	43.55 81.64
Pirol 10' PCS Frame (1) (AT&T)	A	From Leg	1.50 0.00 0.00	0.0000	181.50	No Ice 9.00 1/2" Ice 13.20	9.00 13.20	250.00 350.00
Pirol 10' PCS Frame (1) (AT&T)	A	From Leg	1.50 0.00 0.00	0.0000	181.50	No Ice 9.00 1/2" Ice 13.20	9.00 13.20	250.00 350.00
(3) DB844H90E-XY w/Mount Pipe (Nextel)	A	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 3.58 1/2" Ice 4.20	5.40 6.49	35.55 76.59
(3) DB844H90E-XY w/Mount Pipe (Nextel)	B	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 3.58 1/2" Ice 4.20	5.40 6.49	35.55 76.59
(3) DB844H90E-XY w/Mount Pipe (Nextel)	C	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 3.58 1/2" Ice 4.20	5.40 6.49	35.55 76.59
Pirol 15' T-Frame Sector Mount (1) (Nextel)	A	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 15.00 1/2" Ice 20.60	15.00 20.60	500.00 650.00
Pirol 15' T-Frame Sector Mount (1) (Nextel)	B	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 15.00 1/2" Ice 20.60	15.00 20.60	500.00 650.00

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	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{A,A} Front ft ²	C _{A,A} Side ft ²	Weight lb
Pirol 15' T-Frame Sector Mount (1) (Nextel)	C	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	15.00 20.60	500.00 650.00
ASP-711 (Unknown)	A	From Leg	1.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.30 3.63	13.00 31.56
3' Stand-off (Unknown)	A	From Leg	0.75 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.00 1.20	50.00 75.00
2.5" x 14' Omni (Unknown)	B	From Leg	3.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	3.50 4.93	30.00 55.97
3' Stand-off (Unknown)	B	From Leg	1.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.00 1.20	50.00 75.00
6' Stand-off (Unknown)	A	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	75.00 125.00
6' Stand-off (Unknown)	B	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	75.00 125.00
6' Stand-off (Unknown)	C	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	75.00 125.00
Flash Beacon Lighting (Unknown)	C	None		0.0000	287.00	No Ice 1/2" Ice	2.70 3.10	50.00 70.00
Flash Beacon Lighting (Unknown)	C	None		0.0000	290.50	No Ice 1/2" Ice	2.70 3.10	50.00 70.00
1' Yagi antenna (Not Used)	C	From Leg	0.50 0.00 0.00	0.0000	124.50	No Ice 1/2" Ice	0.50 0.86	25.00 29.40
3" x 12.5' Omni (Not Used)	B	From Leg	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	3.75 5.03	30.00 57.13
3' Stand-off (Not Used)	B	From Leg	1.50 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.00 1.20	50.00 75.00
6' Stand-off (Not Used)	C	From Leg	3.00 0.00 0.00	0.0000	180.50	No Ice 1/2" Ice	1.20 1.40	75.00 125.00
2.5" x 10' Omni (Not Used)	A	From Leg	1.00 0.00 0.00	0.0000	284.00	No Ice 1/2" Ice	2.50 3.53	30.00 48.64
FM Antenna (WMRQ)	B	From Face	4.50 0.00 0.00	0.0000	289.00	No Ice 1/2" Ice	8.30 13.00	102.00 132.60
(2) 7770 Panel Antenna (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	35.00 67.63
(2) 7770 Panel Antenna (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	35.00 67.63
(2) 7770 Panel Antenna (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	35.00 67.63
(2) LGP214nn TMA (AT&T)	A	From Leg	4.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	1.90 9.06

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	Client	Designed by
	AT&T	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{A,A} Front ft²	C _{A,A} Side ft²	Weight lb
(4) LGP219nn (AT&T)	A	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP214nn TMA (AT&T)	B	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	0.23 0.31	1.90 9.06
(4) LGP219nn (AT&T)	B	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP214nn TMA (AT&T)	C	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	0.23 0.31	1.90 9.06
(4) LGP219nn (AT&T)	C	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
SBNH-1D6565C (AT&T)	A	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
SBNH-1D6565C (AT&T)	B	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
SBNH-1D6565C (AT&T)	C	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
Surge Suppressor (AT&T)	C	None		0.0000	164.00	No Ice 1/2" Ice	0.80 0.94	0.80 0.94	30.00 41.94
(2) RRU (AT&T)	A	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
(2) RRU (AT&T)	B	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
(2) RRU (AT&T)	C	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	A	From Leg	0.00 2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	B	From Leg	0.00 2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	C	From Leg	0.00 2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10

Dishes

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	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horiz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft ²	lb
9' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	3.00 0.00 0.00	0.0000		104.50	9.00	No Ice 1/2" Ice	63.62 64.80 100.00 432.64
4' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	4.00 0.00 0.00	0.0000		113.00	4.00	No Ice 1/2" Ice	12.57 13.10 50.00 117.25
6.5' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.25 0.00 0.00	0.0000		153.00	6.50	No Ice 1/2" Ice	33.18 34.04 75.00 249.74
5.5' Dish w/ Radome (Unknown)	A	Paraboloid w/Radome	From Leg	2.50 0.00 0.00	0.0000		153.00	5.50	No Ice 1/2" Ice	23.76 24.48 75.00 200.66
8' Dish w/ Radome (Unknown)	A	Paraboloid w/Radome	From Leg	2.83 0.00 0.00	0.0000		204.50	8.00	No Ice 1/2" Ice	50.27 51.32 75.00 338.44
6' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.25 0.00 0.00	0.0000		204.50	6.00	No Ice 1/2" Ice	28.27 29.07 75.00 224.23
8' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.83 0.00 0.00	0.0000		212.50	8.00	No Ice 1/2" Ice	50.27 51.32 75.00 338.44
MF-950B (WBMW)	C	Grid	From Leg	0.50 0.00 0.00	0.0000		280.00	1.33	No Ice 1/2" Ice	2.66 3.50 13.00 21.00

Tower Pressures - No Ice

$$G_H = 1.092$$

Section Elevation	z	K _z	q _z	A _G	F _{a c e}	A _F	A _R	A _{leg}	Leg %	C _d A _{A In Face}	C _d A _{A Out Face}
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
T1 282.00-262.00	272.00	1.827	34	83.333	A	4.951	10.620	6.667	42.81	0.000	0.000
					B	4.618	15.520		33.11	0.000	0.000
					C	4.726	13.927		35.74	0.000	0.000
T2 262.00-242.00	252.00	1.788	33	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T3 242.00-222.00	232.00	1.746	32	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T4 222.00-202.00	212.00	1.701	31	83.333	A	10.730	36.367	6.667	14.16	0.000	0.000
					B	15.307	11.833		24.56	0.000	0.000
					C	14.257	11.833		25.55	0.000	0.000
T5 202.00-182.00	192.00	1.654	31	83.333	A	12.944	36.367	6.667	13.52	0.000	0.000
					B	20.642	11.939		20.46	0.000	0.000
					C	16.640	11.833		23.41	0.000	0.000
T6 182.00-162.00	172.00	1.603	30	83.333	A	4.764	41.731	6.667	14.34	0.000	0.000
					B	7.868	30.373		17.43	0.000	0.000
					C	3.652	16.822		32.56	0.000	0.000
T7 162.00-142.00	152.00	1.547	29	83.333	A	5.633	55.825	6.667	10.85	0.000	0.000
					B	8.971	40.199		13.56	0.000	0.000
					C	3.380	21.780		26.50	0.000	0.000
T8 132.00	132.00	1.486	27	83.333	A	10.050	57.448	6.667	9.88	0.000	0.000

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	21 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
142.00-122.00					B	16.535	38.233		12.17	0.000	0.000
					C	13.794	24.062		17.61	0.000	0.000
T9	112.00	1.418	26	83.333	A	9.631	59.000	6.667	9.71	0.000	0.000
122.00-102.00					B	16.150	38.233		12.26	0.000	0.000
					C	9.564	35.367		14.84	0.000	0.000
T10	92.00	1.34	25	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
102.00-82.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T11	72.00	1.25	23	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
82.00-62.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T12	52.00	1.139	21	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
62.00-42.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T13	32.00	1	18	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
42.00-22.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T14	22.00-2.00	1	18	83.333	A	7.545	47.541	6.667	12.10	0.000	0.000
					B	9.525	32.706		15.79	0.000	0.000
					C	2.872	31.035		19.66	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.092$$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T1	272.00	1.827	25	0.5000	85.000	A	4.951	20.387	10.000	39.47	0.000	0.000
282.00-262.00						B	4.402	27.736		31.12	0.000	0.000
						C	4.581	25.347		33.41	0.000	0.000
T2	252.00	1.788	25	0.5000	85.000	A	3.993	20.068	10.000	41.56	0.000	0.000
262.00-242.00						B	3.550	27.452		32.26	0.000	0.000
						C	3.550	27.452		32.26	0.000	0.000
T3	232.00	1.746	24	0.5000	85.000	A	3.993	20.068	10.000	41.56	0.000	0.000
242.00-222.00						B	3.550	27.452		32.26	0.000	0.000
						C	3.550	27.452		32.26	0.000	0.000
T4	212.00	1.701	24	0.5000	85.000	A	9.392	55.308	10.000	15.46	0.000	0.000
222.00-202.00						B	17.625	19.875		26.67	0.000	0.000
						C	16.270	19.920		27.63	0.000	0.000
T5	192.00	1.654	23	0.5000	85.000	A	11.263	55.507	10.000	14.98	0.000	0.000
202.00-182.00						B	23.635	20.392		22.71	0.000	0.000
						C	18.542	20.488		25.62	0.000	0.000
T6	172.00	1.603	22	0.5000	85.000	A	4.926	62.503	10.000	14.83	0.000	0.000
182.00-162.00						B	9.323	47.172		17.70	0.000	0.000
						C	3.443	29.246		30.59	0.000	0.000
T7	152.00	1.547	21	0.5000	85.000	A	6.121	81.010	10.000	11.48	0.000	0.000
162.00-142.00						B	10.830	60.467		14.03	0.000	0.000
						C	3.033	36.080		25.57	0.000	0.000
T8	132.00	1.486	21	0.5000	85.000	A	5.240	86.043	10.000	10.95	0.000	0.000
142.00-122.00						B	15.438	58.687		13.49	0.000	0.000
						C	13.397	38.853		19.14	0.000	0.000
T9	112.00	1.418	20	0.5000	85.000	A	5.610	88.748	10.000	10.60	0.000	0.000
122.00-102.00						B	16.196	58.513		13.39	0.000	0.000
						C	7.471	56.019		15.75	0.000	0.000

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	22 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	z	K _z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T10 102.00-82.00	92.00	1.34	19	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.598	59.842		13.43	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T11 82.00-62.00	72.00	1.25	17	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.598	59.842		13.43	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T12 62.00-42.00	52.00	1.139	16	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.598	59.842		13.43	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T13 42.00-22.00	32.00	1	14	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.598	59.842		13.43	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T14 22.00-2.00	12.00	1	14	0.5000	85.000	A	8.808	70.269	10.000	12.65	0.000	0.000
						B	11.947	49.899		16.17	0.000	0.000
						C	2.221	49.625		19.29	0.000	0.000

Tower Pressure - Service

$$G_H = 1.092$$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
T1 282.00-262.00	272.00	1.827	12	83.333	A	4.951	10.620	6.667	42.81	0.000	0.000
					B	4.618	15.520		33.11	0.000	0.000
					C	4.726	13.927		35.74	0.000	0.000
T2 262.00-242.00	252.00	1.788	11	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T3 242.00-222.00	232.00	1.746	11	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T4 222.00-202.00	212.00	1.701	11	83.333	A	10.730	36.367	6.667	14.16	0.000	0.000
					B	15.307	11.833		24.56	0.000	0.000
					C	14.257	11.833		25.55	0.000	0.000
T5 202.00-182.00	192.00	1.654	11	83.333	A	12.944	36.367	6.667	13.52	0.000	0.000
					B	20.642	11.939		20.46	0.000	0.000
					C	16.640	11.833		23.41	0.000	0.000
T6 182.00-162.00	172.00	1.603	10	83.333	A	4.764	41.731	6.667	14.34	0.000	0.000
					B	7.868	30.373		17.43	0.000	0.000
					C	3.652	16.822		32.56	0.000	0.000
T7 162.00-142.00	152.00	1.547	10	83.333	A	5.633	55.825	6.667	10.85	0.000	0.000
					B	8.971	40.199		13.56	0.000	0.000
					C	3.380	21.780		26.50	0.000	0.000
T8 142.00-122.00	132.00	1.486	10	83.333	A	10.050	57.448	6.667	9.88	0.000	0.000
					B	16.535	38.233		12.17	0.000	0.000
					C	13.794	24.062		17.61	0.000	0.000
T9 122.00-102.00	112.00	1.418	9	83.333	A	9.631	59.000	6.667	9.71	0.000	0.000
					B	16.150	38.233		12.26	0.000	0.000
					C	9.564	35.367		14.84	0.000	0.000
T10 102.00-82.00	92.00	1.34	9	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T11 72.00	72.00	1.25	8	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	23 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
82.00-62.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T12	52.00	1.139	7	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
62.00-42.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T13	32.00	1	6	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
42.00-22.00					B	11.369	40.068		12.96	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T14	22.00-2.00	1	6	83.333	A	7.545	47.541	6.667	12.10	0.000	0.000
					B	9.525	32.706		15.79	0.000	0.000
					C	2.872	31.035		19.66	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	1	1	11.194	1265.66	63.28	B
282.00-262.00			B	0.242	2.463	0.6	1	1	13.926			
			C	0.224	2.518	0.596	1	1	13.021			
T2	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	1170.86	58.54	C
262.00-242.00			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T3	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	1143.52	57.18	C
242.00-222.00			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T4	251.73	2014.07	A	0.565	1.83	0.733	1	1	37.383	2350.71	117.54	A
222.00-202.00			B	0.326	2.23	0.624	1	1	22.692			
			C	0.313	2.262	0.62	1	1	21.593			
T5	271.27	2247.64	A	0.592	1.809	0.749	1	1	40.167	2427.89	121.39	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	1	1	28.378			
			C	0.342	2.191	0.63	1	1	24.090			
T6	401.23	1153.83	A	0.558	1.836	0.729	1	1	35.176	2090.90	104.54	A
182.00-162.00			B	0.459	1.959	0.677	1	1	28.442			
			C	0.246	2.45	0.601	1	1	13.759			
T7	626.51	1153.83	A	0.737	1.783	0.847	1	1	52.938	2949.71	147.49	A
162.00-142.00			B	0.59	1.811	0.748	1	1	39.021			
			C	0.302	2.291	0.616	1	1	16.807			
T8	704.49	2247.64	A	0.81	1.824	0.905	1	1	62.018	3394.86	169.74	A
142.00-122.00		TA 873.93	B	0.657	1.78	0.79	1	1	46.751			
			C	0.454	1.967	0.675	1	1	30.042			
T9	839.97	2014.07	A	0.824	1.835	0.916	1	1	63.670	3346.60	167.33	A
122.00-102.00			B	0.653	1.781	0.787	1	1	46.248			
			C	0.539	1.854	0.718	1	1	34.967			
T10	849.60	1153.83	A	0.823	1.835	0.915	1	1	63.513	3154.90	157.75	A
102.00-82.00			B	0.617	1.794	0.764	1	1	41.994			
			C	0.484	1.922	0.689	1	1	28.589			
T11	849.60	1153.83	A	0.823	1.835	0.915	1	1	63.513	2941.51	147.08	A
82.00-62.00			B	0.617	1.794	0.764	1	1	41.994			
			C	0.484	1.922	0.689	1	1	28.589			
T12	849.60	1153.83	A	0.823	1.835	0.915	1	1	63.513	2680.34	134.02	A
62.00-42.00			B	0.617	1.794	0.764	1	1	41.994			
			C	0.484	1.922	0.689	1	1	28.589			
T13	849.60	1153.83	A	0.823	1.835	0.915	1	1	63.513	2353.77	117.69	A
42.00-22.00			B	0.617	1.794	0.764	1	1	41.994			
			C	0.484	1.922	0.689	1	1	28.589			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	24 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T14 22.00-2.00	637.20	1153.83	A B C	0.661 0.507 0.407	1.779 1.891 2.051	0.793 0.701 0.654	1 1 1	1 1 1	45.238 32.451 23.182	1625.41	81.27	A
Sum Weight:	7280.61	21868.35								32896.66		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A B C	0.187 0.242 0.224	2.641 2.463 2.518	0.588 0.6 0.596	0.825 0.825 0.825	1 1 1	10.327 13.118 12.194	1192.22	59.61	B
T2 262.00-242.00	52.80	1153.83	A B C	0.175 0.231 0.231	2.68 2.496 2.496	0.586 0.597 0.597	0.825 0.825 0.825	1 1 1	9.514 12.341 12.341	1112.13	55.61	C
T3 242.00-222.00	52.80	1153.83	A B C	0.175 0.231 0.231	2.68 2.496 2.496	0.586 0.597 0.597	0.825 0.825 0.825	1 1 1	9.514 12.341 12.341	1086.17	54.31	C
T4 222.00-202.00	251.73	2014.07	A B C	0.565 0.326 0.313	1.83 2.23 2.262	0.733 0.624 0.62	0.825 0.825 0.825	1 1 1	35.506 20.014 19.099	2232.63	111.63	A
T5 202.00-182.00	271.27	2247.64 TA 873.93	A B C	0.592 0.391 0.342	1.809 2.082 2.191	0.749 0.648 0.63	0.825 0.825 0.825	1 1 1	37.902 24.765 21.178	2290.97	114.55	A
T6 182.00-162.00	401.23	1153.83	A B C	0.558 0.459 0.246	1.836 1.959 2.45	0.729 0.677 0.601	0.825 0.825 0.825	1 1 1	34.343 27.065 13.120	2041.34	102.07	A
T7 162.00-142.00	626.51	1153.83	A B C	0.737 0.59 0.302	1.783 1.811 2.291	0.847 0.748 0.616	0.825 0.825 0.825	1 1 1	51.953 37.451 16.216	2894.78	144.74	A
T8 142.00-122.00	704.49	2247.64 TA 873.93	A B C	0.81 0.657 0.454	1.824 1.78 1.967	0.905 0.79 0.675	0.825 0.825 0.825	1 1 1	60.259 43.857 27.628	3298.58	164.93	A
T9 122.00-102.00	839.97	2014.07	A B C	0.824 0.653 0.539	1.835 1.781 1.854	0.916 0.787 0.718	0.825 0.825 0.825	1 1 1	61.984 43.422 33.293	3258.01	162.90	A
T10 102.00-82.00	849.60	1153.83	A B C	0.823 0.617 0.484	1.835 1.794 1.922	0.915 0.764 0.689	0.825 0.825 0.825	1 1 1	61.985 40.004 28.152	3079.03	153.95	A
T11 82.00-62.00	849.60	1153.83	A B C	0.823 0.617 0.484	1.835 1.794 1.922	0.915 0.764 0.689	0.825 0.825 0.825	1 1 1	61.985 40.004 28.152	2870.77	143.54	A
T12 62.00-42.00	849.60	1153.83	A B C	0.823 0.617 0.484	1.835 1.794 1.922	0.915 0.764 0.689	0.825 0.825 0.825	1 1 1	61.985 40.004 28.152	2615.88	130.79	A
T13 42.00-22.00	849.60	1153.83	A B C	0.823 0.617 0.484	1.835 1.794 1.922	0.915 0.764 0.689	0.825 0.825 0.825	1 1 1	61.985 40.004 28.152	2297.17	114.86	A
T14 22.00-2.00	637.20	1153.83	A B C	0.661 0.507 0.407	1.779 1.891 2.051	0.793 0.701 0.654	0.825 0.825 0.825	1 1 1	43.918 30.784 22.679	1577.97	78.90	A
Sum Weight:	7280.61	21868.35								31847.65		

