



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

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

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

### VIA ELECTRONIC MAIL

June 17, 2019

Murdock MacDonald  
Real Estate Consultant-Site Acquisition  
Centerline Communications  
750 West Center Street, Floor 3/Suite 301  
West Bridgewater, MA 02379

RE: **TS-DISH-086-190524** – Gamma Purchasing LLC (a/k/a Dish Network) request for an order to approve tower sharing at an existing telecommunications facility located at 1334 Route 85, Montville, Connecticut.

Dear Mr. MacDonald:

The Connecticut Siting Council (Council) is in receipt of your correspondence of June 14, 2019 submitted in response to the Council's June 3, 2019 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman  
Executive Director

MAB/IN/emr



## Robidoux, Evan

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**From:** Murdock MacDonald <mmacdonald@clinellc.com>  
**Sent:** Friday, June 14, 2019 2:38 PM  
**To:** Robidoux, Evan  
**Cc:** CSC-DL Siting Council  
**Subject:** RE: Council Incomplete Letter for TS-DISH-086-190524-Route85-Montville  
**Attachments:** DISH-CT0100007A\_ATC-302534\_Hartford CT 2, CT (OAA746560)\_Stamped Structural Analysis(82%)\_6-14-19.pdf

Good afternoon Evan,

Please see attached for revised Structural Analysis including AT&T's approved equipment. A hard copy is being mailed today via UPS, do you need a copy of the shipping label?

Please let me know if you need anything else regarding this proposal.

Best regards,  
Murdock



**Murdock MacDonald** | Site Acquisition Specialist  
Mobile: 508.246.0548  
[mmacdonald@clinellc.com](mailto:mmacdonald@clinellc.com)  
[www.centerlinecommunications.com](http://www.centerlinecommunications.com)

**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Tuesday, June 04, 2019 12:18 PM  
**To:** Murdock MacDonald <mmacdonald@clinellc.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** Council Incomplete Letter for TS-DISH-086-190524-Route85-Montville

Please see the attached correspondence.

Evan Robidoux  
Clerk Typist  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 1089.8 ft Guyed Tower  
**ATC Site Name** : Hartford CT 2, CT  
**ATC Site Number** : 302534  
**Engineering Number** : OAA746560\_C3\_04  
**Proposed Carrier** : Dish Network Corporation  
**Carrier Site Name** : N/A  
**Carrier Site Number** : CT0100007A  
**Site Location** : 1337 Route 85  
Oakdale, CT 06370-1832  
41.417700,-72.198100  
**County** : New London  
**Date** : June 12, 2019  
**Max Usage** : 82%  
**Result** : Pass

Prepared By:  
Christina Minor  
Structural Engineer III

Reviewed By:

**COA: PEC.0001553**



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 1089.8 ft guyed tower to reflect the change in loading by DISH NETWORK CORPORATION.

## Supporting Documents

<b>Tower Drawings</b>	Central Tower Project #GT-833, dated September 29, 2000
<b>Foundation Drawing</b>	Central Tower Project #GT-833, dated November 29, 2000
<b>Geotechnical Report</b>	PSI Project #862-05163, dated October 26, 2000

## Analysis

The tower was analyzed using tnxTower 8.0.2.1. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	104 mph (3-Second Gust), $V_{asd}$ / 132 mph (3-Second Gust), $V_{ult}$
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	4
<b>Crest Height:</b>	400 ft
<b>Spectral Response:</b>	$S_s = 0.17$ , $S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty.	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
1169.0	1169.0	1	Dielectric TFU-31ETT/VP-R O6	Leg	(1) 6 1/8" HL	ION MEDIA
1073.0	1073.0	1	MRC Proscan III	Platform with Handrails	(1) 1" conduit (1) 7/8" Coax	OUTLET BROADCASTING
1003.0	1003.0	1	Valmont ISMD10	Leg	-	MEREDITH CORPORATION
996.0	996.0	1	MRC Proscan III	Platform with Handrails	(1) 7/8" Coax (1) 0.99" LDF2-2R	
889.0	889.0	1	Sabre 10' - 12' Ice Shield	Leg	-	ION MEDIA
878.0	878.0	1	8' Dish w/ Radome	Pipe	(1) EW63	
356.0	356.0	1	Valmont ISMD8	Leg	-	
349.0	349.0	1	8' Dish w/ Radome	Pipe	(1) EW63	
192.0	192.0	6	Powerwave Allgon LGP21401	Leg	(6) 1 5/8" Coax	AT&T MOBILITY
190.0	190.0	1	Raycap DC6-48-60-18-8F	Sector Frames	(2) 0.65" 8 AWG 2C (1) 0.33" Fiber (1) 2 1/2" conduit (1) 0.39" (10mm) Fiber Trunk (4) 0.78" (19.7mm) 8 AWG 6	
		3	Ericsson RRUS 8843 B2, B66A			
		1	Raycap DC6-48-60-18-8C			
		3	Raycap RRUS 4449 B5, B12			
		3	Ericsson RRUS 4478 B14			
		3	Ericsson RRUS-11 800 MHz			
		1	Raycap DC6-48-60-18-8C-EV			
		3	Powerwave Allgon 7770.00			
		2	Kathrein Scala 80010965			
		4	Kathrein Scala 80010966			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
No loading considered as to be removed						

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
400.0	400.0	3	Ericsson Radio O208	Stand-Off	(1) 1.39" Hybrid	Dish Network
		2	Ericsson RRUS 4415 B30			
		3	Comba ODI2-065R18K-GQ			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax anywhere on tower.



### Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	69%	Pass
Diagonals	82%	Pass
Horizontals	49%	Pass
Guys	58%	Pass
Bolts	56%	Pass

### Foundations

Reaction Component	Analysis Reactions	% of Usage
Base Axial (kips)	1720.0	79
Inner Anchor Shear (kips)	172.5	18
Inner Anchor Uplift (kips)	104.9	16
Outer Anchor Shear (kips)	264.0	18
Outer Anchor Uplift (kips)	349.5	28

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



## **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.





<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b> Hartford CT2, CT (302534)	<b>Page</b> 1 of 192
	<b>Project</b> OAA746560_C3_03	<b>Date</b> 15:38:59 06/11/19
	<b>Client</b> DISH NETWORK CORPORATION	<b>Designed by</b> Christina.Minor

## Tower Input Data

The main tower is a 3x guyed tower with an overall height of 1151.90 ft above the ground line.

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

The face width of the tower is 8.00 ft at the top and tapered at the base.

An index plate is provided at the 3x guyed -tower connection.

There is a pole section.

This tower is designed using the TIA-222-G standard.

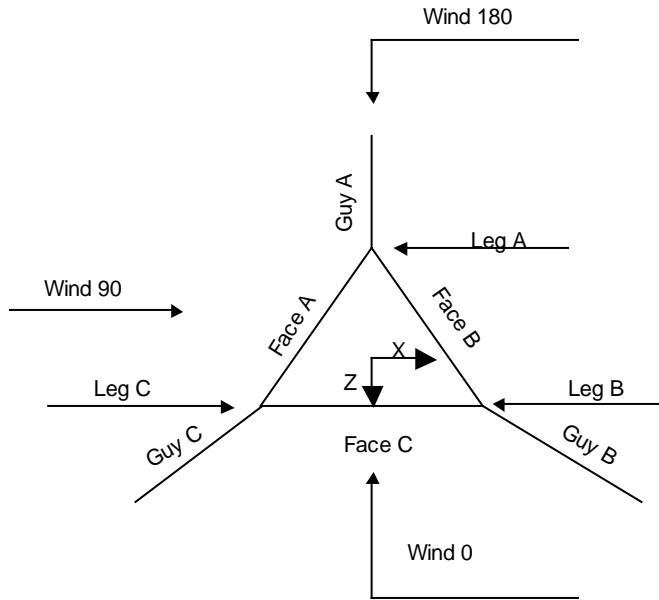
The following design criteria apply:

- Basic wind speed of 104 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 4.
- Crest Height 200.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Tension only take-up is 0.0313 in.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Safety factor used in guy design is 1.
- Stress ratio used in tower member design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

<ul style="list-style-type: none"> <li>Consider Moments - Legs</li> <li>Consider Moments - Horizontals</li> <li>Consider Moments - Diagonals</li> <li>Use Moment Magnification</li> <li>√ Use Code Stress Ratios</li> <li>√ Use Code Safety Factors - Guys</li> <li>Escalate Ice</li> <li>Always Use Max Kz</li> <li>Use Special Wind Profile</li> <li>√ Include Bolts In Member Capacity</li> <li>Leg Bolts Are At Top Of Section</li> <li>√ Secondary Horizontal Braces Leg</li> <li>Use Diamond Inner Bracing (4 Sided)</li> <li>√ SR Members Have Cut Ends</li> <li>SR Members Are Concentric</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Leg Loads As Uniform</li> <li>Assume Legs Pinned</li> <li>√ Assume Rigid Index Plate</li> <li>√ Use Clear Spans For Wind Area</li> <li>√ Use Clear Spans For KL/r</li> <li>√ Retension Guys To Initial Tension</li> <li>√ Bypass Mast Stability Checks</li> <li>√ Use Azimuth Dish Coefficients</li> <li>√ Project Wind Area of Appurt.</li> <li>√ Autocalc Torque Arm Areas</li> <li>Add IBC .6D+W Combination</li> <li>Sort Capacity Reports By Component</li> <li>√ Triangulate Diamond Inner Bracing</li> <li>Treat Feed Line Bundles As Cylinder</li> <li>Ignore KL/ry For 60 Deg. Angle Legs</li> </ul>	<ul style="list-style-type: none"> <li>Use ASCE 10 X-Brace Ly Rules</li> <li>√ Calculate Redundant Bracing Forces</li> <li>Ignore Redundant Members in FEA</li> <li>√ SR Leg Bolts Resist Compression</li> <li>All Leg Panels Have Same Allowable</li> <li>Offset Girt At Foundation</li> <li>√ Consider Feed Line Torque</li> <li>√ Include Angle Block Shear Check</li> <li>√ Use TIA-222-G Bracing Resist. Exemption</li> <li>√ Use TIA-222-G Tension Splice Exemption</li> <li style="text-align: center;">Poles</li> <li>√ Include Shear-Torsion Interaction</li> <li>Always Use Sub-Critical Flow</li> <li>Use Top Mounted Sockets</li> <li>Pole Without Linear Attachments</li> <li>Pole With Shroud Or No Appurtenances</li> <li>Outside and Inside Corner Radii Are</li> <li>Known</li> </ul>
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<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b> Hartford CT2, CT (302534)	<b>Page</b> 2 of 192
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	<b>Client</b> DISH NETWORK CORPORATION	<b>Designed by</b> Christina.Minor



**Corner & Starmount Guyed Tower**

**Pole Section Geometry**

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	1151.90-1089.80	62.10	P20x.812	A500-50 (50 ksi)	

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 1151.90-1089. 80				1	1	1			

**Tower Section Geometry**

**tnxTower**

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
 Phone: (919) 468-0112  
 FAX: (919) 466-5414

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<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	1089.80-1084.90			8.00	1	4.90
T2	1084.90-1080.00			8.00	1	4.90
T3	1080.00-1060.00			8.00	1	20.00
T4	1060.00-1040.00			8.00	1	20.00
T5	1040.00-1020.00			8.00	1	20.00
T6	1020.00-1000.00			8.00	1	20.00
T7	1000.00-980.00			8.00	1	20.00
T8	980.00-960.00			8.00	1	20.00
T9	960.00-940.00			8.00	1	20.00
T10	940.00-935.00			8.00	1	5.00
T11	935.00-930.00			8.00	1	5.00
T12	930.00-925.00			8.00	1	5.00
T13	925.00-920.00			8.00	1	5.00
T14	920.00-915.00			8.00	1	5.00
T15	915.00-910.00			8.00	1	5.00
T16	910.00-905.00			8.00	1	5.00
T17	905.00-900.00			8.00	1	5.00
T18	900.00-880.00			8.00	1	20.00
T19	880.00-860.00			8.00	1	20.00
T20	860.00-840.00			8.00	1	20.00
T21	840.00-820.00			8.00	1	20.00
T22	820.00-800.00			8.00	1	20.00
T23	800.00-780.00			8.00	1	20.00
T24	780.00-775.00			8.00	1	5.00
T25	775.00-770.00			8.00	1	5.00
T26	770.00-765.00			8.00	1	5.00
T27	765.00-760.00			8.00	1	5.00
T28	760.00-755.00			8.00	1	5.00
T29	755.00-750.00			8.00	1	5.00
T30	750.00-745.00			8.00	1	5.00
T31	745.00-740.00			8.00	1	5.00
T32	740.00-720.00			8.00	1	20.00
T33	720.00-700.00			8.00	1	20.00
T34	700.00-680.00			8.00	1	20.00
T35	680.00-660.00			8.00	1	20.00
T36	660.00-640.00			8.00	1	20.00
T37	640.00-620.00			8.00	1	20.00
T38	620.00-615.00			8.00	1	5.00
T39	615.00-610.00			8.00	1	5.00
T40	610.00-605.00			8.00	1	5.00
T41	605.00-600.00			8.00	1	5.00
T42	600.00-595.00			8.00	1	5.00
T43	595.00-590.00			8.00	1	5.00
T44	590.00-585.00			8.00	1	5.00
T45	585.00-580.00			8.00	1	5.00
T46	580.00-560.00			8.00	1	20.00
T47	560.00-540.00			8.00	1	20.00
T48	540.00-535.00			8.00	1	5.00
T49	535.00-530.00			8.00	1	5.00
T50	530.00-525.00			8.00	1	5.00
T51	525.00-520.00			8.00	1	5.00
T52	520.00-500.00			8.00	1	20.00
T53	500.00-480.00			8.00	1	20.00
T54	480.00-460.00			8.00	1	20.00
T55	460.00-440.00			8.00	1	20.00
T56	440.00-435.00			8.00	1	5.00
T57	435.00-430.00			8.00	1	5.00
T58	430.00-425.00			8.00	1	5.00
T59	425.00-420.00			8.00	1	5.00
T60	420.00-415.00			8.00	1	5.00

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	4 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T61	415.00-410.00			8.00	1	5.00
T62	410.00-405.00			8.00	1	5.00
T63	405.00-400.00			8.00	1	5.00
T64	400.00-380.00			8.00	1	20.00
T65	380.00-360.00			8.00	1	20.00
T66	360.00-340.00			8.00	1	20.00
T67	340.00-320.00			8.00	1	20.00
T68	320.00-300.00			8.00	1	20.00
T69	300.00-280.00			8.00	1	20.00
T70	280.00-275.00			8.00	1	5.00
T71	275.00-270.00			8.00	1	5.00
T72	270.00-265.00			8.00	1	5.00
T73	265.00-260.00			8.00	1	5.00
T74	260.00-255.00			8.00	1	5.00
T75	255.00-250.00			8.00	1	5.00
T76	250.00-245.00			8.00	1	5.00
T77	245.00-240.00			8.00	1	5.00
T78	240.00-220.00			8.00	1	20.00
T79	220.00-200.00			8.00	1	20.00
T80	200.00-180.00			8.00	1	20.00
T81	180.00-160.00			8.00	1	20.00
T82	160.00-140.00			8.00	1	20.00
T83	140.00-120.00			8.00	1	20.00
T84	120.00-115.00			8.00	1	5.00
T85	115.00-110.00			8.00	1	5.00
T86	110.00-105.00			8.00	1	5.00
T87	105.00-100.00			8.00	1	5.00
T88	100.00-95.00			8.00	1	5.00
T89	95.00-90.00			8.00	1	5.00
T90	90.00-85.00			8.00	1	5.00
T91	85.00-80.00			8.00	1	5.00
T92	80.00-60.00			8.00	1	20.00
T93	60.00-40.00			8.00	1	20.00
T94	40.00-20.00			8.00	1	20.00
T95	20.00-15.00			8.00	1	5.00
T96	15.00-7.00			8.00	1	8.00
T97	7.00-0.00			8.00	1	7.00

### 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	1089.80-1084.90	4.90	K Brace Down	No	Yes	0.0000	0.0000
T2	1084.90-1080.00	4.90	TX Brace	No	Yes	0.0000	0.0000
T3	1080.00-1060.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T4	1060.00-1040.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T5	1040.00-1020.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T6	1020.00-1000.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T7	1000.00-980.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T8	980.00-960.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T9	960.00-940.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T10	940.00-935.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T11	935.00-930.00	5.00	TX Brace	No	Yes	0.0000	0.0000

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

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
T12	930.00-925.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T13	925.00-920.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T14	920.00-915.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T15	915.00-910.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T16	910.00-905.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T17	905.00-900.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T18	900.00-880.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T19	880.00-860.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T20	860.00-840.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T21	840.00-820.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T22	820.00-800.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T23	800.00-780.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T24	780.00-775.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T25	775.00-770.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T26	770.00-765.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T27	765.00-760.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T28	760.00-755.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T29	755.00-750.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T30	750.00-745.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T31	745.00-740.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T32	740.00-720.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T33	720.00-700.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T34	700.00-680.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T35	680.00-660.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T36	660.00-640.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T37	640.00-620.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T38	620.00-615.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T39	615.00-610.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T40	610.00-605.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T41	605.00-600.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T42	600.00-595.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T43	595.00-590.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T44	590.00-585.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T45	585.00-580.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T46	580.00-560.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T47	560.00-540.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T48	540.00-535.00	5.00	K Brace Down	No	Yes	0.0000	0.0000
T49	535.00-530.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T50	530.00-525.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T51	525.00-520.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T52	520.00-500.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T53	500.00-480.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T54	480.00-460.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T55	460.00-440.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T56	440.00-435.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T57	435.00-430.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T58	430.00-425.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T59	425.00-420.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T60	420.00-415.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T61	415.00-410.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T62	410.00-405.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T63	405.00-400.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T64	400.00-380.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T65	380.00-360.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T66	360.00-340.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T67	340.00-320.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T68	320.00-300.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T69	300.00-280.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T70	280.00-275.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T71	275.00-270.00	5.00	TX Brace	No	Yes	0.0000	0.0000

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Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T72	270.00-265.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T73	265.00-260.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T74	260.00-255.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T75	255.00-250.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T76	250.00-245.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T77	245.00-240.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T78	240.00-220.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T79	220.00-200.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T80	200.00-180.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T81	180.00-160.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T82	160.00-140.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T83	140.00-120.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T84	120.00-115.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T85	115.00-110.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T86	110.00-105.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T87	105.00-100.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T88	100.00-95.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T89	95.00-90.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T90	90.00-85.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T91	85.00-80.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T92	80.00-60.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T93	60.00-40.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T94	40.00-20.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T95	20.00-15.00	5.00	TX Brace	No	Yes	0.0000	0.0000
T96	15.00-7.00	7.88	K1 Down	No	Yes	0.0000	1.5000
T97	7.00-0.00	0.99	X Brace	No	Yes	0.0000	0.6250

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 1089.80-1084.90	Solid Round	3 3/4	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T2 1084.90-1080.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T3 1080.00-1060.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4 1060.00-1040.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5 1040.00-1020.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T6 1020.00-1000.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T7 1000.00-980.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T8 980.00-960.00	Solid Round	3 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T9 960.00-940.00	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T10 940.00-935.00	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T11 935.00-930.00	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T12 930.00-925.00	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T13	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36

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<i>Tower Elevation</i> <i>ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
925.00-920.00			(50 ksi)			(36 ksi)
T14	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
920.00-915.00			(50 ksi)			(36 ksi)
T15	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
915.00-910.00			(50 ksi)			(36 ksi)
T16	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
910.00-905.00			(50 ksi)			(36 ksi)
T17	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
905.00-900.00			(50 ksi)			(36 ksi)
T18	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
900.00-880.00			(50 ksi)			(36 ksi)
T19	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
880.00-860.00			(50 ksi)			(36 ksi)
T20	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
860.00-840.00			(50 ksi)			(36 ksi)
T21	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
840.00-820.00			(50 ksi)			(36 ksi)
T22	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
820.00-800.00			(50 ksi)			(36 ksi)
T23	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
800.00-780.00			(50 ksi)			(36 ksi)
T24	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
780.00-775.00			(50 ksi)			(36 ksi)
T25	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
775.00-770.00			(50 ksi)			(36 ksi)
T26	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
770.00-765.00			(50 ksi)			(36 ksi)
T27	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
765.00-760.00			(50 ksi)			(36 ksi)
T28	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
760.00-755.00			(50 ksi)			(36 ksi)
T29	Solid Round	4 1/2	A572-50	Solid Round	1 1/4	A36
755.00-750.00			(50 ksi)			(36 ksi)
T30	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
750.00-745.00			(50 ksi)			(36 ksi)
T31	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
745.00-740.00			(50 ksi)			(36 ksi)
T32	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
740.00-720.00			(50 ksi)			(36 ksi)
T33	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
720.00-700.00			(50 ksi)			(36 ksi)
T34	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
700.00-680.00			(50 ksi)			(36 ksi)
T35	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
680.00-660.00			(50 ksi)			(36 ksi)
T36	Solid Round	4 1/2	A572-50	Solid Round	1 1/8	A36
660.00-640.00			(50 ksi)			(36 ksi)
T37	Solid Round	5	A572-50	Solid Round	1 1/8	A36
640.00-620.00			(50 ksi)			(36 ksi)
T38	Solid Round	5	A572-50	Solid Round	1 1/8	A36
620.00-615.00			(50 ksi)			(36 ksi)
T39	Solid Round	5	A572-50	Solid Round	1 1/8	A36
615.00-610.00			(50 ksi)			(36 ksi)
T40	Solid Round	5	A572-50	Solid Round	1 1/4	A36
610.00-605.00			(50 ksi)			(36 ksi)
T41	Solid Round	5	A572-50	Solid Round	1 1/4	A36
605.00-600.00			(50 ksi)			(36 ksi)
T42	Solid Round	5	A572-50	Solid Round	1 1/4	A36
600.00-595.00			(50 ksi)			(36 ksi)
T43	Solid Round	5	A572-50	Solid Round	1 1/4	A36
595.00-590.00			(50 ksi)			(36 ksi)



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<i>Tower Elevation ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
T44	Solid Round	5	A572-50	Solid Round	1 1/8	A36
590.00-585.00			(50 ksi)			(36 ksi)
T45	Solid Round	5	A572-50	Solid Round	1 1/8	A36
585.00-580.00			(50 ksi)			(36 ksi)
T46	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
580.00-560.00			(50 ksi)			(36 ksi)
T47	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
560.00-540.00			(50 ksi)			(36 ksi)
T48	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
540.00-535.00			(50 ksi)			(36 ksi)
T49	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
535.00-530.00			(50 ksi)			(36 ksi)
T50	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
530.00-525.00			(50 ksi)			(36 ksi)
T51	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
525.00-520.00			(50 ksi)			(36 ksi)
T52	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
520.00-500.00			(50 ksi)			(36 ksi)
T53	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
500.00-480.00			(50 ksi)			(36 ksi)
T54	Solid Round	4 3/4	A572-50	Solid Round	1 1/8	A36
480.00-460.00			(50 ksi)			(36 ksi)
T55	Solid Round	5	A572-50	Solid Round	1 1/8	A36
460.00-440.00			(50 ksi)			(36 ksi)
T56	Solid Round	5	A572-50	Solid Round	1 1/8	A36
440.00-435.00			(50 ksi)			(36 ksi)
T57	Solid Round	5	A572-50	Solid Round	1 1/8	A36
435.00-430.00			(50 ksi)			(36 ksi)
T58	Solid Round	5	A572-50	Solid Round	1 1/4	A36
430.00-425.00			(50 ksi)			(36 ksi)
T59	Solid Round	5	A572-50	Solid Round	1 1/4	A36
425.00-420.00			(50 ksi)			(36 ksi)
T60	Solid Round	5	A572-50	Solid Round	1 1/4	A36
420.00-415.00			(50 ksi)			(36 ksi)
T61	Solid Round	5	A572-50	Solid Round	1 1/4	A36
415.00-410.00			(50 ksi)			(36 ksi)
T62	Solid Round	5	A572-50	Solid Round	1 1/8	A36
410.00-405.00			(50 ksi)			(36 ksi)
T63	Solid Round	5	A572-50	Solid Round	1 1/8	A36
405.00-400.00			(50 ksi)			(36 ksi)
T64	Solid Round	5	A572-50	Solid Round	1 1/8	A36
400.00-380.00			(50 ksi)			(36 ksi)
T65	Solid Round	5	A572-50	Solid Round	1 1/8	A36
380.00-360.00			(50 ksi)			(36 ksi)
T66	Solid Round	5	A572-50	Solid Round	1 1/8	A36
360.00-340.00			(50 ksi)			(36 ksi)
T67	Solid Round	5	A572-50	Solid Round	1 1/8	A36
340.00-320.00			(50 ksi)			(36 ksi)
T68	Solid Round	5	A572-50	Solid Round	1 1/8	A36
320.00-300.00			(50 ksi)			(36 ksi)
T69	Solid Round	5	A572-60	Solid Round	1 1/8	A36
300.00-280.00			(60 ksi)			(36 ksi)
T70	Solid Round	5	A572-60	Solid Round	1 1/8	A36
280.00-275.00			(60 ksi)			(36 ksi)
T71	Solid Round	5	A572-60	Solid Round	1 1/8	A36
275.00-270.00			(60 ksi)			(36 ksi)
T72	Solid Round	5	A572-60	Solid Round	1 1/4	A36
270.00-265.00			(60 ksi)			(36 ksi)
T73	Solid Round	5	A572-60	Solid Round	1 1/4	A36
265.00-260.00			(60 ksi)			(36 ksi)
T74	Solid Round	5	A572-60	Solid Round	1 1/4	A36

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	9 of 192
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Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
260.00-255.00			(60 ksi)			(36 ksi)
T75	Solid Round	5	A572-60	Solid Round	1 1/4	A36
255.00-250.00			(60 ksi)			(36 ksi)
T76	Solid Round	5	A572-60	Solid Round	1 1/8	A36
250.00-245.00			(60 ksi)			(36 ksi)
T77	Solid Round	5	A572-60	Solid Round	1 1/8	A36
245.00-240.00			(60 ksi)			(36 ksi)
T78	Solid Round	5	A572-60	Solid Round	1 1/8	A36
240.00-220.00			(60 ksi)			(36 ksi)
T79	Solid Round	5	A572-60	Solid Round	1 1/8	A36
220.00-200.00			(60 ksi)			(36 ksi)
T80	Solid Round	5	A572-60	Solid Round	1 1/8	A36
200.00-180.00			(60 ksi)			(36 ksi)
T81	Solid Round	5	A572-60	Solid Round	1 1/8	A36
180.00-160.00			(60 ksi)			(36 ksi)
T82	Solid Round	5	A572-60	Solid Round	1 1/8	A36
160.00-140.00			(60 ksi)			(36 ksi)
T83	Solid Round	5	A572-60	Solid Round	1 1/8	A36
140.00-120.00			(60 ksi)			(36 ksi)
T84	Solid Round	5	A572-60	Solid Round	1 1/8	A36
120.00-115.00			(60 ksi)			(36 ksi)
T85	Solid Round	5	A572-60	Solid Round	1 1/8	A36
115.00-110.00			(60 ksi)			(36 ksi)
T86	Solid Round	5	A572-60	Solid Round	1 1/4	A36
110.00-105.00			(60 ksi)			(36 ksi)
T87	Solid Round	5	A572-60	Solid Round	1 1/4	A36
105.00-100.00			(60 ksi)			(36 ksi)
T88 100.00-95.00	Solid Round	5	A572-60	Solid Round	1 1/4	A36
			(60 ksi)			(36 ksi)
T89 95.00-90.00	Solid Round	5	A572-60	Solid Round	1 1/4	A36
			(60 ksi)			(36 ksi)
T90 90.00-85.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T91 85.00-80.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T92 80.00-60.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T93 60.00-40.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T94 40.00-20.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T95 20.00-15.00	Solid Round	5	A572-60	Solid Round	1 1/8	A36
			(60 ksi)			(36 ksi)
T96 15.00-7.00	Solid Round	5	A572-60	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36
			(60 ksi)			(36 ksi)
T97 7.00-0.00	Solid Round	5	A572-60	Solid Round		A36
			(60 ksi)			(36 ksi)

### 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	Channel	MC18x42.7	A36	Flat Bar		A36
1089.80-1084.90			(36 ksi)			(36 ksi)
T2	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36

# tnxTower

**American Tower**  
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
1084.90-1080.00	Angle		(36 ksi)			(36 ksi)
T3	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
1080.00-1060.00	Angle		(36 ksi)			(36 ksi)
T4	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
1060.00-1040.00	Angle		(36 ksi)			(36 ksi)
T5	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
1040.00-1020.00	Angle		(36 ksi)			(36 ksi)
T6	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
1020.00-1000.00	Angle		(36 ksi)			(36 ksi)
T7	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
1000.00-980.00	Angle		(36 ksi)			(36 ksi)
T8 980.00-960.00	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
	Angle		(36 ksi)			(36 ksi)
T9 960.00-940.00	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
	Angle		(36 ksi)			(36 ksi)
T10	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
940.00-935.00	Angle		(36 ksi)			(36 ksi)
T11	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
935.00-930.00	Angle		(36 ksi)			(36 ksi)
T12	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
930.00-925.00	Angle		(36 ksi)			(36 ksi)
T13	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
925.00-920.00	Angle		(36 ksi)			(36 ksi)
T14	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
920.00-915.00	Angle		(36 ksi)			(36 ksi)
T15	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
915.00-910.00	Angle		(36 ksi)			(36 ksi)
T16	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
910.00-905.00	Angle		(36 ksi)			(36 ksi)
T17	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
905.00-900.00	Angle		(36 ksi)			(36 ksi)
T18	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
900.00-880.00	Angle		(36 ksi)			(36 ksi)
T19	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
880.00-860.00	Angle		(36 ksi)			(36 ksi)
T20	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
860.00-840.00	Angle		(36 ksi)			(36 ksi)
T21	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
840.00-820.00	Angle		(36 ksi)			(36 ksi)
T22	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
820.00-800.00	Angle		(36 ksi)			(36 ksi)
T23	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
800.00-780.00	Angle		(36 ksi)			(36 ksi)
T24	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
780.00-775.00	Angle		(36 ksi)			(36 ksi)
T25	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
775.00-770.00	Angle		(36 ksi)			(36 ksi)
T26	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
770.00-765.00	Angle		(36 ksi)			(36 ksi)
T27	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
765.00-760.00	Angle		(36 ksi)			(36 ksi)
T28	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
760.00-755.00	Angle		(36 ksi)			(36 ksi)
T29	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
755.00-750.00	Angle		(36 ksi)			(36 ksi)
T30	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
750.00-745.00	Angle		(36 ksi)			(36 ksi)
T31	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
745.00-740.00	Angle		(36 ksi)			(36 ksi)
T32	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
740.00-720.00	Angle		(36 ksi)			(36 ksi)

# tnxTower

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T33 720.00-700.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T34 700.00-680.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T35 680.00-660.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T36 660.00-640.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T37 640.00-620.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T38 620.00-615.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T39 615.00-610.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T40 610.00-605.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T41 605.00-600.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T42 600.00-595.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T43 595.00-590.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T44 590.00-585.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T45 585.00-580.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T46 580.00-560.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T47 560.00-540.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T48 540.00-535.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T49 535.00-530.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T50 530.00-525.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T51 525.00-520.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T52 520.00-500.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T53 500.00-480.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T54 480.00-460.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T55 460.00-440.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T56 440.00-435.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T57 435.00-430.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T58 430.00-425.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T59 425.00-420.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T60 420.00-415.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T61 415.00-410.00	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T62 410.00-405.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T63	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36

**tnxTower**

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
405.00-400.00	Angle		(36 ksi)			(36 ksi)
T64	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
400.00-380.00	Angle		(36 ksi)			(36 ksi)
T65	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
380.00-360.00	Angle		(36 ksi)			(36 ksi)
T66	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
360.00-340.00	Angle		(36 ksi)			(36 ksi)
T67	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
340.00-320.00	Angle		(36 ksi)			(36 ksi)
T68	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
320.00-300.00	Angle		(36 ksi)			(36 ksi)
T69	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
300.00-280.00	Angle		(36 ksi)			(36 ksi)
T70	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
280.00-275.00	Angle		(36 ksi)			(36 ksi)
T71	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
275.00-270.00	Angle		(36 ksi)			(36 ksi)
T72	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
270.00-265.00	Angle		(36 ksi)			(36 ksi)
T73	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
265.00-260.00	Angle		(36 ksi)			(36 ksi)
T74	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
260.00-255.00	Angle		(36 ksi)			(36 ksi)
T75	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
255.00-250.00	Angle		(36 ksi)			(36 ksi)
T76	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
250.00-245.00	Angle		(36 ksi)			(36 ksi)
T77	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
245.00-240.00	Angle		(36 ksi)			(36 ksi)
T78	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
240.00-220.00	Angle		(36 ksi)			(36 ksi)
T79	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
220.00-200.00	Angle		(36 ksi)			(36 ksi)
T80	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
200.00-180.00	Angle		(36 ksi)			(36 ksi)
T81	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
180.00-160.00	Angle		(36 ksi)			(36 ksi)
T82	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
160.00-140.00	Angle		(36 ksi)			(36 ksi)
T83	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
140.00-120.00	Angle		(36 ksi)			(36 ksi)
T84	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
120.00-115.00	Angle		(36 ksi)			(36 ksi)
T85	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
115.00-110.00	Angle		(36 ksi)			(36 ksi)
T86	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
110.00-105.00	Angle		(36 ksi)			(36 ksi)
T87	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
105.00-100.00	Angle		(36 ksi)			(36 ksi)
T88	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
100.00-95.00	Angle		(36 ksi)			(36 ksi)
T89	Double Equal	2L2 1/2x2 1/2x5/16	A36	Flat Bar		A36
95.00-90.00	Angle		(36 ksi)			(36 ksi)
T90	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
90.00-85.00	Angle		(36 ksi)			(36 ksi)
T91	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
85.00-80.00	Angle		(36 ksi)			(36 ksi)
T92	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
80.00-60.00	Angle		(36 ksi)			(36 ksi)
T93	Double Equal	2L2 1/2x2 1/2x1/4	A36	Flat Bar		A36
60.00-40.00	Angle		(36 ksi)			(36 ksi)

<p><b>tnxTower</b></p> <p><b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414</p>	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	13 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T94 40.00-20.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T95 20.00-15.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
T96 15.00-7.00	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T97 7.00-0.00	Channel	C15x33.9	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 1089.80-1084.90	None	Flat Bar		A36 (36 ksi)	Channel	MC18x42.7	A36 (36 ksi)
T2 1084.90-1080.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T3 1080.00-1060.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T4 1060.00-1040.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 1040.00-1020.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T6 1020.00-1000.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 1000.00-980.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 980.00-960.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 960.00-940.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T10 940.00-935.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 935.00-930.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T12 930.00-925.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T13 925.00-920.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T14 920.00-915.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T15 915.00-910.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)
T16 910.00-905.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T17 905.00-900.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T18 900.00-880.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T19 880.00-860.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T20 860.00-840.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)
T21	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
840.00-820.00				(36 ksi)	Angle		(36 ksi)
T22	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
820.00-800.00				(36 ksi)	Angle		(36 ksi)
T23	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
800.00-780.00				(36 ksi)	Angle		(36 ksi)
T24	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
780.00-775.00				(36 ksi)	Angle		(36 ksi)
T25	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
775.00-770.00				(36 ksi)	Angle		(36 ksi)
T26	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
770.00-765.00				(36 ksi)	Angle		(36 ksi)
T27	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
765.00-760.00				(36 ksi)	Angle		(36 ksi)
T28	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
760.00-755.00				(36 ksi)	Angle		(36 ksi)
T29	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
755.00-750.00				(36 ksi)	Angle		(36 ksi)
T30	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
750.00-745.00				(36 ksi)	Angle		(36 ksi)
T31	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
745.00-740.00				(36 ksi)	Angle		(36 ksi)
T32	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
740.00-720.00				(36 ksi)	Angle		(36 ksi)
T33	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
720.00-700.00				(36 ksi)	Angle		(36 ksi)
T34	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
700.00-680.00				(36 ksi)	Angle		(36 ksi)
T35	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
680.00-660.00				(36 ksi)	Angle		(36 ksi)
T36	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
660.00-640.00				(36 ksi)	Angle		(36 ksi)
T37	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
640.00-620.00				(36 ksi)	Angle		(36 ksi)
T38	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
620.00-615.00				(36 ksi)	Angle		(36 ksi)
T39	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
615.00-610.00				(36 ksi)	Angle		(36 ksi)
T40	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
610.00-605.00				(36 ksi)	Angle		(36 ksi)
T41	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
605.00-600.00				(36 ksi)	Angle		(36 ksi)
T42	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
600.00-595.00				(36 ksi)	Angle		(36 ksi)
T43	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
595.00-590.00				(36 ksi)	Angle		(36 ksi)
T44	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
590.00-585.00				(36 ksi)	Angle		(36 ksi)
T45	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
585.00-580.00				(36 ksi)	Angle		(36 ksi)
T46	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
580.00-560.00				(36 ksi)	Angle		(36 ksi)
T47	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
560.00-540.00				(36 ksi)	Angle		(36 ksi)
T48	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
540.00-535.00				(36 ksi)	Angle		(36 ksi)
T49	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
535.00-530.00				(36 ksi)	Angle		(36 ksi)
T50	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
530.00-525.00				(36 ksi)	Angle		(36 ksi)
T51	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36

# tnxTower

**American Tower**  
3500 Regency Parkway, Suite 100  
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Phone: (919) 468-0112  
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
525.00-520.00				(36 ksi)	Angle		(36 ksi)
T52	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
520.00-500.00				(36 ksi)	Angle		(36 ksi)
T53	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
500.00-480.00				(36 ksi)	Angle		(36 ksi)
T54	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
480.00-460.00				(36 ksi)	Angle		(36 ksi)
T55	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
460.00-440.00				(36 ksi)	Angle		(36 ksi)
T56	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
440.00-435.00				(36 ksi)	Angle		(36 ksi)
T57	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
435.00-430.00				(36 ksi)	Angle		(36 ksi)
T58	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
430.00-425.00				(36 ksi)	Angle		(36 ksi)
T59	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
425.00-420.00				(36 ksi)	Angle		(36 ksi)
T60	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
420.00-415.00				(36 ksi)	Angle		(36 ksi)
T61	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
415.00-410.00				(36 ksi)	Angle		(36 ksi)
T62	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
410.00-405.00				(36 ksi)	Angle		(36 ksi)
T63	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
405.00-400.00				(36 ksi)	Angle		(36 ksi)
T64	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
400.00-380.00				(36 ksi)	Angle		(36 ksi)
T65	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
380.00-360.00				(36 ksi)	Angle		(36 ksi)
T66	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
360.00-340.00				(36 ksi)	Angle		(36 ksi)
T67	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
340.00-320.00				(36 ksi)	Angle		(36 ksi)
T68	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
320.00-300.00				(36 ksi)	Angle		(36 ksi)
T69	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
300.00-280.00				(36 ksi)	Angle		(36 ksi)
T70	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
280.00-275.00				(36 ksi)	Angle		(36 ksi)
T71	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
275.00-270.00				(36 ksi)	Angle		(36 ksi)
T72	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
270.00-265.00				(36 ksi)	Angle		(36 ksi)
T73	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
265.00-260.00				(36 ksi)	Angle		(36 ksi)
T74	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
260.00-255.00				(36 ksi)	Angle		(36 ksi)
T75	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
255.00-250.00				(36 ksi)	Angle		(36 ksi)
T76	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
250.00-245.00				(36 ksi)	Angle		(36 ksi)
T77	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
245.00-240.00				(36 ksi)	Angle		(36 ksi)
T78	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
240.00-220.00				(36 ksi)	Angle		(36 ksi)
T79	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
220.00-200.00				(36 ksi)	Angle		(36 ksi)
T80	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
200.00-180.00				(36 ksi)	Angle		(36 ksi)
T81	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36



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Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
180.00-160.00				(36 ksi)	Angle		(36 ksi)
T82	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
160.00-140.00				(36 ksi)	Angle		(36 ksi)
T83	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
140.00-120.00				(36 ksi)	Angle		(36 ksi)
T84	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
120.00-115.00				(36 ksi)	Angle		(36 ksi)
T85	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
115.00-110.00				(36 ksi)	Angle		(36 ksi)
T86	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
110.00-105.00				(36 ksi)	Angle		(36 ksi)
T87	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
105.00-100.00				(36 ksi)	Angle		(36 ksi)
T88	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
100.00-95.00				(36 ksi)	Angle		(36 ksi)
T89	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x5/16	A36
95.00-90.00				(36 ksi)	Angle		(36 ksi)
T90	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
90.00-85.00				(36 ksi)	Angle		(36 ksi)
T91	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
85.00-80.00				(36 ksi)	Angle		(36 ksi)
T92	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
80.00-60.00				(36 ksi)	Angle		(36 ksi)
T93	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
60.00-40.00				(36 ksi)	Angle		(36 ksi)
T94	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
40.00-20.00				(36 ksi)	Angle		(36 ksi)
T95	None	Flat Bar		A36	Double Equal	2L2 1/2x2 1/2x1/4	A36
20.00-15.00				(36 ksi)	Angle		(36 ksi)
T96	None	Flat Bar		A36	Double Equal	2L1 1/2x1 1/2x1/8	A36
15.00-7.00				(36 ksi)	Angle		(36 ksi)
T97	None	Flat Bar		A36	Channel	C15x33.9	A36
7.00-0.00				(36 ksi)			(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 1089.80-1084.90	Solid Round		A572-50 (50 ksi)	Channel	MC18x42.7	A572-50 (50 ksi)

**Tower Section Geometry (cont'd)**

Tower Elevation ft	Redundant Bracing Grade	Redundant Type	Redundant Size	K Factor	
T96 15.00-7.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Double Equal Angle Double Equal Angle	2L2 1/2x2 1/2x1/4 2L2 1/2x2 1/2x1/4	1 1

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<i>Tower Elevation</i>	<i>Redundant Bracing Grade</i>	<i>Redundant Type</i>	<i>Redundant Size</i>	<i>K Factor</i>
<i>ft</i>		Sub-Horizontal	Double Equal Angle	1

### Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Gusset Area (per face)</i>	<i>Gusset Thickness</i>	<i>Gusset Grade</i>	<i>Adjust. Factor A<sub>f</sub></i>	<i>Adjust. Factor A<sub>r</sub></i>	<i>Weight Mult.</i>	<i>Double Angle Stitch Bolt Spacing Diagonals in</i>	<i>Double Angle Stitch Bolt Spacing Horizontals in</i>	<i>Double Angle Stitch Bolt Spacing Redundants in</i>
<i>ft</i>	<i>ft<sup>2</sup></i>	<i>in</i>							
1089.80-1084.90	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1084.90-1080.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1080.00-1060.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1060.00-1040.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1040.00-1020.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1020.00-1000.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
1000.00-980.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
980.00-960.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
960.00-940.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
940.00-935.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
935.00-930.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
930.00-925.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
925.00-920.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
920.00-915.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
915.00-910.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
910.00-905.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
905.00-900.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
900.00-880.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
880.00-860.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt
860.00-840.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Third-Pt	Third-Pt	Mid-Pt

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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 in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
840.00-820.00			(36 ksi)						
T22	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
820.00-800.00			(36 ksi)						
T23	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
800.00-780.00			(36 ksi)						
T24	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
780.00-775.00			(36 ksi)						
T25	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
775.00-770.00			(36 ksi)						
T26	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
770.00-765.00			(36 ksi)						
T27	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
765.00-760.00			(36 ksi)						
T28	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
760.00-755.00			(36 ksi)						
T29	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
755.00-750.00			(36 ksi)						
T30	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
750.00-745.00			(36 ksi)						
T31	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
745.00-740.00			(36 ksi)						
T32	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
740.00-720.00			(36 ksi)						
T33	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
720.00-700.00			(36 ksi)						
T34	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
700.00-680.00			(36 ksi)						
T35	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
680.00-660.00			(36 ksi)						
T36	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
660.00-640.00			(36 ksi)						
T37	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
640.00-620.00			(36 ksi)						
T38	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
620.00-615.00			(36 ksi)						
T39	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
615.00-610.00			(36 ksi)						
T40	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
610.00-605.00			(36 ksi)						
T41	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
605.00-600.00			(36 ksi)						
T42	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
600.00-595.00			(36 ksi)						
T43	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
595.00-590.00			(36 ksi)						
T44	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
590.00-585.00			(36 ksi)						
T45	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
585.00-580.00			(36 ksi)						
T46	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
580.00-560.00			(36 ksi)						
T47	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
560.00-540.00			(36 ksi)						
T48	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
540.00-535.00			(36 ksi)						
T49	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
535.00-530.00			(36 ksi)						
T50	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
530.00-525.00			(36 ksi)						

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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 in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
T51	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
525.00-520.00			(36 ksi)						
T52	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
520.00-500.00			(36 ksi)						
T53	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
500.00-480.00			(36 ksi)						
T54	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
480.00-460.00			(36 ksi)						
T55	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
460.00-440.00			(36 ksi)						
T56	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
440.00-435.00			(36 ksi)						
T57	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
435.00-430.00			(36 ksi)						
T58	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
430.00-425.00			(36 ksi)						
T59	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
425.00-420.00			(36 ksi)						
T60	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
420.00-415.00			(36 ksi)						
T61	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
415.00-410.00			(36 ksi)						
T62	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
410.00-405.00			(36 ksi)						
T63	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
405.00-400.00			(36 ksi)						
T64	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
400.00-380.00			(36 ksi)						
T65	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
380.00-360.00			(36 ksi)						
T66	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
360.00-340.00			(36 ksi)						
T67	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
340.00-320.00			(36 ksi)						
T68	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
320.00-300.00			(36 ksi)						
T69	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
300.00-280.00			(36 ksi)						
T70	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
280.00-275.00			(36 ksi)						
T71	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
275.00-270.00			(36 ksi)						
T72	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
270.00-265.00			(36 ksi)						
T73	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
265.00-260.00			(36 ksi)						
T74	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
260.00-255.00			(36 ksi)						
T75	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
255.00-250.00			(36 ksi)						
T76	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
250.00-245.00			(36 ksi)						
T77	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
245.00-240.00			(36 ksi)						
T78	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
240.00-220.00			(36 ksi)						
T79	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt
220.00-200.00			(36 ksi)						
T80	0.00	0.0000	A36	1	1	1	Third-Pt	Third-Pt	Mid-Pt



















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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
T94 40.00-20.00	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
T95 20.00-15.00	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
T96 15.00-7.00	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
T97 7.00-0.00	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

**Tower Section Geometry (cont'd)**

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 1089.80-1084.90	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T2 1084.90-1080.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T3 1080.00-1060.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T4 1060.00-1040.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T5 1040.00-1020.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T6 1020.00-1000.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T7 1000.00-980.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T8 980.00-960.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T9 960.00-940.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T10 940.00-935.00	Flange	0.8750 A325N	0	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T11 935.00-930.00	Flange	0.8750 A325N	0	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T12 930.00-925.00	Flange	0.8750 A325N	0	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T13 925.00-920.00	Flange	0.8750 A325N	4	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T14 920.00-915.00	Flange	0.8750 A325N	0	0.7500 A325N	2	0.7500 A325N	2	0.0000 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0
T15 915.00-910.00	Flange	0.8750 A325N	0	0.7500 A325N	2	0.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	2	0.6250 A325N	0





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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T74	Flange	0.8750	0	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
260.00-255.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T75	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
255.00-250.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T76	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
250.00-245.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T77	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
245.00-240.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T78	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
240.00-220.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T79	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
220.00-200.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T80	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
200.00-180.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T81	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
180.00-160.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T82	Flange	0.8750	4	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
160.00-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T83	Flange	0.8750	4	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
140.00-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T84	Flange	0.8750	0	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
120.00-115.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T85	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
115.00-110.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T86	Flange	0.8750	0	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
110.00-105.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T87	Flange	0.8750	4	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
105.00-100.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T88	Flange	0.8750	0	0.7500	2	0.7500	2	0.0000	0	0.6250	0	0.7500	2	0.6250	0
100.00-95.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T89	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
95.00-90.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T90	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
90.00-85.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T91	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
85.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T92	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T93	Flange	0.8750	4	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
60.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T94	Flange	0.8750	0	0.7500	2	0.7500	2	0.6250	0	0.6250	0	0.7500	2	0.6250	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T95	Flange	0.8750	6	0.7500	2	0.7500	2	0.7500	2	0.6250	0	0.7500	2	0.7500	2
20.00-15.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T96	Flange	0.8750	0	0.7500	0	0.7500	0	0.6250	0	0.6250	0	0.7500	0	0.6250	0
15.00-7.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T97	Flange	0.8750	0	0.7500	0	0.7500	0	0.6250	0	0.6250	0	0.7500	0	0.6250	0
7.00-0.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	



<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	32 of 192
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Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L <sub>u</sub>	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft			lb		ksi	plf	ft	ft	°	ft	%
1089.8	BS	A 1 3/4	37600.00	10%	24000	6.430	1331.05	630.00	0.0000	-86.00	100%
		B 1 3/4	37600.00	10%	24000	6.430	1272.96	694.00	0.0000	19.00	100%
		C 1 3/4	37600.00	10%	24000	6.430	1272.12	694.00	0.0000	20.00	100%
920	BS	A 1 3/4	37600.00	10%	24000	6.430	1183.93	630.00	0.0000	-86.00	100%
		B 1 3/4	37600.00	10%	24000	6.430	1134.01	694.00	0.0000	19.00	100%
		C 1 3/4	37600.00	10%	24000	6.430	1133.22	694.00	0.0000	20.00	100%
760	BS	A 1 3/4	37600.00	10%	24000	6.430	1051.53	630.00	0.0000	-86.00	100%
		B 1 3/4	37600.00	10%	24000	6.430	1011.69	694.00	0.0000	19.00	100%
		C 1 3/4	37600.00	10%	24000	6.430	1010.96	694.00	0.0000	20.00	100%
600	BS	A 1 3/4	37600.00	10%	24000	6.430	927.84	630.00	0.0000	-86.00	100%
		B 1 3/4	37600.00	10%	24000	6.430	901.23	694.00	0.0000	19.00	100%
		C 1 3/4	37600.00	10%	24000	6.430	900.58	694.00	0.0000	20.00	100%
420	BS	A 1 1/2	27600.00	10%	24000	4.730	696.36	500.00	0.0000	-70.00	100%
		B 1 1/2	27600.00	10%	24000	4.730	645.21	500.00	0.0000	6.00	100%
		C 1 1/2	27600.00	10%	24000	4.730	628.25	500.00	0.0000	33.00	100%
260	BS	A 1 1/2	27600.00	10%	24000	4.730	594.88	500.00	0.0000	-70.00	100%
		B 1 1/2	27600.00	10%	24000	4.730	556.38	500.00	0.0000	6.00	100%
		C 1 1/2	27600.00	10%	24000	4.730	544.60	500.00	0.0000	33.00	100%
100	BS	A 1 1/2	27600.00	10%	24000	4.730	523.44	500.00	0.0000	-70.00	100%
		B 1 1/2	27600.00	10%	24000	4.730	503.94	500.00	0.0000	6.00	100%
		C 1 1/2	27600.00	10%	24000	4.730	499.61	500.00	0.0000	33.00	100%

### Guy Data (cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
1089.8	Corner						
920	Corner						
760	Corner						
600	Corner						
420	Corner						
260	Corner						
100	Corner						

### Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
1089.80	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Channel	
920.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Double Equal Angle	
760.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Double Equal Angle	
600.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Double Equal Angle	
420.00	A572-50	Solid Round				A36	Double Equal	

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	33 of 192
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Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
260.00	(50 ksi) A572-50	Solid Round				(36 ksi) A36	Angle Double Equal	
100.00	(50 ksi) A572-50	Solid Round				(36 ksi) A36	Angle Double Equal	

### Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
1089.8	8558.65	8185.16	8179.75		137.91	127.20	127.04	
920	7612.66	7291.69	7286.59		20.3 sec/pulse 110.57	19.5 sec/pulse 102.30	19.5 sec/pulse 102.17	
760	6761.35	6505.20	6500.50		18.2 sec/pulse 88.33	17.5 sec/pulse 82.47	17.5 sec/pulse 82.36	
600	5965.98	5794.88	5790.75		16.2 sec/pulse 69.66	15.7 sec/pulse 66.30	15.7 sec/pulse 66.21	
420	3293.76	3051.85	2971.63		14.4 sec/pulse 39.94	14.1 sec/pulse 34.50	14.0 sec/pulse 32.78	
260	2813.79	2631.67	2575.95		10.9 sec/pulse 29.53	10.1 sec/pulse 26.00	9.9 sec/pulse 24.97	
100	2475.86	2383.62	2363.16		9.4 sec/pulse 23.17	8.8 sec/pulse 21.62	8.6 sec/pulse 21.30	
					8.3 sec/pulse	8.0 sec/pulse	8.0 sec/pulse	

### Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K <sub>x</sub>	K <sub>y</sub>	K <sub>x</sub>	K <sub>y</sub>	K <sub>x</sub>	K <sub>y</sub>
1089.8	No	No			1	1	1	1
920	No	No			1	1	1	1
760	No	No			1	1	1	1
600	No	No			1	1	1	1
420	No	No			1	1	1	1
260	No	No			1	1	1	1
100	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
1089.8	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	34 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

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
920	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
760	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
600	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
420	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
260	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
100	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

### Guy Pressures

Guy Elevation ft	Guy Location	z ft	q <sub>z</sub> psf	q <sub>z</sub> Ice psf	Ice Thickness in
1089.8	A	501.90	38	9	1.9899
	B	554.40	39	9	2.0030
	C	554.90	39	9	2.0032
920	A	417.00	37	9	1.9714
	B	469.50	38	9	1.9823
	C	470.00	38	9	1.9824
760	A	337.00	36	8	1.9604
	B	389.50	37	8	1.9666
	C	390.00	37	8	1.9667
600	A	257.00	36	8	1.9617
	B	309.50	36	8	1.9591
	C	310.00	36	8	1.9591
420	A	175.00	38	9	1.9834
	B	213.00	37	9	1.9704
	C	226.50	37	8	1.9670
260	A	95.00	40	9	2.0226
	B	133.00	39	9	2.0034
	C	146.50	38	9	1.9965
100	A	15.00	41	9	1.9087
	B	53.00	40	9	2.0256
	C	66.50	40	9	2.0296

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
6 1/8" Hard Line	C	No	Ar (CaAa)	1089.80 - 0.00	1	1	0.000 0.000	6.1250		6.83
6 1/8" Hard Line	C	No	Surface Ar (CaAa)	1151.90 - 1089.80	1	1	0.000 0.000	6.1250		6.83
*** 1" conduit	B	No	Ar (CaAa)	1073.00 -	1	1	0.000	1.3200		1.68

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	35 of 192
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Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
7/8" Coax	B	No	Ar (CaAa)	1073.00 - 0.00	1	1	0.000 0.000	1.0900		0.33
***										
7/8" Coax	A	No	Ar (CaAa)	996.00 - 0.00	1	1	0.000 0.000	1.0900		0.33
0.99" (25.1mm) LDF2-2R	A	No	Ar (CaAa)	996.00 - 0.00	1	1	0.000 0.000	0.9900		0.30
***										
EW63	B	No	Ar (CaAa)	878.00 - 0.00	1	1	0.000 0.000	2.0100		0.51
***										
1.39" (35.3mm) Hybrid	A	No	Ar (CaAa)	400.00 - 0.00	1	1	0.000 0.000	1.3900		1.36
***										
EW63	B	No	Ar (CaAa)	349.00 - 0.00	1	1	0.000 0.000	2.0100		0.51
***										
0.33" (8.7mm) Fiber	B	No	Ar (CaAa)	190.00 - 0.00	1	1	0.000 0.000	0.3300		0.05
0.65" (16.4mm) 8 AWG 2C	B	No	Ar (CaAa)	190.00 - 0.00	2	2	0.000 0.000	0.6500		0.31
2 1/2" conduit	B	No	Ar (CaAa)	190.00 - 0.00	1	1	0.000 0.000	2.8800		5.79
***										
1 5/8" Coax	C	No	Ar (CaAa)	192.00 - 0.00	6	6	0.000 0.000	1.9800		0.82
***										
0.39" (10mm) Fiber Trunk	B	No	Ar (CaAa)	190.00 - 0.00	1	1	0.000 0.000	0.3900		0.07
0.78" (19.7 mm) 8 AWG 6	B	No	Ar (CaAa)	190.00 - 0.00	3	3	0.000 0.000	0.7800		0.59

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight lb
L1	1151.90-1089.80	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	38.036	0.000	424.14
T1	1089.80-1084.90	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.501	0.000	33.47
T2	1084.90-1080.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.501	0.000	33.47
T3	1080.00-1060.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.133	0.000	26.13
		C	0.000	0.000	6.125	0.000	136.60
T4	1060.00-1040.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T5	1040.00-1020.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T6	1020.00-1000.00	A	0.000	0.000	0.000	0.000	0.00

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T7	1000.00-980.00	A	0.000	0.000	3.328	0.000	10.08
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T8	980.00-960.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T9	960.00-940.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T10	940.00-935.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T11	935.00-930.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T12	930.00-925.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T13	925.00-920.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T14	920.00-915.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T15	915.00-910.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T16	910.00-905.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T17	905.00-900.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	1.205	0.000	10.05
		C	0.000	0.000	1.531	0.000	34.15
T18	900.00-880.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	4.820	0.000	40.20
		C	0.000	0.000	6.125	0.000	136.60
T19	880.00-860.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.438	0.000	49.38
		C	0.000	0.000	6.125	0.000	136.60
T20	860.00-840.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T21	840.00-820.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T22	820.00-800.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T23	800.00-780.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T24	780.00-775.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T25	775.00-770.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T26	770.00-765.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60

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Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T27	765.00-760.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T28	760.00-755.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T29	755.00-750.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T30	750.00-745.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T31	745.00-740.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T32	740.00-720.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T33	720.00-700.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T34	700.00-680.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T35	680.00-660.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T36	660.00-640.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T37	640.00-620.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
T38	620.00-615.00	C	0.000	0.000	6.125	0.000	136.60
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T39	615.00-610.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T40	610.00-605.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T41	605.00-600.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T42	600.00-595.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T43	595.00-590.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T44	590.00-585.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T45	585.00-580.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
T46	580.00-560.00	C	0.000	0.000	1.531	0.000	34.15
		A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60

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Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T47	560.00-540.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T48	540.00-535.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T49	535.00-530.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T50	530.00-525.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T51	525.00-520.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T52	520.00-500.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T53	500.00-480.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T54	480.00-460.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T55	460.00-440.00	A	0.000	0.000	4.160	0.000	12.60
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T56	440.00-435.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T57	435.00-430.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T58	430.00-425.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T59	425.00-420.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T60	420.00-415.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T61	415.00-410.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T62	410.00-405.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T63	405.00-400.00	A	0.000	0.000	1.040	0.000	3.15
		B	0.000	0.000	2.210	0.000	12.60
		C	0.000	0.000	1.531	0.000	34.15
T64	400.00-380.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T65	380.00-360.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	8.840	0.000	50.40
		C	0.000	0.000	6.125	0.000	136.60
T66	360.00-340.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	10.649	0.000	54.99
		C	0.000	0.000	6.125	0.000	136.60
T67	340.00-320.00	A	0.000	0.000	6.940	0.000	39.80

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
		B	0.000	0.000	12.860	0.000	60.60
		C	0.000	0.000	6.125	0.000	136.60
T68	320.00-300.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	12.860	0.000	60.60
		C	0.000	0.000	6.125	0.000	136.60
T69	300.00-280.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	12.860	0.000	60.60
		C	0.000	0.000	6.125	0.000	136.60
T70	280.00-275.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T71	275.00-270.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T72	270.00-265.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T73	265.00-260.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T74	260.00-255.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T75	255.00-250.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T76	250.00-245.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T77	245.00-240.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	3.215	0.000	15.15
		C	0.000	0.000	1.531	0.000	34.15
T78	240.00-220.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	12.860	0.000	60.60
		C	0.000	0.000	6.125	0.000	136.60
T79	220.00-200.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	12.860	0.000	60.60
		C	0.000	0.000	6.125	0.000	136.60
T80	200.00-180.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	20.100	0.000	143.60
		C	0.000	0.000	20.381	0.000	195.64
T81	180.00-160.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.340	0.000	226.60
		C	0.000	0.000	29.885	0.000	235.00
T82	160.00-140.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.340	0.000	226.60
		C	0.000	0.000	29.885	0.000	235.00
T83	140.00-120.00	A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.330	0.000	226.60
		C	0.000	0.000	29.885	0.000	235.00
T84	120.00-115.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.826	0.000	56.65
		C	0.000	0.000	7.471	0.000	58.75
T85	115.00-110.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.823	0.000	56.65
		C	0.000	0.000	7.471	0.000	58.75
T86	110.00-105.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.821	0.000	56.65
		C	0.000	0.000	7.471	0.000	58.75
T87	105.00-100.00	A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.818	0.000	56.65



<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	40 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T88	100.00-95.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.816	0.000	56.65
T89	95.00-90.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.814	0.000	56.65
T90	90.00-85.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.812	0.000	56.65
T91	85.00-80.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.810	0.000	56.65
T92	80.00-60.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.231	0.000	226.60
T93	60.00-40.00	C	0.000	0.000	29.885	0.000	235.00
		A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.254	0.000	226.60
T94	40.00-20.00	C	0.000	0.000	29.885	0.000	235.00
		A	0.000	0.000	6.940	0.000	39.80
		B	0.000	0.000	27.340	0.000	226.60
T95	20.00-15.00	C	0.000	0.000	29.885	0.000	235.00
		A	0.000	0.000	1.735	0.000	9.95
		B	0.000	0.000	6.802	0.000	56.65
T96	15.00-7.00	C	0.000	0.000	7.471	0.000	58.75
		A	0.000	0.000	2.776	0.000	15.92
		B	0.000	0.000	10.843	0.000	90.64
T97	7.00-0.00	C	0.000	0.000	11.954	0.000	94.00
		A	0.000	0.000	2.429	0.000	13.93
		B	0.000	0.000	9.447	0.000	79.31
		C	0.000	0.000	10.460	0.000	82.25

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

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
L1	1151.90-1089.80	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	64.121	0.000	1734.76
T1	1089.80-1084.90	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.060	0.000	136.89
T2	1084.90-1080.00	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.060	0.000	136.89
T3	1080.00-1060.00	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	14.055	0.000	246.65
		C		0.000	0.000	20.651	0.000	558.73
T4	1060.00-1040.00	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	21.623	0.000	379.47
		C		0.000	0.000	20.651	0.000	558.74
T5	1040.00-1020.00	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	21.623	0.000	379.49
		C		0.000	0.000	20.652	0.000	558.75
T6	1020.00-1000.00	A	2.100	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	21.624	0.000	379.51
		C		0.000	0.000	20.652	0.000	558.77

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T7	1000.00-980.00	A	2.101	0.000	0.000	16.772	0.000	267.99
		B		0.000	0.000	21.625	0.000	379.53
		C		0.000	0.000	20.652	0.000	558.79
T8	980.00-960.00	A	2.101	0.000	0.000	20.965	0.000	335.01
		B		0.000	0.000	21.625	0.000	379.55
		C		0.000	0.000	20.653	0.000	558.81
T9	960.00-940.00	A	2.100	0.000	0.000	20.958	0.000	334.78
		B		0.000	0.000	21.618	0.000	379.31
		C		0.000	0.000	20.649	0.000	558.59
T10	940.00-935.00	A	2.097	0.000	0.000	5.234	0.000	83.52
		B		0.000	0.000	5.399	0.000	94.65
		C		0.000	0.000	5.160	0.000	139.48
T11	935.00-930.00	A	2.096	0.000	0.000	5.232	0.000	83.45
		B		0.000	0.000	5.397	0.000	94.58
		C		0.000	0.000	5.158	0.000	139.41
T12	930.00-925.00	A	2.095	0.000	0.000	5.230	0.000	83.38
		B		0.000	0.000	5.395	0.000	94.51
		C		0.000	0.000	5.157	0.000	139.34
T13	925.00-920.00	A	2.094	0.000	0.000	5.228	0.000	83.31
		B		0.000	0.000	5.393	0.000	94.43
		C		0.000	0.000	5.156	0.000	139.27
T14	920.00-915.00	A	2.093	0.000	0.000	5.225	0.000	83.24
		B		0.000	0.000	5.390	0.000	94.36
		C		0.000	0.000	5.155	0.000	139.20
T15	915.00-910.00	A	2.092	0.000	0.000	5.223	0.000	83.17
		B		0.000	0.000	5.388	0.000	94.29
		C		0.000	0.000	5.154	0.000	139.13
T16	910.00-905.00	A	2.090	0.000	0.000	5.221	0.000	83.10
		B		0.000	0.000	5.386	0.000	94.22
		C		0.000	0.000	5.153	0.000	139.06
T17	905.00-900.00	A	2.089	0.000	0.000	5.219	0.000	83.03
		B		0.000	0.000	5.384	0.000	94.14
		C		0.000	0.000	5.152	0.000	138.99
T18	900.00-880.00	A	2.087	0.000	0.000	20.852	0.000	331.41
		B		0.000	0.000	21.512	0.000	375.83
		C		0.000	0.000	20.596	0.000	555.26
T19	880.00-860.00	A	2.082	0.000	0.000	20.816	0.000	330.25
		B		0.000	0.000	32.589	0.000	571.17
		C		0.000	0.000	20.578	0.000	554.11
T20	860.00-840.00	A	2.077	0.000	0.000	20.779	0.000	329.08
		B		0.000	0.000	33.769	0.000	591.10
		C		0.000	0.000	20.560	0.000	552.95
T21	840.00-820.00	A	2.073	0.000	0.000	20.742	0.000	327.89
		B		0.000	0.000	33.712	0.000	589.17
		C		0.000	0.000	20.541	0.000	551.78
T22	820.00-800.00	A	2.068	0.000	0.000	20.704	0.000	326.69
		B		0.000	0.000	33.655	0.000	587.22
		C		0.000	0.000	20.522	0.000	550.59
T23	800.00-780.00	A	2.063	0.000	0.000	20.665	0.000	325.47
		B		0.000	0.000	33.598	0.000	585.24
		C		0.000	0.000	20.503	0.000	549.38
T24	780.00-775.00	A	2.060	0.000	0.000	5.160	0.000	81.18
		B		0.000	0.000	8.390	0.000	146.00
		C		0.000	0.000	5.123	0.000	137.15
T25	775.00-770.00	A	2.059	0.000	0.000	5.158	0.000	81.10
		B		0.000	0.000	8.387	0.000	145.87
		C		0.000	0.000	5.121	0.000	137.08
T26	770.00-765.00	A	2.058	0.000	0.000	5.155	0.000	81.02
		B		0.000	0.000	8.383	0.000	145.75
		C		0.000	0.000	5.120	0.000	137.00
T27	765.00-760.00	A	2.056	0.000	0.000	5.153	0.000	80.94

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
		B		0.000	0.000	8.379	0.000	145.62
		C		0.000	0.000	5.119	0.000	136.92
T28	760.00-755.00	A	2.055	0.000	0.000	5.150	0.000	80.87
		B		0.000	0.000	8.376	0.000	145.49
		C		0.000	0.000	5.118	0.000	136.85
T29	755.00-750.00	A	2.054	0.000	0.000	5.148	0.000	80.79
		B		0.000	0.000	8.372	0.000	145.37
		C		0.000	0.000	5.116	0.000	136.77
T30	750.00-745.00	A	2.053	0.000	0.000	5.145	0.000	80.71
		B		0.000	0.000	8.368	0.000	145.24
		C		0.000	0.000	5.115	0.000	136.69
T31	745.00-740.00	A	2.051	0.000	0.000	5.143	0.000	80.63
		B		0.000	0.000	8.364	0.000	145.11
		C		0.000	0.000	5.114	0.000	136.61
T32	740.00-720.00	A	2.048	0.000	0.000	20.547	0.000	321.74
		B		0.000	0.000	33.420	0.000	579.17
		C		0.000	0.000	20.443	0.000	545.67
T33	720.00-700.00	A	2.043	0.000	0.000	20.506	0.000	320.47
		B		0.000	0.000	33.359	0.000	577.11
		C		0.000	0.000	20.423	0.000	544.41
T34	700.00-680.00	A	2.038	0.000	0.000	20.465	0.000	319.19
		B		0.000	0.000	33.298	0.000	575.03
		C		0.000	0.000	20.403	0.000	543.14
T35	680.00-660.00	A	2.033	0.000	0.000	20.424	0.000	317.91
		B		0.000	0.000	33.236	0.000	572.94
		C		0.000	0.000	20.382	0.000	541.86
T36	660.00-640.00	A	2.028	0.000	0.000	20.383	0.000	316.62
		B		0.000	0.000	33.174	0.000	570.84
		C		0.000	0.000	20.361	0.000	540.57
T37	640.00-620.00	A	2.023	0.000	0.000	20.341	0.000	315.32
		B		0.000	0.000	33.112	0.000	568.73
		C		0.000	0.000	20.341	0.000	539.27
T38	620.00-615.00	A	2.019	0.000	0.000	5.079	0.000	78.63
		B		0.000	0.000	8.268	0.000	141.85
		C		0.000	0.000	5.082	0.000	134.62
T39	615.00-610.00	A	2.018	0.000	0.000	5.076	0.000	78.55
		B		0.000	0.000	8.264	0.000	141.72
		C		0.000	0.000	5.081	0.000	134.54
T40	610.00-605.00	A	2.017	0.000	0.000	5.074	0.000	78.47
		B		0.000	0.000	8.260	0.000	141.59
		C		0.000	0.000	5.079	0.000	134.45
T41	605.00-600.00	A	2.015	0.000	0.000	5.071	0.000	78.39
		B		0.000	0.000	8.256	0.000	141.46
		C		0.000	0.000	5.078	0.000	134.37
T42	600.00-595.00	A	2.014	0.000	0.000	5.068	0.000	78.31
		B		0.000	0.000	8.252	0.000	141.33
		C		0.000	0.000	5.077	0.000	134.29
T43	595.00-590.00	A	2.013	0.000	0.000	5.066	0.000	78.23
		B		0.000	0.000	8.249	0.000	141.20
		C		0.000	0.000	5.075	0.000	134.21
T44	590.00-585.00	A	2.012	0.000	0.000	5.063	0.000	78.15
		B		0.000	0.000	8.245	0.000	141.07
		C		0.000	0.000	5.074	0.000	134.13
T45	585.00-580.00	A	2.010	0.000	0.000	5.061	0.000	78.06
		B		0.000	0.000	8.241	0.000	140.94
		C		0.000	0.000	5.073	0.000	134.05
T46	580.00-560.00	A	2.007	0.000	0.000	20.216	0.000	311.46
		B		0.000	0.000	32.924	0.000	562.44
		C		0.000	0.000	20.278	0.000	535.40
T47	560.00-540.00	A	2.002	0.000	0.000	20.175	0.000	310.19
		B		0.000	0.000	32.863	0.000	560.38

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	43 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T48	540.00-535.00	C		0.000	0.000	20.258	0.000	534.13
		A	1.999	0.000	0.000	5.037	0.000	77.35
		B		0.000	0.000	8.206	0.000	139.78
T49	535.00-530.00	C		0.000	0.000	5.061	0.000	133.34
		A	1.997	0.000	0.000	5.035	0.000	77.28
		B		0.000	0.000	8.202	0.000	139.65
T50	530.00-525.00	C		0.000	0.000	5.060	0.000	133.26
		A	1.996	0.000	0.000	5.032	0.000	77.20
		B		0.000	0.000	8.199	0.000	139.53
T51	525.00-520.00	C		0.000	0.000	5.059	0.000	133.18
		A	1.995	0.000	0.000	5.030	0.000	77.12
		B		0.000	0.000	8.195	0.000	139.40
T52	520.00-500.00	C		0.000	0.000	5.057	0.000	133.10
		A	1.992	0.000	0.000	20.095	0.000	307.73
		B		0.000	0.000	32.743	0.000	556.37
T53	500.00-480.00	C		0.000	0.000	20.218	0.000	531.66
		A	1.987	0.000	0.000	20.057	0.000	306.55
		B		0.000	0.000	32.685	0.000	554.44
T54	480.00-460.00	C		0.000	0.000	20.198	0.000	530.47
		A	1.982	0.000	0.000	20.019	0.000	305.41
		B		0.000	0.000	32.629	0.000	552.59
T55	460.00-440.00	C		0.000	0.000	20.180	0.000	529.32
		A	1.978	0.000	0.000	19.984	0.000	304.33
		B		0.000	0.000	32.576	0.000	550.83
T56	440.00-435.00	C		0.000	0.000	20.162	0.000	528.23
		A	1.975	0.000	0.000	4.991	0.000	75.92
		B		0.000	0.000	8.136	0.000	137.45
T57	435.00-430.00	C		0.000	0.000	5.038	0.000	131.90
		A	1.974	0.000	0.000	4.989	0.000	75.86
		B		0.000	0.000	8.133	0.000	137.35
T58	430.00-425.00	C		0.000	0.000	5.037	0.000	131.83
		A	1.973	0.000	0.000	4.987	0.000	75.80
		B		0.000	0.000	8.130	0.000	137.25
T59	425.00-420.00	C		0.000	0.000	5.036	0.000	131.77
		A	1.972	0.000	0.000	4.985	0.000	75.74
		B		0.000	0.000	8.127	0.000	137.15
T60	420.00-415.00	C		0.000	0.000	5.035	0.000	131.71
		A	1.971	0.000	0.000	4.983	0.000	75.68
		B		0.000	0.000	8.124	0.000	137.06
T61	415.00-410.00	C		0.000	0.000	5.034	0.000	131.66
		A	1.971	0.000	0.000	4.981	0.000	75.63
		B		0.000	0.000	8.122	0.000	136.96
T62	410.00-405.00	C		0.000	0.000	5.033	0.000	131.60
		A	1.970	0.000	0.000	4.979	0.000	75.57
		B		0.000	0.000	8.119	0.000	136.88
T63	405.00-400.00	C		0.000	0.000	5.032	0.000	131.54
		A	1.969	0.000	0.000	4.978	0.000	75.52
		B		0.000	0.000	8.116	0.000	136.79
T64	400.00-380.00	C		0.000	0.000	5.031	0.000	131.49
		A	1.967	0.000	0.000	30.540	0.000	490.09
		B		0.000	0.000	32.440	0.000	546.34
T65	380.00-360.00	C		0.000	0.000	20.117	0.000	525.45
		A	1.964	0.000	0.000	30.506	0.000	489.01
		B		0.000	0.000	32.406	0.000	545.20
T66	360.00-340.00	C		0.000	0.000	20.105	0.000	524.74
		A	1.962	0.000	0.000	30.478	0.000	488.15
		B		0.000	0.000	37.718	0.000	634.53
T67	340.00-320.00	C		0.000	0.000	20.096	0.000	524.18
		A	1.960	0.000	0.000	30.459	0.000	487.55
		B		0.000	0.000	44.218	0.000	743.96
		C		0.000	0.000	20.090	0.000	523.78

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	44 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
T68	320.00-300.00	A	1.959	0.000	0.000	30.449	0.000	487.25
		B		0.000	0.000	44.205	0.000	743.52
		C		0.000	0.000	20.086	0.000	523.58
T69	300.00-280.00	A	1.959	0.000	0.000	30.450	0.000	487.28
		B		0.000	0.000	44.207	0.000	743.57
		C		0.000	0.000	20.087	0.000	523.60
T70	280.00-275.00	A	1.960	0.000	0.000	7.614	0.000	121.87
		B		0.000	0.000	11.054	0.000	185.97
		C		0.000	0.000	5.022	0.000	130.94
T71	275.00-270.00	A	1.960	0.000	0.000	7.615	0.000	121.91
		B		0.000	0.000	11.055	0.000	186.02
		C		0.000	0.000	5.023	0.000	130.96
T72	270.00-265.00	A	1.961	0.000	0.000	7.617	0.000	121.95
		B		0.000	0.000	11.057	0.000	186.08
		C		0.000	0.000	5.023	0.000	130.98
T73	265.00-260.00	A	1.961	0.000	0.000	7.618	0.000	121.99
		B		0.000	0.000	11.059	0.000	186.14
		C		0.000	0.000	5.024	0.000	131.01
T74	260.00-255.00	A	1.962	0.000	0.000	7.620	0.000	122.05
		B		0.000	0.000	11.061	0.000	186.22
		C		0.000	0.000	5.024	0.000	131.05
T75	255.00-250.00	A	1.962	0.000	0.000	7.622	0.000	122.11
		B		0.000	0.000	11.064	0.000	186.31
		C		0.000	0.000	5.025	0.000	131.09
T76	250.00-245.00	A	1.963	0.000	0.000	7.624	0.000	122.18
		B		0.000	0.000	11.067	0.000	186.41
		C		0.000	0.000	5.025	0.000	131.14
T77	245.00-240.00	A	1.964	0.000	0.000	7.626	0.000	122.25
		B		0.000	0.000	11.070	0.000	186.52
		C		0.000	0.000	5.026	0.000	131.19
T78	240.00-220.00	A	1.966	0.000	0.000	30.534	0.000	489.90
		B		0.000	0.000	44.319	0.000	747.37
		C		0.000	0.000	20.115	0.000	525.33
T79	220.00-200.00	A	1.971	0.000	0.000	30.594	0.000	491.76
		B		0.000	0.000	44.399	0.000	750.07
		C		0.000	0.000	20.135	0.000	526.56
T80	200.00-180.00	A	1.978	0.000	0.000	30.672	0.000	494.17
		B		0.000	0.000	80.647	0.000	1270.06
		C		0.000	0.000	49.069	0.000	973.54
T81	180.00-160.00	A	1.986	0.000	0.000	30.766	0.000	497.14
		B		0.000	0.000	117.123	0.000	1796.17
		C		0.000	0.000	68.422	0.000	1275.09
T82	160.00-140.00	A	1.995	0.000	0.000	30.877	0.000	500.62
		B		0.000	0.000	117.509	0.000	1807.45
		C		0.000	0.000	68.517	0.000	1280.49
T83	140.00-120.00	A	2.005	0.000	0.000	31.000	0.000	504.48
		B		0.000	0.000	117.937	0.000	1819.98
		C		0.000	0.000	68.622	0.000	1286.48
T84	120.00-115.00	A	2.012	0.000	0.000	7.770	0.000	126.74
		B		0.000	0.000	29.553	0.000	457.02
		C		0.000	0.000	17.172	0.000	322.59
T85	115.00-110.00	A	2.014	0.000	0.000	7.777	0.000	126.99
		B		0.000	0.000	29.580	0.000	457.82
		C		0.000	0.000	17.179	0.000	322.97
T86	110.00-105.00	A	2.017	0.000	0.000	7.785	0.000	127.23
		B		0.000	0.000	29.607	0.000	458.60
		C		0.000	0.000	17.186	0.000	323.34
T87	105.00-100.00	A	2.019	0.000	0.000	7.792	0.000	127.46
		B		0.000	0.000	29.633	0.000	459.35
		C		0.000	0.000	17.192	0.000	323.70
T88	100.00-95.00	A	2.021	0.000	0.000	7.799	0.000	127.69

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	45 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight lb
		B		0.000	0.000	29.657	0.000	460.07
		C		0.000	0.000	17.198	0.000	324.04
T89	95.00-90.00	A	2.024	0.000	0.000	7.806	0.000	127.89
		B		0.000	0.000	29.680	0.000	460.74
		C		0.000	0.000	17.204	0.000	324.36
T90	90.00-85.00	A	2.026	0.000	0.000	7.812	0.000	128.08
		B		0.000	0.000	29.700	0.000	461.34
		C		0.000	0.000	17.209	0.000	324.64
T91	85.00-80.00	A	2.027	0.000	0.000	7.817	0.000	128.23
		B		0.000	0.000	29.717	0.000	461.85
		C		0.000	0.000	17.213	0.000	324.89
T92	80.00-60.00	A	2.030	0.000	0.000	31.294	0.000	513.82
		B		0.000	0.000	118.966	0.000	1850.27
		C		0.000	0.000	68.875	0.000	1300.92
T93	60.00-40.00	A	2.024	0.000	0.000	31.223	0.000	511.55
		B		0.000	0.000	118.717	0.000	1842.90
		C		0.000	0.000	68.814	0.000	1297.41
T94	40.00-20.00	A	1.989	0.000	0.000	30.813	0.000	498.61
		B		0.000	0.000	117.286	0.000	1800.93
		C		0.000	0.000	68.462	0.000	1277.37
T95	20.00-15.00	A	1.929	0.000	0.000	7.522	0.000	119.04
		B		0.000	0.000	28.689	0.000	431.99
		C		0.000	0.000	16.960	0.000	310.55
T96	15.00-7.00	A	1.865	0.000	0.000	11.727	0.000	181.13
		B		0.000	0.000	44.826	0.000	660.85
		C		0.000	0.000	26.872	0.000	482.07
T97	7.00-0.00	A	1.688	0.000	0.000	9.519	0.000	137.14
		B		0.000	0.000	36.635	0.000	508.50
		C		0.000	0.000	22.879	0.000	386.90

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
L1	1151.90-1089.80	0.0000	4.9617	0.0000	3.9065
T1	1089.80-1084.90	0.0000	-1.9966	0.0000	-1.6829
T2	1084.90-1080.00	0.0000	-4.7649	0.0000	-3.9176
T3	1080.00-1060.00	0.2908	-6.3214	0.5379	-6.6316
T4	1060.00-1040.00	0.4390	-7.0430	0.7998	-7.8894
T5	1040.00-1020.00	0.4388	-7.0404	0.7998	-7.8894
T6	1020.00-1000.00	0.4387	-7.0377	0.7998	-7.8893
T7	1000.00-980.00	-0.4521	-7.3038	-0.9749	-8.3425
T8	980.00-960.00	-0.6648	-7.3652	-1.3809	-8.4459
T9	960.00-940.00	-0.6526	-7.2153	-1.3388	-8.1861
T10	940.00-935.00	-0.6529	-7.2177	-1.3406	-8.1989
T11	935.00-930.00	-0.6528	-7.2168	-1.3407	-8.2003
T12	930.00-925.00	-0.6422	-7.0922	-1.3246	-8.1015
T13	925.00-920.00	-0.6421	-7.0913	-1.3247	-8.1029
T14	920.00-915.00	-0.6420	-7.0904	-1.3248	-8.1043
T15	915.00-910.00	-0.6419	-7.0895	-1.3248	-8.1057
T16	910.00-905.00	-0.6524	-7.2121	-1.3412	-8.2073
T17	905.00-900.00	-0.6523	-7.2112	-1.3413	-8.2087
T18	900.00-880.00	-0.6521	-7.2088	-1.3415	-8.2123
T19	880.00-860.00	0.2615	-7.4723	-0.2360	-8.4805
T20	860.00-840.00	0.3588	-7.4970	-0.1186	-8.5140
T21	840.00-820.00	0.3586	-7.4930	-0.1182	-8.5198

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	46 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
T22	820.00-800.00	0.3584	-7.4891	-0.1179	-8.5257
T23	800.00-780.00	0.3582	-7.4851	-0.1176	-8.5316
T24	780.00-775.00	0.3581	-7.4825	-0.1173	-8.5353
T25	775.00-770.00	0.3581	-7.4815	-0.1173	-8.5368
T26	770.00-765.00	0.3525	-7.3586	-0.1158	-8.4393
T27	765.00-760.00	0.3525	-7.3576	-0.1157	-8.4409
T28	760.00-755.00	0.3524	-7.3567	-0.1156	-8.4424
T29	755.00-750.00	0.3524	-7.3557	-0.1156	-8.4439
T30	750.00-745.00	0.3578	-7.4764	-0.1168	-8.5444
T31	745.00-740.00	0.3578	-7.4754	-0.1167	-8.5459
T32	740.00-720.00	0.3577	-7.4728	-0.1165	-8.5498
T33	720.00-700.00	0.3575	-7.4686	-0.1161	-8.5559
T34	700.00-680.00	0.3573	-7.4644	-0.1157	-8.5622
T35	680.00-660.00	0.3571	-7.4602	-0.1154	-8.5684
T36	660.00-640.00	0.3569	-7.4559	-0.1150	-8.5747
T37	640.00-620.00	0.3533	-7.3721	-0.1123	-8.4107
T38	620.00-615.00	0.3533	-7.3720	-0.1122	-8.4204
T39	615.00-610.00	0.3532	-7.3707	-0.1121	-8.4219
T40	610.00-605.00	0.3478	-7.2510	-0.1107	-8.3261
T41	605.00-600.00	0.3477	-7.2498	-0.1106	-8.3276
T42	600.00-595.00	0.3477	-7.2486	-0.1105	-8.3292
T43	595.00-590.00	0.3476	-7.2475	-0.1104	-8.3307
T44	590.00-585.00	0.3529	-7.3646	-0.1116	-8.4296
T45	585.00-580.00	0.3529	-7.3633	-0.1115	-8.4311
T46	580.00-560.00	0.3544	-7.3987	-0.1124	-8.5199
T47	560.00-540.00	0.3541	-7.3927	-0.1119	-8.5230
T48	540.00-535.00	0.3707	-7.7615	-0.1262	-9.6533
T49	535.00-530.00	0.3539	-7.3888	-0.1116	-8.5282
T50	530.00-525.00	0.3539	-7.3877	-0.1115	-8.5297
T51	525.00-520.00	0.3538	-7.3866	-0.1114	-8.5312
T52	520.00-500.00	0.3537	-7.3839	-0.1112	-8.5348
T53	500.00-480.00	0.3535	-7.3797	-0.1108	-8.5404
T54	480.00-460.00	0.3533	-7.3757	-0.1104	-8.5459
T55	460.00-440.00	0.3514	-7.3315	-0.1090	-8.4655
T56	440.00-435.00	0.3514	-7.3306	-0.1088	-8.4715
T57	435.00-430.00	0.3513	-7.3296	-0.1087	-8.4726
T58	430.00-425.00	0.3460	-7.2122	-0.1074	-8.3763
T59	425.00-420.00	0.3460	-7.2113	-0.1074	-8.3774
T60	420.00-415.00	0.3459	-7.2105	-0.1073	-8.3785
T61	415.00-410.00	0.3459	-7.2097	-0.1072	-8.3796
T62	410.00-405.00	0.3511	-7.3252	-0.1084	-8.4781
T63	405.00-400.00	0.3511	-7.3244	-0.1083	-8.4791
T64	400.00-380.00	-0.3111	-7.5162	-1.1027	-8.7227
T65	380.00-360.00	-0.3110	-7.5135	-1.1026	-8.7260
T66	360.00-340.00	0.1251	-7.6013	-0.5731	-8.8075
T67	340.00-320.00	0.6385	-7.7057	0.0468	-8.9016
T68	320.00-300.00	0.6384	-7.7049	0.0469	-8.9025
T69	300.00-280.00	0.6385	-7.7050	0.0468	-8.9024
T70	280.00-275.00	0.6385	-7.7056	0.0468	-8.9018
T71	275.00-270.00	0.6385	-7.7059	0.0467	-8.9014
T72	270.00-265.00	0.6296	-7.5919	0.0462	-8.8070
T73	265.00-260.00	0.6296	-7.5923	0.0461	-8.8064
T74	260.00-255.00	0.6296	-7.5928	0.0460	-8.8058
T75	255.00-250.00	0.6297	-7.5934	0.0460	-8.8051
T76	250.00-245.00	0.6387	-7.7085	0.0464	-8.8983
T77	245.00-240.00	0.6388	-7.7093	0.0463	-8.8974
T78	240.00-220.00	0.6390	-7.7115	0.0460	-8.8948
T79	220.00-200.00	0.6393	-7.7160	0.0453	-8.8894
T80	200.00-180.00	2.2295	-6.5644	3.0500	-7.3861
T81	180.00-160.00	3.4862	-5.8683	5.2665	-6.5266
T82	160.00-140.00	3.4889	-5.8738	5.2640	-6.5211

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	47 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
T83	140.00-120.00	4.1602	-5.8912	5.2611	-6.5151
T84	120.00-115.00	4.1549	-5.8949	5.2593	-6.5111
T85	115.00-110.00	4.1528	-5.8964	5.2585	-6.5096
T86	110.00-105.00	4.1076	-5.8247	5.2180	-6.4546
T87	105.00-100.00	4.1056	-5.8261	5.2173	-6.4531
T88	100.00-95.00	4.1038	-5.8273	5.2166	-6.4517
T89	95.00-90.00	4.1021	-5.8285	5.2159	-6.4504
T90	90.00-85.00	4.1437	-5.9028	5.2552	-6.5027
T91	85.00-80.00	4.1424	-5.9038	5.2548	-6.5017
T92	80.00-60.00	4.1406	-5.9051	5.2541	-6.5003
T93	60.00-40.00	4.1453	-5.9017	5.2558	-6.5039
T94	40.00-20.00	3.4873	-5.8706	5.2654	-6.5243
T95	20.00-15.00	4.1361	-5.9084	5.2812	-6.5593
T96	15.00-7.00	2.9952	-4.3738	4.1511	-5.1972
T97	7.00-0.00	0.3115	-1.4431	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L1	2	6 1/8" Hard Line	1089.80 - 1151.90	1.0000	1.0000
T1	1	6 1/8" Hard Line	1084.90 - 1089.80	1.0000	0.3521
T2	1	6 1/8" Hard Line	1080.00 - 1084.90	1.0000	0.5530
T3	1	6 1/8" Hard Line	1060.00 - 1080.00	1.0000	0.5621
T3	4	1" conduit	1060.00 - 1073.00	0.6000	0.5621
T3	5	7/8" Coax	1060.00 - 1073.00	0.6000	0.5621
T4	1	6 1/8" Hard Line	1040.00 - 1060.00	1.0000	0.5621
T4	4	1" conduit	1040.00 - 1060.00	0.6000	0.5621
T4	5	7/8" Coax	1040.00 - 1060.00	0.6000	0.5621
T5	1	6 1/8" Hard Line	1020.00 - 1040.00	1.0000	0.5621
T5	4	1" conduit	1020.00 - 1040.00	0.6000	0.5621
T5	5	7/8" Coax	1020.00 - 1040.00	0.6000	0.5621
T6	1	6 1/8" Hard Line	1000.00 - 1020.00	1.0000	0.5621
T6	4	1" conduit	1000.00 - 1020.00	0.6000	0.5621
T6	5	7/8" Coax	1000.00 - 1020.00	0.6000	0.5621
T7	1	6 1/8" Hard Line	980.00 - 1000.00	1.0000	0.5621



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T7	4	1" conduit	980.00 - 1000.00	0.6000	0.5621
T7	5	7/8" Coax	980.00 - 1000.00	0.6000	0.5621
T7	7	7/8" Coax	980.00 - 996.00	0.6000	0.5621
T7	8	0.99" (25.1mm) LDF2-2R	980.00 - 996.00	0.6000	0.5621
T8	1	6 1/8" Hard Line	960.00 - 980.00	1.0000	0.5621
T8	4	1" conduit	960.00 - 980.00	0.6000	0.5621
T8	5	7/8" Coax	960.00 - 980.00	0.6000	0.5621
T8	7	7/8" Coax	960.00 - 980.00	0.6000	0.5621
T8	8	0.99" (25.1mm) LDF2-2R	960.00 - 980.00	0.6000	0.5621
T9	1	6 1/8" Hard Line	940.00 - 960.00	1.0000	0.5529
T9	4	1" conduit	940.00 - 960.00	0.6000	0.5529
T9	5	7/8" Coax	940.00 - 960.00	0.6000	0.5529
T9	7	7/8" Coax	940.00 - 960.00	0.6000	0.5529
T9	8	0.99" (25.1mm) LDF2-2R	940.00 - 960.00	0.6000	0.5529
T10	1	6 1/8" Hard Line	935.00 - 940.00	1.0000	0.5537
T10	4	1" conduit	935.00 - 940.00	0.6000	0.5537
T10	5	7/8" Coax	935.00 - 940.00	0.6000	0.5537
T10	7	7/8" Coax	935.00 - 940.00	0.6000	0.5537
T10	8	0.99" (25.1mm) LDF2-2R	935.00 - 940.00	0.6000	0.5537
T11	1	6 1/8" Hard Line	930.00 - 935.00	1.0000	0.5538
T11	4	1" conduit	930.00 - 935.00	0.6000	0.5538
T11	5	7/8" Coax	930.00 - 935.00	0.6000	0.5538
T11	7	7/8" Coax	930.00 - 935.00	0.6000	0.5538
T11	8	0.99" (25.1mm) LDF2-2R	930.00 - 935.00	0.6000	0.5538
T12	1	6 1/8" Hard Line	925.00 - 930.00	1.0000	0.5497
T12	4	1" conduit	925.00 - 930.00	0.6000	0.5497
T12	5	7/8" Coax	925.00 - 930.00	0.6000	0.5497
T12	7	7/8" Coax	925.00 - 930.00	0.6000	0.5497
T12	8	0.99" (25.1mm) LDF2-2R	925.00 - 930.00	0.6000	0.5497
T13	1	6 1/8" Hard Line	920.00 - 925.00	1.0000	0.5498
T13	4	1" conduit	920.00 - 925.00	0.6000	0.5498