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	25 of 58
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	Client	AT&T	Designed by	kevin_barker

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.8	1	10.203	1181.73	59.09	B
			B	0.242	2.463	0.6	0.8	1	13.003			
			C	0.224	2.518	0.596	0.8	1	12.075			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	1103.74	55.19	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	1077.97	53.90	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.8	1	35.237	2215.76	110.79	A
			B	0.326	2.23	0.624	0.8	1	19.631			
			C	0.313	2.262	0.62	0.8	1	18.742			
T5 202.00-182.00	271.27	2247.64 TA 873.93	A	0.592	1.809	0.749	0.8	1	37.578	2271.41	113.57	A
			B	0.391	2.082	0.648	0.8	1	24.249			
			C	0.342	2.191	0.63	0.8	1	20.762			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.8	1	34.224	2034.26	101.71	A
			B	0.459	1.959	0.677	0.8	1	26.868			
			C	0.246	2.45	0.601	0.8	1	13.028			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.8	1	51.812	2886.94	144.35	A
			B	0.59	1.811	0.748	0.8	1	37.227			
			C	0.302	2.291	0.616	0.8	1	16.131			
T8 142.00-122.00	704.49	2247.64 TA 873.93	A	0.81	1.824	0.905	0.8	1	60.008	3284.83	164.24	A
			B	0.657	1.78	0.79	0.8	1	43.444			
			C	0.454	1.967	0.675	0.8	1	27.283			
T9 122.00-102.00	839.97	2014.07	A	0.824	1.835	0.916	0.8	1	61.744	3245.36	162.27	A
			B	0.653	1.781	0.787	0.8	1	43.018			
			C	0.539	1.854	0.718	0.8	1	33.054			
T10 102.00-82.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	3068.19	153.41	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T11 82.00-62.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2860.66	143.03	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T12 62.00-42.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2606.67	130.33	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T13 42.00-22.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2289.08	114.45	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T14 22.00-2.00	637.20	1153.83	A	0.661	1.779	0.793	0.8	1	43.729	1571.20	78.56	A
			B	0.507	1.891	0.701	0.8	1	30.546			
			C	0.407	2.051	0.654	0.8	1	22.608			
Sum Weight:	7280.61	21868.35								31697.79		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	26 of 58
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	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.85	1	10.451	1202.71	60.14	B
			B	0.242	2.463	0.6	0.85	1	13.234			
			C	0.224	2.518	0.596	0.85	1	12.312			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	1120.52	56.03	C
			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	1094.36	54.72	C
			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.85	1	35.774	2249.50	112.47	A
			B	0.326	2.23	0.624	0.85	1	20.396			
			C	0.313	2.262	0.62	0.85	1	19.455			
T5 202.00-182.00	271.27	2247.64 TA 873.93	A	0.592	1.809	0.749	0.85	1	38.225	2310.53	115.53	A
			B	0.391	2.082	0.648	0.85	1	25.281			
			C	0.342	2.191	0.63	0.85	1	21.594			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.85	1	34.462	2048.42	102.42	A
			B	0.459	1.959	0.677	0.85	1	27.262			
			C	0.246	2.45	0.601	0.85	1	13.211			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.85	1	52.093	2902.63	145.13	A
			B	0.59	1.811	0.748	0.85	1	37.675			
			C	0.302	2.291	0.616	0.85	1	16.300			
T8 142.00-122.00	704.49	2247.64 TA 873.93	A	0.81	1.824	0.905	0.85	1	60.510	3312.34	165.62	A
			B	0.657	1.78	0.79	0.85	1	44.271			
			C	0.454	1.967	0.675	0.85	1	27.973			
T9 122.00-102.00	839.97	2014.07	A	0.824	1.835	0.916	0.85	1	62.225	3270.67	163.53	A
			B	0.653	1.781	0.787	0.85	1	43.825			
			C	0.539	1.854	0.718	0.85	1	33.532			
T10 102.00-82.00	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	3089.87	154.49	A
			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T11 82.00-62.00	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2880.87	144.04	A
			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T12 62.00-42.00	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2625.09	131.25	A
			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T13 42.00-22.00	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2305.25	115.26	A
			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T14 22.00-2.00	637.20	1153.83	A	0.661	1.779	0.793	0.85	1	44.106	1584.75	79.24	A
			B	0.507	1.891	0.701	0.85	1	31.023			
			C	0.407	2.051	0.654	0.85	1	22.751			
Sum Weight:	7280.61	21868.35								31997.51		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	128.12	1607.29	A	0.298	2.301	0.615	1	1	17.496	1297.81	64.89	B
			B	0.378	2.109	0.643	1	1	22.234			
			C	0.352	2.167	0.633	1	1	20.631			
T2 262.00-242.00	152.98	1515.91	A	0.283	2.342	0.611	1	1	16.252	1219.34	60.97	C
			B	0.365	2.138	0.638	1	1	21.060			
			C	0.365	2.138	0.638	1	1	21.060			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	27 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T3 242.00-222.00	152.98	1515.91	A	0.283	2.342	0.611	1	1	16.252	1190.87	59.54	C
			B	0.365	2.138	0.638	1	1	21.060			
			C	0.365	2.138	0.638	1	1	21.060			
T4 222.00-202.00	655.73	2563.59	A	0.761	1.792	0.865	1	1	57.260	2645.33	132.27	A
			B	0.441	1.988	0.669	1	1	30.928			
			C	0.426	2.015	0.662	1	1	29.466			
T5 202.00-182.00	726.30	2880.99	A	0.786	1.806	0.885	1	1	60.371	2731.77	136.59	A
		TA	B	0.518	1.878	0.707	1	1	38.048			
		1187.59	C	0.459	1.959	0.678	1	1	32.424			
T6 182.00-162.00	1056.40	1515.91	A	0.793	1.811	0.891	1	1	60.613	2665.51	133.28	A
			B	0.665	1.778	0.795	1	1	46.839			
			C	0.385	2.095	0.645	1	1	22.319			
T7 162.00-142.00	1643.98	1515.91	A	1	2.1	1	1	1	87.131	3984.38*	199.22	A
			B	0.839	1.85	0.929	1	1	66.993			
			C	0.46	1.957	0.678	1	1	27.495			
T8 142.00-122.00	1863.56	2880.99	A	1	2.1	1	1	1	91.283	3826.97*	191.35	A
		TA	B	0.872	1.887	0.958	1	1	71.651			
		1187.59	C	0.615	1.796	0.763	1	1	43.030			
T9 122.00-102.00	2237.39	2563.59	A	1	2.1	1	1	1	94.358	3651.47*	182.57	A
			B	0.879	1.896	0.964	1	1	72.602			
			C	0.747	1.786	0.855	1	1	55.341			
T10 102.00-82.00	2273.65	1515.91	A	1	2.1	1	1	1	97.416	3451.90*	172.60	A
			B	0.876	1.892	0.961	1	1	72.116			
			C	0.719	1.778	0.834	1	1	51.209			
T11 82.00-62.00	2273.65	1515.91	A	1	2.1	1	1	1	97.416	3218.42*	160.92	A
			B	0.876	1.892	0.961	1	1	72.116			
			C	0.719	1.778	0.834	1	1	51.209			
T12 62.00-42.00	2273.65	1515.91	A	1	2.1	1	1	1	97.416	2932.67*	146.63	A
			B	0.876	1.892	0.961	1	1	72.116			
			C	0.719	1.778	0.834	1	1	51.209			
T13 42.00-22.00	2273.65	1515.91	A	1	2.1	1	1	1	97.416	2575.36*	128.77	A
			B	0.876	1.892	0.961	1	1	72.116			
			C	0.719	1.778	0.834	1	1	51.209			
T14 22.00-2.00	1705.24	1515.91	A	0.93	1.97	1	1	1	79.077	2360.18	118.01	A
			B	0.728	1.78	0.84	1	1	53.861			
			C	0.61	1.798	0.76	1	1	39.923			
Sum Weight:	19417.29	28514.80			2A _g limit					37751.98		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	128.12	1607.29	A	0.298	2.301	0.615	0.825	1	16.630	1252.84	62.64	B
			B	0.378	2.109	0.643	0.825	1	21.463			
			C	0.352	2.167	0.633	0.825	1	19.830			
T2 262.00-242.00	152.98	1515.91	A	0.283	2.342	0.611	0.825	1	15.553	1183.37	59.17	C
			B	0.365	2.138	0.638	0.825	1	20.439			
			C	0.365	2.138	0.638	0.825	1	20.439			
T3 242.00-222.00	152.98	1515.91	A	0.283	2.342	0.611	0.825	1	15.553	1155.74	57.79	C
			B	0.365	2.138	0.638	0.825	1	20.439			
			C	0.365	2.138	0.638	0.825	1	20.439			
T4 222.00-202.00	655.73	2563.59	A	0.761	1.792	0.865	0.825	1	55.616	2569.40	128.47	A
			B	0.441	1.988	0.669	0.825	1	27.843			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	28 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T5	726.30	2880.99	C	0.426	2.015	0.662	0.825	1	26.619			
202.00-182.00		TA	A	0.786	1.806	0.885	0.825	1	58.399	2642.58	132.13	A
			B	0.518	1.878	0.707	0.825	1	33.912			
		1187.59	C	0.459	1.959	0.678	0.825	1	29.179			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.825	1	59.751	2627.60	131.38	A
182.00-162.00			B	0.665	1.778	0.795	0.825	1	45.207			
			C	0.385	2.095	0.645	0.825	1	21.717			
T7	1643.98	1515.91	A	1	2.1	1	0.825	1	86.060	3984.38*	199.22	A
162.00-142.00			B	0.839	1.85	0.929	0.825	1	65.098			
			C	0.46	1.957	0.678	0.825	1	26.964			
T8	1863.56	2880.99	A	1	2.1	1	0.825	1	90.366	3826.97*	191.35	A
142.00-122.00		TA	B	0.872	1.887	0.958	0.825	1	68.949			
		1187.59	C	0.615	1.796	0.763	0.825	1	40.686			
T9	2237.39	2563.59	A	1	2.1	1	0.825	1	93.376	3651.47*	182.57	A
122.00-102.00			B	0.879	1.896	0.964	0.825	1	69.767			
			C	0.747	1.786	0.855	0.825	1	54.033			
T10	2273.65	1515.91	A	1	2.1	1	0.825	1	95.594	3451.90*	172.60	A
102.00-82.00			B	0.876	1.892	0.961	0.825	1	69.561			
			C	0.719	1.778	0.834	0.825	1	50.924			
T11	2273.65	1515.91	A	1	2.1	1	0.825	1	95.594	3218.42*	160.92	A
82.00-62.00			B	0.876	1.892	0.961	0.825	1	69.561			
			C	0.719	1.778	0.834	0.825	1	50.924			
T12	2273.65	1515.91	A	1	2.1	1	0.825	1	95.594	2932.67*	146.63	A
62.00-42.00			B	0.876	1.892	0.961	0.825	1	69.561			
			C	0.719	1.778	0.834	0.825	1	50.924			
T13	2273.65	1515.91	A	1	2.1	1	0.825	1	95.594	2575.36*	128.77	A
42.00-22.00			B	0.876	1.892	0.961	0.825	1	69.561			
			C	0.719	1.778	0.834	0.825	1	50.924			
T14	1705.24	1515.91	A	0.93	1.97	1	0.825	1	77.536	2314.18	115.71	A
22.00-2.00			B	0.728	1.78	0.84	0.825	1	51.771			
			C	0.61	1.798	0.76	0.825	1	39.534			
Sum Weight:	19417.29	28514.80			*2A _g limit					37386.86		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	128.12	1607.29	A	0.298	2.301	0.615	0.8	1	16.506	1246.41	62.32	B
282.00-262.00			B	0.378	2.109	0.643	0.8	1	21.353			
			C	0.352	2.167	0.633	0.8	1	19.715			
T2	152.98	1515.91	A	0.283	2.342	0.611	0.8	1	15.453	1178.23	58.91	C
262.00-242.00			B	0.365	2.138	0.638	0.8	1	20.350			
			C	0.365	2.138	0.638	0.8	1	20.350			
T3	152.98	1515.91	A	0.283	2.342	0.611	0.8	1	15.453	1150.72	57.54	C
242.00-222.00			B	0.365	2.138	0.638	0.8	1	20.350			
			C	0.365	2.138	0.638	0.8	1	20.350			
T4	655.73	2563.59	A	0.761	1.792	0.865	0.8	1	55.382	2558.55	127.93	A
222.00-202.00			B	0.441	1.988	0.669	0.8	1	27.402			
			C	0.426	2.015	0.662	0.8	1	26.212			
T5	726.30	2880.99	A	0.786	1.806	0.885	0.8	1	58.118	2629.84	131.49	A
202.00-182.00		TA	B	0.518	1.878	0.707	0.8	1	33.321			
		1187.59	C	0.459	1.959	0.678	0.8	1	28.715			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.8	1	59.628	2622.19	131.11	A