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T13	5	7/8" Coax	920.00 - 925.00	0.6000	0.5498
T13	7	7/8" Coax	920.00 - 925.00	0.6000	0.5498
T13	8	0.99" (25.1mm) LDF2-2R	920.00 - 925.00	0.6000	0.5498
T14	1	6 1/8" Hard Line	915.00 - 920.00	1.0000	0.5499
T14	4	1" conduit	915.00 - 920.00	0.6000	0.5499
T14	5	7/8" Coax	915.00 - 920.00	0.6000	0.5499
T14	7	7/8" Coax	915.00 - 920.00	0.6000	0.5499
T14	8	0.99" (25.1mm) LDF2-2R	915.00 - 920.00	0.6000	0.5499
T15	1	6 1/8" Hard Line	910.00 - 915.00	1.0000	0.5501
T15	4	1" conduit	910.00 - 915.00	0.6000	0.5501
T15	5	7/8" Coax	910.00 - 915.00	0.6000	0.5501
T15	7	7/8" Coax	910.00 - 915.00	0.6000	0.5501
T15	8	0.99" (25.1mm) LDF2-2R	910.00 - 915.00	0.6000	0.5501
T16	1	6 1/8" Hard Line	905.00 - 910.00	1.0000	0.5545
T16	4	1" conduit	905.00 - 910.00	0.6000	0.5545
T16	5	7/8" Coax	905.00 - 910.00	0.6000	0.5545
T16	7	7/8" Coax	905.00 - 910.00	0.6000	0.5545
T16	8	0.99" (25.1mm) LDF2-2R	905.00 - 910.00	0.6000	0.5545
T17	1	6 1/8" Hard Line	900.00 - 905.00	1.0000	0.5547
T17	4	1" conduit	900.00 - 905.00	0.6000	0.5547
T17	5	7/8" Coax	900.00 - 905.00	0.6000	0.5547
T17	7	7/8" Coax	900.00 - 905.00	0.6000	0.5547
T17	8	0.99" (25.1mm) LDF2-2R	900.00 - 905.00	0.6000	0.5547
T18	1	6 1/8" Hard Line	880.00 - 900.00	1.0000	0.5550
T18	4	1" conduit	880.00 - 900.00	0.6000	0.5550
T18	5	7/8" Coax	880.00 - 900.00	0.6000	0.5550
T18	7	7/8" Coax	880.00 - 900.00	0.6000	0.5550
T18	8	0.99" (25.1mm) LDF2-2R	880.00 - 900.00	0.6000	0.5550
T19	1	6 1/8" Hard Line	860.00 - 880.00	1.0000	0.5556
T19	4	1" conduit	860.00 - 880.00	0.6000	0.5556
T19	5	7/8" Coax	860.00 - 880.00	0.6000	0.5556

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T19	7	7/8" Coax	860.00 - 880.00	0.6000	0.5556
T19	8	0.99" (25.1mm) LDF2-2R	860.00 - 880.00	0.6000	0.5556
T19	10	EW63	860.00 - 878.00	0.6000	0.5556
T20	1	6 1/8" Hard Line	840.00 - 860.00	1.0000	0.5562
T20	4	1" conduit	840.00 - 860.00	0.6000	0.5562
T20	5	7/8" Coax	840.00 - 860.00	0.6000	0.5562
T20	7	7/8" Coax	840.00 - 860.00	0.6000	0.5562
T20	8	0.99" (25.1mm) LDF2-2R	840.00 - 860.00	0.6000	0.5562
T20	10	EW63	840.00 - 860.00	0.6000	0.5562
T21	1	6 1/8" Hard Line	820.00 - 840.00	1.0000	0.5568
T21	4	1" conduit	820.00 - 840.00	0.6000	0.5568
T21	5	7/8" Coax	820.00 - 840.00	0.6000	0.5568
T21	7	7/8" Coax	820.00 - 840.00	0.6000	0.5568
T21	8	0.99" (25.1mm) LDF2-2R	820.00 - 840.00	0.6000	0.5568
T21	10	EW63	820.00 - 840.00	0.6000	0.5568
T22	1	6 1/8" Hard Line	800.00 - 820.00	1.0000	0.5574
T22	4	1" conduit	800.00 - 820.00	0.6000	0.5574
T22	5	7/8" Coax	800.00 - 820.00	0.6000	0.5574
T22	7	7/8" Coax	800.00 - 820.00	0.6000	0.5574
T22	8	0.99" (25.1mm) LDF2-2R	800.00 - 820.00	0.6000	0.5574
T22	10	EW63	800.00 - 820.00	0.6000	0.5574
T23	1	6 1/8" Hard Line	780.00 - 800.00	1.0000	0.5580
T23	4	1" conduit	780.00 - 800.00	0.6000	0.5580
T23	5	7/8" Coax	780.00 - 800.00	0.6000	0.5580
T23	7	7/8" Coax	780.00 - 800.00	0.6000	0.5580
T23	8	0.99" (25.1mm) LDF2-2R	780.00 - 800.00	0.6000	0.5580
T23	10	EW63	780.00 - 800.00	0.6000	0.5580
T24	1	6 1/8" Hard Line	775.00 - 780.00	1.0000	0.5584
T24	4	1" conduit	775.00 - 780.00	0.6000	0.5584
T24	5	7/8" Coax	775.00 - 780.00	0.6000	0.5584
T24	7	7/8" Coax	775.00 - 780.00	0.6000	0.5584

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T24	8	0.99" (25.1mm) LDF2-2R	775.00 - 780.00	0.6000	0.5584
T24	10	EW63	775.00 - 780.00	0.6000	0.5584
T25	1	6 1/8" Hard Line	770.00 - 775.00	1.0000	0.5585
T25	4	1" conduit	770.00 - 775.00	0.6000	0.5585
T25	5	7/8" Coax	770.00 - 775.00	0.6000	0.5585
T25	7	7/8" Coax	770.00 - 775.00	0.6000	0.5585
T25	8	0.99" (25.1mm) LDF2-2R	770.00 - 775.00	0.6000	0.5585
T25	10	EW63	770.00 - 775.00	0.6000	0.5585
T26	1	6 1/8" Hard Line	765.00 - 770.00	1.0000	0.5544
T26	4	1" conduit	765.00 - 770.00	0.6000	0.5544
T26	5	7/8" Coax	765.00 - 770.00	0.6000	0.5544
T26	7	7/8" Coax	765.00 - 770.00	0.6000	0.5544
T26	8	0.99" (25.1mm) LDF2-2R	765.00 - 770.00	0.6000	0.5544
T26	10	EW63	765.00 - 770.00	0.6000	0.5544
T27	1	6 1/8" Hard Line	760.00 - 765.00	1.0000	0.5546
T27	4	1" conduit	760.00 - 765.00	0.6000	0.5546
T27	5	7/8" Coax	760.00 - 765.00	0.6000	0.5546
T27	7	7/8" Coax	760.00 - 765.00	0.6000	0.5546
T27	8	0.99" (25.1mm) LDF2-2R	760.00 - 765.00	0.6000	0.5546
T27	10	EW63	760.00 - 765.00	0.6000	0.5546
T28	1	6 1/8" Hard Line	755.00 - 760.00	1.0000	0.5547
T28	4	1" conduit	755.00 - 760.00	0.6000	0.5547
T28	5	7/8" Coax	755.00 - 760.00	0.6000	0.5547
T28	7	7/8" Coax	755.00 - 760.00	0.6000	0.5547
T28	8	0.99" (25.1mm) LDF2-2R	755.00 - 760.00	0.6000	0.5547
T28	10	EW63	755.00 - 760.00	0.6000	0.5547
T29	1	6 1/8" Hard Line	750.00 - 755.00	1.0000	0.5549
T29	4	1" conduit	750.00 - 755.00	0.6000	0.5549
T29	5	7/8" Coax	750.00 - 755.00	0.6000	0.5549
T29	7	7/8" Coax	750.00 - 755.00	0.6000	0.5549
T29	8	0.99" (25.1mm) LDF2-2R	750.00 - 755.00	0.6000	0.5549

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T29	10	EW63	750.00 - 755.00	0.6000	0.5549
T30	1	6 1/8" Hard Line	745.00 - 750.00	1.0000	0.5593
T30	4	1" conduit	745.00 - 750.00	0.6000	0.5593
T30	5	7/8" Coax	745.00 - 750.00	0.6000	0.5593
T30	7	7/8" Coax	745.00 - 750.00	0.6000	0.5593
T30	8	0.99" (25.1mm) LDF2-2R	745.00 - 750.00	0.6000	0.5593
T30	10	EW63	745.00 - 750.00	0.6000	0.5593
T31	1	6 1/8" Hard Line	740.00 - 745.00	1.0000	0.5595
T31	4	1" conduit	740.00 - 745.00	0.6000	0.5595
T31	5	7/8" Coax	740.00 - 745.00	0.6000	0.5595
T31	7	7/8" Coax	740.00 - 745.00	0.6000	0.5595
T31	8	0.99" (25.1mm) LDF2-2R	740.00 - 745.00	0.6000	0.5595
T31	10	EW63	740.00 - 745.00	0.6000	0.5595
T32	1	6 1/8" Hard Line	720.00 - 740.00	1.0000	0.5599
T32	4	1" conduit	720.00 - 740.00	0.6000	0.5599
T32	5	7/8" Coax	720.00 - 740.00	0.6000	0.5599
T32	7	7/8" Coax	720.00 - 740.00	0.6000	0.5599
T32	8	0.99" (25.1mm) LDF2-2R	720.00 - 740.00	0.6000	0.5599
T32	10	EW63	720.00 - 740.00	0.6000	0.5599
T33	1	6 1/8" Hard Line	700.00 - 720.00	1.0000	0.5605
T33	4	1" conduit	700.00 - 720.00	0.6000	0.5605
T33	5	7/8" Coax	700.00 - 720.00	0.6000	0.5605
T33	7	7/8" Coax	700.00 - 720.00	0.6000	0.5605
T33	8	0.99" (25.1mm) LDF2-2R	700.00 - 720.00	0.6000	0.5605
T33	10	EW63	700.00 - 720.00	0.6000	0.5605
T34	1	6 1/8" Hard Line	680.00 - 700.00	1.0000	0.5612
T34	4	1" conduit	680.00 - 700.00	0.6000	0.5612
T34	5	7/8" Coax	680.00 - 700.00	0.6000	0.5612
T34	7	7/8" Coax	680.00 - 700.00	0.6000	0.5612
T34	8	0.99" (25.1mm) LDF2-2R	680.00 - 700.00	0.6000	0.5612
T34	10	EW63	680.00 - 700.00	0.6000	0.5612

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T35	1	6 1/8" Hard Line	660.00 - 680.00	1.0000	0.5618
T35	4	1" conduit	660.00 - 680.00	0.6000	0.5618
T35	5	7/8" Coax	660.00 - 680.00	0.6000	0.5618
T35	7	7/8" Coax	660.00 - 680.00	0.6000	0.5618
T35	8	0.99" (25.1mm) LDF2-2R	660.00 - 680.00	0.6000	0.5618
T35	10	EW63	660.00 - 680.00	0.6000	0.5618
T36	1	6 1/8" Hard Line	640.00 - 660.00	1.0000	0.5625
T36	4	1" conduit	640.00 - 660.00	0.6000	0.5625
T36	5	7/8" Coax	640.00 - 660.00	0.6000	0.5625
T36	7	7/8" Coax	640.00 - 660.00	0.6000	0.5625
T36	8	0.99" (25.1mm) LDF2-2R	640.00 - 660.00	0.6000	0.5625
T36	10	EW63	640.00 - 660.00	0.6000	0.5625
T37	1	6 1/8" Hard Line	620.00 - 640.00	1.0000	0.5570
T37	4	1" conduit	620.00 - 640.00	0.6000	0.5570
T37	5	7/8" Coax	620.00 - 640.00	0.6000	0.5570
T37	7	7/8" Coax	620.00 - 640.00	0.6000	0.5570
T37	8	0.99" (25.1mm) LDF2-2R	620.00 - 640.00	0.6000	0.5570
T37	10	EW63	620.00 - 640.00	0.6000	0.5570
T38	1	6 1/8" Hard Line	615.00 - 620.00	1.0000	0.5576
T38	4	1" conduit	615.00 - 620.00	0.6000	0.5576
T38	5	7/8" Coax	615.00 - 620.00	0.6000	0.5576
T38	7	7/8" Coax	615.00 - 620.00	0.6000	0.5576
T38	8	0.99" (25.1mm) LDF2-2R	615.00 - 620.00	0.6000	0.5576
T38	10	EW63	615.00 - 620.00	0.6000	0.5576
T39	1	6 1/8" Hard Line	610.00 - 615.00	1.0000	0.5578
T39	4	1" conduit	610.00 - 615.00	0.6000	0.5578
T39	5	7/8" Coax	610.00 - 615.00	0.6000	0.5578
T39	7	7/8" Coax	610.00 - 615.00	0.6000	0.5578
T39	8	0.99" (25.1mm) LDF2-2R	610.00 - 615.00	0.6000	0.5578
T39	10	EW63	610.00 - 615.00	0.6000	0.5578
T40	1	6 1/8" Hard Line	605.00 - 610.00	1.0000	0.5537

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T40	4	1" conduit	605.00 - 610.00	0.6000	0.5537
T40	5	7/8" Coax	605.00 - 610.00	0.6000	0.5537
T40	7	7/8" Coax	605.00 - 610.00	0.6000	0.5537
T40	8	0.99" (25.1mm) LDF2-2R	605.00 - 610.00	0.6000	0.5537
T40	10	EW63	605.00 - 610.00	0.6000	0.5537
T41	1	6 1/8" Hard Line	600.00 - 605.00	1.0000	0.5539
T41	4	1" conduit	600.00 - 605.00	0.6000	0.5539
T41	5	7/8" Coax	600.00 - 605.00	0.6000	0.5539
T41	7	7/8" Coax	600.00 - 605.00	0.6000	0.5539
T41	8	0.99" (25.1mm) LDF2-2R	600.00 - 605.00	0.6000	0.5539
T41	10	EW63	600.00 - 605.00	0.6000	0.5539
T42	1	6 1/8" Hard Line	595.00 - 600.00	1.0000	0.5540
T42	4	1" conduit	595.00 - 600.00	0.6000	0.5540
T42	5	7/8" Coax	595.00 - 600.00	0.6000	0.5540
T42	7	7/8" Coax	595.00 - 600.00	0.6000	0.5540
T42	8	0.99" (25.1mm) LDF2-2R	595.00 - 600.00	0.6000	0.5540
T42	10	EW63	595.00 - 600.00	0.6000	0.5540
T43	1	6 1/8" Hard Line	590.00 - 595.00	1.0000	0.5542
T43	4	1" conduit	590.00 - 595.00	0.6000	0.5542
T43	5	7/8" Coax	590.00 - 595.00	0.6000	0.5542
T43	7	7/8" Coax	590.00 - 595.00	0.6000	0.5542
T43	8	0.99" (25.1mm) LDF2-2R	590.00 - 595.00	0.6000	0.5542
T43	10	EW63	590.00 - 595.00	0.6000	0.5542
T44	1	6 1/8" Hard Line	585.00 - 590.00	1.0000	0.5586
T44	4	1" conduit	585.00 - 590.00	0.6000	0.5586
T44	5	7/8" Coax	585.00 - 590.00	0.6000	0.5586
T44	7	7/8" Coax	585.00 - 590.00	0.6000	0.5586
T44	8	0.99" (25.1mm) LDF2-2R	585.00 - 590.00	0.6000	0.5586
T44	10	EW63	585.00 - 590.00	0.6000	0.5586
T45	1	6 1/8" Hard Line	580.00 - 585.00	1.0000	0.5588
T45	4	1" conduit	580.00 - 585.00	0.6000	0.5588

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T45	5	7/8" Coax	580.00 - 585.00	0.6000	0.5588
T45	7	7/8" Coax	580.00 - 585.00	0.6000	0.5588
T45	8	0.99" (25.1mm) LDF2-2R	580.00 - 585.00	0.6000	0.5588
T45	10	EW63	580.00 - 585.00	0.6000	0.5588
T46	1	6 1/8" Hard Line	560.00 - 580.00	1.0000	0.5623
T46	4	1" conduit	560.00 - 580.00	0.6000	0.5623
T46	5	7/8" Coax	560.00 - 580.00	0.6000	0.5623
T46	7	7/8" Coax	560.00 - 580.00	0.6000	0.5623
T46	8	0.99" (25.1mm) LDF2-2R	560.00 - 580.00	0.6000	0.5623
T46	10	EW63	560.00 - 580.00	0.6000	0.5623
T47	1	6 1/8" Hard Line	540.00 - 560.00	1.0000	0.5628
T47	4	1" conduit	540.00 - 560.00	0.6000	0.5628
T47	5	7/8" Coax	540.00 - 560.00	0.6000	0.5628
T47	7	7/8" Coax	540.00 - 560.00	0.6000	0.5628
T47	8	0.99" (25.1mm) LDF2-2R	540.00 - 560.00	0.6000	0.5628
T47	10	EW63	540.00 - 560.00	0.6000	0.5628
T48	1	6 1/8" Hard Line	535.00 - 540.00	1.0000	0.6000
T48	4	1" conduit	535.00 - 540.00	0.6000	0.6000
T48	5	7/8" Coax	535.00 - 540.00	0.6000	0.6000
T48	7	7/8" Coax	535.00 - 540.00	0.6000	0.6000
T48	8	0.99" (25.1mm) LDF2-2R	535.00 - 540.00	0.6000	0.6000
T48	10	EW63	535.00 - 540.00	0.6000	0.6000
T49	1	6 1/8" Hard Line	530.00 - 535.00	1.0000	0.5634
T49	4	1" conduit	530.00 - 535.00	0.6000	0.5634
T49	5	7/8" Coax	530.00 - 535.00	0.6000	0.5634
T49	7	7/8" Coax	530.00 - 535.00	0.6000	0.5634
T49	8	0.99" (25.1mm) LDF2-2R	530.00 - 535.00	0.6000	0.5634
T49	10	EW63	530.00 - 535.00	0.6000	0.5634
T50	1	6 1/8" Hard Line	525.00 - 530.00	1.0000	0.5636
T50	4	1" conduit	525.00 - 530.00	0.6000	0.5636
T50	5	7/8" Coax	525.00 - 530.00	0.6000	0.5636



Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T50	7	7/8" Coax	525.00 - 530.00	0.6000	0.5636
T50	8	0.99" (25.1mm) LDF2-2R	525.00 - 530.00	0.6000	0.5636
T50	10	EW63	525.00 - 530.00	0.6000	0.5636
T51	1	6 1/8" Hard Line	520.00 - 525.00	1.0000	0.5637
T51	4	1" conduit	520.00 - 525.00	0.6000	0.5637
T51	5	7/8" Coax	520.00 - 525.00	0.6000	0.5637
T51	7	7/8" Coax	520.00 - 525.00	0.6000	0.5637
T51	8	0.99" (25.1mm) LDF2-2R	520.00 - 525.00	0.6000	0.5637
T51	10	EW63	520.00 - 525.00	0.6000	0.5637
T52	1	6 1/8" Hard Line	500.00 - 520.00	1.0000	0.5641
T52	4	1" conduit	500.00 - 520.00	0.6000	0.5641
T52	5	7/8" Coax	500.00 - 520.00	0.6000	0.5641
T52	7	7/8" Coax	500.00 - 520.00	0.6000	0.5641
T52	8	0.99" (25.1mm) LDF2-2R	500.00 - 520.00	0.6000	0.5641
T52	10	EW63	500.00 - 520.00	0.6000	0.5641
T53	1	6 1/8" Hard Line	480.00 - 500.00	1.0000	0.5647
T53	4	1" conduit	480.00 - 500.00	0.6000	0.5647
T53	5	7/8" Coax	480.00 - 500.00	0.6000	0.5647
T53	7	7/8" Coax	480.00 - 500.00	0.6000	0.5647
T53	8	0.99" (25.1mm) LDF2-2R	480.00 - 500.00	0.6000	0.5647
T53	10	EW63	480.00 - 500.00	0.6000	0.5647
T54	1	6 1/8" Hard Line	460.00 - 480.00	1.0000	0.5653
T54	4	1" conduit	460.00 - 480.00	0.6000	0.5653
T54	5	7/8" Coax	460.00 - 480.00	0.6000	0.5653
T54	7	7/8" Coax	460.00 - 480.00	0.6000	0.5653
T54	8	0.99" (25.1mm) LDF2-2R	460.00 - 480.00	0.6000	0.5653
T54	10	EW63	460.00 - 480.00	0.6000	0.5653
T55	1	6 1/8" Hard Line	440.00 - 460.00	1.0000	0.5628
T55	4	1" conduit	440.00 - 460.00	0.6000	0.5628
T55	5	7/8" Coax	440.00 - 460.00	0.6000	0.5628
T55	7	7/8" Coax	440.00 - 460.00	0.6000	0.5628

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T55	8	0.99" (25.1mm) LDF2-2R	440.00 - 460.00	0.6000	0.5628
T55	10	EW63	440.00 - 460.00	0.6000	0.5628
T56	1	6 1/8" Hard Line	435.00 - 440.00	1.0000	0.5632
T56	4	1" conduit	435.00 - 440.00	0.6000	0.5632
T56	5	7/8" Coax	435.00 - 440.00	0.6000	0.5632
T56	7	7/8" Coax	435.00 - 440.00	0.6000	0.5632
T56	8	0.99" (25.1mm) LDF2-2R	435.00 - 440.00	0.6000	0.5632
T56	10	EW63	435.00 - 440.00	0.6000	0.5632
T57	1	6 1/8" Hard Line	430.00 - 435.00	1.0000	0.5633
T57	4	1" conduit	430.00 - 435.00	0.6000	0.5633
T57	5	7/8" Coax	430.00 - 435.00	0.6000	0.5633
T57	7	7/8" Coax	430.00 - 435.00	0.6000	0.5633
T57	8	0.99" (25.1mm) LDF2-2R	430.00 - 435.00	0.6000	0.5633
T57	10	EW63	430.00 - 435.00	0.6000	0.5633
T58	1	6 1/8" Hard Line	425.00 - 430.00	1.0000	0.5592
T58	4	1" conduit	425.00 - 430.00	0.6000	0.5592
T58	5	7/8" Coax	425.00 - 430.00	0.6000	0.5592
T58	7	7/8" Coax	425.00 - 430.00	0.6000	0.5592
T58	8	0.99" (25.1mm) LDF2-2R	425.00 - 430.00	0.6000	0.5592
T58	10	EW63	425.00 - 430.00	0.6000	0.5592
T59	1	6 1/8" Hard Line	420.00 - 425.00	1.0000	0.5593
T59	4	1" conduit	420.00 - 425.00	0.6000	0.5593
T59	5	7/8" Coax	420.00 - 425.00	0.6000	0.5593
T59	7	7/8" Coax	420.00 - 425.00	0.6000	0.5593
T59	8	0.99" (25.1mm) LDF2-2R	420.00 - 425.00	0.6000	0.5593
T59	10	EW63	420.00 - 425.00	0.6000	0.5593
T60	1	6 1/8" Hard Line	415.00 - 420.00	1.0000	0.5594
T60	4	1" conduit	415.00 - 420.00	0.6000	0.5594
T60	5	7/8" Coax	415.00 - 420.00	0.6000	0.5594
T60	7	7/8" Coax	415.00 - 420.00	0.6000	0.5594
T60	8	0.99" (25.1mm) LDF2-2R	415.00 - 420.00	0.6000	0.5594

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T60	10	EW63	415.00 - 420.00	0.6000	0.5594
T61	1	6 1/8" Hard Line	410.00 - 415.00	1.0000	0.5596
T61	4	1" conduit	410.00 - 415.00	0.6000	0.5596
T61	5	7/8" Coax	410.00 - 415.00	0.6000	0.5596
T61	7	7/8" Coax	410.00 - 415.00	0.6000	0.5596
T61	8	0.99" (25.1mm) LDF2-2R	410.00 - 415.00	0.6000	0.5596
T61	10	EW63	410.00 - 415.00	0.6000	0.5596
T62	1	6 1/8" Hard Line	405.00 - 410.00	1.0000	0.5639
T62	4	1" conduit	405.00 - 410.00	0.6000	0.5639
T62	5	7/8" Coax	405.00 - 410.00	0.6000	0.5639
T62	7	7/8" Coax	405.00 - 410.00	0.6000	0.5639
T62	8	0.99" (25.1mm) LDF2-2R	405.00 - 410.00	0.6000	0.5639
T62	10	EW63	405.00 - 410.00	0.6000	0.5639
T63	1	6 1/8" Hard Line	400.00 - 405.00	1.0000	0.5641
T63	4	1" conduit	400.00 - 405.00	0.6000	0.5641
T63	5	7/8" Coax	400.00 - 405.00	0.6000	0.5641
T63	7	7/8" Coax	400.00 - 405.00	0.6000	0.5641
T63	8	0.99" (25.1mm) LDF2-2R	400.00 - 405.00	0.6000	0.5641
T63	10	EW63	400.00 - 405.00	0.6000	0.5641
T64	1	6 1/8" Hard Line	380.00 - 400.00	1.0000	0.5643
T64	4	1" conduit	380.00 - 400.00	0.6000	0.5643
T64	5	7/8" Coax	380.00 - 400.00	0.6000	0.5643
T64	7	7/8" Coax	380.00 - 400.00	0.6000	0.5643
T64	8	0.99" (25.1mm) LDF2-2R	380.00 - 400.00	0.6000	0.5643
T64	10	EW63	380.00 - 400.00	0.6000	0.5643
T64	12	1.39" (35.3mm) Hybrid	380.00 - 400.00	0.6000	0.5643
T65	1	6 1/8" Hard Line	360.00 - 380.00	1.0000	0.5647
T65	4	1" conduit	360.00 - 380.00	0.6000	0.5647
T65	5	7/8" Coax	360.00 - 380.00	0.6000	0.5647
T65	7	7/8" Coax	360.00 - 380.00	0.6000	0.5647
T65	8	0.99" (25.1mm) LDF2-2R	360.00 - 380.00	0.6000	0.5647

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T65	10	EW63	360.00 - 380.00	0.6000	0.5647
T65	12	1.39" (35.3mm) Hybrid	360.00 - 380.00	0.6000	0.5647
T66	1	6 1/8" Hard Line	340.00 - 360.00	1.0000	0.5650
T66	4	1" conduit	340.00 - 360.00	0.6000	0.5650
T66	5	7/8" Coax	340.00 - 360.00	0.6000	0.5650
T66	7	7/8" Coax	340.00 - 360.00	0.6000	0.5650
T66	8	0.99" (25.1mm) LDF2-2R	340.00 - 360.00	0.6000	0.5650
T66	10	EW63	340.00 - 360.00	0.6000	0.5650
T66	12	1.39" (35.3mm) Hybrid	340.00 - 360.00	0.6000	0.5650
T66	14	EW63	340.00 - 349.00	0.6000	0.5650
T67	1	6 1/8" Hard Line	320.00 - 340.00	1.0000	0.5652
T67	4	1" conduit	320.00 - 340.00	0.6000	0.5652
T67	5	7/8" Coax	320.00 - 340.00	0.6000	0.5652
T67	7	7/8" Coax	320.00 - 340.00	0.6000	0.5652
T67	8	0.99" (25.1mm) LDF2-2R	320.00 - 340.00	0.6000	0.5652
T67	10	EW63	320.00 - 340.00	0.6000	0.5652
T67	12	1.39" (35.3mm) Hybrid	320.00 - 340.00	0.6000	0.5652
T67	14	EW63	320.00 - 340.00	0.6000	0.5652
T68	1	6 1/8" Hard Line	300.00 - 320.00	1.0000	0.5653
T68	4	1" conduit	300.00 - 320.00	0.6000	0.5653
T68	5	7/8" Coax	300.00 - 320.00	0.6000	0.5653
T68	7	7/8" Coax	300.00 - 320.00	0.6000	0.5653
T68	8	0.99" (25.1mm) LDF2-2R	300.00 - 320.00	0.6000	0.5653
T68	10	EW63	300.00 - 320.00	0.6000	0.5653
T68	12	1.39" (35.3mm) Hybrid	300.00 - 320.00	0.6000	0.5653
T68	14	EW63	300.00 - 320.00	0.6000	0.5653
T69	1	6 1/8" Hard Line	280.00 - 300.00	1.0000	0.5653
T69	4	1" conduit	280.00 - 300.00	0.6000	0.5653
T69	5	7/8" Coax	280.00 - 300.00	0.6000	0.5653
T69	7	7/8" Coax	280.00 - 300.00	0.6000	0.5653
T69	8	0.99" (25.1mm) LDF2-2R	280.00 - 300.00	0.6000	0.5653

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T69	10	EW63	280.00 - 300.00	0.6000	0.5653
T69	12	1.39" (35.3mm) Hybrid	280.00 - 300.00	0.6000	0.5653
T69	14	EW63	280.00 - 300.00	0.6000	0.5653
T70	1	6 1/8" Hard Line	275.00 - 280.00	1.0000	0.5652
T70	4	1" conduit	275.00 - 280.00	0.6000	0.5652
T70	5	7/8" Coax	275.00 - 280.00	0.6000	0.5652
T70	7	7/8" Coax	275.00 - 280.00	0.6000	0.5652
T70	8	0.99" (25.1mm) LDF2-2R	275.00 - 280.00	0.6000	0.5652
T70	10	EW63	275.00 - 280.00	0.6000	0.5652
T70	12	1.39" (35.3mm) Hybrid	275.00 - 280.00	0.6000	0.5652
T70	14	EW63	275.00 - 280.00	0.6000	0.5652
T71	1	6 1/8" Hard Line	270.00 - 275.00	1.0000	0.5651
T71	4	1" conduit	270.00 - 275.00	0.6000	0.5651
T71	5	7/8" Coax	270.00 - 275.00	0.6000	0.5651
T71	7	7/8" Coax	270.00 - 275.00	0.6000	0.5651
T71	8	0.99" (25.1mm) LDF2-2R	270.00 - 275.00	0.6000	0.5651
T71	10	EW63	270.00 - 275.00	0.6000	0.5651
T71	12	1.39" (35.3mm) Hybrid	270.00 - 275.00	0.6000	0.5651
T71	14	EW63	270.00 - 275.00	0.6000	0.5651
T72	1	6 1/8" Hard Line	265.00 - 270.00	1.0000	0.5608
T72	4	1" conduit	265.00 - 270.00	0.6000	0.5608
T72	5	7/8" Coax	265.00 - 270.00	0.6000	0.5608
T72	7	7/8" Coax	265.00 - 270.00	0.6000	0.5608
T72	8	0.99" (25.1mm) LDF2-2R	265.00 - 270.00	0.6000	0.5608
T72	10	EW63	265.00 - 270.00	0.6000	0.5608
T72	12	1.39" (35.3mm) Hybrid	265.00 - 270.00	0.6000	0.5608
T72	14	EW63	265.00 - 270.00	0.6000	0.5608
T73	1	6 1/8" Hard Line	260.00 - 265.00	1.0000	0.5608
T73	4	1" conduit	260.00 - 265.00	0.6000	0.5608
T73	5	7/8" Coax	260.00 - 265.00	0.6000	0.5608
T73	7	7/8" Coax	260.00 - 265.00	0.6000	0.5608

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T73	8	0.99" (25.1mm) LDF2-2R	260.00 - 265.00	0.6000	0.5608
T73	10	EW63	260.00 - 265.00	0.6000	0.5608
T73	12	1.39" (35.3mm) Hybrid	260.00 - 265.00	0.6000	0.5608
T73	14	EW63	260.00 - 265.00	0.6000	0.5608
T74	1	6 1/8" Hard Line	255.00 - 260.00	1.0000	0.5607
T74	4	1" conduit	255.00 - 260.00	0.6000	0.5607
T74	5	7/8" Coax	255.00 - 260.00	0.6000	0.5607
T74	7	7/8" Coax	255.00 - 260.00	0.6000	0.5607
T74	8	0.99" (25.1mm) LDF2-2R	255.00 - 260.00	0.6000	0.5607
T74	10	EW63	255.00 - 260.00	0.6000	0.5607
T74	12	1.39" (35.3mm) Hybrid	255.00 - 260.00	0.6000	0.5607
T74	14	EW63	255.00 - 260.00	0.6000	0.5607
T75	1	6 1/8" Hard Line	250.00 - 255.00	1.0000	0.5606
T75	4	1" conduit	250.00 - 255.00	0.6000	0.5606
T75	5	7/8" Coax	250.00 - 255.00	0.6000	0.5606
T75	7	7/8" Coax	250.00 - 255.00	0.6000	0.5606
T75	8	0.99" (25.1mm) LDF2-2R	250.00 - 255.00	0.6000	0.5606
T75	10	EW63	250.00 - 255.00	0.6000	0.5606
T75	12	1.39" (35.3mm) Hybrid	250.00 - 255.00	0.6000	0.5606
T75	14	EW63	250.00 - 255.00	0.6000	0.5606
T76	1	6 1/8" Hard Line	245.00 - 250.00	1.0000	0.5648
T76	4	1" conduit	245.00 - 250.00	0.6000	0.5648
T76	5	7/8" Coax	245.00 - 250.00	0.6000	0.5648
T76	7	7/8" Coax	245.00 - 250.00	0.6000	0.5648
T76	8	0.99" (25.1mm) LDF2-2R	245.00 - 250.00	0.6000	0.5648
T76	10	EW63	245.00 - 250.00	0.6000	0.5648
T76	12	1.39" (35.3mm) Hybrid	245.00 - 250.00	0.6000	0.5648
T76	14	EW63	245.00 - 250.00	0.6000	0.5648
T77	1	6 1/8" Hard Line	240.00 - 245.00	1.0000	0.5647
T77	4	1" conduit	240.00 - 245.00	0.6000	0.5647
T77	5	7/8" Coax	240.00 - 245.00	0.6000	0.5647

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T77	7	7/8" Coax	240.00 - 245.00	0.6000	0.5647
T77	8	0.99" (25.1mm) LDF2-2R	240.00 - 245.00	0.6000	0.5647
T77	10	EW63	240.00 - 245.00	0.6000	0.5647
T77	12	1.39" (35.3mm) Hybrid	240.00 - 245.00	0.6000	0.5647
T77	14	EW63	240.00 - 245.00	0.6000	0.5647
T78	1	6 1/8" Hard Line	220.00 - 240.00	1.0000	0.5644
T78	4	1" conduit	220.00 - 240.00	0.6000	0.5644
T78	5	7/8" Coax	220.00 - 240.00	0.6000	0.5644
T78	7	7/8" Coax	220.00 - 240.00	0.6000	0.5644
T78	8	0.99" (25.1mm) LDF2-2R	220.00 - 240.00	0.6000	0.5644
T78	10	EW63	220.00 - 240.00	0.6000	0.5644
T78	12	1.39" (35.3mm) Hybrid	220.00 - 240.00	0.6000	0.5644
T78	14	EW63	220.00 - 240.00	0.6000	0.5644
T79	1	6 1/8" Hard Line	200.00 - 220.00	1.0000	0.5637
T79	4	1" conduit	200.00 - 220.00	0.6000	0.5637
T79	5	7/8" Coax	200.00 - 220.00	0.6000	0.5637
T79	7	7/8" Coax	200.00 - 220.00	0.6000	0.5637
T79	8	0.99" (25.1mm) LDF2-2R	200.00 - 220.00	0.6000	0.5637
T79	10	EW63	200.00 - 220.00	0.6000	0.5637
T79	12	1.39" (35.3mm) Hybrid	200.00 - 220.00	0.6000	0.5637
T79	14	EW63	200.00 - 220.00	0.6000	0.5637
T80	1	6 1/8" Hard Line	180.00 - 200.00	1.0000	0.5629
T80	4	1" conduit	180.00 - 200.00	0.6000	0.5629
T80	5	7/8" Coax	180.00 - 200.00	0.6000	0.5629
T80	7	7/8" Coax	180.00 - 200.00	0.6000	0.5629
T80	8	0.99" (25.1mm) LDF2-2R	180.00 - 200.00	0.6000	0.5629
T80	10	EW63	180.00 - 200.00	0.6000	0.5629
T80	12	1.39" (35.3mm) Hybrid	180.00 - 200.00	0.6000	0.5629
T80	14	EW63	180.00 - 200.00	0.6000	0.5629
T80	16	0.33" (8.7mm) Fiber	180.00 - 190.00	0.6000	0.5629
T80	17	0.65" (16.4mm) 8 AWG 2C	180.00 - 190.00	0.6000	0.5629

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T80	18	2 1/2" conduit	180.00 - 190.00	0.6000	0.5629
T80	20	1 5/8" Coax	180.00 - 192.00	0.6000	0.5629
T80	22	0.39" (10mm) Fiber Trunk	180.00 - 190.00	0.6000	0.5629
T80	23	0.78" (19.7 mm) 8 AWG 6	180.00 - 190.00	0.6000	0.5629
T81	1	6 1/8" Hard Line	160.00 - 180.00	1.0000	0.5619
T81	4	1" conduit	160.00 - 180.00	0.6000	0.5619
T81	5	7/8" Coax	160.00 - 180.00	0.6000	0.5619
T81	7	7/8" Coax	160.00 - 180.00	0.6000	0.5619
T81	8	0.99" (25.1mm) LDF2-2R	160.00 - 180.00	0.6000	0.5619
T81	10	EW63	160.00 - 180.00	0.6000	0.5619
T81	12	1.39" (35.3mm) Hybrid	160.00 - 180.00	0.6000	0.5619
T81	14	EW63	160.00 - 180.00	0.6000	0.5619
T81	16	0.33" (8.7mm) Fiber	160.00 - 180.00	0.6000	0.5619
T81	17	0.65" (16.4mm) 8 AWG 2C	160.00 - 180.00	0.6000	0.5619
T81	18	2 1/2" conduit	160.00 - 180.00	0.6000	0.5619
T81	20	1 5/8" Coax	160.00 - 180.00	0.6000	0.5619
T81	22	0.39" (10mm) Fiber Trunk	160.00 - 180.00	0.6000	0.5619
T81	23	0.78" (19.7 mm) 8 AWG 6	160.00 - 180.00	0.6000	0.5619
T82	1	6 1/8" Hard Line	140.00 - 160.00	1.0000	0.5608
T82	4	1" conduit	140.00 - 160.00	0.6000	0.5608
T82	5	7/8" Coax	140.00 - 160.00	0.6000	0.5608
T82	7	7/8" Coax	140.00 - 160.00	0.6000	0.5608
T82	8	0.99" (25.1mm) LDF2-2R	140.00 - 160.00	0.6000	0.5608
T82	10	EW63	140.00 - 160.00	0.6000	0.5608
T82	12	1.39" (35.3mm) Hybrid	140.00 - 160.00	0.6000	0.5608
T82	14	EW63	140.00 - 160.00	0.6000	0.5608
T82	16	0.33" (8.7mm) Fiber	140.00 - 160.00	0.6000	0.5608
T82	17	0.65" (16.4mm) 8 AWG 2C	140.00 - 160.00	0.6000	0.5608
T82	18	2 1/2" conduit	140.00 - 160.00	0.6000	0.5608
T82	20	1 5/8" Coax	140.00 - 160.00	0.6000	0.5608
T82	22	0.39" (10mm) Fiber Trunk	140.00 - 160.00	0.6000	0.5608



<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K<sub>a</sub> No Ice</i>	<i>K<sub>a</sub> Ice</i>
T82	23	0.78" (19.7 mm) 8 AWG 6	140.00 - 160.00	0.6000	0.5608
T83	1	6 1/8" Hard Line	120.00 - 140.00	1.0000	0.5595
T83	4	1" conduit	120.00 - 140.00	0.6000	0.5595
T83	5	7/8" Coax	120.00 - 140.00	0.6000	0.5595
T83	7	7/8" Coax	120.00 - 140.00	0.6000	0.5595
T83	8	0.99" (25.1mm) LDF2-2R	120.00 - 140.00	0.6000	0.5595
T83	10	EW63	120.00 - 140.00	0.6000	0.5595
T83	12	1.39" (35.3mm) Hybrid	120.00 - 140.00	0.6000	0.5595
T83	14	EW63	120.00 - 140.00	0.6000	0.5595
T83	16	0.33" (8.7mm) Fiber	120.00 - 140.00	0.6000	0.5595
T83	17	0.65" (16.4mm) 8 AWG 2C	120.00 - 140.00	0.6000	0.5595
T83	18	2 1/2" conduit	120.00 - 140.00	1.0000	0.5595
T83	20	1 5/8" Coax	120.00 - 140.00	0.6000	0.5595
T83	22	0.39" (10mm) Fiber Trunk	120.00 - 140.00	0.6000	0.5595
T83	23	0.78" (19.7 mm) 8 AWG 6	120.00 - 140.00	0.6000	0.5595
T84	1	6 1/8" Hard Line	115.00 - 120.00	1.0000	0.5586
T84	4	1" conduit	115.00 - 120.00	0.6000	0.5586
T84	5	7/8" Coax	115.00 - 120.00	0.6000	0.5586
T84	7	7/8" Coax	115.00 - 120.00	0.6000	0.5586
T84	8	0.99" (25.1mm) LDF2-2R	115.00 - 120.00	0.6000	0.5586
T84	10	EW63	115.00 - 120.00	0.6000	0.5586
T84	12	1.39" (35.3mm) Hybrid	115.00 - 120.00	0.6000	0.5586
T84	14	EW63	115.00 - 120.00	0.6000	0.5586
T84	16	0.33" (8.7mm) Fiber	115.00 - 120.00	0.6000	0.5586
T84	17	0.65" (16.4mm) 8 AWG 2C	115.00 - 120.00	0.6000	0.5586
T84	18	2 1/2" conduit	115.00 - 120.00	1.0000	0.5586
T84	20	1 5/8" Coax	115.00 - 120.00	0.6000	0.5586
T84	22	0.39" (10mm) Fiber Trunk	115.00 - 120.00	0.6000	0.5586
T84	23	0.78" (19.7 mm) 8 AWG 6	115.00 - 120.00	0.6000	0.5586
T85	1	6 1/8" Hard Line	110.00 - 115.00	1.0000	0.5583
T85	4	1" conduit	110.00 - 115.00	0.6000	0.5583

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T85	5	7/8" Coax	110.00 - 115.00	0.6000	0.5583
T85	7	7/8" Coax	110.00 - 115.00	0.6000	0.5583
T85	8	0.99" (25.1mm) LDF2-2R	110.00 - 115.00	0.6000	0.5583
T85	10	EW63	110.00 - 115.00	0.6000	0.5583
T85	12	1.39" (35.3mm) Hybrid	110.00 - 115.00	0.6000	0.5583
T85	14	EW63	110.00 - 115.00	0.6000	0.5583
T85	16	0.33" (8.7mm) Fiber	110.00 - 115.00	0.6000	0.5583
T85	17	0.65" (16.4mm) 8 AWG 2C	110.00 - 115.00	0.6000	0.5583
T85	18	2 1/2" conduit	110.00 - 115.00	1.0000	0.5583
T85	20	1 5/8" Coax	110.00 - 115.00	0.6000	0.5583
T85	22	0.39" (10mm) Fiber Trunk	110.00 - 115.00	0.6000	0.5583
T85	23	0.78" (19.7 mm) 8 AWG 6	110.00 - 115.00	0.6000	0.5583
T86	1	6 1/8" Hard Line	105.00 - 110.00	1.0000	0.5537
T86	4	1" conduit	105.00 - 110.00	0.6000	0.5537
T86	5	7/8" Coax	105.00 - 110.00	0.6000	0.5537
T86	7	7/8" Coax	105.00 - 110.00	0.6000	0.5537
T86	8	0.99" (25.1mm) LDF2-2R	105.00 - 110.00	0.6000	0.5537
T86	10	EW63	105.00 - 110.00	0.6000	0.5537
T86	12	1.39" (35.3mm) Hybrid	105.00 - 110.00	0.6000	0.5537
T86	14	EW63	105.00 - 110.00	0.6000	0.5537
T86	16	0.33" (8.7mm) Fiber	105.00 - 110.00	0.6000	0.5537
T86	17	0.65" (16.4mm) 8 AWG 2C	105.00 - 110.00	0.6000	0.5537
T86	18	2 1/2" conduit	105.00 - 110.00	1.0000	0.5537
T86	20	1 5/8" Coax	105.00 - 110.00	0.6000	0.5537
T86	22	0.39" (10mm) Fiber Trunk	105.00 - 110.00	0.6000	0.5537
T86	23	0.78" (19.7 mm) 8 AWG 6	105.00 - 110.00	0.6000	0.5537
T87	1	6 1/8" Hard Line	100.00 - 105.00	1.0000	0.5534
T87	4	1" conduit	100.00 - 105.00	0.6000	0.5534
T87	5	7/8" Coax	100.00 - 105.00	0.6000	0.5534
T87	7	7/8" Coax	100.00 - 105.00	0.6000	0.5534
T87	8	0.99" (25.1mm) LDF2-2R	100.00 - 105.00	0.6000	0.5534

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T87	10	EW63	100.00 - 105.00	0.6000	0.5534
T87	12	1.39" (35.3mm) Hybrid	100.00 - 105.00	0.6000	0.5534
T87	14	EW63	100.00 - 105.00	0.6000	0.5534
T87	16	0.33" (8.7mm) Fiber	100.00 - 105.00	0.6000	0.5534
T87	17	0.65" (16.4mm) 8 AWG 2C	100.00 - 105.00	0.6000	0.5534
T87	18	2 1/2" conduit	100.00 - 105.00	1.0000	0.5534
T87	20	1 5/8" Coax	100.00 - 105.00	0.6000	0.5534
T87	22	0.39" (10mm) Fiber Trunk	100.00 - 105.00	0.6000	0.5534
T87	23	0.78" (19.7 mm) 8 AWG 6	100.00 - 105.00	0.6000	0.5534
T88	1	6 1/8" Hard Line	95.00 - 100.00	1.0000	0.5531
T88	4	1" conduit	95.00 - 100.00	0.6000	0.5531
T88	5	7/8" Coax	95.00 - 100.00	0.6000	0.5531
T88	7	7/8" Coax	95.00 - 100.00	0.6000	0.5531
T88	8	0.99" (25.1mm) LDF2-2R	95.00 - 100.00	0.6000	0.5531
T88	10	EW63	95.00 - 100.00	0.6000	0.5531
T88	12	1.39" (35.3mm) Hybrid	95.00 - 100.00	0.6000	0.5531
T88	14	EW63	95.00 - 100.00	0.6000	0.5531
T88	16	0.33" (8.7mm) Fiber	95.00 - 100.00	0.6000	0.5531
T88	17	0.65" (16.4mm) 8 AWG 2C	95.00 - 100.00	0.6000	0.5531
T88	18	2 1/2" conduit	95.00 - 100.00	1.0000	0.5531
T88	20	1 5/8" Coax	95.00 - 100.00	0.6000	0.5531
T88	22	0.39" (10mm) Fiber Trunk	95.00 - 100.00	0.6000	0.5531
T88	23	0.78" (19.7 mm) 8 AWG 6	95.00 - 100.00	0.6000	0.5531
T89	1	6 1/8" Hard Line	90.00 - 95.00	1.0000	0.5528
T89	4	1" conduit	90.00 - 95.00	0.6000	0.5528
T89	5	7/8" Coax	90.00 - 95.00	0.6000	0.5528
T89	7	7/8" Coax	90.00 - 95.00	0.6000	0.5528
T89	8	0.99" (25.1mm) LDF2-2R	90.00 - 95.00	0.6000	0.5528
T89	10	EW63	90.00 - 95.00	0.6000	0.5528
T89	12	1.39" (35.3mm) Hybrid	90.00 - 95.00	0.6000	0.5528
T89	14	EW63	90.00 - 95.00	0.6000	0.5528
T89	16	0.33" (8.7mm) Fiber	90.00 - 95.00	0.6000	0.5528
T89	17	0.65" (16.4mm) 8 AWG 2C	90.00 - 95.00	0.6000	0.5528
T89	18	2 1/2" conduit	90.00 - 95.00	1.0000	0.5528
T89	20	1 5/8" Coax	90.00 - 95.00	0.6000	0.5528
T89	22	0.39" (10mm) Fiber Trunk	90.00 - 95.00	0.6000	0.5528
T89	23	0.78" (19.7 mm) 8 AWG 6	90.00 - 95.00	0.6000	0.5528
T90	1	6 1/8" Hard Line	85.00 - 90.00	1.0000	0.5569
T90	4	1" conduit	85.00 - 90.00	0.6000	0.5569
T90	5	7/8" Coax	85.00 - 90.00	0.6000	0.5569
T90	7	7/8" Coax	85.00 - 90.00	0.6000	0.5569
T90	8	0.99" (25.1mm) LDF2-2R	85.00 - 90.00	0.6000	0.5569
T90	10	EW63	85.00 - 90.00	0.6000	0.5569
T90	12	1.39" (35.3mm) Hybrid	85.00 - 90.00	0.6000	0.5569
T90	14	EW63	85.00 - 90.00	0.6000	0.5569
T90	16	0.33" (8.7mm) Fiber	85.00 - 90.00	0.6000	0.5569
T90	17	0.65" (16.4mm) 8 AWG 2C	85.00 - 90.00	0.6000	0.5569
T90	18	2 1/2" conduit	85.00 - 90.00	1.0000	0.5569
T90	20	1 5/8" Coax	85.00 - 90.00	0.6000	0.5569
T90	22	0.39" (10mm) Fiber Trunk	85.00 - 90.00	0.6000	0.5569
T90	23	0.78" (19.7 mm) 8 AWG 6	85.00 - 90.00	0.6000	0.5569
T91	1	6 1/8" Hard Line	80.00 - 85.00	1.0000	0.5566
T91	4	1" conduit	80.00 - 85.00	0.6000	0.5566

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	$K_a$ No Ice	$K_a$ Ice
T91	5	7/8" Coax	80.00 - 85.00	0.6000	0.5566
T91	7	7/8" Coax	80.00 - 85.00	0.6000	0.5566
T91	8	0.99" (25.1mm) LDF2-2R	80.00 - 85.00	0.6000	0.5566
T91	10	EW63	80.00 - 85.00	0.6000	0.5566
T91	12	1.39" (35.3mm) Hybrid	80.00 - 85.00	0.6000	0.5566
T91	14	EW63	80.00 - 85.00	0.6000	0.5566
T91	16	0.33" (8.7mm) Fiber	80.00 - 85.00	0.6000	0.5566
T91	17	0.65" (16.4mm) 8 AWG 2C	80.00 - 85.00	0.6000	0.5566
T91	18	2 1/2" conduit	80.00 - 85.00	1.0000	0.5566
T91	20	1 5/8" Coax	80.00 - 85.00	0.6000	0.5566
T91	22	0.39" (10mm) Fiber Trunk	80.00 - 85.00	0.6000	0.5566
T91	23	0.78" (19.7 mm) 8 AWG 6	80.00 - 85.00	0.6000	0.5566
T92	1	6 1/8" Hard Line	60.00 - 80.00	1.0000	0.5563
T92	4	1" conduit	60.00 - 80.00	0.6000	0.5563
T92	5	7/8" Coax	60.00 - 80.00	0.6000	0.5563
T92	7	7/8" Coax	60.00 - 80.00	0.6000	0.5563
T92	8	0.99" (25.1mm) LDF2-2R	60.00 - 80.00	0.6000	0.5563
T92	10	EW63	60.00 - 80.00	0.6000	0.5563
T92	12	1.39" (35.3mm) Hybrid	60.00 - 80.00	0.6000	0.5563
T92	14	EW63	60.00 - 80.00	0.6000	0.5563
T92	16	0.33" (8.7mm) Fiber	60.00 - 80.00	0.6000	0.5563
T92	17	0.65" (16.4mm) 8 AWG 2C	60.00 - 80.00	0.6000	0.5563
T92	18	2 1/2" conduit	60.00 - 80.00	1.0000	0.5563
T92	20	1 5/8" Coax	60.00 - 80.00	0.6000	0.5563
T92	22	0.39" (10mm) Fiber Trunk	60.00 - 80.00	0.6000	0.5563
T92	23	0.78" (19.7 mm) 8 AWG 6	60.00 - 80.00	0.6000	0.5563
T93	1	6 1/8" Hard Line	40.00 - 60.00	1.0000	0.5571
T93	4	1" conduit	40.00 - 60.00	0.6000	0.5571
T93	5	7/8" Coax	40.00 - 60.00	0.6000	0.5571
T93	7	7/8" Coax	40.00 - 60.00	0.6000	0.5571
T93	8	0.99" (25.1mm) LDF2-2R	40.00 - 60.00	0.6000	0.5571
T93	10	EW63	40.00 - 60.00	0.6000	0.5571
T93	12	1.39" (35.3mm) Hybrid	40.00 - 60.00	0.6000	0.5571
T93	14	EW63	40.00 - 60.00	0.6000	0.5571
T93	16	0.33" (8.7mm) Fiber	40.00 - 60.00	0.6000	0.5571
T93	17	0.65" (16.4mm) 8 AWG 2C	40.00 - 60.00	0.6000	0.5571
T93	18	2 1/2" conduit	40.00 - 60.00	1.0000	0.5571
T93	20	1 5/8" Coax	40.00 - 60.00	0.6000	0.5571
T93	22	0.39" (10mm) Fiber Trunk	40.00 - 60.00	0.6000	0.5571
T93	23	0.78" (19.7 mm) 8 AWG 6	40.00 - 60.00	0.6000	0.5571
T94	1	6 1/8" Hard Line	20.00 - 40.00	1.0000	0.5614
T94	4	1" conduit	20.00 - 40.00	0.6000	0.5614
T94	5	7/8" Coax	20.00 - 40.00	0.6000	0.5614
T94	7	7/8" Coax	20.00 - 40.00	0.6000	0.5614
T94	8	0.99" (25.1mm) LDF2-2R	20.00 - 40.00	0.6000	0.5614
T94	10	EW63	20.00 - 40.00	0.6000	0.5614
T94	12	1.39" (35.3mm) Hybrid	20.00 - 40.00	0.6000	0.5614
T94	14	EW63	20.00 - 40.00	0.6000	0.5614
T94	16	0.33" (8.7mm) Fiber	20.00 - 40.00	0.6000	0.5614
T94	17	0.65" (16.4mm) 8 AWG 2C	20.00 - 40.00	0.6000	0.5614
T94	18	2 1/2" conduit	20.00 - 40.00	0.6000	0.5614
T94	20	1 5/8" Coax	20.00 - 40.00	0.6000	0.5614
T94	22	0.39" (10mm) Fiber Trunk	20.00 - 40.00	0.6000	0.5614
T94	23	0.78" (19.7 mm) 8 AWG 6	20.00 - 40.00	0.6000	0.5614
T95	1	6 1/8" Hard Line	15.00 - 20.00	1.0000	0.5691
T95	4	1" conduit	15.00 - 20.00	0.6000	0.5691
T95	5	7/8" Coax	15.00 - 20.00	0.6000	0.5691
T95	7	7/8" Coax	15.00 - 20.00	0.6000	0.5691
T95	8	0.99" (25.1mm) LDF2-2R	15.00 - 20.00	0.6000	0.5691
T95	10	EW63	15.00 - 20.00	0.6000	0.5691
T95	12	1.39" (35.3mm) Hybrid	15.00 - 20.00	0.6000	0.5691
T95	14	EW63	15.00 - 20.00	0.6000	0.5691

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	68 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T95	16	0.33" (8.7mm) Fiber	15.00 - 20.00	0.6000	0.5691
T95	17	0.65" (16.4mm) 8 AWG 2C	15.00 - 20.00	0.6000	0.5691
T95	18	2 1/2" conduit	15.00 - 20.00	1.0000	0.5691
T95	20	1 5/8" Coax	15.00 - 20.00	0.6000	0.5691
T95	22	0.39" (10mm) Fiber Trunk	15.00 - 20.00	0.6000	0.5691
T95	23	0.78" (19.7 mm) 8 AWG 6	15.00 - 20.00	0.6000	0.5691
T96	1	6 1/8" Hard Line	7.00 - 15.00	1.0000	0.4784
T96	4	1" conduit	7.00 - 15.00	0.6000	0.4784
T96	5	7/8" Coax	7.00 - 15.00	0.6000	0.4784
T96	7	7/8" Coax	7.00 - 15.00	0.6000	0.4784
T96	8	0.99" (25.1mm) LDF2-2R	7.00 - 15.00	0.6000	0.4784
T96	10	EW63	7.00 - 15.00	0.6000	0.4784
T96	12	1.39" (35.3mm) Hybrid	7.00 - 15.00	0.6000	0.4784
T96	14	EW63	7.00 - 15.00	0.6000	0.4784
T96	16	0.33" (8.7mm) Fiber	7.00 - 15.00	0.6000	0.4784
T96	17	0.65" (16.4mm) 8 AWG 2C	7.00 - 15.00	0.6000	0.4784
T96	18	2 1/2" conduit	7.00 - 15.00	1.0000	0.4784
T96	20	1 5/8" Coax	7.00 - 15.00	0.6000	0.4784
T96	22	0.39" (10mm) Fiber Trunk	7.00 - 15.00	0.6000	0.4784
T96	23	0.78" (19.7 mm) 8 AWG 6	7.00 - 15.00	0.6000	0.4784
T97	1	6 1/8" Hard Line	0.00 - 7.00	1.0000	0.0000
T97	4	1" conduit	0.00 - 7.00	0.0000	0.0000
T97	5	7/8" Coax	0.00 - 7.00	0.0000	0.0000
T97	7	7/8" Coax	0.00 - 7.00	0.0000	0.0000
T97	8	0.99" (25.1mm) LDF2-2R	0.00 - 7.00	0.0000	0.0000
T97	10	EW63	0.00 - 7.00	0.0000	0.0000
T97	12	1.39" (35.3mm) Hybrid	0.00 - 7.00	0.0000	0.0000
T97	14	EW63	0.00 - 7.00	0.0000	0.0000
T97	16	0.33" (8.7mm) Fiber	0.00 - 7.00	0.0000	0.0000
T97	17	0.65" (16.4mm) 8 AWG 2C	0.00 - 7.00	0.0000	0.0000
T97	18	2 1/2" conduit	0.00 - 7.00	1.0000	0.0000
T97	20	1 5/8" Coax	0.00 - 7.00	0.0000	0.0000
T97	22	0.39" (10mm) Fiber Trunk	0.00 - 7.00	0.0000	0.0000
T97	23	0.78" (19.7 mm) 8 AWG 6	0.00 - 7.00	0.0000	0.0000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						
			Vert		°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
TFU-31ETT/VP-R O6	A	None			0.0000	1169.00	No Ice	42.81	42.81	27628.00
							1/2" Ice	63.80	63.80	29629.00
							1" Ice	69.70	69.70	32000.00
*** ISMD10	B	From Face	4.00		0.0000	1003.00	No Ice	5.83	1.77	421.50
			0.00				1/2" Ice	7.06	2.14	700.20
			0.00				1" Ice	8.29	2.51	978.90
*** 10' - 12' Ice Shield (C30-085-103)	B	From Leg	4.00		0.0000	889.00	No Ice	6.22	1.09	667.00
			0.00				1/2" Ice	7.83	1.37	949.80
			0.00				1" Ice	9.44	1.65	1232.60

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Vert					
***									
Radio 0208	A	From Leg	4.00	0.0000	400.00	No Ice	1.40	0.38	19.80
			0.00			1/2" Ice	1.90	0.52	28.80
			0.00			1" Ice	2.40	0.66	37.80
RRUS 4415 B30	A	From Leg	4.00	0.0000	400.00	No Ice	1.84	0.82	46.00
			0.00			1/2" Ice	2.45	1.09	60.10
			0.00			1" Ice	3.06	1.36	74.20
ODI2-065R18K-GQ	A	From Leg	4.00	0.0000	400.00	No Ice	4.85	1.02	25.10
			0.00			1/2" Ice	5.72	1.20	49.20
			0.00			1" Ice	6.59	1.38	73.30
***									
Radio 0208	B	From Leg	4.00	0.0000	400.00	No Ice	1.40	0.38	19.80
			0.00			1/2" Ice	1.90	0.52	28.80
			0.00			1" Ice	2.40	0.66	37.80
ODI2-065R18K-GQ	B	From Leg	4.00	0.0000	400.00	No Ice	4.85	1.02	25.10
			0.00			1/2" Ice	5.72	1.20	49.20
			0.00			1" Ice	6.59	1.38	73.30
***									
Radio 0208	C	From Leg	4.00	0.0000	400.00	No Ice	1.40	0.38	19.80
			0.00			1/2" Ice	1.90	0.52	28.80
			0.00			1" Ice	2.40	0.66	37.80
ODI2-065R18K-GQ	C	From Leg	4.00	0.0000	400.00	No Ice	4.85	1.02	25.10
			0.00			1/2" Ice	5.72	1.20	49.20
			0.00			1" Ice	6.59	1.38	73.30
***									
ISMD8	A	From Leg	4.00	30.0000	356.00	No Ice	3.73	1.41	383.40
			0.00			1/2" Ice	4.72	1.78	602.00
			0.00			1" Ice	5.71	2.15	820.60
***									
DC6-48-60-18-8F (23.5" Height)	A	From Leg	4.00	-20.0000	190.00	No Ice	1.11	1.11	20.00
			0.00			1/2" Ice	1.46	1.46	35.10
			0.00			1" Ice	1.81	1.81	50.20
***									
(2) LGP21401	A	From Leg	4.00	-70.0000	192.00	No Ice	1.10	0.35	14.10
			0.00			1/2" Ice	1.53	0.48	21.20
			0.00			1" Ice	1.96	0.61	28.30
7770.00	A	From Leg	4.00	-70.0000	190.00	No Ice	5.51	1.70	35.00
			0.00			1/2" Ice	6.53	2.01	0.00
			0.00			1" Ice	7.55	2.32	0.00
***									
(2) LGP21401	B	From Leg	4.00	-30.0000	192.00	No Ice	1.10	0.35	14.10
			0.00			1/2" Ice	1.53	0.48	21.20
			0.00			1" Ice	1.96	0.61	28.30
7770.00	B	From Leg	4.00	-30.0000	190.00	No Ice	5.51	1.70	35.00
			0.00			1/2" Ice	6.53	2.01	0.00
			0.00			1" Ice	7.55	2.32	0.00
***									
(2) LGP21401	C	From Leg	4.00	-30.0000	192.00	No Ice	1.10	0.35	14.10
			0.00			1/2" Ice	1.53	0.48	21.20
			0.00			1" Ice	1.96	0.61	28.30
7770.00	C	From Leg	4.00	-30.0000	190.00	No Ice	5.51	1.70	35.00
			0.00			1/2" Ice	6.53	2.01	0.00
			0.00			1" Ice	7.55	2.32	0.00
***									
Flat Side Arm	A	From Leg	4.00	-90.0000	1073.00	No Ice	2.14	6.30	150.00
			0.00			1/2" Ice	2.60	7.00	230.00
			0.00			1" Ice	3.06	7.70	310.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			ft ft ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
Flat Side Arm	C	From Leg	4.00 0.00 0.00	90.0000	1073.00	No Ice 1/2" Ice 1" Ice	2.14 2.60 3.06	6.30 7.00 7.70	150.00 230.00 310.00
Flat Side Arm	A	From Leg	4.00 0.00 0.00	90.0000	1003.00	No Ice 1/2" Ice 1" Ice	2.14 2.60 3.06	6.30 7.00 7.70	150.00 230.00 310.00
Flat Side Arm	B	From Leg	4.00 0.00 0.00	-90.0000	1003.00	No Ice 1/2" Ice 1" Ice	2.14 2.60 3.06	6.30 7.00 7.70	150.00 230.00 310.00
***									
Stand-Off	A	From Leg	2.00 0.00 0.00	0.0000	400.00	No Ice 1/2" Ice 1" Ice	1.77 2.00 2.50	2.50 5.50 6.00	75.00 230.00 200.00
Stand-Off	B	From Leg	2.00 0.00 0.00	0.0000	400.00	No Ice 1/2" Ice 1" Ice	1.77 2.00 2.50	2.50 5.50 6.00	75.00 230.00 200.00
Stand-Off	C	From Leg	2.00 0.00 0.00	0.0000	400.00	No Ice 1/2" Ice 1" Ice	1.77 2.00 2.50	2.50 5.50 6.00	75.00 230.00 200.00
***									
***									
Vislink Proscan III	C	From Face	2.00 0.00 0.00	0.0000	1073.00	No Ice 1/2" Ice 1" Ice	19.02 19.50 20.20	19.02 19.50 20.20	185.00 400.00 866.80
Vislink Proscan III	C	From Face	2.00 0.00 0.00	0.0000	996.00	No Ice 1/2" Ice 1" Ice	19.02 19.50 20.20	19.02 19.50 20.20	185.00 400.00 866.80
***									
RRUS 8843 B2, B66A	A	From Leg	4.00 0.00 0.00	-40.0000	190.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
RRUS 8843 B2, B66A	B	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
RRUS 8843 B2, B66A	C	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	72.00 89.60 109.91
DC6-48-60-18-8C	A	From Leg	4.00 0.00 0.00	-20.0000	190.00	No Ice 1/2" Ice 1" Ice	1.27 1.97 2.17	1.27 1.97 2.17	16.00 46.42 79.96
RRUS 4449 B5, B12	A	From Leg	4.00 0.00 0.00	-40.0000	190.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	71.00 89.48 110.77
RRUS 4449 B5, B12	B	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	71.00 89.48 110.77
RRUS 4449 B5, B12	C	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.40 1.56 1.72	71.00 89.48 110.77
RRUS 4478 B14	A	From Leg	4.00 0.00 0.00	-40.0000	190.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.56	59.40 77.06 97.48
RRUS 4478 B14	B	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.56	59.40 77.06 97.48
RRUS 4478 B14	C	From Leg	4.00 0.00 0.00	-30.0000	190.00	No Ice 1/2" Ice	2.02 2.20	1.25 1.40	59.40 77.06





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## Tower Pressures - No Ice

$G_H = 0.850$  (base tower),  $0.850$  (upper structure)

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	$C_A A_A$ Out Face
ft	ft		psf	ft <sup>2</sup>	e	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
L1	1120.91	1.971	46	103.500	A	0.000	103.500	103.500	100.00	0.000	0.000
1151.90-1089.80					B	0.000	103.500		100.00	0.000	0.000
					C	0.000	103.500		100.00	38.036	0.000
T1	1087.35	1.954	46	40.731	A	14.064	3.063	3.063	17.88	0.000	0.000
1089.80-1084.90					B	14.064	3.063		17.88	0.000	0.000
					C	14.064	3.063		17.88	1.501	0.000
T2	1082.45	1.952	46	40.731	A	1.602	4.941	3.063	46.81	0.000	0.000
1084.90-1080.00					B	1.602	4.941		46.81	0.000	0.000
					C	1.602	4.941		46.81	1.501	0.000
T3	1070.00	1.945	46	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
1080.00-1060.00					B	6.406	19.299		48.63	3.133	0.000
					C	6.406	19.299		48.63	6.125	0.000
T4	1050.00	1.935	46	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
1060.00-1040.00					B	6.406	19.299		48.63	4.820	0.000
					C	6.406	19.299		48.63	6.125	0.000
T5	1030.00	1.924	45	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
1040.00-1020.00					B	6.406	19.299		48.63	4.820	0.000
					C	6.406	19.299		48.63	6.125	0.000
T6	1010.00	1.913	45	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
1020.00-1000.00					B	6.406	19.299		48.63	4.820	0.000
					C	6.406	19.299		48.63	6.125	0.000
T7	990.00	1.903	45	166.250	A	6.406	19.299	12.500	48.63	3.328	0.000
1000.00-980.00					B	6.406	19.299		48.63	4.820	0.000
					C	6.406	19.299		48.63	6.125	0.000
T8	970.00	1.891	45	166.250	A	6.406	19.299	12.500	48.63	4.160	0.000
980.00-960.00					B	6.406	19.299		48.63	4.820	0.000
					C	6.406	19.299		48.63	6.125	0.000
T9	950.00	1.88	44	167.500	A	6.367	21.751	15.000	53.35	4.160	0.000
960.00-940.00					B	6.367	21.751		53.35	4.820	0.000
					C	6.367	21.751		53.35	6.125	0.000
T10	937.50	1.873	44	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
940.00-935.00					B	1.589	5.436		53.38	1.205	0.000
					C	1.589	5.436		53.38	1.531	0.000
T11	932.50	1.87	44	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
935.00-930.00					B	1.589	5.436		53.38	1.205	0.000
					C	1.589	5.436		53.38	1.531	0.000
T12	927.50	1.867	44	41.875	A	1.589	5.623	3.750	52.00	1.040	0.000
930.00-925.00					B	1.589	5.623		52.00	1.205	0.000
					C	1.589	5.623		52.00	1.531	0.000
T13	922.50	1.865	44	41.875	A	1.589	5.623	3.750	52.00	1.040	0.000
925.00-920.00					B	1.589	5.623		52.00	1.205	0.000
					C	1.589	5.623		52.00	1.531	0.000
T14	917.50	1.862	44	41.875	A	1.589	5.623	3.750	52.00	1.040	0.000
920.00-915.00					B	1.589	5.623		52.00	1.205	0.000
					C	1.589	5.623		52.00	1.531	0.000
T15	912.50	1.859	44	41.875	A	1.589	5.623	3.750	52.00	1.040	0.000
915.00-910.00					B	1.589	5.623		52.00	1.205	0.000
					C	1.589	5.623		52.00	1.531	0.000
T16	907.50	1.856	44	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
910.00-905.00					B	1.589	5.436		53.38	1.205	0.000
					C	1.589	5.436		53.38	1.531	0.000
T17	902.50	1.853	44	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
905.00-900.00					B	1.589	5.436		53.38	1.205	0.000

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
 Phone: (919) 468-0112  
 FAX: (919) 466-5414

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Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>				
T18 900.00-880.00	890.00	1.845	44	167.500	C	1.589	5.436	15.000	53.38	1.531	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			4.820	0.000	
T19 880.00-860.00	870.00	1.834	43	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.438	0.000	
T20 860.00-840.00	850.00	1.821	43	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T21 840.00-820.00	830.00	1.809	43	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T22 820.00-800.00	810.00	1.796	42	167.500	C	6.354	21.744	15.000	53.38	4.160	0.000	
					A	6.354	21.744			8.840	0.000	
					B	6.354	21.744			8.840	0.000	
T23 800.00-780.00	790.00	1.784	42	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T24 780.00-775.00	777.50	1.776	42	41.875	C	6.354	21.744	3.750	53.38	6.125	0.000	
					A	1.589	5.436			1.040	0.000	
					B	1.589	5.436			2.210	0.000	
T25 775.00-770.00	772.50	1.772	42	41.875	C	1.589	5.436	3.750	53.38	1.531	0.000	
					A	1.589	5.436			1.040	0.000	
					B	1.589	5.436			2.210	0.000	
T26 770.00-765.00	767.50	1.769	42	41.875	C	1.589	5.436	3.750	53.38	1.531	0.000	
					A	1.589	5.623			52.00	1.040	0.000
					B	1.589	5.623			52.00	2.210	0.000
T27 765.00-760.00	762.50	1.766	42	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000	
					A	1.589	5.623			52.00	1.040	0.000
					B	1.589	5.623			52.00	2.210	0.000
T28 760.00-755.00	757.50	1.762	42	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000	
					A	1.589	5.623			52.00	1.040	0.000
					B	1.589	5.623			52.00	2.210	0.000
T29 755.00-750.00	752.50	1.759	42	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000	
					A	1.589	5.623			52.00	1.040	0.000
					B	1.589	5.623			52.00	2.210	0.000
T30 750.00-745.00	747.50	1.756	42	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000	
					A	1.589	5.436			53.38	1.040	0.000
					B	1.589	5.436			53.38	2.210	0.000
T31 745.00-740.00	742.50	1.752	41	41.875	C	1.589	5.436	3.750	53.38	1.531	0.000	
					A	1.589	5.436			53.38	1.040	0.000
					B	1.589	5.436			53.38	2.210	0.000
T32 740.00-720.00	730.00	1.744	41	167.500	C	1.589	5.436	15.000	53.38	1.531	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T33 720.00-700.00	710.00	1.73	41	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T34 700.00-680.00	690.00	1.716	41	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T35 680.00-660.00	670.00	1.702	40	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T36 660.00-640.00	650.00	1.687	40	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000	
					A	6.354	21.744			4.160	0.000	
					B	6.354	21.744			8.840	0.000	
T37 640.00-620.00	630.00	1.672	40	168.333	C	6.354	21.744	16.667	56.10	6.125	0.000	
					A	6.328	23.378			4.160	0.000	
					B	6.328	23.378		56.10	8.840	0.000	

# tnxTower

**American Tower**  
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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	74 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation  ft	z  ft	K <sub>Z</sub>	q <sub>z</sub>  psf	A <sub>G</sub>  ft <sup>2</sup>	F a c e	A <sub>F</sub>  ft <sup>2</sup>	A <sub>R</sub>  ft <sup>2</sup>	A <sub>leg</sub>  ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
T38 620.00-615.00	617.50	1.662	40	42.083	C	6.328	23.378		56.10	6.125	0.000
					A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T39 615.00-610.00	612.50	1.659	40	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T40 610.00-605.00	607.50	1.655	39	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T41 605.00-600.00	602.50	1.651	39	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T42 600.00-595.00	597.50	1.647	39	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T43 595.00-590.00	592.50	1.643	39	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T44 590.00-585.00	587.50	1.639	39	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T45 585.00-580.00	582.50	1.635	39	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T46 580.00-560.00	570.00	1.625	39	167.917	A	6.332	22.556	15.833	54.81	4.160	0.000
					B	6.332	22.556		54.81	8.840	0.000
					C	6.332	22.556		54.81	6.125	0.000
T47 560.00-540.00	550.00	1.608	39	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000
					C	6.337	22.559		54.80	6.125	0.000
T48 540.00-535.00	537.50	1.598	38	41.979	A	1.584	5.100	3.958	59.22	1.040	0.000
					B	1.584	5.100		59.22	2.210	0.000
					C	1.584	5.100		59.22	1.531	0.000
T49 535.00-530.00	532.50	1.594	38	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T50 530.00-525.00	527.50	1.589	38	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T51 525.00-520.00	522.50	1.585	38	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T52 520.00-500.00	510.00	1.574	38	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000
					C	6.337	22.559		54.80	6.125	0.000
T53 500.00-480.00	490.00	1.556	38	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000
					C	6.337	22.559		54.80	6.125	0.000
T54 480.00-460.00	470.00	1.538	38	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000
					C	6.337	22.559		54.80	6.125	0.000
T55 460.00-440.00	450.00	1.519	37	168.333	A	6.324	23.376	16.667	56.12	4.160	0.000
					B	6.324	23.376		56.12	8.840	0.000
					C	6.324	23.376		56.12	6.125	0.000
T56 440.00-435.00	437.50	1.507	37	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T57 435.00-430.00	432.50	1.502	37	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	75 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
T58 430.00-425.00	427.50	1.497	37	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	6.030		54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
T59 425.00-420.00	422.50	1.492	37	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030		54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
T60 420.00-415.00	417.50	1.487	37	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030		54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
T61 415.00-410.00	412.50	1.481	37	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030		54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
T62 410.00-405.00	407.50	1.476	37	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	5.843		56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
T63 405.00-400.00	402.50	1.471	37	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	5.843		56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
T64 400.00-380.00	390.00	1.458	37	168.333	C	1.580	5.843	16.667	56.13	1.531	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	8.840	0.000
T65 380.00-360.00	370.00	1.436	37	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	8.840	0.000
T66 360.00-340.00	350.00	1.414	36	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	10.649	0.000
T67 340.00-320.00	330.00	1.39	36	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	12.860	0.000
T68 320.00-300.00	310.00	1.365	36	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	12.860	0.000
T69 300.00-280.00	290.00	1.34	36	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374		56.13	6.940	0.000
					B	6.319	23.374		56.13	12.860	0.000
T70 280.00-275.00	277.50	1.323	36	42.083	C	1.580	5.843	4.167	56.13	1.735	0.000
					A	1.580	5.843		56.13	3.215	0.000
					B	1.580	5.843		56.13	1.531	0.000
T71 275.00-270.00	272.50	1.316	36	42.083	C	1.580	5.843	4.167	56.13	1.735	0.000
					A	1.580	5.843		56.13	3.215	0.000
					B	1.580	5.843		56.13	1.531	0.000
T72 270.00-265.00	267.50	1.309	36	42.083	C	1.580	6.030	4.167	54.76	1.735	0.000
					A	1.580	6.030		54.76	3.215	0.000
					B	1.580	6.030		54.76	1.531	0.000
T73 265.00-260.00	262.50	1.302	36	42.083	C	1.580	6.030	4.167	54.76	1.735	0.000
					A	1.580	6.030		54.76	3.215	0.000
					B	1.580	6.030		54.76	1.531	0.000
T74 260.00-255.00	257.50	1.295	36	42.083	C	1.580	6.030	4.167	54.76	1.735	0.000
					A	1.580	6.030		54.76	3.215	0.000
					B	1.580	6.030		54.76	1.531	0.000
T75 255.00-250.00	252.50	1.288	37	42.083	C	1.580	6.030	4.167	54.76	1.735	0.000
					A	1.580	6.030		54.76	3.215	0.000
					B	1.580	6.030		54.76	1.531	0.000
T76 250.00-245.00	247.50	1.28	37	42.083	C	1.580	6.030	4.167	54.76	1.735	0.000
					A	1.580	5.843		56.13	1.735	0.000
					B	1.580	5.843		56.13	3.215	0.000
T77 245.00-240.00	242.50	1.273	37	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	5.843		56.13	1.735	0.000
					B	1.580	5.843		56.13	3.215	0.000

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	76 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
T78 240.00-220.00	230.00	1.254	37	168.333	C	1.580	5.843		56.13	1.531	0.000
					A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	12.860	0.000
					C	6.319	23.374		56.13	6.125	0.000
T79 220.00-200.00	210.00	1.222	37	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	12.860	0.000
					C	6.319	23.374		56.13	6.125	0.000
T80 200.00-180.00	190.00	1.187	37	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	20.100	0.000
					C	6.319	23.374		56.13	20.381	0.000
T81 180.00-160.00	170.00	1.15	38	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.340	0.000
					C	6.319	23.374		56.13	29.885	0.000
T82 160.00-140.00	150.00	1.11	38	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.340	0.000
					C	6.319	23.374		56.13	29.885	0.000
T83 140.00-120.00	130.00	1.065	39	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.330	0.000
					C	6.319	23.374		56.13	29.885	0.000
T84 120.00-115.00	117.50	1.035	39	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843		56.13	6.826	0.000
					C	1.580	5.843		56.13	7.471	0.000
T85 115.00-110.00	112.50	1.022	39	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843		56.13	6.823	0.000
					C	1.580	5.843		56.13	7.471	0.000
T86 110.00-105.00	107.50	1.009	39	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
					B	1.580	6.030		54.76	6.821	0.000
					C	1.580	6.030		54.76	7.471	0.000
T87 105.00-100.00	102.50	0.995	40	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
					B	1.580	6.030		54.76	6.818	0.000
					C	1.580	6.030		54.76	7.471	0.000
T88 100.00-95.00	97.50	0.981	40	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
					B	1.580	6.030		54.76	6.816	0.000
					C	1.580	6.030		54.76	7.471	0.000
T89 95.00-90.00	92.50	0.966	40	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
					B	1.580	6.030		54.76	6.814	0.000
					C	1.580	6.030		54.76	7.471	0.000
T90 90.00-85.00	87.50	0.951	40	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843		56.13	6.812	0.000
					C	1.580	5.843		56.13	7.471	0.000
T91 85.00-80.00	82.50	0.935	40	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843		56.13	6.810	0.000
					C	1.580	5.843		56.13	7.471	0.000
T92 80.00-60.00	70.00	0.892	40	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.231	0.000
					C	6.319	23.374		56.13	29.885	0.000
T93 60.00-40.00	50.00	0.811	40	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.254	0.000
					C	6.319	23.374		56.13	29.885	0.000
T94 40.00-20.00	30.00	0.701	38	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374		56.13	27.340	0.000
					C	6.319	23.374		56.13	29.885	0.000
T95 20.00-15.00	17.50	0.7	41	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843		56.13	6.802	0.000
					C	1.580	5.843		56.13	7.471	0.000
T96 15.00-7.00	11.00	0.7	42	67.333	A	10.043	6.667	6.667	39.90	2.776	0.000
					B	10.043	6.667		39.90	10.843	0.000
					C	10.043	6.667		39.90	11.954	0.000
T97 7.00-0.00	3.50	0.7	44	31.359	A	36.577	6.989	6.989	16.04	2.429	0.000
					B	36.577	6.989		16.04	9.447	0.000

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b> Hartford CT2, CT (302534)	<b>Page</b> 77 of 192
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	<b>Client</b> DISH NETWORK CORPORATION	<b>Designed by</b> Christina.Minor

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F <sub>a</sub>	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> <sub>In</sub> Face	C <sub>AA</sub> <sub>Out</sub> Face
ft	ft		psf	ft <sup>2</sup>	c	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
					e	36.577	6.989		16.04	10.460	0.000

### Tower Pressure - With Ice

*G<sub>H</sub> = 0.850 (base tower), 0.850 (upper structure)*

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	t <sub>z</sub>	A <sub>G</sub>	F <sub>a</sub>	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> <sub>In</sub> Face	C <sub>AA</sub> <sub>Out</sub> Face
ft	ft		psf	in	ft <sup>2</sup>	c	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
L1 1151.90-1089.80	1120.91	1.971	11	2.1002	125.237	A	0.000	125.237	125.237	100.00	0.000	0.000
						B	0.000	125.237		100.00	0.000	0.000
						C	0.000	125.237		100.00	64.121	0.000
T1 1089.80-1084.90	1087.35	1.954	11	2.1003	42.446	A	14.064	13.439	6.493	23.61	0.000	0.000
						B	14.064	13.439		23.61	0.000	0.000
						C	14.064	13.439		23.61	5.060	0.000
T2 1084.90-1080.00	1082.45	1.952	11	2.1003	42.446	A	1.602	17.373	6.493	34.22	0.000	0.000
						B	1.602	17.373		34.22	0.000	0.000
						C	1.602	17.373		34.22	5.060	0.000
T3 1080.00-1060.00	1070.00	1.945	11	2.1003	173.251	A	6.406	69.452	26.502	34.94	0.000	0.000
						B	6.406	69.452		34.94	14.055	0.000
						C	6.406	69.452		34.94	20.651	0.000
T4 1060.00-1040.00	1050.00	1.935	11	2.1004	173.251	A	6.406	69.454	26.502	34.94	0.000	0.000
						B	6.406	69.454		34.94	21.623	0.000
						C	6.406	69.454		34.94	20.651	0.000
T5 1040.00-1020.00	1030.00	1.924	10	2.1004	173.251	A	6.406	69.455	26.503	34.94	0.000	0.000
						B	6.406	69.455		34.94	21.623	0.000
						C	6.406	69.455		34.94	20.652	0.000
T6 1020.00-1000.00	1010.00	1.913	10	2.1005	173.252	A	6.406	69.457	26.503	34.94	0.000	0.000
						B	6.406	69.457		34.94	21.624	0.000
						C	6.406	69.457		34.94	20.652	0.000
T7 1000.00-980.00	990.00	1.903	10	2.1006	173.252	A	6.406	69.458	26.504	34.94	16.772	0.000
						B	6.406	69.458		34.94	21.625	0.000
						C	6.406	69.458		34.94	20.652	0.000
T8 980.00-960.00	970.00	1.891	10	2.1007	173.252	A	6.406	69.461	26.504	34.94	20.965	0.000
						B	6.406	69.461		34.94	21.625	0.000
						C	6.406	69.461		34.94	20.653	0.000
T9 960.00-940.00	950.00	1.88	10	2.0998	174.499	A	6.367	71.645	28.998	37.17	20.958	0.000
						B	6.367	71.645		37.17	21.618	0.000
						C	6.367	71.645		37.17	20.649	0.000
T10 940.00-935.00	937.50	1.873	10	2.0971	43.623	A	1.589	17.881	7.245	37.21	5.234	0.000
						B	1.589	17.881		37.21	5.399	0.000
						C	1.589	17.881		37.21	5.160	0.000
T11 935.00-930.00	932.50	1.87	10	2.0960	43.622	A	1.589	17.875	7.243	37.21	5.232	0.000
						B	1.589	17.875		37.21	5.397	0.000
						C	1.589	17.875		37.21	5.158	0.000
T12 930.00-925.00	927.50	1.867	10	2.0949	43.621	A	1.589	18.056	7.241	36.86	5.230	0.000
						B	1.589	18.056		36.86	5.395	0.000
						C	1.589	18.056		36.86	5.157	0.000
T13 925.00-920.00	922.50	1.865	10	2.0938	43.620	A	1.589	18.049	7.240	36.87	5.228	0.000
						B	1.589	18.049		36.87	5.393	0.000
						C	1.589	18.049		36.87	5.156	0.000
T14 920.00-915.00	917.50	1.862	10	2.0927	43.619	A	1.589	18.043	7.238	36.87	5.225	0.000
						B	1.589	18.043		36.87	5.390	0.000
						C	1.589	18.043		36.87	5.155	0.000
T15	912.50	1.859	10	2.0916	43.618	A	1.589	18.036	7.236	36.87	5.223	0.000

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	Kz	qz	tz	AG	F a c e	AF	AR	Aleg	Leg %	CAAA In Face ft <sup>2</sup>	CAAA Out Face ft <sup>2</sup>
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
915.00-910.00						B	1.589	18.036		36.87	5.388	0.000
						C	1.589	18.036		36.87	5.154	0.000
T16	907.50	1.856	10	2.0905	43.617	A	1.589	17.842	7.234	37.23	5.221	0.000
910.00-905.00						B	1.589	17.842		37.23	5.386	0.000
						C	1.589	17.842		37.23	5.153	0.000
T17	902.50	1.853	10	2.0893	43.616	A	1.589	17.836	7.232	37.23	5.219	0.000
905.00-900.00						B	1.589	17.836		37.23	5.384	0.000
						C	1.589	17.836		37.23	5.152	0.000
T18	890.00	1.845	10	2.0865	174.455	A	6.354	71.276	28.910	37.24	20.852	0.000
900.00-880.00						B	6.354	71.276		37.24	21.512	0.000
						C	6.354	71.276		37.24	20.596	0.000
T19	870.00	1.834	10	2.0820	174.440	A	6.354	71.168	28.880	37.25	20.816	0.000
880.00-860.00						B	6.354	71.168		37.25	32.589	0.000
						C	6.354	71.168		37.25	20.578	0.000
T20	850.00	1.821	10	2.0774	174.425	A	6.354	71.059	28.849	37.27	20.779	0.000
860.00-840.00						B	6.354	71.059		37.27	33.769	0.000
						C	6.354	71.059		37.27	20.560	0.000
T21	830.00	1.809	10	2.0727	174.409	A	6.354	70.948	28.818	37.28	20.742	0.000
840.00-820.00						B	6.354	70.948		37.28	33.712	0.000
						C	6.354	70.948		37.28	20.541	0.000
T22	810.00	1.796	10	2.0680	174.393	A	6.354	70.835	28.786	37.29	20.704	0.000
820.00-800.00						B	6.354	70.835		37.29	33.655	0.000
						C	6.354	70.835		37.29	20.522	0.000
T23	790.00	1.784	10	2.0631	174.377	A	6.354	70.721	28.754	37.31	20.665	0.000
800.00-780.00						B	6.354	70.721		37.31	33.598	0.000
						C	6.354	70.721		37.31	20.503	0.000
T24	777.50	1.776	10	2.0601	43.592	A	1.589	17.662	7.183	37.32	5.160	0.000
780.00-775.00						B	1.589	17.662		37.32	8.390	0.000
						C	1.589	17.662		37.32	5.123	0.000
T25	772.50	1.772	10	2.0589	43.591	A	1.589	17.655	7.181	37.32	5.158	0.000
775.00-770.00						B	1.589	17.655		37.32	8.387	0.000
						C	1.589	17.655		37.32	5.121	0.000
T26	767.50	1.769	10	2.0576	43.590	A	1.589	17.835	7.179	36.96	5.155	0.000
770.00-765.00						B	1.589	17.835		36.96	8.383	0.000
						C	1.589	17.835		36.96	5.120	0.000
T27	762.50	1.766	10	2.0564	43.589	A	1.589	17.828	7.177	36.97	5.153	0.000
765.00-760.00						B	1.589	17.828		36.97	8.379	0.000
						C	1.589	17.828		36.97	5.119	0.000
T28	757.50	1.762	10	2.0552	43.588	A	1.589	17.820	7.175	36.97	5.150	0.000
760.00-755.00						B	1.589	17.820		36.97	8.376	0.000
						C	1.589	17.820		36.97	5.118	0.000
T29	752.50	1.759	10	2.0539	43.587	A	1.589	17.813	7.173	36.97	5.148	0.000
755.00-750.00						B	1.589	17.813		36.97	8.372	0.000
						C	1.589	17.813		36.97	5.116	0.000
T30	747.50	1.756	10	2.0527	43.586	A	1.589	17.618	7.171	37.34	5.145	0.000
750.00-745.00						B	1.589	17.618		37.34	8.368	0.000
						C	1.589	17.618		37.34	5.115	0.000
T31	742.50	1.752	10	2.0514	43.585	A	1.589	17.611	7.169	37.34	5.143	0.000
745.00-740.00						B	1.589	17.611		37.34	8.364	0.000
						C	1.589	17.611		37.34	5.114	0.000
T32	730.00	1.744	10	2.0483	174.328	A	6.354	70.369	28.655	37.35	20.547	0.000
740.00-720.00						B	6.354	70.369		37.35	33.420	0.000
						C	6.354	70.369		37.35	20.443	0.000
T33	710.00	1.73	9	2.0433	174.311	A	6.354	70.249	28.622	37.36	20.506	0.000
720.00-700.00						B	6.354	70.249		37.36	33.359	0.000
						C	6.354	70.249		37.36	20.423	0.000
T34	690.00	1.716	9	2.0382	174.294	A	6.354	70.128	28.588	37.38	20.465	0.000
700.00-680.00						B	6.354	70.128		37.38	33.298	0.000
						C	6.354	70.128		37.38	20.403	0.000
T35	670.00	1.702	9	2.0330	174.277	A	6.354	70.005	28.553	37.39	20.424	0.000