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	29 of 58
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	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
182.00-162.00			B	0.665	1.778	0.795	0.8	1	44.974			
			C	0.385	2.095	0.645	0.8	1	21.631			
T7	1643.98	1515.91	A	1	2.1	1	0.8	1	85.907	3984.38*	199.22	A
162.00-142.00			B	0.839	1.85	0.929	0.8	1	64.827			
			C	0.46	1.957	0.678	0.8	1	26.889			
T8	1863.56	2880.99	A	1	2.1	1	0.8	1	90.235	3826.97*	191.35	A
142.00-122.00			TA	0.872	1.887	0.958	0.8	1	68.563			
			C	0.615	1.796	0.763	0.8	1	40.351			
T9	2237.39	2563.59	A	1	2.1	1	0.8	1	93.236	3651.47*	182.57	A
122.00-102.00			B	0.879	1.896	0.964	0.8	1	69.363			
			C	0.747	1.786	0.855	0.8	1	53.847			
T10	2273.65	1515.91	A	1	2.1	1	0.8	1	95.333	3451.90*	172.60	A
102.00-82.00			B	0.876	1.892	0.961	0.8	1	69.196			
			C	0.719	1.778	0.834	0.8	1	50.883			
T11	2273.65	1515.91	A	1	2.1	1	0.8	1	95.333	3218.42*	160.92	A
82.00-62.00			B	0.876	1.892	0.961	0.8	1	69.196			
			C	0.719	1.778	0.834	0.8	1	50.883			
T12	2273.65	1515.91	A	1	2.1	1	0.8	1	95.333	2932.67*	146.63	A
62.00-42.00			B	0.876	1.892	0.961	0.8	1	69.196			
			C	0.719	1.778	0.834	0.8	1	50.883			
T13	2273.65	1515.91	A	1	2.1	1	0.8	1	95.333	2575.36*	128.77	A
42.00-22.00			B	0.876	1.892	0.961	0.8	1	69.196			
			C	0.719	1.778	0.834	0.8	1	50.883			
T14	1705.24	1515.91	A	0.93	1.97	1	0.8	1	77.316	2307.60	115.38	A
22.00-2.00			B	0.728	1.78	0.84	0.8	1	51.472			
			C	0.61	1.798	0.76	0.8	1	39.478			
Sum Weight:	19417.29	28514.80			2A _g limit					37334.71		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	128.12	1607.29	A	0.298	2.301	0.615	0.85	1	16.753	1259.26	62.96	B
282.00-262.00			B	0.378	2.109	0.643	0.85	1	21.573			
			C	0.352	2.167	0.633	0.85	1	19.944			
T2	152.98	1515.91	A	0.283	2.342	0.611	0.85	1	15.653	1188.51	59.43	C
262.00-242.00			B	0.365	2.138	0.638	0.85	1	20.528			
			C	0.365	2.138	0.638	0.85	1	20.528			
T3	152.98	1515.91	A	0.283	2.342	0.611	0.85	1	15.653	1160.76	58.04	C
242.00-222.00			B	0.365	2.138	0.638	0.85	1	20.528			
			C	0.365	2.138	0.638	0.85	1	20.528			
T4	655.73	2563.59	A	0.761	1.792	0.865	0.85	1	55.851	2580.25	129.01	A
222.00-202.00			B	0.441	1.988	0.669	0.85	1	28.284			
			C	0.426	2.015	0.662	0.85	1	27.026			
T5	726.30	2880.99	A	0.786	1.806	0.885	0.85	1	58.681	2655.32	132.77	A
202.00-182.00			TA	0.518	1.878	0.707	0.85	1	34.503			
			C	0.459	1.959	0.678	0.85	1	29.642			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.85	1	59.874	2633.02	131.65	A
182.00-162.00			B	0.665	1.778	0.795	0.85	1	45.441			
			C	0.385	2.095	0.645	0.85	1	21.803			
T7	1643.98	1515.91	A	1	2.1	1	0.85	1	86.213	3984.38*	199.22	A
162.00-142.00			B	0.839	1.85	0.929	0.85	1	65.368			
			C	0.46	1.957	0.678	0.85	1	27.040			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	30 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T8 142.00-122.00	1863.56	2880.99	A	1	2.1	1	0.85	1	90.497	3826.97*	191.35	A
		TA	B	0.872	1.887	0.958	0.85	1	69.335			
		1187.59	C	0.615	1.796	0.763	0.85	1	41.021			
T9 122.00-102.00	2237.39	2563.59	A	1	2.1	1	0.85	1	93.517	3651.47*	182.57	A
			B	0.879	1.896	0.964	0.85	1	70.172			
			C	0.747	1.786	0.855	0.85	1	54.220			
T10 102.00-82.00	2273.65	1515.91	A	1	2.1	1	0.85	1	95.854	3451.90*	172.60	A
			B	0.876	1.892	0.961	0.85	1	69.926			
			C	0.719	1.778	0.834	0.85	1	50.965			
T11 82.00-62.00	2273.65	1515.91	A	1	2.1	1	0.85	1	95.854	3218.42*	160.92	A
			B	0.876	1.892	0.961	0.85	1	69.926			
			C	0.719	1.778	0.834	0.85	1	50.965			
T12 62.00-42.00	2273.65	1515.91	A	1	2.1	1	0.85	1	95.854	2932.67*	146.63	A
			B	0.876	1.892	0.961	0.85	1	69.926			
			C	0.719	1.778	0.834	0.85	1	50.965			
T13 42.00-22.00	2273.65	1515.91	A	1	2.1	1	0.85	1	95.854	2575.36*	128.77	A
			B	0.876	1.892	0.961	0.85	1	69.926			
			C	0.719	1.778	0.834	0.85	1	50.965			
T14 22.00-2.00	1705.24	1515.91	A	0.93	1.97	1	0.85	1	77.756	2320.75	116.04	A
			B	0.728	1.78	0.84	0.85	1	52.069			
			C	0.61	1.798	0.76	0.85	1	39.590			
Sum Weight:	19417.29	28514.80			*2A _g limit					37439.02		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	1	1	11.194	437.94	21.90	B
			B	0.242	2.463	0.6	1	1	13.926			
			C	0.224	2.518	0.596	1	1	13.021			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	405.14	20.26	C
			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	395.68	19.78	C
			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	1	1	37.383	813.39	40.67	A
			B	0.326	2.23	0.624	1	1	22.692			
			C	0.313	2.262	0.62	1	1	21.593			
T5 202.00-182.00	271.27	2247.64	A	0.592	1.809	0.749	1	1	40.167	840.10	42.01	A
		TA 873.93	B	0.391	2.082	0.648	1	1	28.378			
			C	0.342	2.191	0.63	1	1	24.090			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	1	1	35.176	723.49	36.17	A
			B	0.459	1.959	0.677	1	1	28.442			
			C	0.246	2.45	0.601	1	1	13.759			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	1	1	52.938	1020.66	51.03	A
			B	0.59	1.811	0.748	1	1	39.021			
			C	0.302	2.291	0.616	1	1	16.807			
T8 142.00-122.00	704.49	2247.64	A	0.81	1.824	0.905	1	1	62.018	1174.69	58.73	A
		TA 873.93	B	0.657	1.78	0.79	1	1	46.751			
			C	0.454	1.967	0.675	1	1	30.042			
T9 122.00-102.00	839.97	2014.07	A	0.824	1.835	0.916	1	1	63.670	1157.99	57.90	A
			B	0.653	1.781	0.787	1	1	46.248			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	31 of 58
	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T10 102.00-82.00	849.60	1153.83	C	0.539	1.854	0.718	1	1	34.967			
			A	0.823	1.835	0.915	1	1	63.513	1091.66	54.58	A
			B	0.617	1.794	0.764	1	1	41.994			
T11 82.00-62.00	849.60	1153.83	C	0.484	1.922	0.689	1	1	28.589			
			A	0.823	1.835	0.915	1	1	63.513	1017.82	50.89	A
			B	0.617	1.794	0.764	1	1	41.994			
T12 62.00-42.00	849.60	1153.83	C	0.484	1.922	0.689	1	1	28.589			
			A	0.823	1.835	0.915	1	1	63.513	927.45	46.37	A
			B	0.617	1.794	0.764	1	1	41.994			
T13 42.00-22.00	849.60	1153.83	C	0.484	1.922	0.689	1	1	28.589			
			A	0.823	1.835	0.915	1	1	63.513	814.45	40.72	A
			B	0.617	1.794	0.764	1	1	41.994			
T14 22.00-2.00	637.20	1153.83	C	0.484	1.922	0.689	1	1	28.589			
			A	0.661	1.779	0.793	1	1	45.238	562.43	28.12	A
			B	0.507	1.891	0.701	1	1	32.451			
			C	0.407	2.051	0.654	1	1	23.182			
Sum Weight:	7280.61	21868.35								11382.93		

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.825	1	10.327	412.53	20.63	B
			B	0.242	2.463	0.6	0.825	1	13.118			
			C	0.224	2.518	0.596	0.825	1	12.194			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	384.82	19.24	C
			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	375.84	18.79	C
			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.825	1	35.506	772.54	38.63	A
			B	0.326	2.23	0.624	0.825	1	20.014			
			C	0.313	2.262	0.62	0.825	1	19.099			
T5 202.00-182.00	271.27	2247.64	A	0.592	1.809	0.749	0.825	1	37.902	792.72	39.64	A
		TA 873.93	B	0.391	2.082	0.648	0.825	1	24.765			
			C	0.342	2.191	0.63	0.825	1	21.178			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.825	1	34.343	706.35	35.32	A
			B	0.459	1.959	0.677	0.825	1	27.065			
			C	0.246	2.45	0.601	0.825	1	13.120			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.825	1	51.953	1001.65	50.08	A
			B	0.59	1.811	0.748	0.825	1	37.451			
			C	0.302	2.291	0.616	0.825	1	16.216			
T8 142.00-122.00	704.49	2247.64	A	0.81	1.824	0.905	0.825	1	60.259	1141.38	57.07	A
		TA 873.93	B	0.657	1.78	0.79	0.825	1	43.857			
			C	0.454	1.967	0.675	0.825	1	27.628			
T9 122.00-102.00	839.97	2014.07	A	0.824	1.835	0.916	0.825	1	61.984	1127.34	56.37	A
			B	0.653	1.781	0.787	0.825	1	43.422			
			C	0.539	1.854	0.718	0.825	1	33.293			
T10 102.00-82.00	849.60	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	1065.41	53.27	A
			B	0.617	1.794	0.764	0.825	1	40.004			
			C	0.484	1.922	0.689	0.825	1	28.152			
T11 82.00-62.00	849.60	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	993.34	49.67	A
			B	0.617	1.794	0.764	0.825	1	40.004			

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	Project	130 Vernon Rd Bolton, CT	Date	16:57:35 07/24/12
	Client	AT&T	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T12 62.00-42.00	849.60	1153.83	C	0.484	1.922	0.689	0.825	1	28.152			
			A	0.823	1.835	0.915	0.825	1	61.985	905.15	45.26	A
			B	0.617	1.794	0.764	0.825	1	40.004			
T13 42.00-22.00	849.60	1153.83	C	0.484	1.922	0.689	0.825	1	28.152			
			A	0.823	1.835	0.915	0.825	1	61.985	794.87	39.74	A
			B	0.617	1.794	0.764	0.825	1	40.004			
T14 22.00-2.00	637.20	1153.83	C	0.484	1.922	0.689	0.825	1	28.152			
			A	0.661	1.779	0.793	0.825	1	43.918	546.01	27.30	A
			B	0.507	1.891	0.701	0.825	1	30.784			
			C	0.407	2.051	0.654	0.825	1	22.679			
Sum Weight:	7280.61	21868.35								11019.95		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.8	1	10.203	408.90	20.45	B
			B	0.242	2.463	0.6	0.8	1	13.003			
			C	0.224	2.518	0.596	0.8	1	12.075			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	381.92	19.10	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	373.00	18.65	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.8	1	35.237	766.70	38.33	A
			B	0.326	2.23	0.624	0.8	1	19.631			
			C	0.313	2.262	0.62	0.8	1	18.742			
T5 202.00-182.00	271.27	2247.64 TA 873.93	A	0.592	1.809	0.749	0.8	1	37.578	785.96	39.30	A
			B	0.391	2.082	0.648	0.8	1	24.249			
			C	0.342	2.191	0.63	0.8	1	20.762			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.8	1	34.224	703.90	35.19	A
			B	0.459	1.959	0.677	0.8	1	26.868			
			C	0.246	2.45	0.601	0.8	1	13.028			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.8	1	51.812	998.94	49.95	A
			B	0.59	1.811	0.748	0.8	1	37.227			
			C	0.302	2.291	0.616	0.8	1	16.131			
T8 142.00-122.00	704.49	2247.64 TA 873.93	A	0.81	1.824	0.905	0.8	1	60.008	1136.62	56.83	A
			B	0.657	1.78	0.79	0.8	1	43.444			
			C	0.454	1.967	0.675	0.8	1	27.283			
T9 122.00-102.00	839.97	2014.07	A	0.824	1.835	0.916	0.8	1	61.744	1122.96	56.15	A
			B	0.653	1.781	0.787	0.8	1	43.018			
			C	0.539	1.854	0.718	0.8	1	33.054			
T10 102.00-82.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	1061.66	53.08	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T11 82.00-62.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	989.85	49.49	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T12 62.00-42.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	901.96	45.10	A
			B	0.617	1.794	0.764	0.8	1	39.720			
			C	0.484	1.922	0.689	0.8	1	28.089			
T13 42.00-22.00	849.60	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	792.07	39.60	A
			B	0.617	1.794	0.764	0.8	1	39.720			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T14	637.20	1153.83	C	0.484	1.922	0.689	0.8	1	28.089			
22.00-2.00			A	0.661	1.779	0.793	0.8	1	43.729	543.67	27.18	A
			B	0.507	1.891	0.701	0.8	1	30.546			
			C	0.407	2.051	0.654	0.8	1	22.608			
Sum Weight:	7280.61	21868.35								10968.10		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	0.85	1	10.451	416.16	20.81	B
282.00-262.00			B	0.242	2.463	0.6	0.85	1	13.234			
			C	0.224	2.518	0.596	0.85	1	12.312			
T2	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	387.72	19.39	C
262.00-242.00			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T3	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	378.67	18.93	C
242.00-222.00			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T4	251.73	2014.07	A	0.565	1.83	0.733	0.85	1	35.774	778.37	38.92	A
222.00-202.00			B	0.326	2.23	0.624	0.85	1	20.396			
			C	0.313	2.262	0.62	0.85	1	19.455			
T5	271.27	2247.64	A	0.592	1.809	0.749	0.85	1	38.225	799.49	39.97	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	0.85	1	25.281			
			C	0.342	2.191	0.63	0.85	1	21.594			
T6	401.23	1153.83	A	0.558	1.836	0.729	0.85	1	34.462	708.80	35.44	A
182.00-162.00			B	0.459	1.959	0.677	0.85	1	27.262			
			C	0.246	2.45	0.601	0.85	1	13.211			
T7	626.51	1153.83	A	0.737	1.783	0.847	0.85	1	52.093	1004.37	50.22	A
162.00-142.00			B	0.59	1.811	0.748	0.85	1	37.675			
			C	0.302	2.291	0.616	0.85	1	16.300			
T8	704.49	2247.64	A	0.81	1.824	0.905	0.85	1	60.510	1146.14	57.31	A
142.00-122.00		TA 873.93	B	0.657	1.78	0.79	0.85	1	44.271			
			C	0.454	1.967	0.675	0.85	1	27.973			
T9	839.97	2014.07	A	0.824	1.835	0.916	0.85	1	62.225	1131.72	56.59	A
122.00-102.00			B	0.653	1.781	0.787	0.85	1	43.825			
			C	0.539	1.854	0.718	0.85	1	33.532			
T10	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	1069.16	53.46	A
102.00-82.00			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T11	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	996.84	49.84	A
82.00-62.00			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T12	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	908.34	45.42	A
62.00-42.00			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T13	849.60	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	797.67	39.88	A
42.00-22.00			B	0.617	1.794	0.764	0.85	1	40.288			
			C	0.484	1.922	0.689	0.85	1	28.214			
T14	637.20	1153.83	A	0.661	1.779	0.793	0.85	1	44.106	548.36	27.42	A
22.00-2.00			B	0.507	1.891	0.701	0.85	1	31.023			
			C	0.407	2.051	0.654	0.85	1	22.751			
Sum Weight:	7280.61	21868.35								11071.80		