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	Kz	qz	tz	AG	F a c e	AF	AR	Aleg	Leg %	CAAA In Face ft <sup>2</sup>	CAAA Out Face ft <sup>2</sup>
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
680.00-660.00						B	6.354	70.005		37.39	33.236	0.000
						C	6.354	70.005		37.39	20.382	0.000
T36	650.00	1.687	9	2.0278	174.259	A	6.354	69.883	28.519	37.41	20.383	0.000
660.00-640.00						B	6.354	69.883		37.41	33.174	0.000
						C	6.354	69.883		37.41	20.361	0.000
T37	630.00	1.672	9	2.0226	175.075	A	6.328	71.235	30.151	38.87	20.341	0.000
640.00-620.00						B	6.328	71.235		38.87	33.112	0.000
						C	6.328	71.235		38.87	20.341	0.000
T38	617.50	1.662	9	2.0194	43.766	A	1.580	17.781	7.532	38.91	5.079	0.000
620.00-615.00						B	1.580	17.781		38.91	8.268	0.000
						C	1.580	17.781		38.91	5.082	0.000
T39	612.50	1.659	9	2.0181	43.765	A	1.580	17.773	7.530	38.91	5.076	0.000
615.00-610.00						B	1.580	17.773		38.91	8.264	0.000
						C	1.580	17.773		38.91	5.081	0.000
T40	607.50	1.655	9	2.0168	43.764	A	1.580	17.952	7.528	38.54	5.074	0.000
610.00-605.00						B	1.580	17.952		38.54	8.260	0.000
						C	1.580	17.952		38.54	5.079	0.000
T41	602.50	1.651	9	2.0155	43.763	A	1.580	17.944	7.526	38.55	5.071	0.000
605.00-600.00						B	1.580	17.944		38.55	8.256	0.000
						C	1.580	17.944		38.55	5.078	0.000
T42	597.50	1.647	9	2.0142	43.762	A	1.580	17.936	7.524	38.55	5.068	0.000
600.00-595.00						B	1.580	17.936		38.55	8.252	0.000
						C	1.580	17.936		38.55	5.077	0.000
T43	592.50	1.643	9	2.0129	43.761	A	1.580	17.929	7.521	38.55	5.066	0.000
595.00-590.00						B	1.580	17.929		38.55	8.249	0.000
						C	1.580	17.929		38.55	5.075	0.000
T44	587.50	1.639	9	2.0116	43.760	A	1.580	17.735	7.519	38.93	5.063	0.000
590.00-585.00						B	1.580	17.735		38.93	8.245	0.000
						C	1.580	17.735		38.93	5.074	0.000
T45	582.50	1.635	9	2.0103	43.759	A	1.580	17.727	7.517	38.93	5.061	0.000
585.00-580.00						B	1.580	17.727		38.93	8.241	0.000
						C	1.580	17.727		38.93	5.073	0.000
T46	570.00	1.625	9	2.0070	174.607	A	6.332	70.093	29.214	38.23	20.216	0.000
580.00-560.00						B	6.332	70.093		38.23	32.924	0.000
						C	6.332	70.093		38.23	20.278	0.000
T47	550.00	1.608	9	2.0019	174.590	A	6.337	69.989	29.179	38.23	20.175	0.000
560.00-540.00						B	6.337	69.989		38.23	32.863	0.000
						C	6.337	69.989		38.23	20.258	0.000
T48	537.50	1.598	9	1.9987	43.645	A	1.584	15.019	7.290	43.90	5.037	0.000
540.00-535.00						B	1.584	15.019		43.90	8.206	0.000
						C	1.584	15.019		43.90	5.061	0.000
T49	532.50	1.594	9	1.9975	43.644	A	1.584	17.471	7.287	38.24	5.035	0.000
535.00-530.00						B	1.584	17.471		38.24	8.202	0.000
						C	1.584	17.471		38.24	5.060	0.000
T50	527.50	1.589	9	1.9962	43.643	A	1.584	17.463	7.285	38.25	5.032	0.000
530.00-525.00						B	1.584	17.463		38.25	8.199	0.000
						C	1.584	17.463		38.25	5.059	0.000
T51	522.50	1.585	9	1.9950	43.642	A	1.584	17.456	7.283	38.25	5.030	0.000
525.00-520.00						B	1.584	17.456		38.25	8.195	0.000
						C	1.584	17.456		38.25	5.057	0.000
T52	510.00	1.574	9	1.9919	174.556	A	6.337	69.751	29.113	38.26	20.095	0.000
520.00-500.00						B	6.337	69.751		38.26	32.743	0.000
						C	6.337	69.751		38.26	20.218	0.000
T53	490.00	1.556	9	1.9871	174.540	A	6.337	69.637	29.080	38.28	20.057	0.000
500.00-480.00						B	6.337	69.637		38.28	32.685	0.000
						C	6.337	69.637		38.28	20.198	0.000
T54	470.00	1.538	9	1.9824	174.525	A	6.337	69.527	29.050	38.29	20.019	0.000
480.00-460.00						B	6.337	69.527		38.29	32.629	0.000
						C	6.337	69.527		38.29	20.180	0.000
T55	450.00	1.519	9	1.9780	174.927	A	6.324	70.162	29.853	39.03	19.984	0.000



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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	Kz	qz	tz	AG	F a c e	AF	AR	Aleg	Leg %	CAAA In Face ft <sup>2</sup>	CAAA Out Face ft <sup>2</sup>
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
460.00-440.00						B	6.324	70.162		39.03	32.576	0.000
						C	6.324	70.162		39.03	20.162	0.000
T56	437.50	1.507	9	1.9754	43.729	A	1.580	17.521	7.459	39.05	4.991	0.000
440.00-435.00						B	1.580	17.521		39.05	8.136	0.000
						C	1.580	17.521		39.05	5.038	0.000
T57	432.50	1.502	9	1.9744	43.729	A	1.580	17.515	7.457	39.05	4.989	0.000
435.00-430.00						B	1.580	17.515		39.05	8.133	0.000
						C	1.580	17.515		39.05	5.037	0.000
T58	427.50	1.497	9	1.9734	43.728	A	1.580	17.695	7.456	38.68	4.987	0.000
430.00-425.00						B	1.580	17.695		38.68	8.130	0.000
						C	1.580	17.695		38.68	5.036	0.000
T59	422.50	1.492	9	1.9724	43.727	A	1.580	17.689	7.454	38.68	4.985	0.000
425.00-420.00						B	1.580	17.689		38.68	8.127	0.000
						C	1.580	17.689		38.68	5.035	0.000
T60	417.50	1.487	9	1.9715	43.726	A	1.580	17.684	7.452	38.69	4.983	0.000
420.00-415.00						B	1.580	17.684		38.69	8.124	0.000
						C	1.580	17.684		38.69	5.034	0.000
T61	412.50	1.481	9	1.9705	43.725	A	1.580	17.678	7.451	38.69	4.981	0.000
415.00-410.00						B	1.580	17.678		38.69	8.122	0.000
						C	1.580	17.678		38.69	5.033	0.000
T62	407.50	1.476	9	1.9696	43.725	A	1.580	17.487	7.449	39.07	4.979	0.000
410.00-405.00						B	1.580	17.487		39.07	8.119	0.000
						C	1.580	17.487		39.07	5.032	0.000
T63	402.50	1.471	9	1.9688	43.724	A	1.580	17.482	7.448	39.07	4.978	0.000
405.00-400.00						B	1.580	17.482		39.07	8.116	0.000
						C	1.580	17.482		39.07	5.031	0.000
T64	390.00	1.458	8	1.9667	174.889	A	6.319	69.878	29.778	39.08	30.540	0.000
400.00-380.00						B	6.319	69.878		39.08	32.440	0.000
						C	6.319	69.878		39.08	20.117	0.000
T65	370.00	1.436	8	1.9638	174.879	A	6.319	69.810	29.759	39.09	30.506	0.000
380.00-360.00						B	6.319	69.810		39.09	32.406	0.000
						C	6.319	69.810		39.09	20.105	0.000
T66	350.00	1.414	8	1.9615	174.872	A	6.319	69.755	29.743	39.10	30.478	0.000
360.00-340.00						B	6.319	69.755		39.10	37.718	0.000
						C	6.319	69.755		39.10	20.096	0.000
T67	330.00	1.39	8	1.9599	174.866	A	6.319	69.717	29.733	39.10	30.459	0.000
340.00-320.00						B	6.319	69.717		39.10	44.218	0.000
						C	6.319	69.717		39.10	20.090	0.000
T68	310.00	1.365	8	1.9591	174.864	A	6.319	69.698	29.727	39.11	30.449	0.000
320.00-300.00						B	6.319	69.698		39.11	44.205	0.000
						C	6.319	69.698		39.11	20.086	0.000
T69	290.00	1.34	8	1.9592	174.864	A	6.319	69.700	29.728	39.11	30.450	0.000
300.00-280.00						B	6.319	69.700		39.11	44.207	0.000
						C	6.319	69.700		39.11	20.087	0.000
T70	277.50	1.323	8	1.9598	43.716	A	1.580	17.428	7.433	39.10	7.614	0.000
280.00-275.00						B	1.580	17.428		39.10	11.054	0.000
						C	1.580	17.428		39.10	5.022	0.000
T71	272.50	1.316	8	1.9601	43.717	A	1.580	17.430	7.434	39.10	7.615	0.000
275.00-270.00						B	1.580	17.430		39.10	11.055	0.000
						C	1.580	17.430		39.10	5.023	0.000
T72	267.50	1.309	8	1.9605	43.717	A	1.580	17.619	7.434	38.72	7.617	0.000
270.00-265.00						B	1.580	17.619		38.72	11.057	0.000
						C	1.580	17.619		38.72	5.023	0.000
T73	262.50	1.302	8	1.9610	43.718	A	1.580	17.622	7.435	38.72	7.618	0.000
265.00-260.00						B	1.580	17.622		38.72	11.059	0.000
						C	1.580	17.622		38.72	5.024	0.000
T74	257.50	1.295	8	1.9616	43.718	A	1.580	17.626	7.436	38.72	7.620	0.000
260.00-255.00						B	1.580	17.626		38.72	11.061	0.000
						C	1.580	17.626		38.72	5.024	0.000
T75	252.50	1.288	8	1.9623	43.719	A	1.580	17.629	7.437	38.72	7.622	0.000

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	81 of 192
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	Kz	qz	tz	AG	F a c e	AF	AR	Aleg	Leg %	CAAA In Face ft <sup>2</sup>	CAAA Out Face ft <sup>2</sup>
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
255.00-250.00						B	1.580	17.629		38.72	11.064	0.000
						C	1.580	17.629		38.72	5.025	0.000
T76	247.50	1.28	8	1.9630	43.719	A	1.580	17.448	7.438	39.09	7.624	0.000
250.00-245.00						B	1.580	17.448		39.09	11.067	0.000
						C	1.580	17.448		39.09	5.025	0.000
T77	242.50	1.273	8	1.9638	43.720	A	1.580	17.452	7.440	39.09	7.626	0.000
245.00-240.00						B	1.580	17.452		39.09	11.070	0.000
						C	1.580	17.452		39.09	5.026	0.000
T78	230.00	1.254	8	1.9662	174.887	A	6.319	69.866	29.775	39.08	30.534	0.000
240.00-220.00						B	6.319	69.866		39.08	44.319	0.000
						C	6.319	69.866		39.08	20.115	0.000
T79	210.00	1.222	9	1.9712	174.904	A	6.319	69.984	29.808	39.07	30.594	0.000
220.00-200.00						B	6.319	69.984		39.07	44.399	0.000
						C	6.319	69.984		39.07	20.135	0.000
T80	190.00	1.187	9	1.9776	174.925	A	6.319	70.136	29.851	39.04	30.672	0.000
200.00-180.00						B	6.319	70.136		39.04	80.647	0.000
						C	6.319	70.136		39.04	49.069	0.000
T81	170.00	1.15	9	1.9855	174.952	A	6.319	70.323	29.904	39.02	30.766	0.000
180.00-160.00						B	6.319	70.323		39.02	117.123	0.000
						C	6.319	70.323		39.02	68.422	0.000
T82	150.00	1.11	9	1.9948	174.983	A	6.319	70.541	29.965	38.99	30.877	0.000
160.00-140.00						B	6.319	70.541		38.99	117.509	0.000
						C	6.319	70.541		38.99	68.517	0.000
T83	130.00	1.065	9	2.0050	175.017	A	6.319	70.783	30.033	38.95	31.000	0.000
140.00-120.00						B	6.319	70.783		38.95	117.937	0.000
						C	6.319	70.783		38.95	68.622	0.000
T84	117.50	1.035	9	2.0116	43.760	A	1.580	17.735	7.519	38.93	7.770	0.000
120.00-115.00						B	1.580	17.735		38.93	29.553	0.000
						C	1.580	17.735		38.93	17.172	0.000
T85	112.50	1.022	9	2.0142	43.762	A	1.580	17.750	7.524	38.92	7.777	0.000
115.00-110.00						B	1.580	17.750		38.92	29.580	0.000
						C	1.580	17.750		38.92	17.179	0.000
T86	107.50	1.009	9	2.0167	43.764	A	1.580	17.951	7.528	38.54	7.785	0.000
110.00-105.00						B	1.580	17.951		38.54	29.607	0.000
						C	1.580	17.951		38.54	17.186	0.000
T87	102.50	0.995	9	2.0191	43.766	A	1.580	17.966	7.532	38.54	7.792	0.000
105.00-100.00						B	1.580	17.966		38.54	29.633	0.000
						C	1.580	17.966		38.54	17.192	0.000
T88	97.50	0.981	9	2.0215	43.768	A	1.580	17.980	7.536	38.53	7.799	0.000
100.00-95.00						B	1.580	17.980		38.53	29.657	0.000
						C	1.580	17.980		38.53	17.198	0.000
T89	95.00-90.00	0.966	9	2.0236	43.770	A	1.580	17.992	7.539	38.52	7.806	0.000
						B	1.580	17.992		38.52	29.680	0.000
						C	1.580	17.992		38.52	17.204	0.000
T90	90.00-85.00	0.951	9	2.0256	43.771	A	1.580	17.817	7.543	38.88	7.812	0.000
						B	1.580	17.817		38.88	29.700	0.000
						C	1.580	17.817		38.88	17.209	0.000
T91	85.00-80.00	0.935	9	2.0272	43.773	A	1.580	17.827	7.545	38.88	7.817	0.000
						B	1.580	17.827		38.88	29.717	0.000
						C	1.580	17.827		38.88	17.213	0.000
T92	80.00-60.00	0.892	9	2.0295	175.098	A	6.319	71.364	30.197	38.87	31.294	0.000
						B	6.319	71.364		38.87	118.966	0.000
						C	6.319	71.364		38.87	68.875	0.000
T93	60.00-40.00	0.811	9	2.0236	175.079	A	6.319	71.223	30.157	38.89	31.223	0.000
						B	6.319	71.223		38.89	118.717	0.000
						C	6.319	71.223		38.89	68.814	0.000
T94	40.00-20.00	0.701	9	1.9894	174.965	A	6.319	70.415	29.930	39.00	30.813	0.000
						B	6.319	70.415		39.00	117.286	0.000
						C	6.319	70.415		39.00	68.462	0.000
T95	20.00-15.00	0.7	9	1.9290	43.691	A	1.580	17.247	7.382	39.21	7.522	0.000

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	82 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	t <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T96 15.00-7.00	11.00	0.7	10	1.8648	69.820	B	1.580	17.247	11.639	39.21	28.689	0.000
						C	1.580	17.247			16.960	0.000
						A	10.043	26.374			11.727	0.000
						B	10.043	26.374			31.96	44.826
T97 7.00-0.00	3.50	0.7	10	1.6881	33.628	C	10.043	26.374	11.708	20.72	26.872	0.000
						A	36.577	19.941			9.519	0.000
						B	36.577	19.941			36.635	0.000
						C	36.577	19.941			22.879	0.000

### Tower Pressure - Service

*G<sub>H</sub> = 0.850 (base tower), 0.850 (upper structure)*

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
L1 1151.90-1089.80	1120.91	1.971	15	103.500	A	0.000	103.500	103.500	100.00	0.000	0.000
					B	0.000	103.500	100.00	0.000	0.000	
					C	0.000	103.500	100.00	38.036	0.000	
T1 1089.80-1084.90	1087.35	1.954	15	40.731	A	14.064	3.063	3.063	17.88	0.000	0.000
					B	14.064	3.063	17.88	0.000	0.000	
					C	14.064	3.063	17.88	1.501	0.000	
T2 1084.90-1080.00	1082.45	1.952	15	40.731	A	1.602	4.941	3.063	46.81	0.000	0.000
					B	1.602	4.941	46.81	0.000	0.000	
					C	1.602	4.941	46.81	1.501	0.000	
T3 1080.00-1060.00	1070.00	1.945	15	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
					B	6.406	19.299	48.63	3.133	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T4 1060.00-1040.00	1050.00	1.935	15	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
					B	6.406	19.299	48.63	4.820	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T5 1040.00-1020.00	1030.00	1.924	15	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
					B	6.406	19.299	48.63	4.820	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T6 1020.00-1000.00	1010.00	1.913	15	166.250	A	6.406	19.299	12.500	48.63	0.000	0.000
					B	6.406	19.299	48.63	4.820	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T7 1000.00-980.00	990.00	1.903	15	166.250	A	6.406	19.299	12.500	48.63	3.328	0.000
					B	6.406	19.299	48.63	4.820	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T8 980.00-960.00	970.00	1.891	15	166.250	A	6.406	19.299	12.500	48.63	4.160	0.000
					B	6.406	19.299	48.63	4.820	0.000	
					C	6.406	19.299	48.63	6.125	0.000	
T9 960.00-940.00	950.00	1.88	15	167.500	A	6.367	21.751	15.000	53.35	4.160	0.000
					B	6.367	21.751	53.35	4.820	0.000	
					C	6.367	21.751	53.35	6.125	0.000	
T10 940.00-935.00	937.50	1.873	15	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
					B	1.589	5.436	53.38	1.205	0.000	
					C	1.589	5.436	53.38	1.531	0.000	
T11 935.00-930.00	932.50	1.87	15	41.875	A	1.589	5.436	3.750	53.38	1.040	0.000
					B	1.589	5.436	53.38	1.205	0.000	
					C	1.589	5.436	53.38	1.531	0.000	
T12 930.00-925.00	927.50	1.867	15	41.875	A	1.589	5.623	3.750	52.00	1.040	0.000
					B	1.589	5.623	52.00	1.205	0.000	

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
T13 925.00-920.00	922.50	1.865	15	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000
					A	1.589	5.623			1.040	0.000
					B	1.589	5.623			1.205	0.000
T14 920.00-915.00	917.50	1.862	15	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000
					A	1.589	5.623			1.040	0.000
					B	1.589	5.623			1.205	0.000
T15 915.00-910.00	912.50	1.859	15	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000
					A	1.589	5.623			1.040	0.000
					B	1.589	5.623			1.205	0.000
T16 910.00-905.00	907.50	1.856	15	41.875	C	1.589	5.623	3.750	52.00	1.531	0.000
					A	1.589	5.436			1.040	0.000
					B	1.589	5.436			1.205	0.000
T17 905.00-900.00	902.50	1.853	15	41.875	C	1.589	5.436	3.750	53.38	1.531	0.000
					A	1.589	5.436			1.040	0.000
					B	1.589	5.436			1.205	0.000
T18 900.00-880.00	890.00	1.845	14	167.500	C	1.589	5.436	15.000	53.38	1.531	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			4.820	0.000
T19 880.00-860.00	870.00	1.834	14	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			8.438	0.000
T20 860.00-840.00	850.00	1.821	14	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			8.840	0.000
T21 840.00-820.00	830.00	1.809	14	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			8.840	0.000
T22 820.00-800.00	810.00	1.796	14	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			8.840	0.000
T23 800.00-780.00	790.00	1.784	14	167.500	C	6.354	21.744	15.000	53.38	6.125	0.000
					A	6.354	21.744			4.160	0.000
					B	6.354	21.744			8.840	0.000
T24 780.00-775.00	777.50	1.776	14	41.875	C	1.589	5.436	3.750	53.38	1.040	0.000
					A	1.589	5.436			2.210	0.000
					B	1.589	5.436			1.531	0.000
T25 775.00-770.00	772.50	1.772	14	41.875	C	1.589	5.436	3.750	53.38	1.040	0.000
					A	1.589	5.436			2.210	0.000
					B	1.589	5.436			1.531	0.000
T26 770.00-765.00	767.50	1.769	14	41.875	C	1.589	5.623	3.750	52.00	1.040	0.000
					A	1.589	5.623			2.210	0.000
					B	1.589	5.623			1.531	0.000
T27 765.00-760.00	762.50	1.766	14	41.875	C	1.589	5.623	3.750	52.00	1.040	0.000
					A	1.589	5.623			2.210	0.000
					B	1.589	5.623			1.531	0.000
T28 760.00-755.00	757.50	1.762	14	41.875	C	1.589	5.623	3.750	52.00	1.040	0.000
					A	1.589	5.623			2.210	0.000
					B	1.589	5.623			1.531	0.000
T29 755.00-750.00	752.50	1.759	14	41.875	C	1.589	5.623	3.750	52.00	1.040	0.000
					A	1.589	5.623			2.210	0.000
					B	1.589	5.623			1.531	0.000
T30 750.00-745.00	747.50	1.756	14	41.875	C	1.589	5.436	3.750	53.38	1.040	0.000
					A	1.589	5.436			2.210	0.000
					B	1.589	5.436			1.531	0.000
T31 745.00-740.00	742.50	1.752	14	41.875	C	1.589	5.436	3.750	53.38	1.040	0.000
					A	1.589	5.436			2.210	0.000
					B	1.589	5.436			1.531	0.000
T32 740.00-720.00	730.00	1.744	14	167.500	C	6.354	21.744	15.000	53.38	4.160	0.000
					A	6.354	21.744			8.840	0.000

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	z	K <sub>Z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>			
T33 720.00-700.00	710.00	1.73	14	167.500	C	6.354	21.744		53.38	6.125	0.000
					A	6.354	21.744	15.000	53.38	4.160	0.000
					B	6.354	21.744		53.38	8.840	0.000
					C	6.354	21.744		53.38	6.125	0.000
T34 700.00-680.00	690.00	1.716	14	167.500	A	6.354	21.744	15.000	53.38	4.160	0.000
					B	6.354	21.744		53.38	8.840	0.000
					C	6.354	21.744		53.38	6.125	0.000
T35 680.00-660.00	670.00	1.702	13	167.500	A	6.354	21.744	15.000	53.38	4.160	0.000
					B	6.354	21.744		53.38	8.840	0.000
					C	6.354	21.744		53.38	6.125	0.000
T36 660.00-640.00	650.00	1.687	13	167.500	A	6.354	21.744	15.000	53.38	4.160	0.000
					B	6.354	21.744		53.38	8.840	0.000
					C	6.354	21.744		53.38	6.125	0.000
T37 640.00-620.00	630.00	1.672	13	168.333	A	6.328	23.378	16.667	56.10	4.160	0.000
					B	6.328	23.378		56.10	8.840	0.000
					C	6.328	23.378		56.10	6.125	0.000
T38 620.00-615.00	617.50	1.662	13	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T39 615.00-610.00	612.50	1.659	13	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T40 610.00-605.00	607.50	1.655	13	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T41 605.00-600.00	602.50	1.651	13	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T42 600.00-595.00	597.50	1.647	13	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T43 595.00-590.00	592.50	1.643	13	42.083	A	1.580	6.030	4.167	54.76	1.040	0.000
					B	1.580	6.030		54.76	2.210	0.000
					C	1.580	6.030		54.76	1.531	0.000
T44 590.00-585.00	587.50	1.639	13	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T45 585.00-580.00	582.50	1.635	13	42.083	A	1.580	5.843	4.167	56.13	1.040	0.000
					B	1.580	5.843		56.13	2.210	0.000
					C	1.580	5.843		56.13	1.531	0.000
T46 580.00-560.00	570.00	1.625	13	167.917	A	6.332	22.556	15.833	54.81	4.160	0.000
					B	6.332	22.556		54.81	8.840	0.000
					C	6.332	22.556		54.81	6.125	0.000
T47 560.00-540.00	550.00	1.608	13	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000
					C	6.337	22.559		54.80	6.125	0.000
T48 540.00-535.00	537.50	1.598	13	41.979	A	1.584	5.100	3.958	59.22	1.040	0.000
					B	1.584	5.100		59.22	2.210	0.000
					C	1.584	5.100		59.22	1.531	0.000
T49 535.00-530.00	532.50	1.594	13	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T50 530.00-525.00	527.50	1.589	13	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T51 525.00-520.00	522.50	1.585	13	41.979	A	1.584	5.640	3.958	54.80	1.040	0.000
					B	1.584	5.640		54.80	2.210	0.000
					C	1.584	5.640		54.80	1.531	0.000
T52 520.00-500.00	510.00	1.574	13	167.917	A	6.337	22.559	15.833	54.80	4.160	0.000
					B	6.337	22.559		54.80	8.840	0.000

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
T53 500.00-480.00	490.00	1.556	13	167.917	C	6.337	22.559	15.833	54.80	6.125	0.000
					A	6.337	22.559			4.160	0.000
					B	6.337	22.559			8.840	0.000
T54 480.00-460.00	470.00	1.538	13	167.917	C	6.337	22.559	15.833	54.80	6.125	0.000
					A	6.337	22.559			4.160	0.000
					B	6.337	22.559			8.840	0.000
T55 460.00-440.00	450.00	1.519	12	168.333	C	6.337	22.559	16.667	54.80	6.125	0.000
					A	6.324	23.376			4.160	0.000
					B	6.324	23.376			8.840	0.000
T56 440.00-435.00	437.50	1.507	12	42.083	C	6.337	22.559	4.167	56.12	6.125	0.000
					A	1.580	5.843			1.040	0.000
					B	1.580	5.843			2.210	0.000
T57 435.00-430.00	432.50	1.502	12	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	5.843			1.040	0.000
					B	1.580	5.843			2.210	0.000
T58 430.00-425.00	427.50	1.497	12	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	6.030			1.040	0.000
					B	1.580	6.030			2.210	0.000
T59 425.00-420.00	422.50	1.492	12	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030			1.040	0.000
					B	1.580	6.030			2.210	0.000
T60 420.00-415.00	417.50	1.487	12	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030			1.040	0.000
					B	1.580	6.030			2.210	0.000
T61 415.00-410.00	412.50	1.481	12	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	6.030			1.040	0.000
					B	1.580	6.030			2.210	0.000
T62 410.00-405.00	407.50	1.476	12	42.083	C	1.580	6.030	4.167	54.76	1.531	0.000
					A	1.580	5.843			1.040	0.000
					B	1.580	5.843			2.210	0.000
T63 405.00-400.00	402.50	1.471	12	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	5.843			1.040	0.000
					B	1.580	5.843			2.210	0.000
T64 400.00-380.00	390.00	1.458	12	168.333	C	1.580	5.843	16.667	56.13	1.531	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			8.840	0.000
T65 380.00-360.00	370.00	1.436	12	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			8.840	0.000
T66 360.00-340.00	350.00	1.414	12	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			10.649	0.000
T67 340.00-320.00	330.00	1.39	12	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			12.860	0.000
T68 320.00-300.00	310.00	1.365	12	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			12.860	0.000
T69 300.00-280.00	290.00	1.34	12	168.333	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			12.860	0.000
T70 280.00-275.00	277.50	1.323	12	42.083	C	6.319	23.374	16.667	56.13	6.125	0.000
					A	1.580	5.843			1.735	0.000
					B	1.580	5.843			3.215	0.000
T71 275.00-270.00	272.50	1.316	12	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	5.843			1.735	0.000
					B	1.580	5.843			3.215	0.000
T72 270.00-265.00	267.50	1.309	12	42.083	C	1.580	5.843	4.167	56.13	1.531	0.000
					A	1.580	6.030			1.735	0.000
					B	1.580	6.030		54.76	3.215	0.000

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
T73	262.50	1.302	12	42.083	C	1.580	6.030		54.76	1.531	0.000
265.00-260.00					A	1.580	6.030	4.167	54.76	1.735	0.000
					B	1.580	6.030		54.76	3.215	0.000
					C	1.580	6.030		54.76	1.531	0.000
T74	257.50	1.295	12	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
260.00-255.00					B	1.580	6.030		54.76	3.215	0.000
					C	1.580	6.030		54.76	1.531	0.000
T75	252.50	1.288	12	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
255.00-250.00					B	1.580	6.030		54.76	3.215	0.000
					C	1.580	6.030		54.76	1.531	0.000
T76	247.50	1.28	12	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
250.00-245.00					B	1.580	5.843		56.13	3.215	0.000
					C	1.580	5.843		56.13	1.531	0.000
T77	242.50	1.273	12	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
245.00-240.00					B	1.580	5.843		56.13	3.215	0.000
					C	1.580	5.843		56.13	1.531	0.000
T78	230.00	1.254	12	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
240.00-220.00					B	6.319	23.374		56.13	12.860	0.000
					C	6.319	23.374		56.13	6.125	0.000
T79	210.00	1.222	12	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
220.00-200.00					B	6.319	23.374		56.13	12.860	0.000
					C	6.319	23.374		56.13	6.125	0.000
T80	190.00	1.187	12	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
200.00-180.00					B	6.319	23.374		56.13	20.100	0.000
					C	6.319	23.374		56.13	20.381	0.000
T81	170.00	1.15	13	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
180.00-160.00					B	6.319	23.374		56.13	27.340	0.000
					C	6.319	23.374		56.13	29.885	0.000
T82	150.00	1.11	13	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
160.00-140.00					B	6.319	23.374		56.13	27.340	0.000
					C	6.319	23.374		56.13	29.885	0.000
T83	130.00	1.065	13	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
140.00-120.00					B	6.319	23.374		56.13	27.330	0.000
					C	6.319	23.374		56.13	29.885	0.000
T84	117.50	1.035	13	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
120.00-115.00					B	1.580	5.843		56.13	6.826	0.000
					C	1.580	5.843		56.13	7.471	0.000
T85	112.50	1.022	13	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
115.00-110.00					B	1.580	5.843		56.13	6.823	0.000
					C	1.580	5.843		56.13	7.471	0.000
T86	107.50	1.009	13	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
110.00-105.00					B	1.580	6.030		54.76	6.821	0.000
					C	1.580	6.030		54.76	7.471	0.000
T87	102.50	0.995	13	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
105.00-100.00					B	1.580	6.030		54.76	6.818	0.000
					C	1.580	6.030		54.76	7.471	0.000
T88	97.50	0.981	13	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
100.00-95.00					B	1.580	6.030		54.76	6.816	0.000
					C	1.580	6.030		54.76	7.471	0.000
T89	92.50	0.966	13	42.083	A	1.580	6.030	4.167	54.76	1.735	0.000
95.00-90.00					B	1.580	6.030		54.76	6.814	0.000
					C	1.580	6.030		54.76	7.471	0.000
T90	87.50	0.951	13	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
90.00-85.00					B	1.580	5.843		56.13	6.812	0.000
					C	1.580	5.843		56.13	7.471	0.000
T91	82.50	0.935	13	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
85.00-80.00					B	1.580	5.843		56.13	6.810	0.000
					C	1.580	5.843		56.13	7.471	0.000
T92	70.00	0.892	13	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
80.00-60.00					B	6.319	23.374		56.13	27.231	0.000

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	87 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F <sub>a</sub> c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>
T93 60.00-40.00	50.00	0.811	13	168.333	C	6.319	23.374	16.667	56.13	29.885	0.000
					A	6.319	23.374			6.940	0.000
					B	6.319	23.374			27.254	0.000
					C	6.319	23.374			29.885	0.000
T94 40.00-20.00	30.00	0.701	13	168.333	A	6.319	23.374	16.667	56.13	6.940	0.000
					B	6.319	23.374			27.340	0.000
					C	6.319	23.374			29.885	0.000
T95 20.00-15.00	17.50	0.7	13	42.083	A	1.580	5.843	4.167	56.13	1.735	0.000
					B	1.580	5.843			6.802	0.000
					C	1.580	5.843			7.471	0.000
T96 15.00-7.00	11.00	0.7	14	67.333	A	10.043	6.667	6.667	39.90	2.776	0.000
					B	10.043	6.667			10.843	0.000
					C	10.043	6.667			11.954	0.000
T97 7.00-0.00	3.50	0.7	15	31.359	A	36.577	6.989	6.989	16.04	2.429	0.000
					B	36.577	6.989			9.447	0.000
					C	36.577	6.989			16.04	0.000
					C	36.577	6.989			10.460	0.000

### Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F <sub>a</sub> c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
L1 1151.90-1089.80	424.14	10343.38	A	1	0.777	46	1	1	103.500	3171.41	51.07	B
			B	1	0.777	46	1	1	103.500			
			C	1	0.6	46	1	1	103.500			
T1 1089.80-1084.90	33.47	2474.36	A	0.42	2.025	46	1	1	15.974	1323.68	270.14	C
			B	0.42	2.025	46	1	1	15.974			
			C	0.42	2.025	46	1	1	15.974			
T2 1084.90-1080.00	33.47	1026.80	A	0.161	2.733	46	1	1	4.226	509.67	104.01	C
			B	0.161	2.733	46	1	1	4.226			
			C	0.161	2.733	46	1	1	4.226			
T3 1080.00-1060.00	162.73	3798.26	A	0.155	2.755	46	1	1	16.603	2092.12	104.61	C
			B	0.155	2.755	46	1	1	16.603			
			C	0.155	2.755	46	1	1	16.603			
T4 1060.00-1040.00	176.80	3798.26	A	0.155	2.755	46	1	1	16.610	2120.94	106.05	C
			B	0.155	2.755	46	1	1	16.610			
			C	0.155	2.755	46	1	1	16.610			
T5 1040.00-1020.00	176.80	3798.26	A	0.155	2.755	45	1	1	16.617	2110.24	105.51	C
			B	0.155	2.755	45	1	1	16.617			
			C	0.155	2.755	45	1	1	16.617			
T6 1020.00-1000.00	176.80	3798.26	A	0.155	2.755	45	1	1	16.624	2099.39	104.97	C
			B	0.155	2.755	45	1	1	16.624			
			C	0.155	2.755	45	1	1	16.624			
T7 1000.00-980.00	186.88	3798.26	A	0.155	2.755	45	1	1	16.631	2164.47	108.22	C
			B	0.155	2.755	45	1	1	16.631			
			C	0.155	2.755	45	1	1	16.631			
T8 980.00-960.00	189.40	3798.26	A	0.155	2.755	45	1	1	16.639	2171.82	108.59	C
			B	0.155	2.755	45	1	1	16.639			
			C	0.155	2.755	45	1	1	16.639			
T9 960.00-940.00	189.40	4790.45	A	0.168	2.707	44	1	1	17.329	2199.70	109.99	C
			B	0.168	2.707	44	1	1	17.329			
			C	0.168	2.707	44	1	1	17.329			
T10 940.00-935.00	47.35	1197.61	A	0.168	2.707	44	1	1	4.329	547.69	109.54	C
			B	0.168	2.707	44	1	1	4.329			
			C	0.168	2.707	44	1	1	4.329			
T11	47.35	1197.61	A	0.168	2.707	44	1	1	4.330	546.94	109.39	C



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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
935.00-930.00			B	0.168	2.707		1	1	4.330			
			C	0.168	2.707		1	1	4.330			
T12	47.35	1287.44	A	0.172	2.691	44	1	1	4.445	555.16	111.03	C
930.00-925.00			B	0.172	2.691		1	1	4.445			
			C	0.172	2.691		1	1	4.445			
T13	47.35	1287.44	A	0.172	2.691	44	1	1	4.446	554.39	110.88	C
925.00-920.00			B	0.172	2.691		1	1	4.446			
			C	0.172	2.691		1	1	4.446			
T14	47.35	1287.44	A	0.172	2.691	44	1	1	4.447	553.62	110.72	C
920.00-915.00			B	0.172	2.691		1	1	4.447			
			C	0.172	2.691		1	1	4.447			
T15	47.35	1287.44	A	0.172	2.691	44	1	1	4.447	552.85	110.57	C
915.00-910.00			B	0.172	2.691		1	1	4.447			
			C	0.172	2.691		1	1	4.447			
T16	47.35	1197.61	A	0.168	2.707	44	1	1	4.333	543.18	108.64	C
910.00-905.00			B	0.168	2.707		1	1	4.333			
			C	0.168	2.707		1	1	4.333			
T17	47.35	1197.61	A	0.168	2.707	44	1	1	4.334	542.42	108.48	C
905.00-900.00			B	0.168	2.707		1	1	4.334			
			C	0.168	2.707		1	1	4.334			
T18	189.40	4790.45	A	0.168	2.707	44	1	1	17.343	2162.05	108.10	C
900.00-880.00			B	0.168	2.707		1	1	17.343			
			C	0.168	2.707		1	1	17.343			
T19	198.58	4790.45	A	0.168	2.707	43	1	1	17.354	2229.49	111.47	C
880.00-860.00			B	0.168	2.707		1	1	17.354			
			C	0.168	2.707		1	1	17.354			
T20	199.60	4790.45	A	0.168	2.707	43	1	1	17.365	2225.31	111.27	C
860.00-840.00			B	0.168	2.707		1	1	17.365			
			C	0.168	2.707		1	1	17.365			
T21	199.60	4790.45	A	0.168	2.707	43	1	1	17.376	2212.12	110.61	C
840.00-820.00			B	0.168	2.707		1	1	17.376			
			C	0.168	2.707		1	1	17.376			
T22	199.60	4790.45	A	0.168	2.707	42	1	1	17.388	2198.78	109.94	C
820.00-800.00			B	0.168	2.707		1	1	17.388			
			C	0.168	2.707		1	1	17.388			
T23	199.60	4790.45	A	0.168	2.707	42	1	1	17.399	2185.30	109.26	C
800.00-780.00			B	0.168	2.707		1	1	17.399			
			C	0.168	2.707		1	1	17.399			
T24	49.90	1197.61	A	0.168	2.707	42	1	1	4.352	544.20	108.84	C
780.00-775.00			B	0.168	2.707		1	1	4.352			
			C	0.168	2.707		1	1	4.352			
T25	49.90	1197.61	A	0.168	2.707	42	1	1	4.352	543.35	108.67	C
775.00-770.00			B	0.168	2.707		1	1	4.352			
			C	0.168	2.707		1	1	4.352			
T26	49.90	1287.44	A	0.172	2.691	42	1	1	4.467	550.97	110.19	C
770.00-765.00			B	0.172	2.691		1	1	4.467			
			C	0.172	2.691		1	1	4.467			
T27	49.90	1287.44	A	0.172	2.691	42	1	1	4.468	550.09	110.02	C
765.00-760.00			B	0.172	2.691		1	1	4.468			
			C	0.172	2.691		1	1	4.468			
T28	49.90	1287.44	A	0.172	2.691	42	1	1	4.469	549.22	109.84	C
760.00-755.00			B	0.172	2.691		1	1	4.469			
			C	0.172	2.691		1	1	4.469			
T29	49.90	1287.44	A	0.172	2.691	42	1	1	4.470	548.34	109.67	C
755.00-750.00			B	0.172	2.691		1	1	4.470			
			C	0.172	2.691		1	1	4.470			
T30	49.90	1197.61	A	0.168	2.707	42	1	1	4.356	539.06	107.81	C
750.00-745.00			B	0.168	2.707		1	1	4.356			
			C	0.168	2.707		1	1	4.356			
T31	49.90	1197.61	A	0.168	2.707	41	1	1	4.357	538.19	107.64	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
745.00-740.00			B	0.168	2.707		1	1	4.357			
			C	0.168	2.707		1	1	4.357			
T32	199.60	4790.45	A	0.168	2.707	41	1	1	17.435	2144.10	107.21	C
740.00-720.00			B	0.168	2.707		1	1	17.435			
			C	0.168	2.707		1	1	17.435			
T33	199.60	4790.45	A	0.168	2.707	41	1	1	17.447	2130.16	106.51	C
720.00-700.00			B	0.168	2.707		1	1	17.447			
			C	0.168	2.707		1	1	17.447			
T34	199.60	4790.45	A	0.168	2.707	41	1	1	17.459	2116.13	105.81	C
700.00-680.00			B	0.168	2.707		1	1	17.459			
			C	0.168	2.707		1	1	17.459			
T35	199.60	4790.45	A	0.168	2.707	40	1	1	17.471	2102.04	105.10	C
680.00-660.00			B	0.168	2.707		1	1	17.471			
			C	0.168	2.707		1	1	17.471			
T36	199.60	4790.45	A	0.168	2.707	40	1	1	17.484	2087.92	104.40	C
660.00-640.00			B	0.168	2.707		1	1	17.484			
			C	0.168	2.707		1	1	17.484			
T37	199.60	5552.12	A	0.176	2.676	40	1	1	17.919	2093.88	104.69	C
640.00-620.00			B	0.176	2.676		1	1	17.919			
			C	0.176	2.676		1	1	17.919			
T38	49.90	1388.03	A	0.176	2.677	40	1	1	4.479	521.05	104.21	C
620.00-615.00			B	0.176	2.677		1	1	4.479			
			C	0.176	2.677		1	1	4.479			
T39	49.90	1388.03	A	0.176	2.677	40	1	1	4.480	520.17	104.03	C
615.00-610.00			B	0.176	2.677		1	1	4.480			
			C	0.176	2.677		1	1	4.480			
T40	49.90	1477.86	A	0.181	2.661	39	1	1	4.597	527.32	105.46	C
610.00-605.00			B	0.181	2.661		1	1	4.597			
			C	0.181	2.661		1	1	4.597			
T41	49.90	1477.86	A	0.181	2.661	39	1	1	4.598	526.43	105.29	C
605.00-600.00			B	0.181	2.661		1	1	4.598			
			C	0.181	2.661		1	1	4.598			
T42	49.90	1477.86	A	0.181	2.661	39	1	1	4.599	525.54	105.11	C
600.00-595.00			B	0.181	2.661		1	1	4.599			
			C	0.181	2.661		1	1	4.599			
T43	49.90	1477.86	A	0.181	2.661	39	1	1	4.600	524.65	104.93	C
595.00-590.00			B	0.181	2.661		1	1	4.600			
			C	0.181	2.661		1	1	4.600			
T44	49.90	1388.03	A	0.176	2.677	39	1	1	4.485	515.81	103.16	C
590.00-585.00			B	0.176	2.677		1	1	4.485			
			C	0.176	2.677		1	1	4.485			
T45	49.90	1388.03	A	0.176	2.677	39	1	1	4.486	514.94	102.99	C
585.00-580.00			B	0.176	2.677		1	1	4.486			
			C	0.176	2.677		1	1	4.486			
T46	199.60	5161.26	A	0.172	2.692	39	1	1	17.743	2041.60	102.08	C
580.00-560.00			B	0.172	2.692		1	1	17.743			
			C	0.172	2.692		1	1	17.743			
T47	199.60	5161.26	A	0.172	2.692	39	1	1	17.762	2028.34	101.42	C
560.00-540.00			B	0.172	2.692		1	1	17.762			
			C	0.172	2.692		1	1	17.762			
T48	49.90	1228.81	A	0.159	2.738	38	1	1	4.113	482.15	96.43	C
540.00-535.00			B	0.159	2.738		1	1	4.113			
			C	0.159	2.738		1	1	4.113			
T49	49.90	1290.32	A	0.172	2.692	38	1	1	4.443	504.14	100.83	C
535.00-530.00			B	0.172	2.692		1	1	4.443			
			C	0.172	2.692		1	1	4.443			
T50	49.90	1290.32	A	0.172	2.692	38	1	1	4.444	503.31	100.66	C
530.00-525.00			B	0.172	2.692		1	1	4.444			
			C	0.172	2.692		1	1	4.444			
T51	49.90	1290.32	A	0.172	2.692	38	1	1	4.445	502.48	100.50	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
525.00-520.00			B	0.172	2.692		1	1	4.445			
			C	0.172	2.692		1	1	4.445			
T52	199.60	5161.26	A	0.172	2.692	38	1	1	17.788	2001.75	100.09	C
520.00-500.00			B	0.172	2.692		1	1	17.788			
			C	0.172	2.692		1	1	17.788			
T53	199.60	5161.26	A	0.172	2.692	38	1	1	17.801	1989.03	99.45	C
500.00-480.00			B	0.172	2.692		1	1	17.801			
			C	0.172	2.692		1	1	17.801			
T54	199.60	5161.26	A	0.172	2.692	38	1	1	17.813	1976.81	98.84	C
480.00-460.00			B	0.172	2.692		1	1	17.813			
			C	0.172	2.692		1	1	17.813			
T55	199.60	5552.12	A	0.176	2.677	37	1	1	18.040	1974.97	98.75	C
460.00-440.00			B	0.176	2.677		1	1	18.040			
			C	0.176	2.677		1	1	18.040			
T56	49.90	1388.03	A	0.176	2.677	37	1	1	4.510	491.92	98.38	C
440.00-435.00			B	0.176	2.677		1	1	4.510			
			C	0.176	2.677		1	1	4.510			
T57	49.90	1388.03	A	0.176	2.677	37	1	1	4.511	491.26	98.25	C
435.00-430.00			B	0.176	2.677		1	1	4.511			
			C	0.176	2.677		1	1	4.511			
T58	49.90	1477.86	A	0.181	2.661	37	1	1	4.627	498.10	99.62	C
430.00-425.00			B	0.181	2.661		1	1	4.627			
			C	0.181	2.661		1	1	4.627			
T59	49.90	1477.86	A	0.181	2.661	37	1	1	4.628	497.46	99.49	C
425.00-420.00			B	0.181	2.661		1	1	4.628			
			C	0.181	2.661		1	1	4.628			
T60	49.90	1477.86	A	0.181	2.661	37	1	1	4.629	496.83	99.37	C
420.00-415.00			B	0.181	2.661		1	1	4.629			
			C	0.181	2.661		1	1	4.629			
T61	49.90	1477.86	A	0.181	2.661	37	1	1	4.629	496.22	99.24	C
415.00-410.00			B	0.181	2.661		1	1	4.629			
			C	0.181	2.661		1	1	4.629			
T62	49.90	1388.03	A	0.176	2.677	37	1	1	4.515	488.18	97.64	C
410.00-405.00			B	0.176	2.677		1	1	4.515			
			C	0.176	2.677		1	1	4.515			
T63	49.90	1388.03	A	0.176	2.677	37	1	1	4.515	487.62	97.52	C
405.00-400.00			B	0.176	2.677		1	1	4.515			
			C	0.176	2.677		1	1	4.515			
T64	226.80	5552.12	A	0.176	2.677	37	1	1	18.067	1997.23	99.86	C
400.00-380.00			B	0.176	2.677		1	1	18.067			
			C	0.176	2.677		1	1	18.067			
T65	226.80	5552.12	A	0.176	2.677	37	1	1	18.075	1989.55	99.48	C
380.00-360.00			B	0.176	2.677		1	1	18.075			
			C	0.176	2.677		1	1	18.075			
T66	231.39	5552.12	A	0.176	2.677	36	1	1	18.081	2017.08	100.85	C
360.00-340.00			B	0.176	2.677		1	1	18.081			
			C	0.176	2.677		1	1	18.081			
T67	237.00	5552.12	A	0.176	2.677	36	1	1	18.086	2053.74	102.69	C
340.00-320.00			B	0.176	2.677		1	1	18.086			
			C	0.176	2.677		1	1	18.086			
T68	237.00	5552.12	A	0.176	2.677	36	1	1	18.088	2051.48	102.57	C
320.00-300.00			B	0.176	2.677		1	1	18.088			
			C	0.176	2.677		1	1	18.088			
T69	237.00	5552.12	A	0.176	2.677	36	1	1	18.088	2051.75	102.59	C
300.00-280.00			B	0.176	2.677		1	1	18.088			
			C	0.176	2.677		1	1	18.088			
T70	59.25	1388.03	A	0.176	2.677	36	1	1	4.522	513.34	102.67	C
280.00-275.00			B	0.176	2.677		1	1	4.522			
			C	0.176	2.677		1	1	4.522			
T71	59.25	1388.03	A	0.176	2.677	36	1	1	4.521	513.58	102.72	C