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Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	8979.76			
Bracing Weight	12888.60			
Total Member Self-Weight	21868.35			
Guy Weight	4059.04			
Total Weight	39887.06			
Wind 0 deg - No Ice		645.03	-51050.56	-14168.86
Wind 30 deg - No Ice		25700.80	-44298.23	-15687.10
Wind 45 deg - No Ice		35907.77	-35951.33	-14268.70
Wind 60 deg - No Ice		43729.21	-25122.37	-14603.54
Wind 90 deg - No Ice		50823.26	191.22	-9427.12
Wind 120 deg - No Ice		44351.40	25144.00	279.66
Wind 135 deg - No Ice		35473.51	34475.58	4526.81
Wind 150 deg - No Ice		25247.14	42244.18	10331.63
Wind 180 deg - No Ice		196.64	48753.34	16448.54
Wind 210 deg - No Ice		-25208.16	43483.58	17470.40
Wind 225 deg - No Ice		-35426.95	35776.52	17422.81
Wind 240 deg - No Ice		-44271.61	25842.74	13889.21
Wind 270 deg - No Ice		-49189.03	447.87	6495.29
Wind 300 deg - No Ice		-41202.06	-23890.38	-1845.01
Wind 315 deg - No Ice		-33513.13	-34243.06	-5708.66
Wind 330 deg - No Ice		-23568.58	-42425.33	-9183.10
Member Ice	6646.44			
Guy Ice	3447.39			
Total Weight Ice	66597.17			
Wind 0 deg - Ice		630.50	-53769.22	-11192.70
Wind 30 deg - Ice		27303.48	-46942.27	-13868.34
Wind 45 deg - Ice		38260.89	-38218.22	-13399.34
Wind 60 deg - Ice		46687.05	-26856.19	-14136.69
Wind 90 deg - Ice		54009.35	58.16	-10442.82
Wind 120 deg - Ice		46745.81	26474.73	-2311.87
Wind 135 deg - Ice		37900.64	36994.72	1565.84
Wind 150 deg - Ice		26832.16	45324.19	6725.23
Wind 180 deg - Ice		129.11	52467.87	13080.46
Wind 210 deg - Ice		-26836.58	46315.68	15373.83
Wind 225 deg - Ice		-37820.83	38074.99	15908.52
Wind 240 deg - Ice		-46621.99	27131.29	13504.57
Wind 270 deg - Ice		-52709.30	356.31	8056.77
Wind 300 deg - Ice		-44671.54	-25841.61	1056.23
Wind 315 deg - Ice		-36335.97	-36846.84	-2473.65
Wind 330 deg - Ice		-25538.81	-45465.90	-5844.67
Total Weight	39887.06			
Wind 0 deg - Service		223.19	-17664.55	-4902.72
Wind 30 deg - Service		8893.01	-15328.11	-5428.06
Wind 45 deg - Service		12424.83	-12439.91	-4937.26
Wind 60 deg - Service		15131.21	-8692.86	-5053.13
Wind 90 deg - Service		17585.90	66.17	-3261.98
Wind 120 deg - Service		15346.51	8700.34	96.77
Wind 135 deg - Service		12274.57	11929.27	1566.37
Wind 150 deg - Service		8736.03	14617.36	3574.96
Wind 180 deg - Service		68.04	16869.67	5691.54
Wind 210 deg - Service		-8722.55	15046.22	6045.12
Wind 225 deg - Service		-12258.46	12379.42	6028.65
Wind 240 deg - Service		-15318.90	8942.12	4805.95

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<i>Load Case</i>	<i>Vertical Forces</i>	<i>Sum of Forces X</i>	<i>Sum of Forces Z</i>	<i>Sum of Torques</i>
	<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb-ft</i>
Wind 270 deg - Service		-17020.43	154.97	2247.50
Wind 300 deg - Service		-14256.77	-8266.57	-638.41
Wind 315 deg - Service		-11596.24	-11848.81	-1975.32
Wind 330 deg - Service		-8155.22	-14680.04	-3177.54

Load Combinations

<i>Comb. No.</i>	<i>Description</i>
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 45 deg - No Ice+Guy
5	Dead+Wind 60 deg - No Ice+Guy
6	Dead+Wind 90 deg - No Ice+Guy
7	Dead+Wind 120 deg - No Ice+Guy
8	Dead+Wind 135 deg - No Ice+Guy
9	Dead+Wind 150 deg - No Ice+Guy
10	Dead+Wind 180 deg - No Ice+Guy
11	Dead+Wind 210 deg - No Ice+Guy
12	Dead+Wind 225 deg - No Ice+Guy
13	Dead+Wind 240 deg - No Ice+Guy
14	Dead+Wind 270 deg - No Ice+Guy
15	Dead+Wind 300 deg - No Ice+Guy
16	Dead+Wind 315 deg - No Ice+Guy
17	Dead+Wind 330 deg - No Ice+Guy
18	Dead+Ice+Temp+Guy
19	Dead+Wind 0 deg+Ice+Temp+Guy
20	Dead+Wind 30 deg+Ice+Temp+Guy
21	Dead+Wind 45 deg+Ice+Temp+Guy
22	Dead+Wind 60 deg+Ice+Temp+Guy
23	Dead+Wind 90 deg+Ice+Temp+Guy
24	Dead+Wind 120 deg+Ice+Temp+Guy
25	Dead+Wind 135 deg+Ice+Temp+Guy
26	Dead+Wind 150 deg+Ice+Temp+Guy
27	Dead+Wind 180 deg+Ice+Temp+Guy
28	Dead+Wind 210 deg+Ice+Temp+Guy
29	Dead+Wind 225 deg+Ice+Temp+Guy
30	Dead+Wind 240 deg+Ice+Temp+Guy
31	Dead+Wind 270 deg+Ice+Temp+Guy
32	Dead+Wind 300 deg+Ice+Temp+Guy
33	Dead+Wind 315 deg+Ice+Temp+Guy
34	Dead+Wind 330 deg+Ice+Temp+Guy
35	Dead+Wind 0 deg - Service+Guy
36	Dead+Wind 30 deg - Service+Guy
37	Dead+Wind 45 deg - Service+Guy
38	Dead+Wind 60 deg - Service+Guy
39	Dead+Wind 90 deg - Service+Guy
40	Dead+Wind 120 deg - Service+Guy
41	Dead+Wind 135 deg - Service+Guy
42	Dead+Wind 150 deg - Service+Guy
43	Dead+Wind 180 deg - Service+Guy
44	Dead+Wind 210 deg - Service+Guy
45	Dead+Wind 225 deg - Service+Guy

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Comb. No.	Description
46	Dead+Wind 240 deg - Service+Guy
47	Dead+Wind 270 deg - Service+Guy
48	Dead+Wind 300 deg - Service+Guy
49	Dead+Wind 315 deg - Service+Guy
50	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	282 - 262	Leg	Max Tension	22	7392.89	-240.74	141.05
			Max. Compression	27	-14534.21	11.44	450.73
			Max. Mx	20	-829.35	-771.06	309.80
			Max. My	27	-14459.69	-2.54	-845.57
			Max. Vy	24	-558.59	0.00	0.00
		Diagonal	Max. Vx	34	571.49	-0.00	-0.00
			Max Tension	23	4640.86	0.00	0.00
			Max. Compression	32	-4081.48	0.00	0.00
			Max. Mx	24	2134.38	8.22	0.00
			Max. My	23	2587.68	0.00	0.08
			Max. Vy	24	-5.81	0.00	0.00
			Max. Vx	23	-0.06	0.00	0.00
		Secondary Horizontal	Max Tension	30	296.30	0.00	0.00
			Max. Compression	27	-251.74	0.00	0.00
			Max. Mx	18	140.41	-9.77	0.00
			Max. My	23	213.83	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Top Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-2205.08	0.00	0.00
			Max. Mx	18	-1163.39	-15.23	0.00
			Max. My	23	-1369.80	0.00	0.00
			Max. Vy	18	15.23	0.00	0.00
		Guy A	Max. Vx	23	-0.00	0.00	0.00
			Bottom Tension	27	17445.11		
			Top Tension	27	18009.84		
			Top Cable Vert	27	14901.12		
			Top Cable Norm	27	10114.88		
			Top Cable Tan	27	2.18		
			Bot Cable Vert	27	-13654.02		
			Bot Cable Norm	27	10858.17		
		Guy B	Bot Cable Tan	27	2.18		
			Bottom Tension	32	17425.06		
			Top Tension	32	17953.49		
			Top Cable Vert	32	14838.80		
			Top Cable Norm	32	10106.32		
			Top Cable Tan	32	1.18		
			Bot Cable Vert	32	-13660.82		
			Bot Cable Norm	32	10817.33		
		Guy C	Bot Cable Tan	32	1.18		
			Bottom Tension	22	17580.25		
			Top Tension	22	18127.74		
			Top Cable Vert	22	14973.43		
			Top Cable Norm	22	10218.19		
			Top Cable Tan	22	3.40		
			Bot Cable Vert	22	-13757.60		
			Bot Cable Norm	22	10945.03		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T2	262 - 242	Leg	Bot Cable Tan	22	3.40		
			Max Tension	13	12636.05	-86.29	52.28
			Max. Compression	27	-27451.58	-0.94	6.98
			Max. Mx	20	-18375.29	-484.46	167.79
			Max. My	27	-19955.56	-41.97	-515.67
		Diagonal	Max. Vy	21	-368.70	-478.68	208.09
			Max. Vx	27	-392.97	-41.97	-515.67
			Max Tension	27	2644.25	0.00	0.00
			Max. Compression	27	-2330.31	0.00	0.00
			Max. Mx	24	1425.39	8.22	0.00
			Max. My	23	1558.35	0.00	0.08
			Max. Vy	24	-5.81	0.00	0.00
			Max. Vx	23	-0.06	0.00	0.00
		Secondary Horizontal	Max Tension	27	475.48	0.00	0.00
			Max. Compression	27	-475.48	0.00	0.00
			Max. Mx	32	133.88	-9.77	0.00
			Max. My	23	233.91	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
T3	242 - 222	Leg	Max. Vx	23	-0.00	0.00	0.00
			Max Tension	13	19075.72	-26.94	19.23
			Max. Compression	27	-31101.68	-5.95	-110.90
			Max. Mx	20	-26799.29	-169.44	60.69
			Max. My	27	-29686.21	-0.42	-184.02
		Diagonal	Max. Vy	6	-1058.54	-27.85	133.96
			Max. Vx	10	-1124.72	-7.11	-104.94
			Max Tension	33	1702.26	0.00	0.00
			Max. Compression	34	-2095.67	0.00	0.00
			Max. Mx	24	-218.58	8.21	0.00
			Max. My	23	-779.66	0.00	0.06
			Max. Vy	24	-5.80	0.00	0.00
			Max. Vx	23	-0.04	0.00	0.00
		Secondary Horizontal	Max Tension	27	538.70	0.00	0.00
			Max. Compression	27	-538.70	0.00	0.00
			Max. Mx	25	469.93	-9.77	0.00
			Max. My	23	274.93	0.00	0.00
			Max. Vy	25	9.77	0.00	0.00
T4	222 - 202	Leg	Max. Vx	23	-0.00	0.00	0.00
			Max Tension	13	14229.51	8.54	-4.87
			Max. Compression	27	-26825.56	-55.13	-83.17
			Max. Mx	5	-13590.69	816.59	-48.76
			Max. My	3	-6917.57	62.33	-741.56
		Diagonal	Max. Vy	5	-830.68	-419.11	11.51
			Max. Vx	3	736.97	-51.69	354.28
			Max Tension	3	4371.28	0.00	0.00
			Max. Compression	3	-4215.88	0.00	0.00
			Max. Mx	24	-1353.55	25.71	0.00
			Max. My	23	-1382.38	0.00	0.16
			Max. Vy	24	-18.18	0.00	0.00
			Max. Vx	23	0.11	0.00	0.00
		Secondary Horizontal	Max Tension	27	464.63	0.00	0.00
			Max. Compression	27	-464.63	0.00	0.00
			Max. Mx	18	210.47	-9.77	0.00
			Max. My	23	347.45	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
T5	202 - 182	Leg	Max. Vx	23	-0.00	0.00	0.00
			Max Tension	15	7717.95	42.25	129.54
			Max. Compression	28	-42931.15	7.09	-355.83
			Max. Mx	6	-19568.83	364.83	40.92

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	27	-42216.78	7.87	-367.38
			Max. Vy	6	277.72	-173.11	-42.07
			Max. Vx	27	278.14	7.87	-367.38
		Diagonal	Max Tension	3	5114.84	0.00	0.00
			Max. Compression	27	-9308.67	0.00	0.00
			Max. Mx	24	2148.42	25.70	0.00
			Max. My	23	-2270.88	0.00	0.15
			Max. Vy	24	-18.18	0.00	0.00
			Max. Vx	23	0.10	0.00	0.00
		Secondary Horizontal	Max Tension	28	743.59	0.00	0.00
			Max. Compression	28	-743.59	0.00	0.00
			Max. Mx	18	367.61	-9.77	0.00
			Max. My	23	613.26	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Guy A	Bottom Tension	27	16898.89		
			Top Tension	27	17229.85		
			Top Cable Vert	27	12641.68		
			Top Cable Norm	27	11707.08		
			Top Cable Tan	27	11.69		
			Bot Cable Vert	27	-11819.75		
			Bot Cable Norm	27	12077.50		
			Bot Cable Tan	27	11.64		
		Guy B	Bottom Tension	32	16697.46		
			Top Tension	32	17000.21		
			Top Cable Vert	32	12331.95		
			Top Cable Norm	32	11701.70		
			Top Cable Tan	32	10.55		
			Bot Cable Vert	32	-11565.44		
			Bot Cable Norm	32	12043.48		
			Bot Cable Tan	32	12.98		
		Guy C	Bottom Tension	21	17539.27		
			Top Tension	21	17856.55		
			Top Cable Vert	21	13002.63		
			Top Cable Norm	21	12238.67		
			Top Cable Tan	21	54.14		
			Bot Cable Vert	21	-12206.76		
			Bot Cable Norm	21	12594.02		
			Bot Cable Tan	21	107.62		
		Top Guy Pull-Off	Max Tension	22	19769.47	0.00	0.00
			Max. Compression	2	-5391.76	0.00	0.00
			Max. Mx	18	4517.71	-26.45	0.00
			Max. My	23	17953.71	0.00	0.00
			Max. Vy	18	26.45	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Bottom Guy Pull-Off	Max Tension	32	3164.49	0.00	0.00
			Max. Compression	2	-3072.50	0.00	0.00
			Max. Mx	18	451.65	-26.45	0.00
			Max. My	23	2900.16	0.00	0.00
			Max. Vy	18	26.45	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	23	22583.40	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	24	6288.56	-89.26	0.00
			Max. My	23	12489.69	0.00	0.14
			Max. Vy	24	47.71	0.00	0.00
			Max. Vx	23	-0.08	0.00	0.00
		Torque Arm Bottom	Max Tension	2	934.86	0.00	0.00
			Max. Compression	21	-22986.68	0.00	0.00

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page 39 of 58
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	Client	AT&T	Designed by kevin_barker

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T6	182 - 162	Leg	Max. Mx	24	-15929.28	-89.31	0.00
			Max. My	23	-497.93	0.00	-0.16
			Max. Vy	24	47.74	0.00	0.00
			Max. Vx	23	-0.08	0.00	0.00
			Max Tension	7	12872.89	-256.42	-145.47
			Max. Compression	27	-58092.37	13.71	-574.47
			Max. Mx	6	-45199.17	1022.43	-191.30
			Max. My	27	-57038.57	4.78	1100.80
			Max. Vy	6	-771.93	-515.65	194.82
			Max. Vx	27	-871.06	-1.84	-628.39
		Diagonal	Max Tension	23	2043.92	0.00	0.00
			Max. Compression	23	-2029.00	0.00	0.00
			Max. Mx	27	388.92	8.19	0.00
			Max. My	23	500.42	0.00	0.04
			Max. Vy	27	-5.79	0.00	0.00
		Secondary Horizontal	Max. Vx	23	-0.03	0.00	0.00
			Max Tension	27	1006.19	0.00	0.00
			Max. Compression	27	-1006.19	0.00	0.00
			Max. Mx	18	402.19	-9.77	0.00
			Max. My	23	665.14	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Leg	Max Tension	7	9851.38	-321.27	-184.11
			Max. Compression	28	-55549.29	-134.08	-138.13
			Max. Mx	6	-43949.99	-485.05	180.90
			Max. My	27	-55404.49	13.71	-574.47
			Max. Vy	12	492.42	133.77	-291.41
			Max. Vx	3	631.90	-220.03	264.60
		Diagonal	Max Tension	28	3842.70	0.00	0.00
			Max. Compression	29	-3935.81	0.00	0.00
			Max. Mx	28	3842.70	8.20	0.00
			Max. My	27	-654.19	0.00	-0.05
			Max. Vy	28	-5.80	0.00	0.00
		Secondary Horizontal	Max. Vx	27	0.04	0.00	0.00
			Max Tension	28	962.14	0.00	0.00
			Max. Compression	28	-962.14	0.00	0.00
			Max. Mx	22	535.24	-9.77	0.00
			Max. My	27	961.41	0.00	-0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
T8	142 - 122	Leg	Max Tension	15	4572.07	169.79	137.46
			Max. Compression	19	-49864.11	-58.84	45.91
			Max. Mx	21	-32316.55	-412.22	216.75
			Max. My	28	-37151.11	-8.76	-458.13
			Max. Vy	6	-341.27	-369.17	-77.20
			Max. Vx	2	309.07	26.28	330.12
		Diagonal	Max Tension	28	4936.62	0.00	0.00
			Max. Compression	20	-11716.34	0.00	0.00
			Max. Mx	28	4083.81	25.74	0.00
			Max. My	27	-826.54	0.00	-0.15
			Max. Vy	28	-18.20	0.00	0.00
		Secondary Horizontal	Max. Vx	27	0.11	0.00	0.00
			Max Tension	19	863.67	0.00	0.00
			Max. Compression	19	-863.67	0.00	0.00
			Max. Mx	22	795.58	-9.77	0.00
			Max. My	27	778.92	0.00	-0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T9	122 - 102	Guy A	Bottom Tension	28	16503.67		
			Top Tension	28	16705.35		
			Top Cable Vert	28	9929.60		
			Top Cable Norm	28	13433.81		
			Top Cable Tan	28	67.58		
			Bot Cable Vert	28	-9373.81		
			Bot Cable Norm	28	13582.17		
			Bot Cable Tan	28	165.49		
		Guy B	Bottom Tension	33	15847.58		
			Top Tension	33	16024.94		
			Top Cable Vert	33	9126.44		
			Top Cable Norm	33	13172.16		
			Top Cable Tan	33	30.77		
			Bot Cable Vert	33	-8622.79		
			Bot Cable Norm	33	13296.05		
			Bot Cable Tan	33	90.49		
		Guy C	Bottom Tension	21	16808.55		
			Top Tension	21	16998.97		
			Top Cable Vert	21	9883.11		
			Top Cable Norm	21	13830.72		
			Top Cable Tan	21	17.30		
			Bot Cable Vert	21	-9355.70		
			Bot Cable Norm	21	13963.96		
			Bot Cable Tan	21	77.59		
		Top Guy Pull-Off	Max Tension	22	22864.97	0.00	0.00
			Max. Compression	19	-5452.65	0.00	0.00
			Max. Mx	22	22864.97	-26.45	0.00
			Max. My	27	573.54	0.00	0.00
			Max. Vy	22	26.45	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
			Max Tension	32	10436.37	0.00	0.00
		Bottom Guy Pull-Off	Max. Compression	2	-2590.99	0.00	0.00
			Max. Mx	22	10388.24	-26.45	0.00
			Max. My	27	1075.91	0.00	-0.00
			Max. Vy	22	26.45	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
			Max Tension	23	20698.98	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
		Torque Arm Top	Max. Mx	28	19226.25	-89.27	0.00
			Max. My	27	6122.47	0.00	-0.12
			Max. Vy	28	47.72	0.00	0.00
			Max. Vx	27	0.06	0.00	0.00
			Max Tension	6	4736.10	0.00	0.00
			Max. Compression	20	-20556.09	0.00	0.00
			Max. Mx	28	-10198.80	-89.29	0.00
		Torque Arm Bottom	Max. My	27	-19569.52	0.00	0.09
			Max. Vy	28	47.73	0.00	0.00
			Max. Vx	27	0.05	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-69769.34	-453.25	199.70
			Max. Mx	23	-69738.55	662.83	-77.04
			Max. My	17	-42721.58	-131.66	-815.27
		Leg	Max. Vy	7	-717.81	-417.56	-94.74
			Max. Vx	17	833.85	-9.45	429.76
			Max Tension	20	4557.36	0.00	0.00
			Max. Compression	19	-4497.30	0.00	0.00
			Max. Mx	28	-322.67	25.75	0.00
			Max. My	29	1635.56	0.00	-0.14
			Max. Vy	28	-18.21	0.00	0.00
		Diagonal	Max. Vx	29	-0.10	0.00	0.00

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	AT&T	kevin_barker

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T10	102 - 82	Secondary Horizontal	Max Tension	23	1208.44	0.00	0.00
			Max. Compression	23	-1208.44	0.00	0.00
		Leg	Max. Mx	22	775.80	-9.77	0.00
			Max. My	26	1127.99	0.00	0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-74230.01	-583.79	560.81
			Max. Mx	19	-60340.66	816.48	122.73
			Max. My	29	-69300.55	-250.26	-789.88
			Max. Vy	19	-612.28	816.48	122.73
			Max. Vx	29	632.84	-250.26	-789.88
		Diagonal	Max Tension	25	2029.07	0.00	0.00
			Max. Compression	26	-2848.93	0.00	0.00
			Max. Mx	29	-575.55	8.23	0.00
			Max. My	29	-2568.35	0.00	-0.06
			Max. Vy	29	-5.82	0.00	0.00
			Max. Vx	29	0.04	0.00	0.00
		Secondary Horizontal	Max Tension	23	1285.70	0.00	0.00
			Max. Compression	23	-1285.70	0.00	0.00
		Leg	Max. Mx	22	608.59	-9.77	0.00
			Max. My	29	1200.32	0.00	-0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-72915.73	386.00	-474.07
			Max. Mx	19	-68988.90	-1606.63	301.58
			Max. My	29	-63243.73	-463.45	-1604.04
			Max. Vy	19	1051.93	494.96	-185.53
			Max. Vx	29	-1072.48	-463.48	-1604.04
T11	82 - 62	Diagonal	Max Tension	27	4468.20	0.00	0.00
			Max. Compression	27	-4023.95	0.00	0.00
			Max. Mx	29	-3135.59	8.24	0.00
			Max. My	30	-2706.82	0.00	-0.07
			Max. Vy	29	-5.83	0.00	0.00
			Max. Vx	30	0.05	0.00	0.00
		Secondary Horizontal	Max Tension	23	1262.94	0.00	0.00
			Max. Compression	23	-1262.94	0.00	0.00
		Guy A	Max. Mx	18	689.82	-9.77	0.00
			Max. My	29	1182.47	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
			Bottom Tension	28	12790.83		
			Top Tension	28	12898.61		
			Top Cable Vert	28	5395.22		
			Top Cable Norm	28	11715.95		
			Top Cable Tan	28	49.18		
			Bot Cable Vert	28	-5021.99		
		Guy B	Bot Cable Norm	28	11763.15		
			Bot Cable Tan	28	115.49		
			Bottom Tension	32	12259.72		
			Top Tension	32	12346.67		
			Top Cable Vert	32	4530.57		
			Top Cable Norm	32	11485.39		
			Top Cable Tan	32	1.30		
			Bot Cable Vert	32	-4227.33		
			Bot Cable Norm	32	11507.84		
			Bot Cable Tan	32	1.30		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T12	62 - 42	Guy C	Bottom Tension	21	12664.20		
			Top Tension	21	12762.25		
			Top Cable Vert	21	5027.63		
			Top Cable Norm	21	11730.21		
			Top Cable Tan	21	9.63		
			Bot Cable Vert	21	-4690.44		
			Bot Cable Norm	21	11763.47		
			Bot Cable Tan	21	50.96		
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-85509.66	-70.70	5.62
			Max. Mx	19	-70815.49	1180.72	175.09
			Max. My	29	-73711.79	-370.86	-1142.50
			Max. Vy	19	-812.95	442.83	-201.93
			Max. Vx	29	-828.71	-370.86	-1142.50
		Diagonal	Max Tension	27	3158.74	0.00	0.00
			Max. Compression	27	-2882.56	0.00	0.00
			Max. Mx	29	676.09	8.27	0.00
			Max. My	30	1225.26	0.00	-0.09
			Max. Vy	29	-5.85	0.00	0.00
			Max. Vx	30	0.06	0.00	0.00
		Secondary Horizontal	Max Tension	23	1481.07	0.00	0.00
			Max. Compression	23	-1481.07	0.00	0.00
			Max. Mx	24	1326.57	-9.77	0.00
			Max. My	29	1367.62	0.00	-0.00
			Max. Vy	24	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
T13	42 - 22	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-84859.69	-144.61	84.44
			Max. Mx	19	-71750.43	668.58	125.56
			Max. My	29	-76990.36	-188.98	-662.38
			Max. Vy	20	-534.32	-641.56	209.00
			Max. Vx	28	-561.64	-135.04	-652.54
		Diagonal	Max Tension	29	1543.76	0.00	0.00
			Max. Compression	29	-2230.21	0.00	0.00
			Max. Mx	25	946.01	8.30	0.00
			Max. My	30	-216.69	0.00	-0.11
			Max. Vy	25	-5.87	0.00	0.00
			Max. Vx	30	0.08	0.00	0.00
		Secondary Horizontal	Max Tension	21	1469.81	0.00	0.00
			Max. Compression	21	-1469.81	0.00	0.00
			Max. Mx	18	697.21	-9.77	0.00
			Max. My	29	1358.88	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
T14	22 - 2	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-75544.93	-189.66	101.00
			Max. Mx	19	-67415.98	511.08	153.61
			Max. My	29	-71432.28	-98.49	-535.54
			Max. Vy	20	-435.79	-501.88	207.02
			Max. Vx	28	-474.12	-69.42	-533.24
		Diagonal	Max Tension	20	2814.41	0.00	0.00
			Max. Compression	20	-3558.58	0.00	0.00
			Max. Mx	25	2063.29	8.31	0.00
			Max. My	24	-212.42	0.00	0.12
			Max. Vy	25	-5.88	0.00	0.00
			Max. Vx	24	-0.08	0.00	0.00
		Secondary Horizontal	Max Tension	21	1308.48	0.00	0.00
			Max. Compression	21	-1308.48	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	18	706.59	-9.77	0.00
			Max. My	29	1238.47	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
		Base Beam	Max Tension	24	3376.60	-127852.09	-41.83
			Max. Compression	22	-2644.46	369.92	1.78
			Max. Mx	24	-55556.34	-127921.83	-1889.36
			Max. My	23	-54645.51	-125848.75	2837.72
			Max. Vy	24	-55556.34	-127921.83	-1889.36
			Max. Vx	23	1226.60	-125848.75	2837.72

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 213 ft Elev -17.5 ft Azimuth 240 deg	Max. Vert	13	-1776.16	-1213.86	699.93
	Max. H _x	13	-1776.16	-1213.86	699.93
	Max. H _z	21	-60287.14	-64073.99	37771.79
	Min. Vert	21	-60287.14	-64073.99	37771.79
	Min. H _x	22	-60228.06	-64187.20	37118.65
	Min. H _z	13	-1776.16	-1213.86	699.93
Guy B @ 205 ft Elev -7.5 ft Azimuth 120 deg	Max. Vert	7	-1710.53	1179.45	680.68
	Max. H _x	32	-58087.75	63011.25	36391.72
	Max. H _z	33	-57742.74	62461.46	36754.77
	Min. Vert	32	-58087.75	63011.25	36391.72
	Min. H _x	7	-1710.53	1179.45	680.68
	Min. H _z	7	-1710.53	1179.45	680.68
Guy A @ 219 ft Elev -26.5 ft Azimuth 0 deg	Max. Vert	2	-1898.78	-0.53	-1476.30
	Max. H _x	31	-33024.96	2908.05	-39039.63
	Max. H _z	2	-1898.78	-0.53	-1476.30
	Min. Vert	27	-60040.12	39.52	-72579.11
	Min. H _x	23	-32909.69	-2928.27	-38995.16
	Min. H _z	27	-60040.12	39.52	-72579.11
Mast	Max. Vert	24	166687.91	-2704.29	-1420.52
	Max. H _x	31	162748.03	3196.38	253.67
	Max. H _z	19	165568.31	-3.51	3174.82
	Max. M _x	1	0.00	-11.62	138.96
	Max. M _z	1	0.00	-11.62	138.96
	Max. Torsion	5	2374.07	-2524.16	1517.96
	Min. Vert	1	85737.78	-11.62	138.96
	Min. H _x	23	164026.09	-3162.16	263.40
	Min. H _z	27	157323.07	-18.92	-3221.99
	Min. M _x	1	0.00	-11.62	138.96
	Min. M _z	1	0.00	-11.62	138.96
	Min. Torsion	10	-3001.16	6.31	-2783.27

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Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
Dead Only	85737.78	11.62	-138.96	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	127556.23	-5.01	-2794.43	0.00	0.00	-2284.77
Dead+Wind 30 deg - No Ice+Guy	122832.11	1437.12	-2361.82	0.00	0.00	-2271.53
Dead+Wind 45 deg - No Ice+Guy	116215.89	2053.98	-2007.53	0.00	0.00	-2118.87
Dead+Wind 60 deg - No Ice+Guy	111152.04	2524.16	-1517.96	0.00	0.00	-2374.07
Dead+Wind 90 deg - No Ice+Guy	122599.50	2764.32	-209.37	0.00	0.00	-1316.38
Dead+Wind 120 deg - No Ice+Guy	128676.52	2376.46	1237.76	0.00	0.00	184.14
Dead+Wind 135 deg - No Ice+Guy	125613.90	1876.84	1814.20	0.00	0.00	912.23
Dead+Wind 150 deg - No Ice+Guy	121448.51	1326.81	2319.21	0.00	0.00	1735.03
Dead+Wind 180 deg - No Ice+Guy	110219.17	-6.31	2783.27	0.00	0.00	3001.16
Dead+Wind 210 deg - No Ice+Guy	122305.36	-1294.35	2276.88	0.00	0.00	2634.15
Dead+Wind 225 deg - No Ice+Guy	126219.84	-1846.81	1774.38	0.00	0.00	2531.14
Dead+Wind 240 deg - No Ice+Guy	128500.34	-2362.65	1225.24	0.00	0.00	2136.65
Dead+Wind 270 deg - No Ice+Guy	120461.07	-2820.38	-191.57	0.00	0.00	1067.87
Dead+Wind 300 deg - No Ice+Guy	109948.29	-2567.29	-1541.06	0.00	0.00	-529.37
Dead+Wind 315 deg - No Ice+Guy	113979.59	-2092.82	-2082.65	0.00	0.00	-1270.25
Dead+Wind 330 deg - No Ice+Guy	119927.69	-1472.42	-2466.44	0.00	0.00	-1772.55
Dead+Ice+Temp+Guy	122842.86	26.47	-120.33	0.00	0.00	1.05
Dead+Wind 0 deg+Ice+Temp+Guy	165568.31	3.51	-3174.82	0.00	0.00	-2122.00
Dead+Wind 30 deg+Ice+Temp+Guy	164386.56	1705.16	-2652.43	0.00	0.00	-1984.01
Dead+Wind 45 deg+Ice+Temp+Guy	160826.86	2410.81	-2234.78	0.00	0.00	-1981.30
Dead+Wind 60 deg+Ice+Temp+Guy	158246.57	2925.57	-1723.29	0.00	0.00	-2341.38
Dead+Wind 90 deg+Ice+Temp+Guy	164026.09	3162.16	-263.40	0.00	0.00	-1829.62
Dead+Wind 120 deg+Ice+Temp+Guy	166687.91	2704.29	1420.52	0.00	0.00	-76.66
Dead+Wind 135 deg+Ice+Temp+Guy	165508.43	2144.47	2117.24	0.00	0.00	854.56
Dead+Wind 150 deg+Ice+Temp+Guy	163153.28	1472.92	2684.18	0.00	0.00	1762.54
Dead+Wind 180 deg+Ice+Temp+Guy	157323.07	18.92	3221.99	0.00	0.00	2562.99
Dead+Wind 210 deg+Ice+Temp+Guy	163982.88	-1401.69	2635.62	0.00	0.00	2293.96
Dead+Wind 225 deg+Ice+Temp+Guy	165951.67	-2085.28	2074.07	0.00	0.00	2335.34
Dead+Wind 240 deg+Ice+Temp+Guy	166451.30	-2670.31	1405.56	0.00	0.00	2221.82