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
 Phone: (919) 468-0112  
 FAX: (919) 466-5414

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	91 of 192
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
275.00-270.00			B	0.176	2.677		1	1	4.521			
			C	0.176	2.677		1	1	4.521			
T72	59.25	1477.86	A	0.181	2.661	36	1	1	4.636	521.21	104.24	C
270.00-265.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T73	59.25	1477.86	A	0.181	2.661	36	1	1	4.636	521.56	104.31	C
265.00-260.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T74	59.25	1477.86	A	0.181	2.661	36	1	1	4.636	521.96	104.39	C
260.00-255.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T75	59.25	1477.86	A	0.181	2.661	37	1	1	4.635	522.42	104.48	C
255.00-250.00			B	0.181	2.661		1	1	4.635			
			C	0.181	2.661		1	1	4.635			
T76	59.25	1388.03	A	0.176	2.677	37	1	1	4.519	515.57	103.11	C
250.00-245.00			B	0.176	2.677		1	1	4.519			
			C	0.176	2.677		1	1	4.519			
T77	59.25	1388.03	A	0.176	2.677	37	1	1	4.519	516.13	103.23	C
245.00-240.00			B	0.176	2.677		1	1	4.519			
			C	0.176	2.677		1	1	4.519			
T78	237.00	5552.12	A	0.176	2.677	37	1	1	18.068	2071.18	103.56	C
240.00-220.00			B	0.176	2.677		1	1	18.068			
			C	0.176	2.677		1	1	18.068			
T79	237.00	5552.12	A	0.176	2.677	37	1	1	18.054	2085.03	104.25	C
220.00-200.00			B	0.176	2.677		1	1	18.054			
			C	0.176	2.677		1	1	18.054			
T80	379.04	5552.12	A	0.176	2.677	37	1	1	18.036	2509.79	125.49	C
200.00-180.00			B	0.176	2.677		1	1	18.036			
			C	0.176	2.677		1	1	18.036			
T81	501.40	5552.12	A	0.176	2.677	38	1	1	18.013	2856.57	142.83	C
180.00-160.00			B	0.176	2.677		1	1	18.013			
			C	0.176	2.677		1	1	18.013			
T82	501.40	5552.12	A	0.176	2.677	38	1	1	17.987	2892.40	144.62	C
160.00-140.00			B	0.176	2.677		1	1	17.987			
			C	0.176	2.677		1	1	17.987			
T83	501.40	5552.12	A	0.176	2.677	39	1	1	17.958	3008.04	150.40	C
140.00-120.00			B	0.176	2.677		1	1	17.958			
			C	0.176	2.677		1	1	17.958			
T84	125.35	1388.03	A	0.176	2.677	39	1	1	4.485	758.44	151.69	C
120.00-115.00			B	0.176	2.677		1	1	4.485			
			C	0.176	2.677		1	1	4.485			
T85	125.35	1388.03	A	0.176	2.677	39	1	1	4.483	760.98	152.20	C
115.00-110.00			B	0.176	2.677		1	1	4.483			
			C	0.176	2.677		1	1	4.483			
T86	125.35	1477.86	A	0.181	2.661	39	1	1	4.597	771.50	154.30	C
110.00-105.00			B	0.181	2.661		1	1	4.597			
			C	0.181	2.661		1	1	4.597			
T87	125.35	1477.86	A	0.181	2.661	40	1	1	4.595	773.94	154.79	C
105.00-100.00			B	0.181	2.661		1	1	4.595			
			C	0.181	2.661		1	1	4.595			
T88	125.35	1477.86	A	0.181	2.661	40	1	1	4.593	776.26	155.25	C
100.00-95.00			B	0.181	2.661		1	1	4.593			
			C	0.181	2.661		1	1	4.593			
T89	125.35	1477.86	A	0.181	2.661	40	1	1	4.592	778.42	155.68	C
95.00-90.00			B	0.181	2.661		1	1	4.592			
			C	0.181	2.661		1	1	4.592			
T90	125.35	1388.03	A	0.176	2.677	40	1	1	4.475	772.23	154.45	C
90.00-85.00			B	0.176	2.677		1	1	4.475			
			C	0.176	2.677		1	1	4.475			
T91	125.35	1388.03	A	0.176	2.677	40	1	1	4.474	773.86	154.77	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	92 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
85.00-80.00			B	0.176	2.677		1	1	4.474			
			C	0.176	2.677		1	1	4.474			
T92	501.40	5552.12	A	0.176	2.677	40	1	1	17.888	3104.68	155.23	C
80.00-60.00			B	0.176	2.677		1	1	17.888			
			C	0.176	2.677		1	1	17.888			
T93	501.40	5552.12	A	0.176	2.677	40	1	1	17.905	3081.07	154.05	C
60.00-40.00			B	0.176	2.677		1	1	17.905			
			C	0.176	2.677		1	1	17.905			
T94	501.40	5552.12	A	0.176	2.677	38	1	1	18.002	2871.66	143.58	C
40.00-20.00			B	0.176	2.677		1	1	18.002			
			C	0.176	2.677		1	1	18.002			
T95	125.35	1388.03	A	0.176	2.677	41	1	1	4.468	781.88	156.38	C
20.00-15.00			B	0.176	2.677		1	1	4.468			
			C	0.176	2.677		1	1	4.468			
T96	200.56	2850.83	A	0.248	2.443	42	1	1	13.347	1776.30	222.04	C
15.00-7.00			B	0.248	2.443		1	1	13.347			
			C	0.248	2.443		1	1	13.347			
T97 7.00-0.00	175.49	4952.76	A	1	2.1	44	1	1	43.382	2453.85*	350.55	C
			B	1	2.1		1	1	43.382			
			C	1	2.1		1	1	43.382			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					128703.18		

### Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
L1	424.14	10343.38	A	1	0.6	46	1	1	103.500	3171.41	51.07	C
1151.90-1089.80			B	1	0.777		1	1	103.500			
			C	1	0.777		1	1	103.500			
T1	33.47	2474.36	A	0.42	2.025	46	0.8	1	13.161	1100.94	224.68	C
1089.80-1084.90			B	0.42	2.025		0.8	1	13.161			
			C	0.42	2.025		0.8	1	13.161			
T2	33.47	1026.80	A	0.161	2.733	46	0.8	1	3.905	475.48	97.04	C
1084.90-1080.00			B	0.161	2.733		0.8	1	3.905			
			C	0.161	2.733		0.8	1	3.905			
T3	162.73	3798.26	A	0.155	2.755	46	0.8	1	15.322	1954.72	97.74	C
1080.00-1060.00			B	0.155	2.755		0.8	1	15.322			
			C	0.155	2.755		0.8	1	15.322			
T4	176.80	3798.26	A	0.155	2.755	46	0.8	1	15.329	1984.27	99.21	C
1060.00-1040.00			B	0.155	2.755		0.8	1	15.329			
			C	0.155	2.755		0.8	1	15.329			
T5	176.80	3798.26	A	0.155	2.755	45	0.8	1	15.336	1974.30	98.72	C
1040.00-1020.00			B	0.155	2.755		0.8	1	15.336			
			C	0.155	2.755		0.8	1	15.336			
T6	176.80	3798.26	A	0.155	2.755	45	0.8	1	15.343	1964.21	98.21	C
1020.00-1000.00			B	0.155	2.755		0.8	1	15.343			
			C	0.155	2.755		0.8	1	15.343			
T7	186.88	3798.26	A	0.155	2.755	45	0.8	1	15.350	2030.04	101.50	C
1000.00-980.00			B	0.155	2.755		0.8	1	15.350			
			C	0.155	2.755		0.8	1	15.350			
T8	189.40	3798.26	A	0.155	2.755	45	0.8	1	15.357	2038.16	101.91	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
980.00-960.00			B	0.155	2.755		0.8	1	15.357			
			C	0.155	2.755		0.8	1	15.357			
T9	189.40	4790.45	A	0.168	2.707	44	0.8	1	16.056	2069.91	103.50	C
960.00-940.00			B	0.168	2.707		0.8	1	16.056			
			C	0.168	2.707		0.8	1	16.056			
T10	47.35	1197.61	A	0.168	2.707	44	0.8	1	4.012	515.42	103.08	C
940.00-935.00			B	0.168	2.707		0.8	1	4.012			
			C	0.168	2.707		0.8	1	4.012			
T11	47.35	1197.61	A	0.168	2.707	44	0.8	1	4.012	514.72	102.94	C
935.00-930.00			B	0.168	2.707		0.8	1	4.012			
			C	0.168	2.707		0.8	1	4.012			
T12	47.35	1287.44	A	0.172	2.691	44	0.8	1	4.128	523.17	104.63	C
930.00-925.00			B	0.172	2.691		0.8	1	4.128			
			C	0.172	2.691		0.8	1	4.128			
T13	47.35	1287.44	A	0.172	2.691	44	0.8	1	4.128	522.46	104.49	C
925.00-920.00			B	0.172	2.691		0.8	1	4.128			
			C	0.172	2.691		0.8	1	4.128			
T14	47.35	1287.44	A	0.172	2.691	44	0.8	1	4.129	521.74	104.35	C
920.00-915.00			B	0.172	2.691		0.8	1	4.129			
			C	0.172	2.691		0.8	1	4.129			
T15	47.35	1287.44	A	0.172	2.691	44	0.8	1	4.130	521.01	104.20	C
915.00-910.00			B	0.172	2.691		0.8	1	4.130			
			C	0.172	2.691		0.8	1	4.130			
T16	47.35	1197.61	A	0.168	2.707	44	0.8	1	4.016	511.20	102.24	C
910.00-905.00			B	0.168	2.707		0.8	1	4.016			
			C	0.168	2.707		0.8	1	4.016			
T17	47.35	1197.61	A	0.168	2.707	44	0.8	1	4.016	510.49	102.10	C
905.00-900.00			B	0.168	2.707		0.8	1	4.016			
			C	0.168	2.707		0.8	1	4.016			
T18	189.40	4790.45	A	0.168	2.707	44	0.8	1	16.072	2034.82	101.74	C
900.00-880.00			B	0.168	2.707		0.8	1	16.072			
			C	0.168	2.707		0.8	1	16.072			
T19	198.58	4790.45	A	0.168	2.707	43	0.8	1	16.083	2103.05	105.15	C
880.00-860.00			B	0.168	2.707		0.8	1	16.083			
			C	0.168	2.707		0.8	1	16.083			
T20	199.60	4790.45	A	0.168	2.707	43	0.8	1	16.094	2099.67	104.98	C
860.00-840.00			B	0.168	2.707		0.8	1	16.094			
			C	0.168	2.707		0.8	1	16.094			
T21	199.60	4790.45	A	0.168	2.707	43	0.8	1	16.106	2087.28	104.36	C
840.00-820.00			B	0.168	2.707		0.8	1	16.106			
			C	0.168	2.707		0.8	1	16.106			
T22	199.60	4790.45	A	0.168	2.707	42	0.8	1	16.117	2074.76	103.74	C
820.00-800.00			B	0.168	2.707		0.8	1	16.117			
			C	0.168	2.707		0.8	1	16.117			
T23	199.60	4790.45	A	0.168	2.707	42	0.8	1	16.129	2062.11	103.11	C
800.00-780.00			B	0.168	2.707		0.8	1	16.129			
			C	0.168	2.707		0.8	1	16.129			
T24	49.90	1197.61	A	0.168	2.707	42	0.8	1	4.034	513.53	102.71	C
780.00-775.00			B	0.168	2.707		0.8	1	4.034			
			C	0.168	2.707		0.8	1	4.034			
T25	49.90	1197.61	A	0.168	2.707	42	0.8	1	4.035	512.73	102.55	C
775.00-770.00			B	0.168	2.707		0.8	1	4.035			
			C	0.168	2.707		0.8	1	4.035			
T26	49.90	1287.44	A	0.172	2.691	42	0.8	1	4.150	520.58	104.12	C
770.00-765.00			B	0.172	2.691		0.8	1	4.150			
			C	0.172	2.691		0.8	1	4.150			
T27	49.90	1287.44	A	0.172	2.691	42	0.8	1	4.150	519.76	103.95	C
765.00-760.00			B	0.172	2.691		0.8	1	4.150			
			C	0.172	2.691		0.8	1	4.150			
T28	49.90	1287.44	A	0.172	2.691	42	0.8	1	4.151	518.94	103.79	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
760.00-755.00			B	0.172	2.691		0.8	1	4.151			
			C	0.172	2.691		0.8	1	4.151			
T29	49.90	1287.44	A	0.172	2.691	42	0.8	1	4.152	518.11	103.62	C
755.00-750.00			B	0.172	2.691		0.8	1	4.152			
			C	0.172	2.691		0.8	1	4.152			
T30	49.90	1197.61	A	0.168	2.707	42	0.8	1	4.038	508.70	101.74	C
750.00-745.00			B	0.168	2.707		0.8	1	4.038			
			C	0.168	2.707		0.8	1	4.038			
T31	49.90	1197.61	A	0.168	2.707	41	0.8	1	4.039	507.89	101.58	C
745.00-740.00			B	0.168	2.707		0.8	1	4.039			
			C	0.168	2.707		0.8	1	4.039			
T32	199.60	4790.45	A	0.168	2.707	41	0.8	1	16.164	2023.42	101.17	C
740.00-720.00			B	0.168	2.707		0.8	1	16.164			
			C	0.168	2.707		0.8	1	16.164			
T33	199.60	4790.45	A	0.168	2.707	41	0.8	1	16.176	2010.33	100.52	C
720.00-700.00			B	0.168	2.707		0.8	1	16.176			
			C	0.168	2.707		0.8	1	16.176			
T34	199.60	4790.45	A	0.168	2.707	41	0.8	1	16.188	1997.15	99.86	C
700.00-680.00			B	0.168	2.707		0.8	1	16.188			
			C	0.168	2.707		0.8	1	16.188			
T35	199.60	4790.45	A	0.168	2.707	40	0.8	1	16.201	1983.92	99.20	C
680.00-660.00			B	0.168	2.707		0.8	1	16.201			
			C	0.168	2.707		0.8	1	16.201			
T36	199.60	4790.45	A	0.168	2.707	40	0.8	1	16.213	1970.66	98.53	C
660.00-640.00			B	0.168	2.707		0.8	1	16.213			
			C	0.168	2.707		0.8	1	16.213			
T37	199.60	5552.12	A	0.176	2.676	40	0.8	1	16.654	1979.27	98.96	C
640.00-620.00			B	0.176	2.676		0.8	1	16.654			
			C	0.176	2.676		0.8	1	16.654			
T38	49.90	1388.03	A	0.176	2.677	40	0.8	1	4.163	492.56	98.51	C
620.00-615.00			B	0.176	2.677		0.8	1	4.163			
			C	0.176	2.677		0.8	1	4.163			
T39	49.90	1388.03	A	0.176	2.677	40	0.8	1	4.164	491.74	98.35	C
615.00-610.00			B	0.176	2.677		0.8	1	4.164			
			C	0.176	2.677		0.8	1	4.164			
T40	49.90	1477.86	A	0.181	2.661	39	0.8	1	4.281	499.10	99.82	C
610.00-605.00			B	0.181	2.661		0.8	1	4.281			
			C	0.181	2.661		0.8	1	4.281			
T41	49.90	1477.86	A	0.181	2.661	39	0.8	1	4.282	498.26	99.65	C
605.00-600.00			B	0.181	2.661		0.8	1	4.282			
			C	0.181	2.661		0.8	1	4.282			
T42	49.90	1477.86	A	0.181	2.661	39	0.8	1	4.283	497.42	99.48	C
600.00-595.00			B	0.181	2.661		0.8	1	4.283			
			C	0.181	2.661		0.8	1	4.283			
T43	49.90	1477.86	A	0.181	2.661	39	0.8	1	4.284	496.59	99.32	C
595.00-590.00			B	0.181	2.661		0.8	1	4.284			
			C	0.181	2.661		0.8	1	4.284			
T44	49.90	1388.03	A	0.176	2.677	39	0.8	1	4.169	487.64	97.53	C
590.00-585.00			B	0.176	2.677		0.8	1	4.169			
			C	0.176	2.677		0.8	1	4.169			
T45	49.90	1388.03	A	0.176	2.677	39	0.8	1	4.170	486.82	97.36	C
585.00-580.00			B	0.176	2.677		0.8	1	4.170			
			C	0.176	2.677		0.8	1	4.170			
T46	199.60	5161.26	A	0.172	2.692	39	0.8	1	16.476	1928.76	96.44	C
580.00-560.00			B	0.172	2.692		0.8	1	16.476			
			C	0.172	2.692		0.8	1	16.476			
T47	199.60	5161.26	A	0.172	2.692	39	0.8	1	16.495	1916.26	95.81	C
560.00-540.00			B	0.172	2.692		0.8	1	16.495			
			C	0.172	2.692		0.8	1	16.495			
T48	49.90	1228.81	A	0.159	2.738	38	0.8	1	3.796	453.78	90.76	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
540.00-535.00			B	0.159	2.738		0.8	1	3.796			
			C	0.159	2.738		0.8	1	3.796			
T49	49.90	1290.32	A	0.172	2.692	38	0.8	1	4.127	476.29	95.26	C
535.00-530.00			B	0.172	2.692		0.8	1	4.127			
			C	0.172	2.692		0.8	1	4.127			
T50	49.90	1290.32	A	0.172	2.692	38	0.8	1	4.127	475.51	95.10	C
530.00-525.00			B	0.172	2.692		0.8	1	4.127			
			C	0.172	2.692		0.8	1	4.127			
T51	49.90	1290.32	A	0.172	2.692	38	0.8	1	4.128	474.74	94.95	C
525.00-520.00			B	0.172	2.692		0.8	1	4.128			
			C	0.172	2.692		0.8	1	4.128			
T52	199.60	5161.26	A	0.172	2.692	38	0.8	1	16.521	1891.26	94.56	C
520.00-500.00			B	0.172	2.692		0.8	1	16.521			
			C	0.172	2.692		0.8	1	16.521			
T53	199.60	5161.26	A	0.172	2.692	38	0.8	1	16.533	1879.30	93.96	C
500.00-480.00			B	0.172	2.692		0.8	1	16.533			
			C	0.172	2.692		0.8	1	16.533			
T54	199.60	5161.26	A	0.172	2.692	38	0.8	1	16.545	1867.82	93.39	C
480.00-460.00			B	0.172	2.692		0.8	1	16.545			
			C	0.172	2.692		0.8	1	16.545			
T55	199.60	5552.12	A	0.176	2.677	37	0.8	1	16.776	1867.50	93.37	C
460.00-440.00			B	0.176	2.677		0.8	1	16.776			
			C	0.176	2.677		0.8	1	16.776			
T56	49.90	1388.03	A	0.176	2.677	37	0.8	1	4.195	465.18	93.04	C
440.00-435.00			B	0.176	2.677		0.8	1	4.195			
			C	0.176	2.677		0.8	1	4.195			
T57	49.90	1388.03	A	0.176	2.677	37	0.8	1	4.195	464.55	92.91	C
435.00-430.00			B	0.176	2.677		0.8	1	4.195			
			C	0.176	2.677		0.8	1	4.195			
T58	49.90	1477.86	A	0.181	2.661	37	0.8	1	4.311	471.59	94.32	C
430.00-425.00			B	0.181	2.661		0.8	1	4.311			
			C	0.181	2.661		0.8	1	4.311			
T59	49.90	1477.86	A	0.181	2.661	37	0.8	1	4.312	470.98	94.20	C
425.00-420.00			B	0.181	2.661		0.8	1	4.312			
			C	0.181	2.661		0.8	1	4.312			
T60	49.90	1477.86	A	0.181	2.661	37	0.8	1	4.313	470.39	94.08	C
420.00-415.00			B	0.181	2.661		0.8	1	4.313			
			C	0.181	2.661		0.8	1	4.313			
T61	49.90	1477.86	A	0.181	2.661	37	0.8	1	4.313	469.81	93.96	C
415.00-410.00			B	0.181	2.661		0.8	1	4.313			
			C	0.181	2.661		0.8	1	4.313			
T62	49.90	1388.03	A	0.176	2.677	37	0.8	1	4.199	461.66	92.33	C
410.00-405.00			B	0.176	2.677		0.8	1	4.199			
			C	0.176	2.677		0.8	1	4.199			
T63	49.90	1388.03	A	0.176	2.677	37	0.8	1	4.199	461.13	92.23	C
405.00-400.00			B	0.176	2.677		0.8	1	4.199			
			C	0.176	2.677		0.8	1	4.199			
T64	226.80	5552.12	A	0.176	2.677	37	0.8	1	16.803	1891.57	94.58	C
400.00-380.00			B	0.176	2.677		0.8	1	16.803			
			C	0.176	2.677		0.8	1	16.803			
T65	226.80	5552.12	A	0.176	2.677	37	0.8	1	16.811	1884.34	94.22	C
380.00-360.00			B	0.176	2.677		0.8	1	16.811			
			C	0.176	2.677		0.8	1	16.811			
T66	231.39	5552.12	A	0.176	2.677	36	0.8	1	16.817	1912.22	95.61	C
360.00-340.00			B	0.176	2.677		0.8	1	16.817			
			C	0.176	2.677		0.8	1	16.817			
T67	237.00	5552.12	A	0.176	2.677	36	0.8	1	16.822	1949.13	97.46	C
340.00-320.00			B	0.176	2.677		0.8	1	16.822			
			C	0.176	2.677		0.8	1	16.822			
T68	237.00	5552.12	A	0.176	2.677	36	0.8	1	16.824	1946.99	97.35	C



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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
320.00-300.00			B	0.176	2.677		0.8	1	16.824			
			C	0.176	2.677		0.8	1	16.824			
T69	237.00	5552.12	A	0.176	2.677	36	0.8	1	16.824	1947.24	97.36	C
300.00-280.00			B	0.176	2.677		0.8	1	16.824			
			C	0.176	2.677		0.8	1	16.824			
T70	59.25	1388.03	A	0.176	2.677	36	0.8	1	4.206	487.19	97.44	C
280.00-275.00			B	0.176	2.677		0.8	1	4.206			
			C	0.176	2.677		0.8	1	4.206			
T71	59.25	1388.03	A	0.176	2.677	36	0.8	1	4.205	487.42	97.48	C
275.00-270.00			B	0.176	2.677		0.8	1	4.205			
			C	0.176	2.677		0.8	1	4.205			
T72	59.25	1477.86	A	0.181	2.661	36	0.8	1	4.320	495.18	99.04	C
270.00-265.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T73	59.25	1477.86	A	0.181	2.661	36	0.8	1	4.320	495.51	99.10	C
265.00-260.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T74	59.25	1477.86	A	0.181	2.661	36	0.8	1	4.320	495.89	99.18	C
260.00-255.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T75	59.25	1477.86	A	0.181	2.661	37	0.8	1	4.319	496.33	99.27	C
255.00-250.00			B	0.181	2.661		0.8	1	4.319			
			C	0.181	2.661		0.8	1	4.319			
T76	59.25	1388.03	A	0.176	2.677	37	0.8	1	4.203	489.30	97.86	C
250.00-245.00			B	0.176	2.677		0.8	1	4.203			
			C	0.176	2.677		0.8	1	4.203			
T77	59.25	1388.03	A	0.176	2.677	37	0.8	1	4.203	489.83	97.97	C
245.00-240.00			B	0.176	2.677		0.8	1	4.203			
			C	0.176	2.677		0.8	1	4.203			
T78	237.00	5552.12	A	0.176	2.677	37	0.8	1	16.804	1965.61	98.28	C
240.00-220.00			B	0.176	2.677		0.8	1	16.804			
			C	0.176	2.677		0.8	1	16.804			
T79	237.00	5552.12	A	0.176	2.677	37	0.8	1	16.790	1978.69	98.93	C
220.00-200.00			B	0.176	2.677		0.8	1	16.790			
			C	0.176	2.677		0.8	1	16.790			
T80	379.04	5552.12	A	0.176	2.677	37	0.8	1	16.772	2402.45	120.12	A
200.00-180.00			B	0.176	2.677		0.8	1	16.772			
			C	0.176	2.677		0.8	1	16.772			
T81	501.40	5552.12	A	0.176	2.677	38	0.8	1	16.749	2748.00	137.40	A
180.00-160.00			B	0.176	2.677		0.8	1	16.749			
			C	0.176	2.677		0.8	1	16.749			
T82	501.40	5552.12	A	0.176	2.677	38	0.8	1	16.723	2782.38	139.12	A
160.00-140.00			B	0.176	2.677		0.8	1	16.723			
			C	0.176	2.677		0.8	1	16.723			
T83	501.40	5552.12	A	0.176	2.677	39	0.8	1	16.694	2896.41	144.82	A
140.00-120.00			B	0.176	2.677		0.8	1	16.694			
			C	0.176	2.677		0.8	1	16.694			
T84	125.35	1388.03	A	0.176	2.677	39	0.8	1	4.169	730.27	146.05	A
120.00-115.00			B	0.176	2.677		0.8	1	4.169			
			C	0.176	2.677		0.8	1	4.169			
T85	125.35	1388.03	A	0.176	2.677	39	0.8	1	4.167	732.71	146.54	A
115.00-110.00			B	0.176	2.677		0.8	1	4.167			
			C	0.176	2.677		0.8	1	4.167			
T86	125.35	1477.86	A	0.181	2.661	39	0.8	1	4.281	743.28	148.66	A
110.00-105.00			B	0.181	2.661		0.8	1	4.281			
			C	0.181	2.661		0.8	1	4.281			
T87	125.35	1477.86	A	0.181	2.661	40	0.8	1	4.279	745.63	149.13	A
105.00-100.00			B	0.181	2.661		0.8	1	4.279			
			C	0.181	2.661		0.8	1	4.279			
T88	125.35	1477.86	A	0.181	2.661	40	0.8	1	4.278	747.86	149.57	A

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b> Hartford CT2, CT (302534)	<b>Page</b> 97 of 192
	<b>Project</b> OAA746560_C3_03	<b>Date</b> 15:38:59 06/11/19
	<b>Client</b> DISH NETWORK CORPORATION	<b>Designed by</b> Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
100.00-95.00			B	0.181	2.661		0.8	1	4.278			
			C	0.181	2.661		0.8	1	4.278			
T89	125.35	1477.86	A	0.181	2.661	40	0.8	1	4.276	749.93	149.99	A
95.00-90.00			B	0.181	2.661		0.8	1	4.276			
			C	0.181	2.661		0.8	1	4.276			
T90	125.35	1388.03	A	0.176	2.677	40	0.8	1	4.159	743.49	148.70	A
90.00-85.00			B	0.176	2.677		0.8	1	4.159			
			C	0.176	2.677		0.8	1	4.159			
T91	125.35	1388.03	A	0.176	2.677	40	0.8	1	4.158	745.06	149.01	A
85.00-80.00			B	0.176	2.677		0.8	1	4.158			
			C	0.176	2.677		0.8	1	4.158			
T92	501.40	5552.12	A	0.176	2.677	40	0.8	1	16.624	2989.09	149.45	A
80.00-60.00			B	0.176	2.677		0.8	1	16.624			
			C	0.176	2.677		0.8	1	16.624			
T93	501.40	5552.12	A	0.176	2.677	40	0.8	1	16.641	2966.45	148.32	A
60.00-40.00			B	0.176	2.677		0.8	1	16.641			
			C	0.176	2.677		0.8	1	16.641			
T94	501.40	5552.12	A	0.176	2.677	38	0.8	1	16.738	2762.48	138.12	A
40.00-20.00			B	0.176	2.677		0.8	1	16.738			
			C	0.176	2.677		0.8	1	16.738			
T95	125.35	1388.03	A	0.176	2.677	41	0.8	1	4.152	752.75	150.55	A
20.00-15.00			B	0.176	2.677		0.8	1	4.152			
			C	0.176	2.677		0.8	1	4.152			
T96	200.56	2850.83	A	0.248	2.443	42	0.8	1	11.339	1601.11	200.14	A
15.00-7.00			B	0.248	2.443		0.8	1	11.339			
			C	0.248	2.443		0.8	1	11.339			
T97 7.00-0.00	175.49	4952.76	A	1	2.1	44	0.8	1	36.067	2453.85*	350.55	C
			B	1	2.1		0.8	1	36.067			
			C	1	2.1		0.8	1	36.067			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					122072.63		

### Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
L1	424.14	10343.38	A	1	0.6	46	1	1	103.500	6774.49	109.09	C
1151.90-1089.80			B	1	0.6		1	1	103.500			
			C	1	1.2		1	1	103.500			
T1	33.47	2474.36	A	0.42	2.025	46	0.85	1	13.865	1156.63	236.05	C
1089.80-1084.90			B	0.42	2.025		0.85	1	13.865			
			C	0.42	2.025		0.85	1	13.865			
T2	33.47	1026.80	A	0.161	2.733	46	0.85	1	3.986	484.03	98.78	C
1084.90-1080.00			B	0.161	2.733		0.85	1	3.986			
			C	0.161	2.733		0.85	1	3.986			
T3	162.73	3798.26	A	0.155	2.755	46	0.85	1	15.642	1989.07	99.45	C
1080.00-1060.00			B	0.155	2.755		0.85	1	15.642			
			C	0.155	2.755		0.85	1	15.642			
T4	176.80	3798.26	A	0.155	2.755	46	0.85	1	15.649	2018.44	100.92	C
1060.00-1040.00			B	0.155	2.755		0.85	1	15.649			
			C	0.155	2.755		0.85	1	15.649			
T5	176.80	3798.26	A	0.155	2.755	45	0.85	1	15.656	2008.29	100.41	C

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	98 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
1040.00-1020.00			B	0.155	2.755		0.85	1	15.656			
			C	0.155	2.755		0.85	1	15.656			
T6	176.80	3798.26	A	0.155	2.755	45	0.85	1	15.663	1998.00	99.90	C
1020.00-1000.00			B	0.155	2.755		0.85	1	15.663			
			C	0.155	2.755		0.85	1	15.663			
T7	186.88	3798.26	A	0.155	2.755	45	0.85	1	15.670	2063.65	103.18	C
1000.00-980.00			B	0.155	2.755		0.85	1	15.670			
			C	0.155	2.755		0.85	1	15.670			
T8	189.40	3798.26	A	0.155	2.755	45	0.85	1	15.678	2071.58	103.58	C
980.00-960.00			B	0.155	2.755		0.85	1	15.678			
			C	0.155	2.755		0.85	1	15.678			
T9	189.40	4790.45	A	0.168	2.707	44	0.85	1	16.374	2102.36	105.12	C
960.00-940.00			B	0.168	2.707		0.85	1	16.374			
			C	0.168	2.707		0.85	1	16.374			
T10	47.35	1197.61	A	0.168	2.707	44	0.85	1	4.091	523.49	104.70	C
940.00-935.00			B	0.168	2.707		0.85	1	4.091			
			C	0.168	2.707		0.85	1	4.091			
T11	47.35	1197.61	A	0.168	2.707	44	0.85	1	4.092	522.78	104.56	C
935.00-930.00			B	0.168	2.707		0.85	1	4.092			
			C	0.168	2.707		0.85	1	4.092			
T12	47.35	1287.44	A	0.172	2.691	44	0.85	1	4.207	531.17	106.23	C
930.00-925.00			B	0.172	2.691		0.85	1	4.207			
			C	0.172	2.691		0.85	1	4.207			
T13	47.35	1287.44	A	0.172	2.691	44	0.85	1	4.208	530.44	106.09	C
925.00-920.00			B	0.172	2.691		0.85	1	4.208			
			C	0.172	2.691		0.85	1	4.208			
T14	47.35	1287.44	A	0.172	2.691	44	0.85	1	4.208	529.71	105.94	C
920.00-915.00			B	0.172	2.691		0.85	1	4.208			
			C	0.172	2.691		0.85	1	4.208			
T15	47.35	1287.44	A	0.172	2.691	44	0.85	1	4.209	528.97	105.79	C
915.00-910.00			B	0.172	2.691		0.85	1	4.209			
			C	0.172	2.691		0.85	1	4.209			
T16	47.35	1197.61	A	0.168	2.707	44	0.85	1	4.095	519.20	103.84	C
910.00-905.00			B	0.168	2.707		0.85	1	4.095			
			C	0.168	2.707		0.85	1	4.095			
T17	47.35	1197.61	A	0.168	2.707	44	0.85	1	4.096	518.47	103.69	C
905.00-900.00			B	0.168	2.707		0.85	1	4.096			
			C	0.168	2.707		0.85	1	4.096			
T18	189.40	4790.45	A	0.168	2.707	44	0.85	1	16.390	2066.62	103.33	C
900.00-880.00			B	0.168	2.707		0.85	1	16.390			
			C	0.168	2.707		0.85	1	16.390			
T19	198.58	4790.45	A	0.168	2.707	43	0.85	1	16.401	2134.66	106.73	C
880.00-860.00			B	0.168	2.707		0.85	1	16.401			
			C	0.168	2.707		0.85	1	16.401			
T20	199.60	4790.45	A	0.168	2.707	43	0.85	1	16.412	2131.08	106.55	C
860.00-840.00			B	0.168	2.707		0.85	1	16.412			
			C	0.168	2.707		0.85	1	16.412			
T21	199.60	4790.45	A	0.168	2.707	43	0.85	1	16.423	2118.49	105.92	C
840.00-820.00			B	0.168	2.707		0.85	1	16.423			
			C	0.168	2.707		0.85	1	16.423			
T22	199.60	4790.45	A	0.168	2.707	42	0.85	1	16.435	2105.76	105.29	C
820.00-800.00			B	0.168	2.707		0.85	1	16.435			
			C	0.168	2.707		0.85	1	16.435			
T23	199.60	4790.45	A	0.168	2.707	42	0.85	1	16.446	2092.90	104.65	C
800.00-780.00			B	0.168	2.707		0.85	1	16.446			
			C	0.168	2.707		0.85	1	16.446			
T24	49.90	1197.61	A	0.168	2.707	42	0.85	1	4.113	521.20	104.24	C
780.00-775.00			B	0.168	2.707		0.85	1	4.113			
			C	0.168	2.707		0.85	1	4.113			
T25	49.90	1197.61	A	0.168	2.707	42	0.85	1	4.114	520.39	104.08	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
775.00-770.00			B	0.168	2.707		0.85	1	4.114			
			C	0.168	2.707		0.85	1	4.114			
T26	49.90	1287.44	A	0.172	2.691	42	0.85	1	4.229	528.18	105.64	C
770.00-765.00			B	0.172	2.691		0.85	1	4.229			
			C	0.172	2.691		0.85	1	4.229			
T27	49.90	1287.44	A	0.172	2.691	42	0.85	1	4.230	527.34	105.47	C
765.00-760.00			B	0.172	2.691		0.85	1	4.230			
			C	0.172	2.691		0.85	1	4.230			
T28	49.90	1287.44	A	0.172	2.691	42	0.85	1	4.231	526.51	105.30	C
760.00-755.00			B	0.172	2.691		0.85	1	4.231			
			C	0.172	2.691		0.85	1	4.231			
T29	49.90	1287.44	A	0.172	2.691	42	0.85	1	4.231	525.67	105.13	C
755.00-750.00			B	0.172	2.691		0.85	1	4.231			
			C	0.172	2.691		0.85	1	4.231			
T30	49.90	1197.61	A	0.168	2.707	42	0.85	1	4.118	516.29	103.26	C
750.00-745.00			B	0.168	2.707		0.85	1	4.118			
			C	0.168	2.707		0.85	1	4.118			
T31	49.90	1197.61	A	0.168	2.707	41	0.85	1	4.119	515.47	103.09	C
745.00-740.00			B	0.168	2.707		0.85	1	4.119			
			C	0.168	2.707		0.85	1	4.119			
T32	199.60	4790.45	A	0.168	2.707	41	0.85	1	16.482	2053.59	102.68	C
740.00-720.00			B	0.168	2.707		0.85	1	16.482			
			C	0.168	2.707		0.85	1	16.482			
T33	199.60	4790.45	A	0.168	2.707	41	0.85	1	16.494	2040.28	102.01	C
720.00-700.00			B	0.168	2.707		0.85	1	16.494			
			C	0.168	2.707		0.85	1	16.494			
T34	199.60	4790.45	A	0.168	2.707	41	0.85	1	16.506	2026.90	101.34	C
700.00-680.00			B	0.168	2.707		0.85	1	16.506			
			C	0.168	2.707		0.85	1	16.506			
T35	199.60	4790.45	A	0.168	2.707	40	0.85	1	16.518	2013.45	100.67	C
680.00-660.00			B	0.168	2.707		0.85	1	16.518			
			C	0.168	2.707		0.85	1	16.518			
T36	199.60	4790.45	A	0.168	2.707	40	0.85	1	16.531	1999.97	100.00	C
660.00-640.00			B	0.168	2.707		0.85	1	16.531			
			C	0.168	2.707		0.85	1	16.531			
T37	199.60	5552.12	A	0.176	2.676	40	0.85	1	16.970	2007.92	100.40	C
640.00-620.00			B	0.176	2.676		0.85	1	16.970			
			C	0.176	2.676		0.85	1	16.970			
T38	49.90	1388.03	A	0.176	2.677	40	0.85	1	4.242	499.68	99.94	C
620.00-615.00			B	0.176	2.677		0.85	1	4.242			
			C	0.176	2.677		0.85	1	4.242			
T39	49.90	1388.03	A	0.176	2.677	40	0.85	1	4.243	498.85	99.77	C
615.00-610.00			B	0.176	2.677		0.85	1	4.243			
			C	0.176	2.677		0.85	1	4.243			
T40	49.90	1477.86	A	0.181	2.661	39	0.85	1	4.360	506.15	101.23	C
610.00-605.00			B	0.181	2.661		0.85	1	4.360			
			C	0.181	2.661		0.85	1	4.360			
T41	49.90	1477.86	A	0.181	2.661	39	0.85	1	4.361	505.30	101.06	C
605.00-600.00			B	0.181	2.661		0.85	1	4.361			
			C	0.181	2.661		0.85	1	4.361			
T42	49.90	1477.86	A	0.181	2.661	39	0.85	1	4.362	504.45	100.89	C
600.00-595.00			B	0.181	2.661		0.85	1	4.362			
			C	0.181	2.661		0.85	1	4.362			
T43	49.90	1477.86	A	0.181	2.661	39	0.85	1	4.363	503.60	100.72	C
595.00-590.00			B	0.181	2.661		0.85	1	4.363			
			C	0.181	2.661		0.85	1	4.363			
T44	49.90	1388.03	A	0.176	2.677	39	0.85	1	4.248	494.68	98.94	C
590.00-585.00			B	0.176	2.677		0.85	1	4.248			
			C	0.176	2.677		0.85	1	4.248			
T45	49.90	1388.03	A	0.176	2.677	39	0.85	1	4.249	493.85	98.77	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	100 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
585.00-580.00			B	0.176	2.677		0.85	1	4.249			
			C	0.176	2.677		0.85	1	4.249			
T46	199.60	5161.26	A	0.172	2.692	39	0.85	1	16.793	1956.97	97.85	C
580.00-560.00			B	0.172	2.692		0.85	1	16.793			
			C	0.172	2.692		0.85	1	16.793			
T47	199.60	5161.26	A	0.172	2.692	39	0.85	1	16.812	1944.28	97.21	C
560.00-540.00			B	0.172	2.692		0.85	1	16.812			
			C	0.172	2.692		0.85	1	16.812			
T48	49.90	1228.81	A	0.159	2.738	38	0.85	1	3.875	460.88	92.18	C
540.00-535.00			B	0.159	2.738		0.85	1	3.875			
			C	0.159	2.738		0.85	1	3.875			
T49	49.90	1290.32	A	0.172	2.692	38	0.85	1	4.206	483.26	96.65	C
535.00-530.00			B	0.172	2.692		0.85	1	4.206			
			C	0.172	2.692		0.85	1	4.206			
T50	49.90	1290.32	A	0.172	2.692	38	0.85	1	4.207	482.46	96.49	C
530.00-525.00			B	0.172	2.692		0.85	1	4.207			
			C	0.172	2.692		0.85	1	4.207			
T51	49.90	1290.32	A	0.172	2.692	38	0.85	1	4.207	481.67	96.33	C
525.00-520.00			B	0.172	2.692		0.85	1	4.207			
			C	0.172	2.692		0.85	1	4.207			
T52	199.60	5161.26	A	0.172	2.692	38	0.85	1	16.838	1918.88	95.94	C
520.00-500.00			B	0.172	2.692		0.85	1	16.838			
			C	0.172	2.692		0.85	1	16.838			
T53	199.60	5161.26	A	0.172	2.692	38	0.85	1	16.850	1906.73	95.34	C
500.00-480.00			B	0.172	2.692		0.85	1	16.850			
			C	0.172	2.692		0.85	1	16.850			
T54	199.60	5161.26	A	0.172	2.692	38	0.85	1	16.862	1895.07	94.75	C
480.00-460.00			B	0.172	2.692		0.85	1	16.862			
			C	0.172	2.692		0.85	1	16.862			
T55	199.60	5552.12	A	0.176	2.677	37	0.85	1	17.092	1894.37	94.72	C
460.00-440.00			B	0.176	2.677		0.85	1	17.092			
			C	0.176	2.677		0.85	1	17.092			
T56	49.90	1388.03	A	0.176	2.677	37	0.85	1	4.274	471.86	94.37	C
440.00-435.00			B	0.176	2.677		0.85	1	4.274			
			C	0.176	2.677		0.85	1	4.274			
T57	49.90	1388.03	A	0.176	2.677	37	0.85	1	4.274	471.23	94.25	C
435.00-430.00			B	0.176	2.677		0.85	1	4.274			
			C	0.176	2.677		0.85	1	4.274			
T58	49.90	1477.86	A	0.181	2.661	37	0.85	1	4.390	478.22	95.64	C
430.00-425.00			B	0.181	2.661		0.85	1	4.390			
			C	0.181	2.661		0.85	1	4.390			
T59	49.90	1477.86	A	0.181	2.661	37	0.85	1	4.391	477.60	95.52	C
425.00-420.00			B	0.181	2.661		0.85	1	4.391			
			C	0.181	2.661		0.85	1	4.391			
T60	49.90	1477.86	A	0.181	2.661	37	0.85	1	4.392	477.00	95.40	C
420.00-415.00			B	0.181	2.661		0.85	1	4.392			
			C	0.181	2.661		0.85	1	4.392			
T61	49.90	1477.86	A	0.181	2.661	37	0.85	1	4.392	476.41	95.28	C
415.00-410.00			B	0.181	2.661		0.85	1	4.392			
			C	0.181	2.661		0.85	1	4.392			
T62	49.90	1388.03	A	0.176	2.677	37	0.85	1	4.278	468.29	93.66	C
410.00-405.00			B	0.176	2.677		0.85	1	4.278			
			C	0.176	2.677		0.85	1	4.278			
T63	49.90	1388.03	A	0.176	2.677	37	0.85	1	4.278	467.75	93.55	C
405.00-400.00			B	0.176	2.677		0.85	1	4.278			
			C	0.176	2.677		0.85	1	4.278			
T64	226.80	5552.12	A	0.176	2.677	37	0.85	1	17.119	1917.99	95.90	C
400.00-380.00			B	0.176	2.677		0.85	1	17.119			
			C	0.176	2.677		0.85	1	17.119			
T65	226.80	5552.12	A	0.176	2.677	37	0.85	1	17.127	1910.64	95.53	C