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Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
Dead+Wind 270 deg+Ice+Temp+Guy	162748.03	-3196.38	-253.67	0.00	0.00	1616.63
Dead+Wind 300 deg+Ice+Temp+Guy	157639.95	-2949.34	-1757.89	0.00	0.00	-155.97
Dead+Wind 315 deg+Ice+Temp+Guy	159425.64	-2428.89	-2331.47	0.00	0.00	-1163.71
Dead+Wind 330 deg+Ice+Temp+Guy	162346.40	-1721.50	-2770.79	0.00	0.00	-1799.32
Dead+Wind 0 deg - Service+Guy	88296.91	10.38	-1260.20	0.00	0.00	-746.50
Dead+Wind 30 deg - Service+Guy	88072.14	549.38	-1071.11	0.00	0.00	-725.37
Dead+Wind 45 deg - Service+Guy	87974.41	772.80	-892.46	0.00	0.00	-648.49
Dead+Wind 60 deg - Service+Guy	87890.38	944.63	-666.68	0.00	0.00	-648.14
Dead+Wind 90 deg - Service+Guy	87749.39	1119.75	-122.92	0.00	0.00	-411.08
Dead+Wind 120 deg - Service+Guy	87825.42	1023.24	446.07	0.00	0.00	84.96
Dead+Wind 135 deg - Service+Guy	87594.07	814.06	649.73	0.00	0.00	322.16
Dead+Wind 150 deg - Service+Guy	87473.16	576.56	817.84	0.00	0.00	581.63
Dead+Wind 180 deg - Service+Guy	87507.02	7.30	943.33	0.00	0.00	809.99
Dead+Wind 210 deg - Service+Guy	87693.31	-555.98	810.54	0.00	0.00	819.23
Dead+Wind 225 deg - Service+Guy	87872.71	-791.06	642.76	0.00	0.00	802.49
Dead+Wind 240 deg - Service+Guy	88117.15	-997.67	444.00	0.00	0.00	672.32
Dead+Wind 270 deg - Service+Guy	87990.52	-1104.27	-120.47	0.00	0.00	307.94
Dead+Wind 300 deg - Service+Guy	88098.39	-936.03	-671.85	0.00	0.00	-156.23
Dead+Wind 315 deg - Service+Guy	88096.46	-762.47	-903.21	0.00	0.00	-378.76
Dead+Wind 330 deg - Service+Guy	88074.05	-536.11	-1085.23	0.00	0.00	-558.04

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-39886.64	0.00	5.95	39886.67	15.14	0.041%
2	634.43	-40151.58	-56304.95	-632.61	40149.00	56210.22	0.137%
3	28325.60	-39861.17	-48832.59	-28333.51	39859.00	48743.27	0.130%
4	39638.39	-39654.67	-39648.55	-39656.12	39653.11	39566.21	0.123%
5	48299.61	-39577.00	-27744.00	-48290.60	39577.04	27778.40	0.052%
6	56102.27	-39918.12	202.19	-56030.08	39916.01	-146.14	0.133%
7	48941.09	-40251.08	27789.00	-48854.56	40248.32	-27736.72	0.146%
8	39227.43	-40163.22	38195.29	-39138.34	40160.56	-38147.26	0.149%
9	27895.30	-39943.58	46797.06	-27809.27	39941.36	-46758.00	0.140%
10	207.23	-39621.70	54007.74	-169.91	39621.61	-54012.00	0.056%
11	-27832.97	-39912.11	48017.94	27751.13	39909.91	-47978.21	0.133%
12	-39157.58	-40118.62	39473.74	39073.26	40116.04	-39425.97	0.141%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
13	-48842.01	-40196.28	28464.37	48758.02	40193.57	-28411.43	0.143%
14	-54468.05	-39855.17	436.90	54402.47	39853.27	-383.94	0.125%
15	-45791.75	-39522.21	-26535.39	45818.57	39522.68	26545.31	0.043%
16	-37267.05	-39610.07	-37962.77	37285.59	39608.84	37891.22	0.111%
17	-26216.74	-39829.70	-46978.21	26227.60	39827.82	46897.04	0.122%
18	0.00	-66596.41	0.00	-2.36	66596.38	-2.19	0.005%
19	609.68	-67125.98	-63907.60	-607.75	67123.48	63807.98	0.108%
20	32367.46	-66545.49	-55689.48	-32383.08	66543.40	55591.63	0.107%
21	45460.57	-66132.82	-45349.85	-45487.82	66131.41	45259.32	0.103%
22	55506.63	-65977.41	-31914.69	-55456.43	65976.20	31879.60	0.067%
23	64194.84	-66659.08	79.94	-64119.63	66657.04	-12.23	0.109%
24	55603.73	-67324.59	31579.41	-55512.68	67321.86	-31523.78	0.115%
25	45146.54	-67148.82	44170.61	-45052.33	67146.24	-44123.91	0.114%
26	31942.31	-66710.00	54107.82	-31843.98	66707.79	-54071.29	0.114%
27	149.93	-66066.83	62606.24	-149.67	66065.58	-62543.89	0.069%
28	-31900.55	-66647.32	55062.89	31806.96	66645.17	-55025.21	0.110%
29	-45020.50	-67059.99	45206.62	44927.73	67057.42	-45158.08	0.113%
30	-55441.57	-67215.41	32189.78	55353.43	67212.77	-32133.62	0.113%
31	-62894.79	-66533.73	334.52	62828.29	66531.99	-272.70	0.099%
32	-53529.46	-65868.22	-30946.30	53514.99	65867.78	30926.78	0.027%
33	-43581.87	-66043.99	-44022.73	43610.49	66042.81	43938.50	0.098%
34	-30648.96	-66482.81	-54249.53	30666.63	66481.08	54162.96	0.097%
35	219.53	-39978.32	-19482.68	-218.78	39978.03	19457.88	0.056%
36	9801.25	-39877.83	-16897.09	-9804.44	39877.61	16872.45	0.056%
37	13715.71	-39806.37	-13719.22	-13719.47	39806.23	13696.66	0.052%
38	16712.67	-39779.50	-9600.00	-16694.70	39779.34	9588.92	0.048%
39	19412.55	-39897.53	69.96	-19395.62	39897.38	-53.47	0.053%
40	16934.63	-40012.74	9615.57	-16915.24	40012.48	-9603.28	0.052%
41	13573.51	-39982.34	13216.36	-13552.96	39982.11	-13206.06	0.052%
42	9652.35	-39906.34	16192.76	-9630.48	39906.18	-16184.79	0.053%
43	71.71	-39794.97	18687.80	-72.81	39794.82	-18667.49	0.046%
44	-9630.79	-39895.45	16615.20	9607.75	39895.25	-16605.75	0.056%
45	-13549.34	-39966.91	13658.73	13528.95	39966.67	-13647.75	0.052%
46	-16900.35	-39993.78	9849.26	16880.83	39993.52	-9836.14	0.053%
47	-18847.07	-39875.75	151.18	18832.32	39875.63	-135.90	0.048%
48	-15844.90	-39760.54	-9181.79	15828.76	39760.40	9173.27	0.042%
49	-12895.17	-39790.94	-13135.91	12899.93	39790.82	13114.27	0.051%
50	-9071.54	-39866.94	-16255.44	9075.69	39866.78	16234.65	0.048%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	20	0.00000001	0.00004717
2	Yes	96	0.00019270	0.00008940
3	Yes	91	0.00019359	0.00007855
4	Yes	86	0.00019514	0.00005748
5	Yes	29	0.00019375	0.00018326
6	Yes	98	0.00019392	0.00007303
7	Yes	102	0.00019120	0.00008792
8	Yes	99	0.00019973	0.00008633
9	Yes	96	0.00019952	0.00007642
10	Yes	32	0.00019483	0.00019175
11	Yes	94	0.00019176	0.00007835
12	Yes	97	0.00019338	0.00008735
13	Yes	99	0.00019361	0.00009076

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14	Yes	94	0.00019581	0.00007053
15	Yes	29	0.00018065	0.00012836
16	Yes	84	0.00019237	0.00004959
17	Yes	90	0.00019436	0.00007102
18	Yes	12	0.00020000	0.00017910
19	Yes	98	0.00019520	0.00006806
20	Yes	93	0.00019772	0.00005930
21	Yes	87	0.00019149	0.00003965
22	Yes	24	0.00019738	0.00019353
23	Yes	100	0.00019550	0.00005085
24	Yes	104	0.00019280	0.00006457
25	Yes	102	0.00019237	0.00006098
26	Yes	98	0.00019903	0.00005363
27	Yes	29	0.00019445	0.00015493
28	Yes	96	0.00019438	0.00005805
29	Yes	99	0.00019531	0.00006608
30	Yes	101	0.00019618	0.00006814
31	Yes	97	0.00019240	0.00004940
32	Yes	22	0.00011507	0.00017464
33	Yes	84	0.00019722	0.00003600
34	Yes	93	0.00019119	0.00005122
35	Yes	41	0.00019302	0.00004525
36	Yes	37	0.00019303	0.00004048
37	Yes	32	0.00000001	0.00003765
38	Yes	20	0.00000001	0.00006845
39	Yes	38	0.00018831	0.00004799
40	Yes	44	0.00018279	0.00005700
41	Yes	41	0.00018694	0.00005716
42	Yes	37	0.00000001	0.00005214
43	Yes	20	0.00000001	0.00007587
44	Yes	37	0.00018891	0.00005194
45	Yes	41	0.00017912	0.00005360
46	Yes	43	0.00018155	0.00005504
47	Yes	37	0.00000001	0.00004030
48	Yes	19	0.00000001	0.00007031
49	Yes	30	0.00000001	0.00004120
50	Yes	36	0.00000001	0.00003624

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	282 - 262	2.474	43	0.1174	0.0996
T2	262 - 242	2.859	43	0.1169	0.0899
T3	242 - 222	3.194	43	0.0902	0.0827
T4	222 - 202	3.375	43	0.0501	0.0885
T5	202 - 182	3.402	43	0.0360	0.0857
T6	182 - 162	3.460	44	0.0484	0.0839
T7	162 - 142	3.411	44	0.0537	0.0830
T8	142 - 122	3.231	46	0.0832	0.0652
T9	122 - 102	3.128	35	0.0566	0.0611
T10	102 - 82	3.126	35	0.0681	0.0719
T11	82 - 62	2.926	35	0.0934	0.0616
T12	62 - 42	2.527	35	0.1176	0.0494
T13	42 - 22	1.917	35	0.1766	0.0350
T14	22 - 2	1.049	35	0.2312	0.0183

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Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
290.50	Flash Beacon Lighting	43	2.474	0.1174	0.0996	592071
289.00	FM Antenna	43	2.474	0.1174	0.0996	592071
287.00	Flash Beacon Lighting	43	2.474	0.1174	0.0996	592071
284.00	2.5" x 10' Omni	43	2.474	0.1174	0.0996	592071
281.00	6' Stand-off	43	2.493	0.1176	0.0991	592071
280.00	MF-950B	43	2.513	0.1179	0.0986	592071
270.00	Guy	43	2.707	0.1192	0.0937	246695
260.00	ASP-711	43	2.896	0.1155	0.0890	101014
226.00	(3) DB844H90E-XY w/Mount Pipe	43	3.354	0.0569	0.0879	23166
212.50	8' Dish w/ Radome	43	3.397	0.0392	0.0879	61845
204.50	8' Dish w/ Radome	43	3.401	0.0358	0.0863	38464
196.00	Guy	43	3.410	0.0419	0.0846	47495
181.50	RR90-17-02DP w/Mount Pipe	44	3.461	0.0480	0.0839	34855
180.50	6' Stand-off	44	3.463	0.0470	0.0840	32643
164.00	(2) 7770 Panel Antenna	44	3.427	0.0483	0.0839	16209
153.00	6.5' Dish w/ Radome	46	3.336	0.0742	0.0757	33360
132.00	14' Dipole	46	3.144	0.0710	0.0603	41956
128.00	Guy	35	3.125	0.0643	0.0597	42495
125.00	3" x 12.5' Omni	35	3.125	0.0599	0.0601	43213
124.50	1' Yagi antenna	35	3.126	0.0592	0.0602	43578
121.00	(3) DB844H105ESX w/Mount Pipe	35	3.129	0.0559	0.0616	53708
113.00	4' Dish w/ Radome	35	3.139	0.0564	0.0667	56879
104.50	9' Dish w/ Radome	35	3.134	0.0649	0.0714	21365
70.00	Guy	35	2.710	0.1039	0.0542	24953

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	282 - 262	12.411	28	0.4456	0.4341
T2	262 - 242	13.807	28	0.4456	0.4012
T3	242 - 222	15.428	7	0.3604	0.3643
T4	222 - 202	16.662	7	0.2248	0.3256
T5	202 - 182	17.355	7	0.1649	0.3192
T6	182 - 162	17.929	7	0.1336	0.3119
T7	162 - 142	18.019	7	0.1644	0.3076
T8	142 - 122	17.381	24	0.2504	0.2725
T9	122 - 102	16.649	24	0.2026	0.2635
T10	102 - 82	15.810	24	0.3218	0.2900
T11	82 - 62	14.212	24	0.5011	0.2430
T12	62 - 42	11.898	24	0.6395	0.1911
T13	42 - 22	8.783	24	0.8555	0.1333
T14	22 - 2	4.736	24	1.0580	0.0691

Critical Deflections and Radius of Curvature - Design Wind

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<i>Elevation</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection</i>	<i>Tilt</i>	<i>Twist</i>	<i>Radius of Curvature</i>
<i>ft</i>			<i>in</i>	<i>°</i>	<i>°</i>	<i>ft</i>
290.50	Flash Beacon Lighting	28	12.411	0.4456	0.4341	173123
289.00	FM Antenna	28	12.411	0.4456	0.4341	173123
287.00	Flash Beacon Lighting	28	12.411	0.4456	0.4341	173123
284.00	2.5" x 10' Omni	28	12.411	0.4456	0.4341	173123
281.00	6' Stand-off	28	12.481	0.4465	0.4325	173123
280.00	MF-950B	28	12.552	0.4474	0.4309	173123
270.00	Guy	28	13.254	0.4525	0.4145	72135
260.00	ASP-711	13	13.958	0.4414	0.3977	30870
226.00	(3) DB844H90E-XY w/Mount Pipe	7	16.467	0.2473	0.3316	7093
212.50	8' Dish w/ Radome	7	17.028	0.1857	0.3228	15357
204.50	8' Dish w/ Radome	7	17.279	0.1678	0.3200	13203
196.00	Guy	7	17.542	0.1614	0.3172	18014
181.50	RR90-17-02DP w/Mount Pipe	7	17.940	0.1312	0.3117	9444
180.50	6' Stand-off	7	17.960	0.1264	0.3112	8864
164.00	(2) 7770 Panel Antenna	7	18.049	0.1483	0.3087	4557
153.00	6.5' Dish w/ Radome	24	17.775	0.2258	0.2946	8019
132.00	14' Dipole	24	17.007	0.2207	0.2606	12967
128.00	Guy	24	16.862	0.2099	0.2597	12868
125.00	3" x 12.5' Omni	24	16.755	0.2040	0.2608	12887
124.50	1' Yagi antenna	24	16.737	0.2034	0.2611	12963
121.00	(3) DB844H105ESX w/Mount Pipe	24	16.614	0.2034	0.2648	15659
113.00	4' Dish w/ Radome	24	16.327	0.2329	0.2787	11544
104.50	9' Dish w/ Radome	24	15.948	0.2991	0.2898	5584
70.00	Guy	24	12.909	0.5829	0.2111	6612