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	101 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
380.00-360.00			B	0.176	2.677		0.85	1	17.127			
			C	0.176	2.677		0.85	1	17.127			
T66	231.39	5552.12	A	0.176	2.677	36	0.85	1	17.133	1938.44	96.92	C
360.00-340.00			B	0.176	2.677		0.85	1	17.133			
			C	0.176	2.677		0.85	1	17.133			
T67	237.00	5552.12	A	0.176	2.677	36	0.85	1	17.138	1975.28	98.76	C
340.00-320.00			B	0.176	2.677		0.85	1	17.138			
			C	0.176	2.677		0.85	1	17.138			
T68	237.00	5552.12	A	0.176	2.677	36	0.85	1	17.140	1973.12	98.66	C
320.00-300.00			B	0.176	2.677		0.85	1	17.140			
			C	0.176	2.677		0.85	1	17.140			
T69	237.00	5552.12	A	0.176	2.677	36	0.85	1	17.140	1973.37	98.67	C
300.00-280.00			B	0.176	2.677		0.85	1	17.140			
			C	0.176	2.677		0.85	1	17.140			
T70	59.25	1388.03	A	0.176	2.677	36	0.85	1	4.285	493.73	98.75	C
280.00-275.00			B	0.176	2.677		0.85	1	4.285			
			C	0.176	2.677		0.85	1	4.285			
T71	59.25	1388.03	A	0.176	2.677	36	0.85	1	4.284	493.96	98.79	C
275.00-270.00			B	0.176	2.677		0.85	1	4.284			
			C	0.176	2.677		0.85	1	4.284			
T72	59.25	1477.86	A	0.181	2.661	36	0.85	1	4.399	501.69	100.34	C
270.00-265.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T73	59.25	1477.86	A	0.181	2.661	36	0.85	1	4.399	502.02	100.40	C
265.00-260.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T74	59.25	1477.86	A	0.181	2.661	36	0.85	1	4.399	502.41	100.48	C
260.00-255.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T75	59.25	1477.86	A	0.181	2.661	37	0.85	1	4.398	502.85	100.57	C
255.00-250.00			B	0.181	2.661		0.85	1	4.398			
			C	0.181	2.661		0.85	1	4.398			
T76	59.25	1388.03	A	0.176	2.677	37	0.85	1	4.282	495.87	99.17	C
250.00-245.00			B	0.176	2.677		0.85	1	4.282			
			C	0.176	2.677		0.85	1	4.282			
T77	59.25	1388.03	A	0.176	2.677	37	0.85	1	4.282	496.41	99.28	C
245.00-240.00			B	0.176	2.677		0.85	1	4.282			
			C	0.176	2.677		0.85	1	4.282			
T78	237.00	5552.12	A	0.176	2.677	37	0.85	1	17.120	1992.00	99.60	C
240.00-220.00			B	0.176	2.677		0.85	1	17.120			
			C	0.176	2.677		0.85	1	17.120			
T79	237.00	5552.12	A	0.176	2.677	37	0.85	1	17.106	2005.27	100.26	C
220.00-200.00			B	0.176	2.677		0.85	1	17.106			
			C	0.176	2.677		0.85	1	17.106			
T80	379.04	5552.12	A	0.176	2.677	37	0.85	1	17.088	2431.73	121.59	A
200.00-180.00			B	0.176	2.677		0.85	1	17.088			
			C	0.176	2.677		0.85	1	17.088			
T81	501.40	5552.12	A	0.176	2.677	38	0.85	1	17.065	2780.08	139.00	A
180.00-160.00			B	0.176	2.677		0.85	1	17.065			
			C	0.176	2.677		0.85	1	17.065			
T82	501.40	5552.12	A	0.176	2.677	38	0.85	1	17.039	2814.89	140.74	A
160.00-140.00			B	0.176	2.677		0.85	1	17.039			
			C	0.176	2.677		0.85	1	17.039			
T83	501.40	5552.12	A	0.176	2.677	39	0.85	1	17.010	2929.39	146.47	A
140.00-120.00			B	0.176	2.677		0.85	1	17.010			
			C	0.176	2.677		0.85	1	17.010			
T84	125.35	1388.03	A	0.176	2.677	39	0.85	1	4.248	738.59	147.72	A
120.00-115.00			B	0.176	2.677		0.85	1	4.248			
			C	0.176	2.677		0.85	1	4.248			
T85	125.35	1388.03	A	0.176	2.677	39	0.85	1	4.246	741.06	148.21	A

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	102 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
115.00-110.00			B	0.176	2.677		0.85	1	4.246			
			C	0.176	2.677		0.85	1	4.246			
T86	125.35	1477.86	A	0.181	2.661	39	0.85	1	4.360	751.62	150.32	A
110.00-105.00			B	0.181	2.661		0.85	1	4.360			
			C	0.181	2.661		0.85	1	4.360			
T87	125.35	1477.86	A	0.181	2.661	40	0.85	1	4.358	754.00	150.80	A
105.00-100.00			B	0.181	2.661		0.85	1	4.358			
			C	0.181	2.661		0.85	1	4.358			
T88	125.35	1477.86	A	0.181	2.661	40	0.85	1	4.356	756.26	151.25	A
100.00-95.00			B	0.181	2.661		0.85	1	4.356			
			C	0.181	2.661		0.85	1	4.356			
T89	125.35	1477.86	A	0.181	2.661	40	0.85	1	4.355	758.35	151.67	A
95.00-90.00			B	0.181	2.661		0.85	1	4.355			
			C	0.181	2.661		0.85	1	4.355			
T90	125.35	1388.03	A	0.176	2.677	40	0.85	1	4.238	751.98	150.40	A
90.00-85.00			B	0.176	2.677		0.85	1	4.238			
			C	0.176	2.677		0.85	1	4.238			
T91	125.35	1388.03	A	0.176	2.677	40	0.85	1	4.237	753.57	150.71	A
85.00-80.00			B	0.176	2.677		0.85	1	4.237			
			C	0.176	2.677		0.85	1	4.237			
T92	501.40	5552.12	A	0.176	2.677	40	0.85	1	16.940	3023.24	151.16	A
80.00-60.00			B	0.176	2.677		0.85	1	16.940			
			C	0.176	2.677		0.85	1	16.940			
T93	501.40	5552.12	A	0.176	2.677	40	0.85	1	16.957	3000.31	150.02	A
60.00-40.00			B	0.176	2.677		0.85	1	16.957			
			C	0.176	2.677		0.85	1	16.957			
T94	501.40	5552.12	A	0.176	2.677	38	0.85	1	17.054	2794.74	139.74	A
40.00-20.00			B	0.176	2.677		0.85	1	17.054			
			C	0.176	2.677		0.85	1	17.054			
T95	125.35	1388.03	A	0.176	2.677	41	0.85	1	4.231	761.36	152.27	A
20.00-15.00			B	0.176	2.677		0.85	1	4.231			
			C	0.176	2.677		0.85	1	4.231			
T96	200.56	2850.83	A	0.248	2.443	42	0.85	1	11.841	1647.10	205.89	A
15.00-7.00			B	0.248	2.443		0.85	1	11.841			
			C	0.248	2.443		0.85	1	11.841			
T97 7.00-0.00	175.49	4952.76	A	1	2.1	44	0.85	1	37.895	2453.85*	350.55	C
			B	1	2.1		0.85	1	37.895			
			C	1	2.1		0.85	1	37.895			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					127380.10		

### Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
L1	1734.76	13864.88	A	1	1.2	11	1	1	125.237	1370.19	22.06	C
1151.90-1089.80			B	1	1.2		1	1	125.237			
			C	1	1.2		1	1	125.237			
T1	136.89	5282.80	A	0.648	1.782	11	1	1	24.480	410.45	83.77	C
1089.80-1084.90			B	0.648	1.782		1	1	24.480			
			C	0.648	1.782		1	1	24.480			
T2	136.89	2168.63	A	0.447	1.978	11	1	1	13.030	257.99	52.65	C

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	103 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
1084.90-1080.00			B	0.447	1.978		1	1	13.030			
			C	0.447	1.978		1	1	13.030			
T3	805.37	8321.91	A	0.438	1.994	11	1	1	51.788	1104.76	55.24	C
1080.00-1060.00			B	0.438	1.994		1	1	51.788			
			C	0.438	1.994		1	1	51.788			
T4	938.21	8322.07	A	0.438	1.994	11	1	1	51.789	1136.99	56.85	C
1060.00-1040.00			B	0.438	1.994		1	1	51.789			
			C	0.438	1.994		1	1	51.789			
T5	938.24	8322.26	A	0.438	1.994	10	1	1	51.791	1130.87	56.54	C
1040.00-1020.00			B	0.438	1.994		1	1	51.791			
			C	0.438	1.994		1	1	51.791			
T6	938.28	8322.47	A	0.438	1.994	10	1	1	51.792	1124.67	56.23	C
1020.00-1000.00			B	0.438	1.994		1	1	51.792			
			C	0.438	1.994		1	1	51.792			
T7	1206.31	8322.72	A	0.438	1.994	10	1	1	51.794	1201.40	60.07	C
1000.00-980.00			B	0.438	1.994		1	1	51.794			
			C	0.438	1.994		1	1	51.794			
T8	1273.38	8323.01	A	0.438	1.994	10	1	1	51.795	1215.22	60.76	C
980.00-960.00			B	0.438	1.994		1	1	51.795			
			C	0.438	1.994		1	1	51.795			
T9	1272.69	9427.82	A	0.447	1.978	10	1	1	53.499	1225.40	61.27	C
960.00-940.00			B	0.447	1.978		1	1	53.499			
			C	0.447	1.978		1	1	53.499			
T10	317.65	2354.80	A	0.446	1.98	10	1	1	13.346	304.90	60.98	C
940.00-935.00			B	0.446	1.98		1	1	13.346			
			C	0.446	1.98		1	1	13.346			
T11	317.44	2353.93	A	0.446	1.98	10	1	1	13.340	304.37	60.87	C
935.00-930.00			B	0.446	1.98		1	1	13.340			
			C	0.446	1.98		1	1	13.340			
T12	317.23	2461.00	A	0.45	1.973	10	1	1	13.495	305.19	61.04	C
930.00-925.00			B	0.45	1.973		1	1	13.495			
			C	0.45	1.973		1	1	13.495			
T13	317.02	2460.11	A	0.45	1.973	10	1	1	13.490	304.66	60.93	C
925.00-920.00			B	0.45	1.973		1	1	13.490			
			C	0.45	1.973		1	1	13.490			
T14	316.80	2459.23	A	0.45	1.973	10	1	1	13.484	304.12	60.82	C
920.00-915.00			B	0.45	1.973		1	1	13.484			
			C	0.45	1.973		1	1	13.484			
T15	316.59	2458.34	A	0.45	1.974	10	1	1	13.479	303.59	60.72	C
915.00-910.00			B	0.45	1.974		1	1	13.479			
			C	0.45	1.974		1	1	13.479			
T16	316.38	2349.55	A	0.445	1.981	10	1	1	13.313	301.72	60.34	C
910.00-905.00			B	0.445	1.981		1	1	13.313			
			C	0.445	1.981		1	1	13.313			
T17	316.16	2348.66	A	0.445	1.981	10	1	1	13.307	301.19	60.24	C
905.00-900.00			B	0.445	1.981		1	1	13.307			
			C	0.445	1.981		1	1	13.307			
T18	1262.49	9385.73	A	0.445	1.982	10	1	1	53.172	1199.39	59.97	C
900.00-880.00			B	0.445	1.982		1	1	53.172			
			C	0.445	1.982		1	1	53.172			
T19	1455.54	9371.31	A	0.444	1.983	10	1	1	53.081	1243.18	62.16	C
880.00-860.00			B	0.444	1.983		1	1	53.081			
			C	0.444	1.983		1	1	53.081			
T20	1473.14	9356.68	A	0.444	1.984	10	1	1	52.989	1239.87	61.99	C
860.00-840.00			B	0.444	1.984		1	1	52.989			
			C	0.444	1.984		1	1	52.989			
T21	1468.84	9341.85	A	0.443	1.985	10	1	1	52.896	1230.65	61.53	C
840.00-820.00			B	0.443	1.985		1	1	52.896			
			C	0.443	1.985		1	1	52.896			
T22	1464.50	9326.84	A	0.443	1.986	10	1	1	52.801	1221.35	61.07	C



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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
820.00-800.00			B	0.443	1.986		1	1	52.801			
			C	0.443	1.986		1	1	52.801			
T23	1460.09	9311.63	A	0.442	1.987	10	1	1	52.705	1211.97	60.60	C
800.00-780.00			B	0.442	1.987		1	1	52.705			
			C	0.442	1.987		1	1	52.705			
T24	364.33	2325.51	A	0.442	1.987	10	1	1	13.161	301.52	60.30	C
780.00-775.00			B	0.442	1.987		1	1	13.161			
			C	0.442	1.987		1	1	13.161			
T25	364.05	2324.54	A	0.441	1.988	10	1	1	13.155	300.92	60.18	C
775.00-770.00			B	0.441	1.988		1	1	13.155			
			C	0.441	1.988		1	1	13.155			
T26	363.77	2431.19	A	0.446	1.981	10	1	1	13.309	301.49	60.30	C
770.00-765.00			B	0.446	1.981		1	1	13.309			
			C	0.446	1.981		1	1	13.309			
T27	363.49	2430.21	A	0.445	1.981	10	1	1	13.302	300.89	60.18	C
765.00-760.00			B	0.445	1.981		1	1	13.302			
			C	0.445	1.981		1	1	13.302			
T28	363.21	2429.23	A	0.445	1.981	10	1	1	13.296	300.29	60.06	C
760.00-755.00			B	0.445	1.981		1	1	13.296			
			C	0.445	1.981		1	1	13.296			
T29	362.92	2428.24	A	0.445	1.982	10	1	1	13.290	299.69	59.94	C
755.00-750.00			B	0.445	1.982		1	1	13.290			
			C	0.445	1.982		1	1	13.290			
T30	362.64	2319.68	A	0.441	1.989	10	1	1	13.124	297.95	59.59	C
750.00-745.00			B	0.441	1.989		1	1	13.124			
			C	0.441	1.989		1	1	13.124			
T31	362.36	2318.70	A	0.441	1.989	10	1	1	13.118	297.35	59.47	C
745.00-740.00			B	0.441	1.989		1	1	13.118			
			C	0.441	1.989		1	1	13.118			
T32	1446.58	9264.95	A	0.44	1.99	10	1	1	52.411	1183.41	59.17	C
740.00-720.00			B	0.44	1.99		1	1	52.411			
			C	0.44	1.99		1	1	52.411			
T33	1441.99	9249.08	A	0.439	1.991	9	1	1	52.311	1173.78	58.69	C
720.00-700.00			B	0.439	1.991		1	1	52.311			
			C	0.439	1.991		1	1	52.311			
T34	1437.36	9233.09	A	0.439	1.992	9	1	1	52.209	1164.12	58.21	C
700.00-680.00			B	0.439	1.992		1	1	52.209			
			C	0.439	1.992		1	1	52.209			
T35	1432.70	9216.98	A	0.438	1.993	9	1	1	52.108	1154.43	57.72	C
680.00-660.00			B	0.438	1.993		1	1	52.108			
			C	0.438	1.993		1	1	52.108			
T36	1428.02	9200.80	A	0.437	1.995	9	1	1	52.005	1144.75	57.24	C
660.00-640.00			B	0.437	1.995		1	1	52.005			
			C	0.437	1.995		1	1	52.005			
T37	1423.33	10020.39	A	0.443	1.985	9	1	1	53.052	1145.03	57.25	C
640.00-620.00			B	0.443	1.985		1	1	53.052			
			C	0.443	1.985		1	1	53.052			
T38	355.10	2502.53	A	0.442	1.986	9	1	1	13.237	284.66	56.93	C
620.00-615.00			B	0.442	1.986		1	1	13.237			
			C	0.442	1.986		1	1	13.237			
T39	354.81	2501.50	A	0.442	1.986	9	1	1	13.230	284.06	56.81	C
615.00-610.00			B	0.442	1.986		1	1	13.230			
			C	0.442	1.986		1	1	13.230			
T40	354.51	2607.74	A	0.446	1.98	9	1	1	13.383	284.55	56.91	C
610.00-605.00			B	0.446	1.98		1	1	13.383			
			C	0.446	1.98		1	1	13.383			
T41	354.22	2606.70	A	0.446	1.98	9	1	1	13.376	283.95	56.79	C
605.00-600.00			B	0.446	1.98		1	1	13.376			
			C	0.446	1.98		1	1	13.376			
T42	353.93	2605.67	A	0.446	1.98	9	1	1	13.370	283.34	56.67	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
600.00-595.00			B	0.446	1.98		1	1	13.370			
			C	0.446	1.98		1	1	13.370			
T43	353.64	2604.64	A	0.446	1.98	9	1	1	13.363	282.74	56.55	C
595.00-590.00			B	0.446	1.98		1	1	13.363			
			C	0.446	1.98		1	1	13.363			
T44	353.34	2496.39	A	0.441	1.988	9	1	1	13.198	281.05	56.21	C
590.00-585.00			B	0.441	1.988		1	1	13.198			
			C	0.441	1.988		1	1	13.198			
T45	353.05	2495.37	A	0.441	1.988	9	1	1	13.192	280.45	56.09	C
585.00-580.00			B	0.441	1.988		1	1	13.192			
			C	0.441	1.988		1	1	13.192			
T46	1409.31	9543.68	A	0.438	1.994	9	1	1	52.128	1110.99	55.55	C
580.00-560.00			B	0.438	1.994		1	1	52.128			
			C	0.438	1.994		1	1	52.128			
T47	1404.71	9527.67	A	0.437	1.995	9	1	1	52.047	1101.80	55.09	C
560.00-540.00			B	0.437	1.995		1	1	52.047			
			C	0.437	1.995		1	1	52.047			
T48	350.47	2179.22	A	0.38	2.104	9	1	1	11.016	258.24	51.65	C
540.00-535.00			B	0.38	2.104		1	1	11.016			
			C	0.38	2.104		1	1	11.016			
T49	350.19	2378.47	A	0.437	1.996	9	1	1	12.990	273.44	54.69	C
535.00-530.00			B	0.437	1.996		1	1	12.990			
			C	0.437	1.996		1	1	12.990			
T50	349.91	2377.49	A	0.436	1.996	9	1	1	12.984	272.88	54.58	C
530.00-525.00			B	0.436	1.996		1	1	12.984			
			C	0.436	1.996		1	1	12.984			
T51	349.63	2376.52	A	0.436	1.997	9	1	1	12.978	272.31	54.46	C
525.00-520.00			B	0.436	1.997		1	1	12.978			
			C	0.436	1.997		1	1	12.978			
T52	1395.75	9496.50	A	0.436	1.997	9	1	1	51.850	1083.71	54.19	C
520.00-500.00			B	0.436	1.997		1	1	51.850			
			C	0.436	1.997		1	1	51.850			
T53	1391.46	9481.53	A	0.435	1.998	9	1	1	51.755	1075.09	53.75	C
500.00-480.00			B	0.435	1.998		1	1	51.755			
			C	0.435	1.998		1	1	51.755			
T54	1387.32	9467.14	A	0.435	1.999	9	1	1	51.664	1066.83	53.34	C
480.00-460.00			B	0.435	1.999		1	1	51.664			
			C	0.435	1.999		1	1	51.664			
T55	1383.40	9880.58	A	0.437	1.995	9	1	1	52.150	1063.68	53.18	C
460.00-440.00			B	0.437	1.995		1	1	52.150			
			C	0.437	1.995		1	1	52.150			
T56	345.27	2468.11	A	0.437	1.996	9	1	1	13.020	264.73	52.95	C
440.00-435.00			B	0.437	1.996		1	1	13.020			
			C	0.437	1.996		1	1	13.020			
T57	345.04	2467.32	A	0.437	1.996	9	1	1	13.015	264.28	52.86	C
435.00-430.00			B	0.437	1.996		1	1	13.015			
			C	0.437	1.996		1	1	13.015			
T58	344.82	2573.43	A	0.441	1.989	9	1	1	13.167	264.87	52.97	C
430.00-425.00			B	0.441	1.989		1	1	13.167			
			C	0.441	1.989		1	1	13.167			
T59	344.61	2572.67	A	0.441	1.989	9	1	1	13.162	264.44	52.89	C
425.00-420.00			B	0.441	1.989		1	1	13.162			
			C	0.441	1.989		1	1	13.162			
T60	344.40	2571.92	A	0.441	1.989	9	1	1	13.158	264.02	52.80	C
420.00-415.00			B	0.441	1.989		1	1	13.158			
			C	0.441	1.989		1	1	13.158			
T61	344.19	2571.19	A	0.44	1.989	9	1	1	13.153	263.61	52.72	C
415.00-410.00			B	0.44	1.989		1	1	13.153			
			C	0.44	1.989		1	1	13.153			
T62	343.99	2463.64	A	0.436	1.997	9	1	1	12.991	262.19	52.44	C

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	106 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
410.00-405.00			B	0.436	1.997		1	1	12.991			
			C	0.436	1.997		1	1	12.991			
T63	343.80	2462.96	A	0.436	1.997	9	1	1	12.987	261.81	52.36	C
405.00-400.00			B	0.436	1.997		1	1	12.987			
			C	0.436	1.997		1	1	12.987			
T64	1561.88	9845.44	A	0.436	1.998	8	1	1	51.908	1087.01	54.35	C
400.00-380.00			B	0.436	1.998		1	1	51.908			
			C	0.436	1.998		1	1	51.908			
T65	1558.95	9836.50	A	0.435	1.998	8	1	1	51.851	1081.78	54.09	C
380.00-360.00			B	0.435	1.998		1	1	51.851			
			C	0.435	1.998		1	1	51.851			
T66	1646.87	9829.37	A	0.435	1.999	8	1	1	51.806	1099.23	54.96	C
360.00-340.00			B	0.435	1.999		1	1	51.806			
			C	0.435	1.999		1	1	51.806			
T67	1755.30	9824.38	A	0.435	1.999	8	1	1	51.775	1122.61	56.13	C
340.00-320.00			B	0.435	1.999		1	1	51.775			
			C	0.435	1.999		1	1	51.775			
T68	1754.35	9821.84	A	0.435	1.999	8	1	1	51.759	1121.08	56.05	C
320.00-300.00			B	0.435	1.999		1	1	51.759			
			C	0.435	1.999		1	1	51.759			
T69	1754.46	9822.14	A	0.435	1.999	8	1	1	51.760	1121.26	56.06	C
300.00-280.00			B	0.435	1.999		1	1	51.760			
			C	0.435	1.999		1	1	51.760			
T70	438.78	2455.98	A	0.435	1.999	8	1	1	12.943	280.59	56.12	C
280.00-275.00			B	0.435	1.999		1	1	12.943			
			C	0.435	1.999		1	1	12.943			
T71	438.89	2456.26	A	0.435	1.999	8	1	1	12.945	280.75	56.15	C
275.00-270.00			B	0.435	1.999		1	1	12.945			
			C	0.435	1.999		1	1	12.945			
T72	439.01	2563.36	A	0.439	1.992	8	1	1	13.104	281.78	56.36	C
270.00-265.00			B	0.439	1.992		1	1	13.104			
			C	0.439	1.992		1	1	13.104			
T73	439.15	2563.75	A	0.439	1.992	8	1	1	13.106	282.02	56.40	C
265.00-260.00			B	0.439	1.992		1	1	13.106			
			C	0.439	1.992		1	1	13.106			
T74	439.32	2564.20	A	0.439	1.991	8	1	1	13.109	282.29	56.46	C
260.00-255.00			B	0.439	1.991		1	1	13.109			
			C	0.439	1.991		1	1	13.109			
T75	439.51	2564.71	A	0.439	1.991	8	1	1	13.112	282.60	56.52	C
255.00-250.00			B	0.439	1.991		1	1	13.112			
			C	0.439	1.991		1	1	13.112			
T76	439.72	2458.49	A	0.435	1.998	8	1	1	12.959	282.11	56.42	C
250.00-245.00			B	0.435	1.998		1	1	12.959			
			C	0.435	1.998		1	1	12.959			
T77	439.96	2459.12	A	0.435	1.998	8	1	1	12.963	282.49	56.50	C
245.00-240.00			B	0.435	1.998		1	1	12.963			
			C	0.435	1.998		1	1	12.963			
T78	1762.61	9843.91	A	0.436	1.998	8	1	1	51.898	1134.50	56.72	C
240.00-220.00			B	0.436	1.998		1	1	51.898			
			C	0.436	1.998		1	1	51.898			
T79	1768.39	9859.38	A	0.436	1.997	9	1	1	51.996	1143.95	57.20	C
220.00-200.00			B	0.436	1.997		1	1	51.996			
			C	0.436	1.997		1	1	51.996			
T80	2737.77	9879.41	A	0.437	1.995	9	1	1	52.123	1406.23	70.31	C
200.00-180.00			B	0.437	1.995		1	1	52.123			
			C	0.437	1.995		1	1	52.123			
T81	3568.40	9904.03	A	0.438	1.994	9	1	1	52.278	1638.99	81.95	C
180.00-160.00			B	0.438	1.994		1	1	52.278			
			C	0.438	1.994		1	1	52.278			
T82	3588.56	9932.88	A	0.439	1.992	9	1	1	52.460	1663.34	83.17	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	107 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
160.00-140.00			B	0.439	1.992		1	1	52.460			
			C	0.439	1.992		1	1	52.460			
T83	3610.94	9964.88	A	0.441	1.989	9	1	1	52.662	1690.56	84.53	C
140.00-120.00			B	0.441	1.989		1	1	52.662			
			C	0.441	1.989		1	1	52.662			
T84	906.35	2496.38	A	0.441	1.988	9	1	1	13.198	427.06	85.41	C
120.00-115.00			B	0.441	1.988		1	1	13.198			
			C	0.441	1.988		1	1	13.198			
T85	907.77	2498.42	A	0.442	1.987	9	1	1	13.211	428.82	85.76	C
115.00-110.00			B	0.442	1.987		1	1	13.211			
			C	0.442	1.987		1	1	13.211			
T86	909.17	2607.68	A	0.446	1.98	9	1	1	13.382	430.51	86.10	C
110.00-105.00			B	0.446	1.98		1	1	13.382			
			C	0.446	1.98		1	1	13.382			
T87	910.52	2609.63	A	0.447	1.979	9	1	1	13.395	432.18	86.44	C
105.00-100.00			B	0.447	1.979		1	1	13.395			
			C	0.447	1.979		1	1	13.395			
T88	911.80	2611.49	A	0.447	1.979	9	1	1	13.406	433.76	86.75	C
100.00-95.00			B	0.447	1.979		1	1	13.406			
			C	0.447	1.979		1	1	13.406			
T89	912.99	2613.20	A	0.447	1.978	9	1	1	13.417	435.24	87.05	C
95.00-90.00			B	0.447	1.978		1	1	13.417			
			C	0.447	1.978		1	1	13.417			
T90	914.06	2507.41	A	0.443	1.985	9	1	1	13.267	436.58	87.32	C
90.00-85.00			B	0.443	1.985		1	1	13.267			
			C	0.443	1.985		1	1	13.267			
T91	914.97	2508.71	A	0.443	1.985	9	1	1	13.276	437.71	87.54	C
85.00-80.00			B	0.443	1.985		1	1	13.276			
			C	0.443	1.985		1	1	13.276			
T92	3665.01	10042.20	A	0.444	1.984	9	1	1	53.148	1757.26	87.86	C
80.00-60.00			B	0.444	1.984		1	1	53.148			
			C	0.444	1.984		1	1	53.148			
T93	3651.86	10023.39	A	0.443	1.985	9	1	1	53.030	1740.91	87.05	C
60.00-40.00			B	0.443	1.985		1	1	53.030			
			C	0.443	1.985		1	1	53.030			
T94	3576.90	9916.20	A	0.439	1.993	9	1	1	52.355	1649.24	82.46	C
40.00-20.00			B	0.439	1.993		1	1	52.355			
			C	0.439	1.993		1	1	52.355			
T95	861.58	2432.33	A	0.431	2.006	9	1	1	12.793	435.72	87.14	C
20.00-15.00			B	0.431	2.006		1	1	12.793			
			C	0.431	2.006		1	1	12.793			
T96	1324.04	5622.89	A	0.522	1.874	10	1	1	28.423	755.88	94.48	C
15.00-7.00			B	0.522	1.874		1	1	28.423			
			C	0.522	1.874		1	1	28.423			
T97 7.00-0.00	1032.54	8698.13	A	1	2.1	10	1	1	56.518	608.21*	86.89	C
			B	1	2.1		1	1	56.518			
			C	1	2.1		1	1	56.518			
Sum Weight:	99360.85	544129.49			*2.1A <sub>g</sub> limit					69247.69		

**Tower Forces - With Ice - Wind 60 To Face**

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	108 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
L1	1734.76	13864.88	A	1	1.2	11	1	1	125.237	1370.19	22.06	C
1151.90-1089.80			B	1	1.2		1	1	125.237			
			C	1	1.2		1	1	125.237			
T1	136.89	5282.80	A	0.648	1.782	11	0.8	1	21.667	365.14	74.52	C
1089.80-1084.90			B	0.648	1.782		0.8	1	21.667			
			C	0.648	1.782		0.8	1	21.667			
T2	136.89	2168.63	A	0.447	1.978	11	0.8	1	12.710	252.27	51.48	C
1084.90-1080.00			B	0.447	1.978		0.8	1	12.710			
			C	0.447	1.978		0.8	1	12.710			
T3	805.37	8321.91	A	0.438	1.994	11	0.8	1	50.507	1081.77	54.09	C
1080.00-1060.00			B	0.438	1.994		0.8	1	50.507			
			C	0.438	1.994		0.8	1	50.507			
T4	938.21	8322.07	A	0.438	1.994	11	0.8	1	50.508	1114.12	55.71	C
1060.00-1040.00			B	0.438	1.994		0.8	1	50.508			
			C	0.438	1.994		0.8	1	50.508			
T5	938.24	8322.26	A	0.438	1.994	10	0.8	1	50.509	1108.12	55.41	C
1040.00-1020.00			B	0.438	1.994		0.8	1	50.509			
			C	0.438	1.994		0.8	1	50.509			
T6	938.28	8322.47	A	0.438	1.994	10	0.8	1	50.511	1102.05	55.10	C
1020.00-1000.00			B	0.438	1.994		0.8	1	50.511			
			C	0.438	1.994		0.8	1	50.511			
T7	1206.31	8322.72	A	0.438	1.994	10	0.8	1	50.512	1178.91	58.95	C
1000.00-980.00			B	0.438	1.994		0.8	1	50.512			
			C	0.438	1.994		0.8	1	50.512			
T8	1273.38	8323.01	A	0.438	1.994	10	0.8	1	50.514	1192.86	59.64	C
980.00-960.00			B	0.438	1.994		0.8	1	50.514			
			C	0.438	1.994		0.8	1	50.514			
T9	1272.69	9427.82	A	0.447	1.978	10	0.8	1	52.225	1203.47	60.17	C
960.00-940.00			B	0.447	1.978		0.8	1	52.225			
			C	0.447	1.978		0.8	1	52.225			
T10	317.65	2354.80	A	0.446	1.98	10	0.8	1	13.028	299.45	59.89	C
940.00-935.00			B	0.446	1.98		0.8	1	13.028			
			C	0.446	1.98		0.8	1	13.028			
T11	317.44	2353.93	A	0.446	1.98	10	0.8	1	13.022	298.93	59.79	C
935.00-930.00			B	0.446	1.98		0.8	1	13.022			
			C	0.446	1.98		0.8	1	13.022			
T12	317.23	2461.00	A	0.45	1.973	10	0.8	1	13.178	299.77	59.95	C
930.00-925.00			B	0.45	1.973		0.8	1	13.178			
			C	0.45	1.973		0.8	1	13.178			
T13	317.02	2460.11	A	0.45	1.973	10	0.8	1	13.172	299.24	59.85	C
925.00-920.00			B	0.45	1.973		0.8	1	13.172			
			C	0.45	1.973		0.8	1	13.172			
T14	316.80	2459.23	A	0.45	1.973	10	0.8	1	13.167	298.72	59.74	C
920.00-915.00			B	0.45	1.973		0.8	1	13.167			
			C	0.45	1.973		0.8	1	13.167			
T15	316.59	2458.34	A	0.45	1.974	10	0.8	1	13.161	298.19	59.64	C
915.00-910.00			B	0.45	1.974		0.8	1	13.161			
			C	0.45	1.974		0.8	1	13.161			
T16	316.38	2349.55	A	0.445	1.981	10	0.8	1	12.995	296.32	59.26	C
910.00-905.00			B	0.445	1.981		0.8	1	12.995			
			C	0.445	1.981		0.8	1	12.995			
T17	316.16	2348.66	A	0.445	1.981	10	0.8	1	12.989	295.79	59.16	C
905.00-900.00			B	0.445	1.981		0.8	1	12.989			
			C	0.445	1.981		0.8	1	12.989			
T18	1262.49	9385.73	A	0.445	1.982	10	0.8	1	51.901	1177.86	58.89	C
900.00-880.00			B	0.445	1.982		0.8	1	51.901			
			C	0.445	1.982		0.8	1	51.901			
T19	1455.54	9371.31	A	0.444	1.983	10	0.8	1	51.810	1221.78	61.09	C
880.00-860.00			B	0.444	1.983		0.8	1	51.810			
			C	0.444	1.983		0.8	1	51.810			

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	109 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T20 860.00-840.00	1473.14	9356.68	A	0.444	1.984	10	0.8	1	51.718	1218.59	60.93	C
			B	0.444	1.984		0.8	1	51.718			
			C	0.444	1.984		0.8	1	51.718			
T21 840.00-820.00	1468.84	9341.85	A	0.443	1.985	10	0.8	1	51.625	1209.50	60.47	C
			B	0.443	1.985		0.8	1	51.625			
			C	0.443	1.985		0.8	1	51.625			
T22 820.00-800.00	1464.50	9326.84	A	0.443	1.986	10	0.8	1	51.530	1200.32	60.02	C
			B	0.443	1.986		0.8	1	51.530			
			C	0.443	1.986		0.8	1	51.530			
T23 800.00-780.00	1460.09	9311.63	A	0.442	1.987	10	0.8	1	51.434	1191.07	59.55	C
			B	0.442	1.987		0.8	1	51.434			
			C	0.442	1.987		0.8	1	51.434			
T24 780.00-775.00	364.33	2325.51	A	0.442	1.987	10	0.8	1	12.843	296.31	59.26	C
			B	0.442	1.987		0.8	1	12.843			
			C	0.442	1.987		0.8	1	12.843			
T25 775.00-770.00	364.05	2324.54	A	0.441	1.988	10	0.8	1	12.837	295.73	59.15	C
			B	0.441	1.988		0.8	1	12.837			
			C	0.441	1.988		0.8	1	12.837			
T26 770.00-765.00	363.77	2431.19	A	0.446	1.981	10	0.8	1	12.991	296.32	59.26	C
			B	0.446	1.981		0.8	1	12.991			
			C	0.446	1.981		0.8	1	12.991			
T27 765.00-760.00	363.49	2430.21	A	0.445	1.981	10	0.8	1	12.985	295.73	59.15	C
			B	0.445	1.981		0.8	1	12.985			
			C	0.445	1.981		0.8	1	12.985			
T28 760.00-755.00	363.21	2429.23	A	0.445	1.981	10	0.8	1	12.979	295.14	59.03	C
			B	0.445	1.981		0.8	1	12.979			
			C	0.445	1.981		0.8	1	12.979			
T29 755.00-750.00	362.92	2428.24	A	0.445	1.982	10	0.8	1	12.972	294.55	58.91	C
			B	0.445	1.982		0.8	1	12.972			
			C	0.445	1.982		0.8	1	12.972			
T30 750.00-745.00	362.64	2319.68	A	0.441	1.989	10	0.8	1	12.807	292.79	58.56	C
			B	0.441	1.989		0.8	1	12.807			
			C	0.441	1.989		0.8	1	12.807			
T31 745.00-740.00	362.36	2318.70	A	0.441	1.989	10	0.8	1	12.801	292.20	58.44	C
			B	0.441	1.989		0.8	1	12.801			
			C	0.441	1.989		0.8	1	12.801			
T32 740.00-720.00	1446.58	9264.95	A	0.44	1.99	10	0.8	1	51.140	1162.90	58.15	C
			B	0.44	1.99		0.8	1	51.140			
			C	0.44	1.99		0.8	1	51.140			
T33 720.00-700.00	1441.99	9249.08	A	0.439	1.991	9	0.8	1	51.040	1153.41	57.67	C
			B	0.439	1.991		0.8	1	51.040			
			C	0.439	1.991		0.8	1	51.040			
T34 700.00-680.00	1437.36	9233.09	A	0.439	1.992	9	0.8	1	50.939	1143.88	57.19	C
			B	0.439	1.992		0.8	1	50.939			
			C	0.439	1.992		0.8	1	50.939			
T35 680.00-660.00	1432.70	9216.98	A	0.438	1.993	9	0.8	1	50.837	1134.33	56.72	C
			B	0.438	1.993		0.8	1	50.837			
			C	0.438	1.993		0.8	1	50.837			
T36 660.00-640.00	1428.02	9200.80	A	0.437	1.995	9	0.8	1	50.735	1124.78	56.24	C
			B	0.437	1.995		0.8	1	50.735			
			C	0.437	1.995		0.8	1	50.735			
T37 640.00-620.00	1423.33	10020.39	A	0.443	1.985	9	0.8	1	51.786	1125.39	56.27	C
			B	0.443	1.985		0.8	1	51.786			
			C	0.443	1.985		0.8	1	51.786			
T38 620.00-615.00	355.10	2502.53	A	0.442	1.986	9	0.8	1	12.921	279.78	55.96	C
			B	0.442	1.986		0.8	1	12.921			
			C	0.442	1.986		0.8	1	12.921			
T39 615.00-610.00	354.81	2501.50	A	0.442	1.986	9	0.8	1	12.914	279.18	55.84	C
			B	0.442	1.986		0.8	1	12.914			
			C	0.442	1.986		0.8	1	12.914			

# tnxTower

**American Tower**  
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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	110 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T40 610.00-605.00	354.51	2607.74	A	0.446	1.98	9	0.8	1	13.067	279.70	55.94	C
			B	0.446	1.98		0.8	1	13.067			
			C	0.446	1.98		0.8	1	13.067			
T41 605.00-600.00	354.22	2606.70	A	0.446	1.98	9	0.8	1	13.060	279.10	55.82	C
			B	0.446	1.98		0.8	1	13.060			
			C	0.446	1.98		0.8	1	13.060			
T42 600.00-595.00	353.93	2605.67	A	0.446	1.98	9	0.8	1	13.054	278.51	55.70	C
			B	0.446	1.98		0.8	1	13.054			
			C	0.446	1.98		0.8	1	13.054			
T43 595.00-590.00	353.64	2604.64	A	0.446	1.98	9	0.8	1	13.047	277.91	55.58	C
			B	0.446	1.98		0.8	1	13.047			
			C	0.446	1.98		0.8	1	13.047			
T44 590.00-585.00	353.34	2496.39	A	0.441	1.988	9	0.8	1	12.882	276.21	55.24	C
			B	0.441	1.988		0.8	1	12.882			
			C	0.441	1.988		0.8	1	12.882			
T45 585.00-580.00	353.05	2495.37	A	0.441	1.988	9	0.8	1	12.876	275.62	55.12	C
			B	0.441	1.988		0.8	1	12.876			
			C	0.441	1.988		0.8	1	12.876			
T46 580.00-560.00	1409.31	9543.68	A	0.438	1.994	9	0.8	1	50.861	1091.67	54.58	C
			B	0.438	1.994		0.8	1	50.861			
			C	0.438	1.994		0.8	1	50.861			
T47 560.00-540.00	1404.71	9527.67	A	0.437	1.995	9	0.8	1	50.779	1082.59	54.13	C
			B	0.437	1.995		0.8	1	50.779			
			C	0.437	1.995		0.8	1	50.779			
T48 540.00-535.00	350.47	2179.22	A	0.38	2.104	9	0.8	1	10.699	253.20	50.64	C
			B	0.38	2.104		0.8	1	10.699			
			C	0.38	2.104		0.8	1	10.699			
T49 535.00-530.00	350.19	2378.47	A	0.437	1.996	9	0.8	1	12.673	268.67	53.73	C
			B	0.437	1.996		0.8	1	12.673			
			C	0.437	1.996		0.8	1	12.673			
T50 530.00-525.00	349.91	2377.49	A	0.436	1.996	9	0.8	1	12.667	268.11	53.62	C
			B	0.436	1.996		0.8	1	12.667			
			C	0.436	1.996		0.8	1	12.667			
T51 525.00-520.00	349.63	2376.52	A	0.436	1.997	9	0.8	1	12.661	267.56	53.51	C
			B	0.436	1.997		0.8	1	12.661			
			C	0.436	1.997		0.8	1	12.661			
T52 520.00-500.00	1395.75	9496.50	A	0.436	1.997	9	0.8	1	50.582	1064.76	53.24	C
			B	0.436	1.997		0.8	1	50.582			
			C	0.436	1.997		0.8	1	50.582			
T53 500.00-480.00	1391.46	9481.53	A	0.435	1.998	9	0.8	1	50.487	1056.26	52.81	C
			B	0.435	1.998		0.8	1	50.487			
			C	0.435	1.998		0.8	1	50.487			
T54 480.00-460.00	1387.32	9467.14	A	0.435	1.999	9	0.8	1	50.396	1048.12	52.41	C
			B	0.435	1.999		0.8	1	50.396			
			C	0.435	1.999		0.8	1	50.396			
T55 460.00-440.00	1383.40	9880.58	A	0.437	1.995	9	0.8	1	50.885	1045.17	52.26	C
			B	0.437	1.995		0.8	1	50.885			
			C	0.437	1.995		0.8	1	50.885			
T56 440.00-435.00	345.27	2468.11	A	0.437	1.996	9	0.8	1	12.704	260.12	52.02	C
			B	0.437	1.996		0.8	1	12.704			
			C	0.437	1.996		0.8	1	12.704			
T57 435.00-430.00	345.04	2467.32	A	0.437	1.996	9	0.8	1	12.699	259.67	51.93	C
			B	0.437	1.996		0.8	1	12.699			
			C	0.437	1.996		0.8	1	12.699			
T58 430.00-425.00	344.82	2573.43	A	0.441	1.989	9	0.8	1	12.851	260.28	52.06	C
			B	0.441	1.989		0.8	1	12.851			
			C	0.441	1.989		0.8	1	12.851			
T59 425.00-420.00	344.61	2572.67	A	0.441	1.989	9	0.8	1	12.846	259.86	51.97	C
			B	0.441	1.989		0.8	1	12.846			
			C	0.441	1.989		0.8	1	12.846			

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	111 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T60 420.00-415.00	344.40	2571.92	A	0.441	1.989	9	0.8	1	12.842	259.45	51.89	C
			B	0.441	1.989		0.8	1	12.842			
			C	0.441	1.989		0.8	1	12.842			
T61 415.00-410.00	344.19	2571.19	A	0.44	1.989	9	0.8	1	12.837	259.05	51.81	C
			B	0.44	1.989		0.8	1	12.837			
			C	0.44	1.989		0.8	1	12.837			
T62 410.00-405.00	343.99	2463.64	A	0.436	1.997	9	0.8	1	12.675	257.62	51.52	C
			B	0.436	1.997		0.8	1	12.675			
			C	0.436	1.997		0.8	1	12.675			
T63 405.00-400.00	343.80	2462.96	A	0.436	1.997	9	0.8	1	12.671	257.24	51.45	C
			B	0.436	1.997		0.8	1	12.671			
			C	0.436	1.997		0.8	1	12.671			
T64 400.00-380.00	1561.88	9845.44	A	0.436	1.998	8	0.8	1	50.644	1068.78	53.44	C
			B	0.436	1.998		0.8	1	50.644			
			C	0.436	1.998		0.8	1	50.644			
T65 380.00-360.00	1558.95	9836.50	A	0.435	1.998	8	0.8	1	50.587	1063.62	53.18	C
			B	0.435	1.998		0.8	1	50.587			
			C	0.435	1.998		0.8	1	50.587			
T66 360.00-340.00	1646.87	9829.37	A	0.435	1.999	8	0.8	1	50.542	1081.13	54.06	C
			B	0.435	1.999		0.8	1	50.542			
			C	0.435	1.999		0.8	1	50.542			
T67 340.00-320.00	1755.30	9824.38	A	0.435	1.999	8	0.8	1	50.511	1104.55	55.23	C
			B	0.435	1.999		0.8	1	50.511			
			C	0.435	1.999		0.8	1	50.511			
T68 320.00-300.00	1754.35	9821.84	A	0.435	1.999	8	0.8	1	50.495	1103.04	55.15	C
			B	0.435	1.999		0.8	1	50.495			
			C	0.435	1.999		0.8	1	50.495			
T69 300.00-280.00	1754.46	9822.14	A	0.435	1.999	8	0.8	1	50.497	1103.21	55.16	C
			B	0.435	1.999		0.8	1	50.497			
			C	0.435	1.999		0.8	1	50.497			
T70 280.00-275.00	438.78	2455.98	A	0.435	1.999	8	0.8	1	12.627	276.07	55.21	C
			B	0.435	1.999		0.8	1	12.627			
			C	0.435	1.999		0.8	1	12.627			
T71 275.00-270.00	438.89	2456.26	A	0.435	1.999	8	0.8	1	12.629	276.24	55.25	C
			B	0.435	1.999		0.8	1	12.629			
			C	0.435	1.999		0.8	1	12.629			
T72 270.00-265.00	439.01	2563.36	A	0.439	1.992	8	0.8	1	12.788	277.28	55.46	C
			B	0.439	1.992		0.8	1	12.788			
			C	0.439	1.992		0.8	1	12.788			
T73 265.00-260.00	439.15	2563.75	A	0.439	1.992	8	0.8	1	12.790	277.51	55.50	C
			B	0.439	1.992		0.8	1	12.790			
			C	0.439	1.992		0.8	1	12.790			
T74 260.00-255.00	439.32	2564.20	A	0.439	1.991	8	0.8	1	12.793	277.78	55.56	C
			B	0.439	1.991		0.8	1	12.793			
			C	0.439	1.991		0.8	1	12.793			
T75 255.00-250.00	439.51	2564.71	A	0.439	1.991	8	0.8	1	12.796	278.08	55.62	C
			B	0.439	1.991		0.8	1	12.796			
			C	0.439	1.991		0.8	1	12.796			
T76 250.00-245.00	439.72	2458.49	A	0.435	1.998	8	0.8	1	12.643	277.57	55.51	C
			B	0.435	1.998		0.8	1	12.643			
			C	0.435	1.998		0.8	1	12.643			
T77 245.00-240.00	439.96	2459.12	A	0.435	1.998	8	0.8	1	12.647	277.95	55.59	C
			B	0.435	1.998		0.8	1	12.647			
			C	0.435	1.998		0.8	1	12.647			
T78 240.00-220.00	1762.61	9843.91	A	0.436	1.998	8	0.8	1	50.634	1116.28	55.81	C
			B	0.436	1.998		0.8	1	50.634			
			C	0.436	1.998		0.8	1	50.634			
T79 220.00-200.00	1768.39	9859.38	A	0.436	1.997	9	0.8	1	50.732	1125.62	56.28	C
			B	0.436	1.997		0.8	1	50.732			
			C	0.436	1.997		0.8	1	50.732			