Guy Design Data

<i>Section No.</i>	<i>Elevation</i>	<i>Size</i>	<i>Initial Tension</i>	<i>Breaking Load</i>	<i>Actual T</i>	<i>Allowable T_a</i>	<i>Required S.F.</i>	<i>Actual S.F.</i>
	<i>ft</i>		<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb</i>		
T1	270.00 (A)	3/4 EHS	5830.00	58299.91	18009.80	29150.00	2.000	3.237 ✓
	(678)							
	270.00 (B)	3/4 EHS	5830.00	58299.91	17953.50	29150.00	2.000	3.247 ✓
T5	(677)							
	270.00 (C)	3/4 EHS	5830.00	58299.91	18127.70	29150.00	2.000	3.216 ✓
	(676)							
T5	196.00 (A)	5/8 EHS	3799.04	42399.99	16660.30	21200.00	2.000	2.545 ✓
	(697)							
	196.00 (A)	5/8 EHS	3799.04	42399.99	17229.90	21200.00	2.000	2.461 ✓
T5	(698)							
	196.00 (B)	5/8 EHS	4240.00	42399.99	16801.10	21200.00	2.000	2.524 ✓
	(691)							
T5	196.00 (B)	5/8 EHS	4240.00	42399.99	17000.20	21200.00	2.000	2.494 ✓
	(692)							
	196.00 (C)	5/8 EHS	4240.00	42399.99	17856.50	21200.00	2.000	2.374 ✓
T5	(679)							
	196.00 (C)	5/8 EHS	4240.00	42399.99	16931.60	21200.00	2.000	2.504 ✓
	(680)							
T8	128.00 (A)	9/16 EHS	3500.00	35000.04	15972.10	17500.00	2.000	2.191 ✓
	(721)							
	128.00 (A)	9/16 EHS	3500.00	35000.04	16705.30	17500.00	2.000	2.095 ✓
T8	(722)							
	128.00 (B)	9/16 EHS	3500.00	35000.04	16024.90	17500.00	2.000	2.184 ✓
	(715)							
T8	128.00 (B)	9/16 EHS	3500.00	35000.04	15976.20	17500.00	2.000	2.191 ✓
	(716)							

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T _a lb	Required S.F.	Actual S.F.
T11	128.00 (C) (703)	9/16 EHS	3500.00	35000.04	16999.00	17500.00	2.000	2.059 ✓
	128.00 (C) (704)	9/16 EHS	3500.00	35000.04	16323.10	17500.00	2.000	2.144 ✓
	70.00 (A) (729)	1/2 EHS	3497.00	26900.04	12898.60	13450.00	2.000	2.085 ✓
	70.00 (B) (728)	1/2 EHS	2690.00	26900.04	12346.70	13450.00	2.000	2.179 ✓
	70.00 (C) (727)	1/2 EHS	2690.00	26900.04	12762.20	13450.00	2.000	2.108 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	Mast Stability Index	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	282 - 262	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-14534.20	70773.60	0.205 ✓
T2	262 - 242	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-27451.60	70773.60	0.388 ✓
T3	242 - 222	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-31101.70	70773.60	0.439 ✓
T4	222 - 202	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-26825.60	70773.60	0.379 ✓
T5	202 - 182	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-42931.10	70773.60	0.607 ✓
T6	182 - 162	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-58092.40	70773.60	0.821 ✓
T7	162 - 142	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-55549.30	70773.60	0.785 ✓
T8	142 - 122	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-49864.10	70773.60	0.705 ✓
T9	122 - 102	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-69769.30	70773.60	0.986 ✓
T10	102 - 82	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-74230.00	70773.60	1.049 ✓
T11	82 - 62	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-72915.70	70773.60	1.030 ✓
T12	62 - 42	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-85509.70	70773.60	1.208 ✓
T13	42 - 22	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-84859.70	70773.60	1.199 ✓
T14	22 - 2	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-75544.90	70773.60	1.067 ✓

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Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	282 - 262	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-4081.48	4061.32	1.005 ✓
T2	262 - 242	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2330.31	4061.32	0.574 ✓
T3	242 - 222	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2095.67	4061.32	0.516 ✓
T4	222 - 202	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-4215.88	37807.40	0.112 ✓
T5	202 - 182	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-9308.67	37807.40	0.246 ✓
T6	182 - 162	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2029.00	4061.32	0.500 ✓
T7	162 - 142	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-3935.81	4061.32	0.969 ✓
T8	142 - 122	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-11716.30	37807.40	0.310 ✓
T9	122 - 102	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-4497.30	37807.40	0.119 ✓
T10	102 - 82	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2848.93	4061.32	0.701 ✓
T11	82 - 62	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-4023.95	4061.32	0.991 ✓
T12	62 - 42	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2882.56	4061.32	0.710 ✓
T13	42 - 22	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2230.21	4061.32	0.549 ✓
T14	22 - 2	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-3558.58	4061.32	0.876 ✓

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	282 - 262	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-251.74	9688.31	0.026 ✓
T2	262 - 242	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-475.48	9688.31	0.049 ✓
T3	242 - 222	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-538.70	9688.31	0.056 ✓
T4	222 - 202	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-464.63	9688.31	0.048 ✓
T5	202 - 182	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-743.59	9688.31	0.077 ✓
T6	182 - 162	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1006.19	9688.31	0.104 ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T7	162 - 142	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-962.14	9688.31	0.099 ✓
T8	142 - 122	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-863.67	9688.31	0.089 ✓
T9	122 - 102	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1208.44	9688.31	0.125 ✓
T10	102 - 82	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1285.70	9688.31	0.133 ✓
T11	82 - 62	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1262.94	9688.31	0.130 ✓
T12	62 - 42	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1481.07	9688.31	0.153 ✓
T13	42 - 22	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1469.81	9688.31	0.152 ✓
T14	22 - 2	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1308.48	9688.31	0.135 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	282 - 262	L3x3x1/4	4.00	3.83	77.7 K=1.00	15.609	1.4400	-2205.08	22476.90	0.098 ✓

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T5	202 - 182	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-5391.76	50292.20	0.107 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-5452.65	50292.20	0.108 ✓

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T5	202 - 182	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-3072.50	50292.20	0.061 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-2590.99	50292.20	0.052 ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
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Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T5	202 - 182 (686)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-22986.70	32355.50	0.710
T5	202 - 182 (687)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-22158.70	32355.50	0.685
T5	202 - 182 (695)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21591.20	32355.50	0.667
T5	202 - 182 (696)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21935.40	32355.50	0.678
T5	202 - 182 (701)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21981.70	32355.50	0.679
T5	202 - 182 (702)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21604.60	32355.50	0.668
T8	142 - 122 (710)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20556.10	32355.50	0.635
T8	142 - 122 (711)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20526.70	32355.50	0.634
T8	142 - 122 (719)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19527.40	32355.50	0.604
T8	142 - 122 (720)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20181.40	32355.50	0.624
T8	142 - 122 (725)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19119.50	32355.50	0.591
T8	142 - 122 (726)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19677.50	32355.50	0.608

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	282 - 262	2	20.00	2.00	48.0	27.000	3.1416	7392.89	84823.00	0.087
T2	262 - 242	2	20.00	2.00	48.0	27.000	3.1416	12636.10	84823.00	0.149
T3	242 - 222	2	20.00	2.00	48.0	27.000	3.1416	19075.70	84823.00	0.225
T4	222 - 202	2	20.00	2.00	48.0	27.000	3.1416	14229.50	84823.00	0.168

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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182	2	20.00	2.00	48.0	27.000	3.1416	7717.95	84823.00	0.091 ✓
T6	182 - 162	2	20.00	2.00	48.0	27.000	3.1416	12872.90	84823.00	0.152 ✓
T7	162 - 142	2	20.00	2.00	48.0	27.000	3.1416	9851.38	84823.00	0.116 ✓
T8	142 - 122	2	20.00	2.00	48.0	27.000	3.1416	4572.07	84823.00	0.054 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	282 - 262	7/8	5.66	5.42	297.4	21.600	0.6013	4640.86	12988.50	0.357 ✓
T2	262 - 242	7/8	5.66	5.42	297.4	21.600	0.6013	2644.25	12988.50	0.204 ✓
T3	242 - 222	7/8	5.66	5.42	297.4	21.600	0.6013	1702.26	12988.50	0.131 ✓
T4	222 - 202	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4371.28	45165.60	0.097 ✓
T5	202 - 182	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	5114.84	45165.60	0.113 ✓
T6	182 - 162	7/8	5.66	5.42	297.4	21.600	0.6013	2043.92	12988.50	0.157 ✓
T7	162 - 142	7/8	5.66	5.42	297.4	21.600	0.6013	3842.70	12988.50	0.296 ✓
T8	142 - 122	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4936.62	45165.60	0.109 ✓
T9	122 - 102	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4557.36	45165.60	0.101 ✓
T10	102 - 82	7/8	5.66	5.42	297.4	21.600	0.6013	2029.07	12988.50	0.156 ✓
T11	82 - 62	7/8	5.66	5.42	297.4	21.600	0.6013	4468.20	12988.50	0.344 ✓
T12	62 - 42	7/8	5.66	5.42	297.4	21.600	0.6013	3158.74	12988.50	0.243 ✓
T13	42 - 22	7/8	5.66	5.42	297.4	21.600	0.6013	1543.76	12988.50	0.119 ✓
T14	22 - 2	7/8	5.66	5.42	297.4	21.600	0.6013	2814.41	12988.50	0.217 ✓

Secondary Horizontal Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	282 - 262	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	296.30	17474.40	0.017 ✓
T2	262 - 242	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	475.48	17474.40	0.027 ✓
T3	242 - 222	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	538.70	17474.40	0.031 ✓
T4	222 - 202	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	464.63	17474.40	0.027 ✓
T5	202 - 182	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	743.59	17474.40	0.043 ✓
T6	182 - 162	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1006.19	17474.40	0.058 ✓
T7	162 - 142	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	962.14	17474.40	0.055 ✓
T8	142 - 122	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	863.67	17474.40	0.049 ✓
T9	122 - 102	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1208.44	17474.40	0.069 ✓
T10	102 - 82	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1285.70	17474.40	0.074 ✓
T11	82 - 62	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1262.94	17474.40	0.072 ✓
T12	62 - 42	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1481.07	17474.40	0.085 ✓
T13	42 - 22	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1469.81	17474.40	0.084 ✓
T14	22 - 2	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1308.48	17474.40	0.075 ✓

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	19769.50	61776.00	0.320 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	22865.00	61776.00	0.370 ✓

Bottom Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	3164.49	61776.00	0.051 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	10436.40	61776.00	0.169 ✓

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	56 of 58
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	Client	AT&T	Designed by	kevin_barker

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T5	202 - 182 (681)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21824.90	61776.00	0.353
T5	202 - 182 (682)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	22583.40	61776.00	0.366
T5	202 - 182 (693)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21809.10	61776.00	0.353
T5	202 - 182 (694)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21945.70	61776.00	0.355
T5	202 - 182 (699)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21324.60	61776.00	0.345
T5	202 - 182 (700)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	22209.50	61776.00	0.360
T8	142 - 122 (705)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20258.10	61776.00	0.328
T8	142 - 122 (706)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20699.00	61776.00	0.335
T8	142 - 122 (717)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19581.20	61776.00	0.317
T8	142 - 122 (718)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19577.70	61776.00	0.317
T8	142 - 122 (723)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19252.40	61776.00	0.312
T8	142 - 122 (724)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20119.60	61776.00	0.326

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T5	202 - 182 (686)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	649.08	61776.00	0.011
T5	202 - 182 (687)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	717.88	61776.00	0.012
T5	202 - 182 (695)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	811.50	61776.00	0.013
T5	202 - 182 (696)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	929.63	61776.00	0.015
T5	202 - 182 (701)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	756.11	61776.00	0.012
T5	202 - 182 (702)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	934.86	61776.00	0.015

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Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T8	142 - 122 (710)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4322.94	61776.00	0.070 ✓
T8	142 - 122 (711)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4513.43	61776.00	0.073 ✓
T8	142 - 122 (719)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4736.10	61776.00	0.077 ✓
T8	142 - 122 (720)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4719.11	61776.00	0.076 ✓
T8	142 - 122 (725)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4190.63	61776.00	0.068 ✓
T8	142 - 122 (726)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4389.97	61776.00	0.071 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T1	282 - 262	Leg	2	3	-14534.20	94341.21	15.4	Pass
T2	262 - 242	Leg	2	54	-27451.60	94341.21	29.1	Pass
T3	242 - 222	Leg	2	102	-31101.70	94341.21	33.0	Pass
T4	222 - 202	Leg	2	150	-26825.60	94341.21	28.4	Pass
T5	202 - 182	Leg	2	198	-42931.10	94341.21	45.5	Pass
T6	182 - 162	Leg	2	246	-58092.40	94341.21	61.6	Pass
T7	162 - 142	Leg	2	294	-55549.30	94341.21	58.9	Pass
T8	142 - 122	Leg	2	342	-49864.10	94341.21	52.9	Pass
T9	122 - 102	Leg	2	388	-69769.30	94341.21	74.0	Pass
T10	102 - 82	Leg	2	436	-74230.00	94341.21	78.7	Pass
T11	82 - 62	Leg	2	484	-72915.70	94341.21	77.3	Pass
T12	62 - 42	Leg	2	532	-85509.70	94341.21	90.6	Pass
T13	42 - 22	Leg	2	580	-84859.70	94341.21	89.9	Pass
T14	22 - 2	Leg	2	628	-75544.90	94341.21	80.1	Pass
T1	282 - 262	Diagonal	7/8	37	-4081.48	5413.74	75.4	Pass
T2	262 - 242	Diagonal	7/8	86	-2330.31	5413.74	43.0	Pass
T3	242 - 222	Diagonal	7/8	106	-2095.67	5413.74	38.7	Pass
T4	222 - 202	Diagonal	SR7/8+L2.5x2.5x0.25	155	-4215.88	50397.26	8.4	Pass
T5	202 - 182	Diagonal	SR7/8+L2.5x2.5x0.25	229	-9308.67	50397.26	18.5	Pass
T6	182 - 162	Diagonal	7/8	283	-2029.00	5413.74	37.5	Pass
T7	162 - 142	Diagonal	7/8	300	-3935.81	5413.74	72.7	Pass
T8	142 - 122	Diagonal	SR7/8+L2.5x2.5x0.25	357	-11716.30	50397.26	23.2	Pass
T9	122 - 102	Diagonal	SR7/8+L2.5x2.5x0.25	423	-4497.30	50397.26	8.9	Pass
T10	102 - 82	Diagonal	7/8	444	-2848.93	5413.74	52.6	Pass
T11	82 - 62	Diagonal	7/8	490	-4023.95	5413.74	74.3	Pass
T12	62 - 42	Diagonal	7/8	565	-2882.56	5413.74	53.2	Pass
T13	42 - 22	Diagonal	7/8	588	-2230.21	5413.74	41.2	Pass
T14	22 - 2	Diagonal	7/8	635	-3558.58	5413.74	65.7	Pass
T1	282 - 262	Secondary Horizontal	L2 1/2x2x3/16	14	-251.74	12914.52	1.9	Pass
T2	262 - 242	Secondary Horizontal	L2 1/2x2x3/16	71	-475.48	12914.52	3.7	Pass
T3	242 - 222	Secondary Horizontal	L2 1/2x2x3/16	110	-538.70	12914.52	4.2	Pass
T4	222 - 202	Secondary Horizontal	L2 1/2x2x3/16	167	-464.63	12914.52	3.6	Pass
T5	202 - 182	Secondary Horizontal	L2 1/2x2x3/16	206	-743.59	12914.52	5.8	Pass
T6	182 - 162	Secondary Horizontal	L2 1/2x2x3/16	255	-1006.19	12914.52	7.8	Pass
T7	162 - 142	Secondary Horizontal	L2 1/2x2x3/16	303	-962.14	12914.52	7.5	Pass
T8	142 - 122	Secondary Horizontal	L2 1/2x2x3/16	351	-863.67	12914.52	6.7	Pass
T9	122 - 102	Secondary Horizontal	L2 1/2x2x3/16	397	-1208.44	12914.52	9.4	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T10	102 - 82	Secondary Horizontal	L2 1/2x2x3/16	447	-1285.70	12914.52	10.0	Pass
T11	82 - 62	Secondary Horizontal	L2 1/2x2x3/16	493	-1262.94	12914.52	9.8	Pass
T12	62 - 42	Secondary Horizontal	L2 1/2x2x3/16	541	-1481.07	12914.52	11.5	Pass
T13	42 - 22	Secondary Horizontal	L2 1/2x2x3/16	589	-1469.81	12914.52	11.4	Pass
T14	22 - 2	Secondary Horizontal	L2 1/2x2x3/16	646	-1308.48	12914.52	10.1	Pass
T1	282 - 262	Top Girt	L3x3x1/4	5	-2205.08	29961.71	7.4	Pass
T1	282 - 262	Guy A@270	3/4	678	18009.80	29150.00	61.8	Pass
T5	202 - 182	Guy A@196	5/8	698	17229.90	21200.00	81.3	Pass
T8	142 - 122	Guy A@128	9/16	722	16705.30	17500.00	95.5	Pass
T11	82 - 62	Guy A@70	1/2	729	12898.60	13450.00	95.9	Pass
T1	282 - 262	Guy B@270	3/4	677	17953.50	29150.00	61.6	Pass
T5	202 - 182	Guy B@196	5/8	692	17000.20	21200.00	80.2	Pass
T8	142 - 122	Guy B@128	9/16	715	16024.90	17500.00	91.6	Pass
T11	82 - 62	Guy B@70	1/2	728	12346.70	13450.00	91.8	Pass
T1	282 - 262	Guy C@270	3/4	676	18127.70	29150.00	62.2	Pass
T5	202 - 182	Guy C@196	5/8	679	17856.50	21200.00	84.2	Pass
T8	142 - 122	Guy C@128	9/16	703	16999.00	17500.00	97.1	Pass
T11	82 - 62	Guy C@70	1/2	727	12762.20	13450.00	94.9	Pass
T5	202 - 182	Top Guy	L4x4x3/8	684	19769.50	82347.40	24.0	Pass
		Pull-Off@196						
T8	142 - 122	Top Guy	L4x4x3/8	708	22865.00	82347.40	27.8	Pass
		Pull-Off@128						
T5	202 - 182	Bottom Guy	L4x4x3/8	688	-3072.50	67039.50	4.6	Pass
		Pull-Off@196						
T8	142 - 122	Bottom Guy	L4x4x3/8	714	10436.40	82347.40	12.7	Pass
		Pull-Off@128						
T5	202 - 182	Torque Arm	L4x4x3/8	682	22583.40	82347.40	27.4	Pass
		Top@196						
T8	142 - 122	Torque Arm	L4x4x3/8	706	20699.00	82347.40	25.1	Pass
		Top@128						
T5	202 - 182	Torque Arm	L4x4x3/8	686	-22986.70	43129.88	53.3	Pass
		Bottom@196						
T8	142 - 122	Torque Arm	L4x4x3/8	710	-20556.10	43129.88	47.7	Pass
		Bottom@128						
							Summary	
							Leg (T12)	90.6 Pass
							Diagonal (T1)	75.4 Pass
							Secondary Horizontal (T12)	11.5 Pass
							Top Girt (T1)	7.4 Pass
							Guy A (T11)	95.9 Pass
							Guy B (T11)	91.8 Pass
							Guy C (T8)	97.1 Pass
							Top Guy Pull-Off (T8)	27.8 Pass
							Bottom Guy Pull-Off (T8)	12.7 Pass
							Torque Arm Top (T5)	27.4 Pass
							Torque Arm Bottom (T5)	53.3 Pass
							RATING =	97.1 Pass

FOUNDATION ANALYSIS

Job	280' Guyed Tower - Bolton, CT	Project No.	MTS-007	Sheet	of
Description	Foundation Analysis	Computed by	KAB	Date	07/24/12
		Checked by		Date	

Tower Base

Width of Base	$w_{base} := 5\text{ft}$	
Thickness of Base	$t_{base} := 3.5\text{ft}$	
Unit Weight of Concrete	$\gamma_{conc} := 150\text{pcf}$	
Weight of Base	$W_{t_{base}} := w_{base}^2 \cdot t_{base} \cdot \gamma_{conc}$	$W_{t_{base}} = 13.13 \cdot \text{kip}$
Compressive force of Tower	$P_{tower} := 166.7\text{kip}$	
Total Downward Force	$P_{foundation} := P_{tower} + W_{t_{base}}$	$P_{foundation} = 179.83 \cdot \text{kip}$
Bearing Pressure	$P_{bearing} := \frac{P_{foundation}}{w_{base}^2}$	$P_{bearing} = 7.19 \cdot \text{ksf}$
Allowable Bearing Pressure	$P_{bearing,allow} := 10\text{tsf}$	
Bearing _{check} :=	"OK" if $P_{bearing} \leq P_{bearing,allow}$ "NG" otherwise	Bearing _{check} = "OK"

Guy Anchors

Six #8 bars in 2 1/4" dia. holes extending 8'6" below foundation

Bond between Rock & Grout = 50 psi

$$\text{Bond}_{capacity} := 2.25\text{in} \cdot \pi \cdot 50\text{psi} \quad \text{Bond}_{capacity} = 4.24 \cdot \frac{\text{kip}}{\text{ft}}$$

$$\text{Bond}_{capacity} \cdot 8.5\text{ft} = 36.05 \cdot \text{kip} < F_y \cdot \text{rebar}$$

$$\text{Uplift}_{resistance} := \text{Bond}_{capacity} \cdot 8.5\text{ft} \cdot 6 \quad \text{Uplift}_{resistance} = 216.3 \cdot \text{kip}$$

$$\text{Uplift}_{anchor} := 60.3\text{kip}$$

$$\text{Uplift}_{check} := \begin{cases} \text{"OK"} & \text{if } \text{Uplift}_{anchor} \leq \text{Uplift}_{resistance} \\ \text{"NG"} & \text{otherwise} \end{cases} \quad \text{Uplift}_{check} = \text{"OK"}$$

Each anchor is embedded into rock a minimum of 1'6"

$$\text{Shear}_{resistance} := 5\text{tsf} \cdot 1.5\text{ft} \cdot 5\text{ft} \quad \text{Shear}_{resistance} = 75 \cdot \text{kip}$$

$$\text{Shear}_{anchor} := 74.4\text{kip}$$

$$\text{Shear}_{check} := \begin{cases} \text{"OK"} & \text{if } \text{Shear}_{anchor} \leq \text{Shear}_{resistance} \\ \text{"NG"} & \text{otherwise} \end{cases} \quad \text{Shear}_{check} = \text{"OK"}$$

2 C6x10.5 Anchor Shafts

$$A_s := 2 \cdot 3.08\text{in}^2 \quad F_y := 36\text{ksi}$$

$$\text{Tension} := 95.7\text{kip}$$

$$\sigma := \frac{\text{Tension}}{A_s} \quad \sigma = 15.54 \cdot \text{ksi}$$

$$\sigma_{check} := \begin{cases} \text{"OK"} & \text{if } \sigma \leq F_y \\ \text{"NG"} & \text{otherwise} \end{cases} \quad \sigma_{check} = \text{"OK"}$$



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Calculated Radio Frequency Emissions



CT1069 – Bolton

130 Vernon Rd., Bolton, CT 06043

July 30, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the guyed wire tower located at 130 Vernon Road in Bolton, CT. The coordinates of the tower are 41° 48' 7.4" N, 72° 26' 28.1" W.

AT&T is proposing the following modifications:

- 1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times \text{EIRP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

$R = \text{Radial Distance} = \sqrt{H^2 + V^2}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm ²)	Limit	%MPE
AT&T UMTS	165	880	1	500	0.0066	0.5867	1.13%
AT&T GSM	165	880	4	296	0.0156	0.5867	2.67%
AT&T GSM	165	1930	2	427	0.0113	1.0000	1.13%
VoiceStream	180	1930	4	226	0.0100	1.0000	1.00%
Verizon	119	869	9	200	0.0457	0.5793	7.89%
Verizon	119	1900	3	200	0.0152	1.0000	1.52%
Verizon	108	11325	1	100	0.0031	1.0000	0.31%
Verizon	151	11325	1	100	0.0016	1.0000	0.16%
Sprint	150	1962.5	11	122	0.0214	1.0000	2.14%
Bolton Radio Station	280	97.5	1	10	0.0000	0.2000	0.02%
Commsite Internat'l	285	929.1875	2	300	0.0027	0.6195	0.43%
Metrocall	125	929.5125	1	300	0.0069	0.6197	1.11%
Pagemart	100	929.7125	1	3500	0.1258	0.6198	20.30%
AirTouch	120	158.1	1	452	0.0113	0.2000	5.64%
Conn. Radio	120	462.15	1	258	0.0064	0.3081	2.09%
Nextel	223	869	24	100	0.0174	0.5793	3.00%
NU	100	6785	1	65.4	0.0024	1.0000	0.24%
NU	190	6685	1	63.9	0.0006	1.0000	0.06%
NU	200	6785	1	63.9	0.0006	1.0000	0.06%
NU	200	6705	1	52	0.0005	1.0000	0.05%
AT&T UMTS	164	880	2	565	0.0015	0.5867	0.26%
AT&T UMTS	164	1900	2	875	0.0023	1.0000	0.23%
AT&T LTE	164	734	1	1375	0.0018	0.4893	0.38%
AT&T GSM	164	880	1	283	0.0004	0.5867	0.06%
AT&T GSM	164	1900	4	525	0.0028	1.0000	0.28%
						Total	47.24%

Table 1: Carrier Information^{1 2 3}

¹ The existing CSC filing for AT&T should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/27/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

² In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

³ Antenna height listed for AT&T is in reference to the URS Corporation Structural Analysis Report dated July 26, 2012.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **47.24% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

A handwritten signature in black ink, appearing to read 'Daniel L. Goulet'.

Daniel L. Goulet
C Squared Systems, LLC

July 30, 2012

Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982. American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997). IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁴

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁵

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

⁴ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

⁵ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

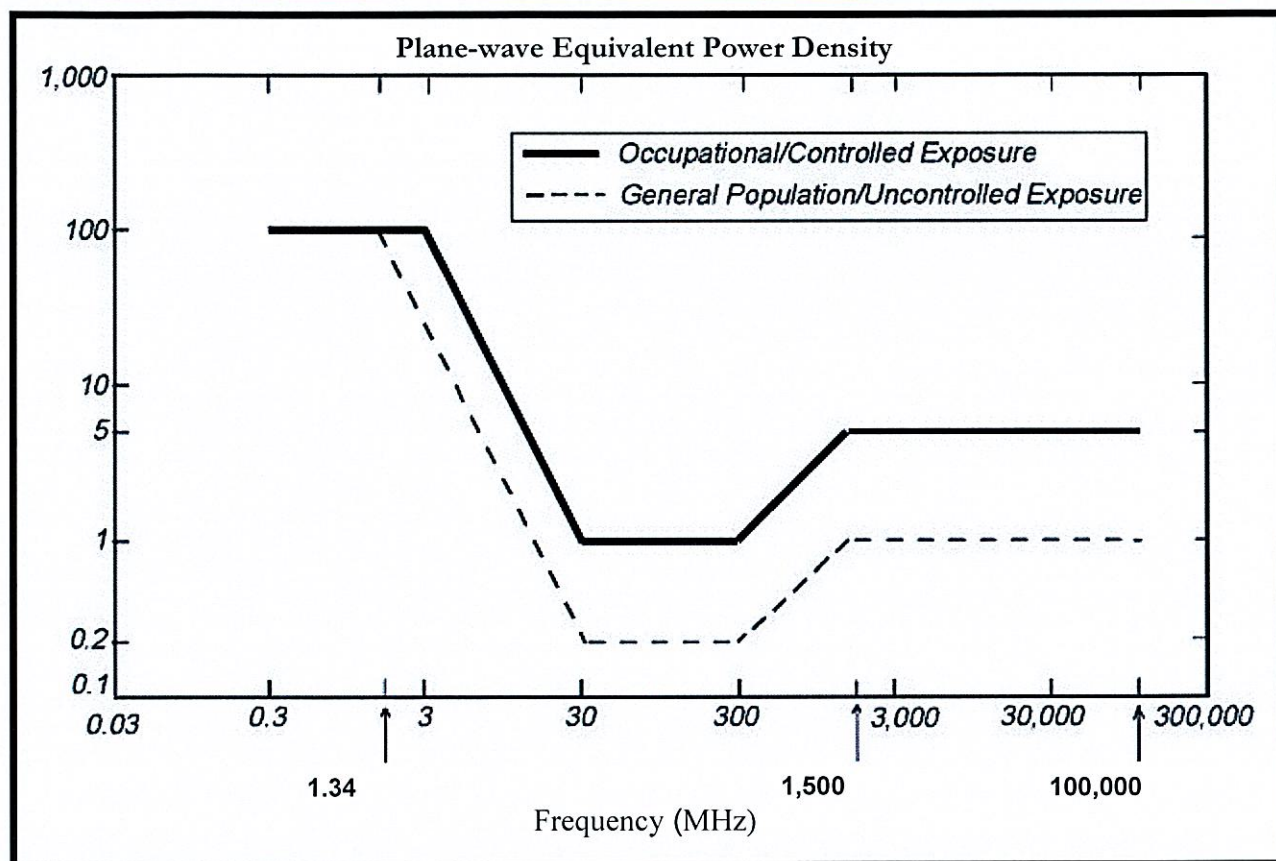
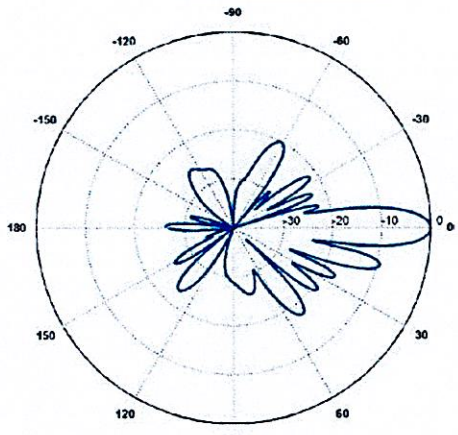
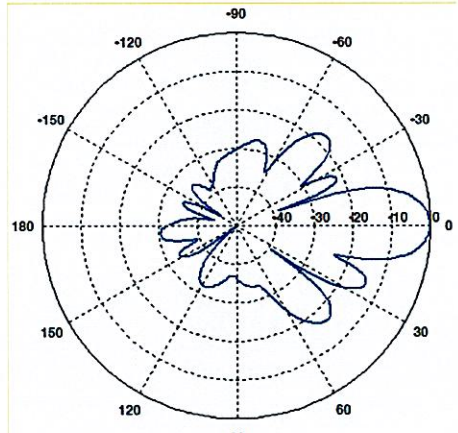
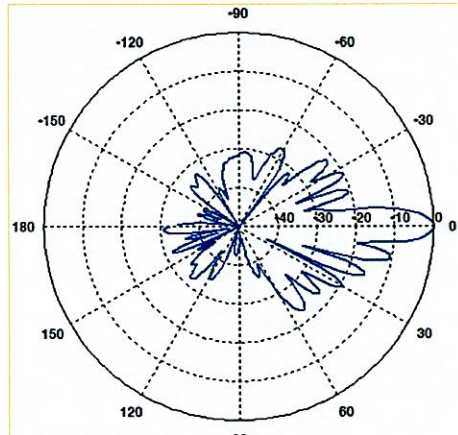


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

700 MHz Manufacturer: Commscope Model #: SBNH-1D6565C Frequency Band: 698-806 MHz Gain: 13.6 dBd Vertical Beamwidth: 8.6° Horizontal Beamwidth: 71° Polarization: $\pm 45^\circ$ Size L x W x D: 96.42" x 11.85" x 7.1"	 A polar plot showing the radiation pattern of the 700 MHz antenna. The plot is circular with concentric dashed lines representing gain levels. The main beam is oriented horizontally, pointing towards the 0-degree mark. The pattern shows a central peak with several side lobes, indicating a directional antenna with a beamwidth of 71 degrees.
850 MHz Manufacturer: Powerwave Model #: 7770 Frequency Band: 824-896 MHz Gain: 11.5 dBd Vertical Beamwidth: 15° Horizontal Beamwidth: 82° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"	 A polar plot showing the radiation pattern of the 850 MHz antenna. The main beam is oriented horizontally, pointing towards the 0-degree mark. The pattern shows a central peak with several side lobes, indicating a directional antenna with a beamwidth of 82 degrees.
1900 MHz Manufacturer: Powerwave Model #: 7770 Frequency Band: 1850-1990 MHz Gain: 13.4 dBd Vertical Beamwidth: 7° Horizontal Beamwidth: 86° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"	 A polar plot showing the radiation pattern of the 1900 MHz antenna. The main beam is oriented horizontally, pointing towards the 0-degree mark. The pattern shows a central peak with several side lobes, indicating a directional antenna with a beamwidth of 86 degrees.