<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	112 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T80 200.00-180.00	2737.77	9879.41	A	0.437	1.995	9	0.8	1	50.859	1387.74	69.39	A
			B	0.437	1.995		0.8	1	50.859			
			C	0.437	1.995		0.8	1	50.859			
T81 180.00-160.00	3568.40	9904.03	A	0.438	1.994	9	0.8	1	51.014	1620.30	81.02	A
			B	0.438	1.994		0.8	1	51.014			
			C	0.438	1.994		0.8	1	51.014			
T82 160.00-140.00	3588.56	9932.88	A	0.439	1.992	9	0.8	1	51.196	1644.42	82.22	A
			B	0.439	1.992		0.8	1	51.196			
			C	0.439	1.992		0.8	1	51.196			
T83 140.00-120.00	3610.94	9964.88	A	0.441	1.989	9	0.8	1	51.398	1671.39	83.57	A
			B	0.441	1.989		0.8	1	51.398			
			C	0.441	1.989		0.8	1	51.398			
T84 120.00-115.00	906.35	2496.38	A	0.441	1.988	9	0.8	1	12.882	422.23	84.45	A
			B	0.441	1.988		0.8	1	12.882			
			C	0.441	1.988		0.8	1	12.882			
T85 115.00-110.00	907.77	2498.42	A	0.442	1.987	9	0.8	1	12.895	423.97	84.79	A
			B	0.442	1.987		0.8	1	12.895			
			C	0.442	1.987		0.8	1	12.895			
T86 110.00-105.00	909.17	2607.68	A	0.446	1.98	9	0.8	1	13.066	425.66	85.13	A
			B	0.446	1.98		0.8	1	13.066			
			C	0.446	1.98		0.8	1	13.066			
T87 105.00-100.00	910.52	2609.63	A	0.447	1.979	9	0.8	1	13.079	427.31	85.46	A
			B	0.447	1.979		0.8	1	13.079			
			C	0.447	1.979		0.8	1	13.079			
T88 100.00-95.00	911.80	2611.49	A	0.447	1.979	9	0.8	1	13.090	428.88	85.78	A
			B	0.447	1.979		0.8	1	13.090			
			C	0.447	1.979		0.8	1	13.090			
T89 95.00-90.00	912.99	2613.20	A	0.447	1.978	9	0.8	1	13.101	430.34	86.07	A
			B	0.447	1.978		0.8	1	13.101			
			C	0.447	1.978		0.8	1	13.101			
T90 90.00-85.00	914.06	2507.41	A	0.443	1.985	9	0.8	1	12.951	431.66	86.33	A
			B	0.443	1.985		0.8	1	12.951			
			C	0.443	1.985		0.8	1	12.951			
T91 85.00-80.00	914.97	2508.71	A	0.443	1.985	9	0.8	1	12.960	432.78	86.56	A
			B	0.443	1.985		0.8	1	12.960			
			C	0.443	1.985		0.8	1	12.960			
T92 80.00-60.00	3665.01	10042.20	A	0.444	1.984	9	0.8	1	51.885	1737.45	86.87	A
			B	0.444	1.984		0.8	1	51.885			
			C	0.444	1.984		0.8	1	51.885			
T93 60.00-40.00	3651.86	10023.39	A	0.443	1.985	9	0.8	1	51.766	1721.26	86.06	A
			B	0.443	1.985		0.8	1	51.766			
			C	0.443	1.985		0.8	1	51.766			
T94 40.00-20.00	3576.90	9916.20	A	0.439	1.993	9	0.8	1	51.091	1630.45	81.52	A
			B	0.439	1.993		0.8	1	51.091			
			C	0.439	1.993		0.8	1	51.091			
T95 20.00-15.00	861.58	2432.33	A	0.431	2.006	9	0.8	1	12.477	430.67	86.13	A
			B	0.431	2.006		0.8	1	12.477			
			C	0.431	2.006		0.8	1	12.477			
T96 15.00-7.00	1324.04	5622.89	A	0.522	1.874	10	0.8	1	26.414	724.82	90.60	A
			B	0.522	1.874		0.8	1	26.414			
			C	0.522	1.874		0.8	1	26.414			
T97 7.00-0.00	1032.54	8698.13	A	1	2.1	10	0.8	1	49.203	608.21*	86.89	C
			B	1	2.1		0.8	1	49.203			
			C	1	2.1		0.8	1	49.203			
Sum Weight:	99360.85	544129.49			*2.1A <sub>g</sub> limit					68107.62		

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b> Hartford CT2, CT (302534)	<b>Page</b> 113 of 192
	<b>Project</b> OAA746560_C3_03	<b>Date</b> 15:38:59 06/11/19
	<b>Client</b> DISH NETWORK CORPORATION	<b>Designed by</b> Christina.Minor

### Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
L1	1734.76	13864.88	A	1	1.2	11	1	1	125.237	1952.31	31.44	C
1151.90-1089.80			B	1	1.2		1	1	125.237			
			C	1	1.2		1	1	125.237			
T1	136.89	5282.80	A	0.648	1.782	11	0.85	1	22.371	376.47	76.83	C
1089.80-1084.90			B	0.648	1.782		0.85	1	22.371			
			C	0.648	1.782		0.85	1	22.371			
T2	136.89	2168.63	A	0.447	1.978	11	0.85	1	12.790	253.70	51.78	C
1084.90-1080.00			B	0.447	1.978		0.85	1	12.790			
			C	0.447	1.978		0.85	1	12.790			
T3	805.37	8321.91	A	0.438	1.994	11	0.85	1	50.828	1087.52	54.38	C
1080.00-1060.00			B	0.438	1.994		0.85	1	50.828			
			C	0.438	1.994		0.85	1	50.828			
T4	938.21	8322.07	A	0.438	1.994	11	0.85	1	50.829	1119.84	55.99	C
1060.00-1040.00			B	0.438	1.994		0.85	1	50.829			
			C	0.438	1.994		0.85	1	50.829			
T5	938.24	8322.26	A	0.438	1.994	10	0.85	1	50.830	1113.81	55.69	C
1040.00-1020.00			B	0.438	1.994		0.85	1	50.830			
			C	0.438	1.994		0.85	1	50.830			
T6	938.28	8322.47	A	0.438	1.994	10	0.85	1	50.831	1107.71	55.39	C
1020.00-1000.00			B	0.438	1.994		0.85	1	50.831			
			C	0.438	1.994		0.85	1	50.831			
T7	1206.31	8322.72	A	0.438	1.994	10	0.85	1	50.833	1184.53	59.23	C
1000.00-980.00			B	0.438	1.994		0.85	1	50.833			
			C	0.438	1.994		0.85	1	50.833			
T8	1273.38	8323.01	A	0.438	1.994	10	0.85	1	50.834	1198.45	59.92	C
980.00-960.00			B	0.438	1.994		0.85	1	50.834			
			C	0.438	1.994		0.85	1	50.834			
T9	1272.69	9427.82	A	0.447	1.978	10	0.85	1	52.544	1208.95	60.45	C
960.00-940.00			B	0.447	1.978		0.85	1	52.544			
			C	0.447	1.978		0.85	1	52.544			
T10	317.65	2354.80	A	0.446	1.98	10	0.85	1	13.107	300.81	60.16	C
940.00-935.00			B	0.446	1.98		0.85	1	13.107			
			C	0.446	1.98		0.85	1	13.107			
T11	317.44	2353.93	A	0.446	1.98	10	0.85	1	13.102	300.29	60.06	C
935.00-930.00			B	0.446	1.98		0.85	1	13.102			
			C	0.446	1.98		0.85	1	13.102			
T12	317.23	2461.00	A	0.45	1.973	10	0.85	1	13.257	301.12	60.22	C
930.00-925.00			B	0.45	1.973		0.85	1	13.257			
			C	0.45	1.973		0.85	1	13.257			
T13	317.02	2460.11	A	0.45	1.973	10	0.85	1	13.252	300.60	60.12	C
925.00-920.00			B	0.45	1.973		0.85	1	13.252			
			C	0.45	1.973		0.85	1	13.252			
T14	316.80	2459.23	A	0.45	1.973	10	0.85	1	13.246	300.07	60.01	C
920.00-915.00			B	0.45	1.973		0.85	1	13.246			
			C	0.45	1.973		0.85	1	13.246			
T15	316.59	2458.34	A	0.45	1.974	10	0.85	1	13.241	299.54	59.91	C
915.00-910.00			B	0.45	1.974		0.85	1	13.241			
			C	0.45	1.974		0.85	1	13.241			
T16	316.38	2349.55	A	0.445	1.981	10	0.85	1	13.074	297.67	59.53	C
910.00-905.00			B	0.445	1.981		0.85	1	13.074			
			C	0.445	1.981		0.85	1	13.074			
T17	316.16	2348.66	A	0.445	1.981	10	0.85	1	13.069	297.14	59.43	C
905.00-900.00			B	0.445	1.981		0.85	1	13.069			
			C	0.445	1.981		0.85	1	13.069			
T18	1262.49	9385.73	A	0.445	1.982	10	0.85	1	52.219	1183.25	59.16	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
900.00-880.00			B	0.445	1.982		0.85	1	52.219			
			C	0.445	1.982		0.85	1	52.219			
T19	1455.54	9371.31	A	0.444	1.983	10	0.85	1	52.128	1227.13	61.36	C
880.00-860.00			B	0.444	1.983		0.85	1	52.128			
			C	0.444	1.983		0.85	1	52.128			
T20	1473.14	9356.68	A	0.444	1.984	10	0.85	1	52.036	1223.91	61.20	C
860.00-840.00			B	0.444	1.984		0.85	1	52.036			
			C	0.444	1.984		0.85	1	52.036			
T21	1468.84	9341.85	A	0.443	1.985	10	0.85	1	51.942	1214.79	60.74	C
840.00-820.00			B	0.443	1.985		0.85	1	51.942			
			C	0.443	1.985		0.85	1	51.942			
T22	1464.50	9326.84	A	0.443	1.986	10	0.85	1	51.848	1205.58	60.28	C
820.00-800.00			B	0.443	1.986		0.85	1	51.848			
			C	0.443	1.986		0.85	1	51.848			
T23	1460.09	9311.63	A	0.442	1.987	10	0.85	1	51.752	1196.29	59.81	C
800.00-780.00			B	0.442	1.987		0.85	1	51.752			
			C	0.442	1.987		0.85	1	51.752			
T24	364.33	2325.51	A	0.442	1.987	10	0.85	1	12.923	297.61	59.52	C
780.00-775.00			B	0.442	1.987		0.85	1	12.923			
			C	0.442	1.987		0.85	1	12.923			
T25	364.05	2324.54	A	0.441	1.988	10	0.85	1	12.917	297.03	59.41	C
775.00-770.00			B	0.441	1.988		0.85	1	12.917			
			C	0.441	1.988		0.85	1	12.917			
T26	363.77	2431.19	A	0.446	1.981	10	0.85	1	13.070	297.61	59.52	C
770.00-765.00			B	0.446	1.981		0.85	1	13.070			
			C	0.446	1.981		0.85	1	13.070			
T27	363.49	2430.21	A	0.445	1.981	10	0.85	1	13.064	297.02	59.40	C
765.00-760.00			B	0.445	1.981		0.85	1	13.064			
			C	0.445	1.981		0.85	1	13.064			
T28	363.21	2429.23	A	0.445	1.981	10	0.85	1	13.058	296.43	59.29	C
760.00-755.00			B	0.445	1.981		0.85	1	13.058			
			C	0.445	1.981		0.85	1	13.058			
T29	362.92	2428.24	A	0.445	1.982	10	0.85	1	13.052	295.84	59.17	C
755.00-750.00			B	0.445	1.982		0.85	1	13.052			
			C	0.445	1.982		0.85	1	13.052			
T30	362.64	2319.68	A	0.441	1.989	10	0.85	1	12.886	294.08	58.82	C
750.00-745.00			B	0.441	1.989		0.85	1	12.886			
			C	0.441	1.989		0.85	1	12.886			
T31	362.36	2318.70	A	0.441	1.989	10	0.85	1	12.880	293.49	58.70	C
745.00-740.00			B	0.441	1.989		0.85	1	12.880			
			C	0.441	1.989		0.85	1	12.880			
T32	1446.58	9264.95	A	0.44	1.99	10	0.85	1	51.458	1168.03	58.40	C
740.00-720.00			B	0.44	1.99		0.85	1	51.458			
			C	0.44	1.99		0.85	1	51.458			
T33	1441.99	9249.08	A	0.439	1.991	9	0.85	1	51.357	1158.50	57.93	C
720.00-700.00			B	0.439	1.991		0.85	1	51.357			
			C	0.439	1.991		0.85	1	51.357			
T34	1437.36	9233.09	A	0.439	1.992	9	0.85	1	51.256	1148.94	57.45	C
700.00-680.00			B	0.439	1.992		0.85	1	51.256			
			C	0.439	1.992		0.85	1	51.256			
T35	1432.70	9216.98	A	0.438	1.993	9	0.85	1	51.155	1139.36	56.97	C
680.00-660.00			B	0.438	1.993		0.85	1	51.155			
			C	0.438	1.993		0.85	1	51.155			
T36	1428.02	9200.80	A	0.437	1.995	9	0.85	1	51.052	1129.77	56.49	C
660.00-640.00			B	0.437	1.995		0.85	1	51.052			
			C	0.437	1.995		0.85	1	51.052			
T37	1423.33	10020.39	A	0.443	1.985	9	0.85	1	52.102	1130.30	56.51	C
640.00-620.00			B	0.443	1.985		0.85	1	52.102			
			C	0.443	1.985		0.85	1	52.102			
T38	355.10	2502.53	A	0.442	1.986	9	0.85	1	13.000	281.00	56.20	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
620.00-615.00			B	0.442	1.986		0.85	1	13.000			
			C	0.442	1.986		0.85	1	13.000			
T39	354.81	2501.50	A	0.442	1.986	9	0.85	1	12.993	280.40	56.08	C
615.00-610.00			B	0.442	1.986		0.85	1	12.993			
			C	0.442	1.986		0.85	1	12.993			
T40	354.51	2607.74	A	0.446	1.98	9	0.85	1	13.146	280.92	56.18	C
610.00-605.00			B	0.446	1.98		0.85	1	13.146			
			C	0.446	1.98		0.85	1	13.146			
T41	354.22	2606.70	A	0.446	1.98	9	0.85	1	13.139	280.32	56.06	C
605.00-600.00			B	0.446	1.98		0.85	1	13.139			
			C	0.446	1.98		0.85	1	13.139			
T42	353.93	2605.67	A	0.446	1.98	9	0.85	1	13.133	279.72	55.94	C
600.00-595.00			B	0.446	1.98		0.85	1	13.133			
			C	0.446	1.98		0.85	1	13.133			
T43	353.64	2604.64	A	0.446	1.98	9	0.85	1	13.126	279.12	55.82	C
595.00-590.00			B	0.446	1.98		0.85	1	13.126			
			C	0.446	1.98		0.85	1	13.126			
T44	353.34	2496.39	A	0.441	1.988	9	0.85	1	12.961	277.42	55.48	C
590.00-585.00			B	0.441	1.988		0.85	1	12.961			
			C	0.441	1.988		0.85	1	12.961			
T45	353.05	2495.37	A	0.441	1.988	9	0.85	1	12.955	276.83	55.37	C
585.00-580.00			B	0.441	1.988		0.85	1	12.955			
			C	0.441	1.988		0.85	1	12.955			
T46	1409.31	9543.68	A	0.438	1.994	9	0.85	1	51.178	1096.50	54.83	C
580.00-560.00			B	0.438	1.994		0.85	1	51.178			
			C	0.438	1.994		0.85	1	51.178			
T47	1404.71	9527.67	A	0.437	1.995	9	0.85	1	51.096	1087.39	54.37	C
560.00-540.00			B	0.437	1.995		0.85	1	51.096			
			C	0.437	1.995		0.85	1	51.096			
T48	350.47	2179.22	A	0.38	2.104	9	0.85	1	10.778	254.46	50.89	C
540.00-535.00			B	0.38	2.104		0.85	1	10.778			
			C	0.38	2.104		0.85	1	10.778			
T49	350.19	2378.47	A	0.437	1.996	9	0.85	1	12.752	269.86	53.97	C
535.00-530.00			B	0.437	1.996		0.85	1	12.752			
			C	0.437	1.996		0.85	1	12.752			
T50	349.91	2377.49	A	0.436	1.996	9	0.85	1	12.746	269.30	53.86	C
530.00-525.00			B	0.436	1.996		0.85	1	12.746			
			C	0.436	1.996		0.85	1	12.746			
T51	349.63	2376.52	A	0.436	1.997	9	0.85	1	12.740	268.75	53.75	C
525.00-520.00			B	0.436	1.997		0.85	1	12.740			
			C	0.436	1.997		0.85	1	12.740			
T52	1395.75	9496.50	A	0.436	1.997	9	0.85	1	50.899	1069.50	53.48	C
520.00-500.00			B	0.436	1.997		0.85	1	50.899			
			C	0.436	1.997		0.85	1	50.899			
T53	1391.46	9481.53	A	0.435	1.998	9	0.85	1	50.804	1060.97	53.05	C
500.00-480.00			B	0.435	1.998		0.85	1	50.804			
			C	0.435	1.998		0.85	1	50.804			
T54	1387.32	9467.14	A	0.435	1.999	9	0.85	1	50.713	1052.80	52.64	C
480.00-460.00			B	0.435	1.999		0.85	1	50.713			
			C	0.435	1.999		0.85	1	50.713			
T55	1383.40	9880.58	A	0.437	1.995	9	0.85	1	51.201	1049.79	52.49	C
460.00-440.00			B	0.437	1.995		0.85	1	51.201			
			C	0.437	1.995		0.85	1	51.201			
T56	345.27	2468.11	A	0.437	1.996	9	0.85	1	12.783	261.27	52.25	C
440.00-435.00			B	0.437	1.996		0.85	1	12.783			
			C	0.437	1.996		0.85	1	12.783			
T57	345.04	2467.32	A	0.437	1.996	9	0.85	1	12.778	260.83	52.17	C
435.00-430.00			B	0.437	1.996		0.85	1	12.778			
			C	0.437	1.996		0.85	1	12.778			
T58	344.82	2573.43	A	0.441	1.989	9	0.85	1	12.930	261.43	52.29	C

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	116 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
430.00-425.00			B	0.441	1.989		0.85	1	12.930			
			C	0.441	1.989		0.85	1	12.930			
T59	344.61	2572.67	A	0.441	1.989	9	0.85	1	12.925	261.01	52.20	C
425.00-420.00			B	0.441	1.989		0.85	1	12.925			
			C	0.441	1.989		0.85	1	12.925			
T60	344.40	2571.92	A	0.441	1.989	9	0.85	1	12.921	260.59	52.12	C
420.00-415.00			B	0.441	1.989		0.85	1	12.921			
			C	0.441	1.989		0.85	1	12.921			
T61	344.19	2571.19	A	0.44	1.989	9	0.85	1	12.916	260.19	52.04	C
415.00-410.00			B	0.44	1.989		0.85	1	12.916			
			C	0.44	1.989		0.85	1	12.916			
T62	343.99	2463.64	A	0.436	1.997	9	0.85	1	12.754	258.76	51.75	C
410.00-405.00			B	0.436	1.997		0.85	1	12.754			
			C	0.436	1.997		0.85	1	12.754			
T63	343.80	2462.96	A	0.436	1.997	9	0.85	1	12.750	258.38	51.68	C
405.00-400.00			B	0.436	1.997		0.85	1	12.750			
			C	0.436	1.997		0.85	1	12.750			
T64	1561.88	9845.44	A	0.436	1.998	8	0.85	1	50.960	1073.34	53.67	C
400.00-380.00			B	0.436	1.998		0.85	1	50.960			
			C	0.436	1.998		0.85	1	50.960			
T65	1558.95	9836.50	A	0.435	1.998	8	0.85	1	50.903	1068.16	53.41	C
380.00-360.00			B	0.435	1.998		0.85	1	50.903			
			C	0.435	1.998		0.85	1	50.903			
T66	1646.87	9829.37	A	0.435	1.999	8	0.85	1	50.858	1085.66	54.28	C
360.00-340.00			B	0.435	1.999		0.85	1	50.858			
			C	0.435	1.999		0.85	1	50.858			
T67	1755.30	9824.38	A	0.435	1.999	8	0.85	1	50.827	1109.07	55.45	C
340.00-320.00			B	0.435	1.999		0.85	1	50.827			
			C	0.435	1.999		0.85	1	50.827			
T68	1754.35	9821.84	A	0.435	1.999	8	0.85	1	50.811	1107.55	55.38	C
320.00-300.00			B	0.435	1.999		0.85	1	50.811			
			C	0.435	1.999		0.85	1	50.811			
T69	1754.46	9822.14	A	0.435	1.999	8	0.85	1	50.813	1107.72	55.39	C
300.00-280.00			B	0.435	1.999		0.85	1	50.813			
			C	0.435	1.999		0.85	1	50.813			
T70	438.78	2455.98	A	0.435	1.999	8	0.85	1	12.706	277.20	55.44	C
280.00-275.00			B	0.435	1.999		0.85	1	12.706			
			C	0.435	1.999		0.85	1	12.706			
T71	438.89	2456.26	A	0.435	1.999	8	0.85	1	12.708	277.36	55.47	C
275.00-270.00			B	0.435	1.999		0.85	1	12.708			
			C	0.435	1.999		0.85	1	12.708			
T72	439.01	2563.36	A	0.439	1.992	8	0.85	1	12.867	278.41	55.68	C
270.00-265.00			B	0.439	1.992		0.85	1	12.867			
			C	0.439	1.992		0.85	1	12.867			
T73	439.15	2563.75	A	0.439	1.992	8	0.85	1	12.869	278.64	55.73	C
265.00-260.00			B	0.439	1.992		0.85	1	12.869			
			C	0.439	1.992		0.85	1	12.869			
T74	439.32	2564.20	A	0.439	1.991	8	0.85	1	12.872	278.91	55.78	C
260.00-255.00			B	0.439	1.991		0.85	1	12.872			
			C	0.439	1.991		0.85	1	12.872			
T75	439.51	2564.71	A	0.439	1.991	8	0.85	1	12.875	279.21	55.84	C
255.00-250.00			B	0.439	1.991		0.85	1	12.875			
			C	0.439	1.991		0.85	1	12.875			
T76	439.72	2458.49	A	0.435	1.998	8	0.85	1	12.722	278.71	55.74	C
250.00-245.00			B	0.435	1.998		0.85	1	12.722			
			C	0.435	1.998		0.85	1	12.722			
T77	439.96	2459.12	A	0.435	1.998	8	0.85	1	12.726	279.09	55.82	C
245.00-240.00			B	0.435	1.998		0.85	1	12.726			
			C	0.435	1.998		0.85	1	12.726			
T78	1762.61	9843.91	A	0.436	1.998	8	0.85	1	50.950	1120.84	56.04	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
240.00-220.00			B	0.436	1.998		0.85	1	50.950			
			C	0.436	1.998		0.85	1	50.950			
T79	1768.39	9859.38	A	0.436	1.997	9	0.85	1	51.048	1130.20	56.51	C
220.00-200.00			B	0.436	1.997		0.85	1	51.048			
			C	0.436	1.997		0.85	1	51.048			
T80	2737.77	9879.41	A	0.437	1.995	9	0.85	1	51.175	1376.13	68.81	A
200.00-180.00			B	0.437	1.995		0.85	1	51.175			
			C	0.437	1.995		0.85	1	51.175			
T81	3568.40	9904.03	A	0.438	1.994	9	0.85	1	51.330	1598.66	79.93	A
180.00-160.00			B	0.438	1.994		0.85	1	51.330			
			C	0.438	1.994		0.85	1	51.330			
T82	3588.56	9932.88	A	0.439	1.992	9	0.85	1	51.512	1622.54	81.13	A
160.00-140.00			B	0.439	1.992		0.85	1	51.512			
			C	0.439	1.992		0.85	1	51.512			
T83	3610.94	9964.88	A	0.441	1.989	9	0.85	1	51.714	1649.24	82.46	A
140.00-120.00			B	0.441	1.989		0.85	1	51.714			
			C	0.441	1.989		0.85	1	51.714			
T84	906.35	2496.38	A	0.441	1.988	9	0.85	1	12.961	416.65	83.33	A
120.00-115.00			B	0.441	1.988		0.85	1	12.961			
			C	0.441	1.988		0.85	1	12.961			
T85	907.77	2498.42	A	0.442	1.987	9	0.85	1	12.974	418.37	83.67	A
115.00-110.00			B	0.442	1.987		0.85	1	12.974			
			C	0.442	1.987		0.85	1	12.974			
T86	909.17	2607.68	A	0.446	1.98	9	0.85	1	13.145	420.10	84.02	A
110.00-105.00			B	0.446	1.98		0.85	1	13.145			
			C	0.446	1.98		0.85	1	13.145			
T87	910.52	2609.63	A	0.447	1.979	9	0.85	1	13.158	421.73	84.35	A
105.00-100.00			B	0.447	1.979		0.85	1	13.158			
			C	0.447	1.979		0.85	1	13.158			
T88	911.80	2611.49	A	0.447	1.979	9	0.85	1	13.169	423.29	84.66	A
100.00-95.00			B	0.447	1.979		0.85	1	13.169			
			C	0.447	1.979		0.85	1	13.169			
T89	912.99	2613.20	A	0.447	1.978	9	0.85	1	13.180	424.73	84.95	A
95.00-90.00			B	0.447	1.978		0.85	1	13.180			
			C	0.447	1.978		0.85	1	13.180			
T90	914.06	2507.41	A	0.443	1.985	9	0.85	1	13.030	425.99	85.20	A
90.00-85.00			B	0.443	1.985		0.85	1	13.030			
			C	0.443	1.985		0.85	1	13.030			
T91	914.97	2508.71	A	0.443	1.985	9	0.85	1	13.039	427.10	85.42	A
85.00-80.00			B	0.443	1.985		0.85	1	13.039			
			C	0.443	1.985		0.85	1	13.039			
T92	3665.01	10042.20	A	0.444	1.984	9	0.85	1	52.201	1714.67	85.73	A
80.00-60.00			B	0.444	1.984		0.85	1	52.201			
			C	0.444	1.984		0.85	1	52.201			
T93	3651.86	10023.39	A	0.443	1.985	9	0.85	1	52.082	1698.64	84.93	A
60.00-40.00			B	0.443	1.985		0.85	1	52.082			
			C	0.443	1.985		0.85	1	52.082			
T94	3576.90	9916.20	A	0.439	1.993	9	0.85	1	51.407	1608.71	80.44	A
40.00-20.00			B	0.439	1.993		0.85	1	51.407			
			C	0.439	1.993		0.85	1	51.407			
T95	861.58	2432.33	A	0.431	2.006	9	0.85	1	12.556	424.78	84.96	A
20.00-15.00			B	0.431	2.006		0.85	1	12.556			
			C	0.431	2.006		0.85	1	12.556			
T96	1324.04	5622.89	A	0.522	1.874	10	0.85	1	26.916	722.62	90.33	A
15.00-7.00			B	0.522	1.874		0.85	1	26.916			
			C	0.522	1.874		0.85	1	26.916			
T97 7.00-0.00	1032.54	8698.13	A	1	2.1	10	0.85	1	51.032	608.21*	86.89	C
			B	1	2.1		0.85	1	51.032			
			C	1	2.1		0.85	1	51.032			
Sum Weight:	99360.85	544129.49			*2.1A <sub>g</sub>					68725.22		

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	118 of 192
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb			limit							

### Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
ft	lb	lb										
L1	424.14	10343.38	A	1	0.777	15	1	1	103.500	1055.57	17.00	B
1151.90-1089.80			B	1	0.777		1	1	103.500			
T1	33.47	2474.36	C	1	0.6		1	1	103.500			
1089.80-1084.90			A	0.42	2.025	15	1	1	15.974	440.58	89.91	C
T2	33.47	1026.80	B	0.42	2.025		1	1	15.974			
1084.90-1080.00			C	0.42	2.025		1	1	15.974			
T3	162.73	3798.26	A	0.161	2.733	15	1	1	4.226	169.64	34.62	C
1080.00-1060.00			B	0.161	2.733		1	1	4.226			
T4	176.80	3798.26	C	0.161	2.733		1	1	4.226			
1060.00-1040.00			A	0.155	2.755	15	1	1	16.603	696.34	34.82	C
T5	176.80	3798.26	B	0.155	2.755		1	1	16.603			
1040.00-1020.00			C	0.155	2.755		1	1	16.603			
T6	176.80	3798.26	A	0.155	2.755	15	1	1	16.610	705.94	35.30	C
1020.00-1000.00			B	0.155	2.755		1	1	16.610			
T7	186.88	3798.26	C	0.155	2.755		1	1	16.610			
1000.00-980.00			A	0.155	2.755	15	1	1	16.617	702.37	35.12	C
T8	189.40	3798.26	B	0.155	2.755		1	1	16.617			
980.00-960.00			C	0.155	2.755		1	1	16.617			
T9	189.40	4790.45	A	0.155	2.755	15	1	1	16.617	720.42	36.02	C
960.00-940.00			B	0.155	2.755		1	1	16.617			
T10	47.35	1197.61	C	0.155	2.755		1	1	16.617			
940.00-935.00			A	0.155	2.755	15	1	1	16.624	698.76	34.94	C
T11	47.35	1197.61	B	0.155	2.755		1	1	16.624			
935.00-930.00			C	0.155	2.755		1	1	16.624			
T12	47.35	1287.44	A	0.168	2.707	15	1	1	16.624	720.42	36.02	C
930.00-925.00			B	0.168	2.707		1	1	16.631			
T13	47.35	1287.44	C	0.168	2.707		1	1	16.631			
925.00-920.00			A	0.168	2.707	15	1	1	16.631	722.87	36.14	C
T14	47.35	1287.44	B	0.168	2.707		1	1	16.639			
920.00-915.00			C	0.168	2.707		1	1	16.639			
T15	47.35	1287.44	A	0.172	2.691	15	1	1	16.639	732.15	36.61	C
			B	0.172	2.691		1	1	17.329			
			C	0.172	2.691		1	1	17.329			
			A	0.168	2.707	15	1	1	17.329	182.29	36.46	C
			B	0.168	2.707		1	1	4.329			
			C	0.168	2.707		1	1	4.329			
			A	0.168	2.707	15	1	1	4.329	182.04	36.41	C
			B	0.168	2.707		1	1	4.330			
			C	0.168	2.707		1	1	4.330			
			A	0.172	2.691	15	1	1	4.330	184.78	36.96	C
			B	0.172	2.691		1	1	4.445			
			C	0.172	2.691		1	1	4.445			
			A	0.172	2.691	15	1	1	4.445	184.52	36.90	C
			B	0.172	2.691		1	1	4.446			
			C	0.172	2.691		1	1	4.446			
			A	0.172	2.691	15	1	1	4.446	184.27	36.85	C
			B	0.172	2.691		1	1	4.447			
			C	0.172	2.691		1	1	4.447			
			A	0.172	2.691	15	1	1	4.447	184.01	36.80	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	119 of 192
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>c</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
915.00-910.00			B	0.172	2.691		1	1	4.447			
			C	0.172	2.691		1	1	4.447			
T16	47.35	1197.61	A	0.168	2.707	15	1	1	4.333	180.79	36.16	C
910.00-905.00			B	0.168	2.707		1	1	4.333			
			C	0.168	2.707		1	1	4.333			
T17	47.35	1197.61	A	0.168	2.707	15	1	1	4.334	180.54	36.11	C
905.00-900.00			B	0.168	2.707		1	1	4.334			
			C	0.168	2.707		1	1	4.334			
T18	189.40	4790.45	A	0.168	2.707	14	1	1	17.343	719.62	35.98	C
900.00-880.00			B	0.168	2.707		1	1	17.343			
			C	0.168	2.707		1	1	17.343			
T19	198.58	4790.45	A	0.168	2.707	14	1	1	17.354	742.06	37.10	C
880.00-860.00			B	0.168	2.707		1	1	17.354			
			C	0.168	2.707		1	1	17.354			
T20	199.60	4790.45	A	0.168	2.707	14	1	1	17.365	740.67	37.03	C
860.00-840.00			B	0.168	2.707		1	1	17.365			
			C	0.168	2.707		1	1	17.365			
T21	199.60	4790.45	A	0.168	2.707	14	1	1	17.376	736.28	36.81	C
840.00-820.00			B	0.168	2.707		1	1	17.376			
			C	0.168	2.707		1	1	17.376			
T22	199.60	4790.45	A	0.168	2.707	14	1	1	17.388	731.84	36.59	C
820.00-800.00			B	0.168	2.707		1	1	17.388			
			C	0.168	2.707		1	1	17.388			
T23	199.60	4790.45	A	0.168	2.707	14	1	1	17.399	727.36	36.37	C
800.00-780.00			B	0.168	2.707		1	1	17.399			
			C	0.168	2.707		1	1	17.399			
T24	49.90	1197.61	A	0.168	2.707	14	1	1	4.352	181.13	36.23	C
780.00-775.00			B	0.168	2.707		1	1	4.352			
			C	0.168	2.707		1	1	4.352			
T25	49.90	1197.61	A	0.168	2.707	14	1	1	4.352	180.85	36.17	C
775.00-770.00			B	0.168	2.707		1	1	4.352			
			C	0.168	2.707		1	1	4.352			
T26	49.90	1287.44	A	0.172	2.691	14	1	1	4.467	183.38	36.68	C
770.00-765.00			B	0.172	2.691		1	1	4.467			
			C	0.172	2.691		1	1	4.467			
T27	49.90	1287.44	A	0.172	2.691	14	1	1	4.468	183.09	36.62	C
765.00-760.00			B	0.172	2.691		1	1	4.468			
			C	0.172	2.691		1	1	4.468			
T28	49.90	1287.44	A	0.172	2.691	14	1	1	4.469	182.80	36.56	C
760.00-755.00			B	0.172	2.691		1	1	4.469			
			C	0.172	2.691		1	1	4.469			
T29	49.90	1287.44	A	0.172	2.691	14	1	1	4.470	182.51	36.50	C
755.00-750.00			B	0.172	2.691		1	1	4.470			
			C	0.172	2.691		1	1	4.470			
T30	49.90	1197.61	A	0.168	2.707	14	1	1	4.356	179.42	35.88	C
750.00-745.00			B	0.168	2.707		1	1	4.356			
			C	0.168	2.707		1	1	4.356			
T31	49.90	1197.61	A	0.168	2.707	14	1	1	4.357	179.13	35.83	C
745.00-740.00			B	0.168	2.707		1	1	4.357			
			C	0.168	2.707		1	1	4.357			
T32	199.60	4790.45	A	0.168	2.707	14	1	1	17.435	713.64	35.68	C
740.00-720.00			B	0.168	2.707		1	1	17.435			
			C	0.168	2.707		1	1	17.435			
T33	199.60	4790.45	A	0.168	2.707	14	1	1	17.447	709.00	35.45	C
720.00-700.00			B	0.168	2.707		1	1	17.447			
			C	0.168	2.707		1	1	17.447			
T34	199.60	4790.45	A	0.168	2.707	14	1	1	17.459	704.33	35.22	C
700.00-680.00			B	0.168	2.707		1	1	17.459			
			C	0.168	2.707		1	1	17.459			
T35	199.60	4790.45	A	0.168	2.707	13	1	1	17.471	699.64	34.98	C



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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>c</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
680.00-660.00			B	0.168	2.707		1	1	17.471			
			C	0.168	2.707		1	1	17.471			
T36	199.60	4790.45	A	0.168	2.707	13	1	1	17.484	694.94	34.75	C
660.00-640.00			B	0.168	2.707		1	1	17.484			
			C	0.168	2.707		1	1	17.484			
T37	199.60	5552.12	A	0.176	2.676	13	1	1	17.919	696.93	34.85	C
640.00-620.00			B	0.176	2.676		1	1	17.919			
			C	0.176	2.676		1	1	17.919			
T38	49.90	1388.03	A	0.176	2.677	13	1	1	4.479	173.43	34.69	C
620.00-615.00			B	0.176	2.677		1	1	4.479			
			C	0.176	2.677		1	1	4.479			
T39	49.90	1388.03	A	0.176	2.677	13	1	1	4.480	173.13	34.63	C
615.00-610.00			B	0.176	2.677		1	1	4.480			
			C	0.176	2.677		1	1	4.480			
T40	49.90	1477.86	A	0.181	2.661	13	1	1	4.597	175.51	35.10	C
610.00-605.00			B	0.181	2.661		1	1	4.597			
			C	0.181	2.661		1	1	4.597			
T41	49.90	1477.86	A	0.181	2.661	13	1	1	4.598	175.22	35.04	C
605.00-600.00			B	0.181	2.661		1	1	4.598			
			C	0.181	2.661		1	1	4.598			
T42	49.90	1477.86	A	0.181	2.661	13	1	1	4.599	174.92	34.98	C
600.00-595.00			B	0.181	2.661		1	1	4.599			
			C	0.181	2.661		1	1	4.599			
T43	49.90	1477.86	A	0.181	2.661	13	1	1	4.600	174.62	34.92	C
595.00-590.00			B	0.181	2.661		1	1	4.600			
			C	0.181	2.661		1	1	4.600			
T44	49.90	1388.03	A	0.176	2.677	13	1	1	4.485	171.68	34.34	C
590.00-585.00			B	0.176	2.677		1	1	4.485			
			C	0.176	2.677		1	1	4.485			
T45	49.90	1388.03	A	0.176	2.677	13	1	1	4.486	171.39	34.28	C
585.00-580.00			B	0.176	2.677		1	1	4.486			
			C	0.176	2.677		1	1	4.486			
T46	199.60	5161.26	A	0.172	2.692	13	1	1	17.743	679.53	33.98	C
580.00-560.00			B	0.172	2.692		1	1	17.743			
			C	0.172	2.692		1	1	17.743			
T47	199.60	5161.26	A	0.172	2.692	13	1	1	17.762	675.11	33.76	C
560.00-540.00			B	0.172	2.692		1	1	17.762			
			C	0.172	2.692		1	1	17.762			
T48	49.90	1228.81	A	0.159	2.738	13	1	1	4.113	160.48	32.10	C
540.00-535.00			B	0.159	2.738		1	1	4.113			
			C	0.159	2.738		1	1	4.113			
T49	49.90	1290.32	A	0.172	2.692	13	1	1	4.443	167.80	33.56	C
535.00-530.00			B	0.172	2.692		1	1	4.443			
			C	0.172	2.692		1	1	4.443			
T50	49.90	1290.32	A	0.172	2.692	13	1	1	4.444	167.52	33.50	C
530.00-525.00			B	0.172	2.692		1	1	4.444			
			C	0.172	2.692		1	1	4.444			
T51	49.90	1290.32	A	0.172	2.692	13	1	1	4.445	167.25	33.45	C
525.00-520.00			B	0.172	2.692		1	1	4.445			
			C	0.172	2.692		1	1	4.445			
T52	199.60	5161.26	A	0.172	2.692	13	1	1	17.788	666.26	33.31	C
520.00-500.00			B	0.172	2.692		1	1	17.788			
			C	0.172	2.692		1	1	17.788			
T53	199.60	5161.26	A	0.172	2.692	13	1	1	17.801	662.03	33.10	C
500.00-480.00			B	0.172	2.692		1	1	17.801			
			C	0.172	2.692		1	1	17.801			
T54	199.60	5161.26	A	0.172	2.692	13	1	1	17.813	657.96	32.90	C
480.00-460.00			B	0.172	2.692		1	1	17.813			
			C	0.172	2.692		1	1	17.813			
T55	199.60	5552.12	A	0.176	2.677	12	1	1	18.040	657.35	32.87	C

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	121 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
460.00-440.00			B	0.176	2.677		1	1	18.040			
			C	0.176	2.677		1	1	18.040			
T56	49.90	1388.03	A	0.176	2.677	12	1	1	4.510	163.73	32.75	C
440.00-435.00			B	0.176	2.677		1	1	4.510			
			C	0.176	2.677		1	1	4.510			
T57	49.90	1388.03	A	0.176	2.677	12	1	1	4.511	163.51	32.70	C
435.00-430.00			B	0.176	2.677		1	1	4.511			
			C	0.176	2.677		1	1	4.511			
T58	49.90	1477.86	A	0.181	2.661	12	1	1	4.627	165.79	33.16	C
430.00-425.00			B	0.181	2.661		1	1	4.627			
			C	0.181	2.661		1	1	4.627			
T59	49.90	1477.86	A	0.181	2.661	12	1	1	4.628	165.57	33.11	C
425.00-420.00			B	0.181	2.661		1	1	4.628			
			C	0.181	2.661		1	1	4.628			
T60	49.90	1477.86	A	0.181	2.661	12	1	1	4.629	165.37	33.07	C
420.00-415.00			B	0.181	2.661		1	1	4.629			
			C	0.181	2.661		1	1	4.629			
T61	49.90	1477.86	A	0.181	2.661	12	1	1	4.629	165.16	33.03	C
415.00-410.00			B	0.181	2.661		1	1	4.629			
			C	0.181	2.661		1	1	4.629			
T62	49.90	1388.03	A	0.176	2.677	12	1	1	4.515	162.49	32.50	C
410.00-405.00			B	0.176	2.677		1	1	4.515			
			C	0.176	2.677		1	1	4.515			
T63	49.90	1388.03	A	0.176	2.677	12	1	1	4.515	162.30	32.46	C
405.00-400.00			B	0.176	2.677		1	1	4.515			
			C	0.176	2.677		1	1	4.515			
T64	226.80	5552.12	A	0.176	2.677	12	1	1	18.067	664.76	33.24	C
400.00-380.00			B	0.176	2.677		1	1	18.067			
			C	0.176	2.677		1	1	18.067			
T65	226.80	5552.12	A	0.176	2.677	12	1	1	18.075	662.20	33.11	C
380.00-360.00			B	0.176	2.677		1	1	18.075			
			C	0.176	2.677		1	1	18.075			
T66	231.39	5552.12	A	0.176	2.677	12	1	1	18.081	671.37	33.57	C
360.00-340.00			B	0.176	2.677		1	1	18.081			
			C	0.176	2.677		1	1	18.081			
T67	237.00	5552.12	A	0.176	2.677	12	1	1	18.086	683.57	34.18	C
340.00-320.00			B	0.176	2.677		1	1	18.086			
			C	0.176	2.677		1	1	18.086			
T68	237.00	5552.12	A	0.176	2.677	12	1	1	18.088	682.82	34.14	C
320.00-300.00			B	0.176	2.677		1	1	18.088			
			C	0.176	2.677		1	1	18.088			
T69	237.00	5552.12	A	0.176	2.677	12	1	1	18.088	682.90	34.15	C
300.00-280.00			B	0.176	2.677		1	1	18.088			
			C	0.176	2.677		1	1	18.088			
T70	59.25	1388.03	A	0.176	2.677	12	1	1	4.522	170.86	34.17	C
280.00-275.00			B	0.176	2.677		1	1	4.522			
			C	0.176	2.677		1	1	4.522			
T71	59.25	1388.03	A	0.176	2.677	12	1	1	4.521	170.94	34.19	C
275.00-270.00			B	0.176	2.677		1	1	4.521			
			C	0.176	2.677		1	1	4.521			
T72	59.25	1477.86	A	0.181	2.661	12	1	1	4.636	173.48	34.70	C
270.00-265.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T73	59.25	1477.86	A	0.181	2.661	12	1	1	4.636	173.60	34.72	C
265.00-260.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T74	59.25	1477.86	A	0.181	2.661	12	1	1	4.636	173.73	34.75	C
260.00-255.00			B	0.181	2.661		1	1	4.636			
			C	0.181	2.661		1	1	4.636			
T75	59.25	1477.86	A	0.181	2.661	12	1	1	4.635	173.88	34.78	C

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	122 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
255.00-250.00			B	0.181	2.661		1	1	4.635			
			C	0.181	2.661		1	1	4.635			
T76	59.25	1388.03	A	0.176	2.677	12	1	1	4.519	171.60	34.32	C
250.00-245.00			B	0.176	2.677		1	1	4.519			
			C	0.176	2.677		1	1	4.519			
T77	59.25	1388.03	A	0.176	2.677	12	1	1	4.519	171.79	34.36	C
245.00-240.00			B	0.176	2.677		1	1	4.519			
			C	0.176	2.677		1	1	4.519			
T78	237.00	5552.12	A	0.176	2.677	12	1	1	18.068	689.37	34.47	C
240.00-220.00			B	0.176	2.677		1	1	18.068			
			C	0.176	2.677		1	1	18.068			
T79	237.00	5552.12	A	0.176	2.677	12	1	1	18.054	693.98	34.70	C
220.00-200.00			B	0.176	2.677		1	1	18.054			
			C	0.176	2.677		1	1	18.054			
T80	379.04	5552.12	A	0.176	2.677	12	1	1	18.036	835.36	41.77	C
200.00-180.00			B	0.176	2.677		1	1	18.036			
			C	0.176	2.677		1	1	18.036			
T81	501.40	5552.12	A	0.176	2.677	13	1	1	18.013	950.78	47.54	C
180.00-160.00			B	0.176	2.677		1	1	18.013			
			C	0.176	2.677		1	1	18.013			
T82	501.40	5552.12	A	0.176	2.677	13	1	1	17.987	962.71	48.14	C
160.00-140.00			B	0.176	2.677		1	1	17.987			
			C	0.176	2.677		1	1	17.987			
T83	501.40	5552.12	A	0.176	2.677	13	1	1	17.958	1001.20	50.06	C
140.00-120.00			B	0.176	2.677		1	1	17.958			
			C	0.176	2.677		1	1	17.958			
T84	125.35	1388.03	A	0.176	2.677	13	1	1	4.485	252.44	50.49	C
120.00-115.00			B	0.176	2.677		1	1	4.485			
			C	0.176	2.677		1	1	4.485			
T85	125.35	1388.03	A	0.176	2.677	13	1	1	4.483	253.29	50.66	C
115.00-110.00			B	0.176	2.677		1	1	4.483			
			C	0.176	2.677		1	1	4.483			
T86	125.35	1477.86	A	0.181	2.661	13	1	1	4.597	256.78	51.36	C
110.00-105.00			B	0.181	2.661		1	1	4.597			
			C	0.181	2.661		1	1	4.597			
T87	125.35	1477.86	A	0.181	2.661	13	1	1	4.595	257.60	51.52	C
105.00-100.00			B	0.181	2.661		1	1	4.595			
			C	0.181	2.661		1	1	4.595			
T88	125.35	1477.86	A	0.181	2.661	13	1	1	4.593	258.37	51.67	C
100.00-95.00			B	0.181	2.661		1	1	4.593			
			C	0.181	2.661		1	1	4.593			
T89	125.35	1477.86	A	0.181	2.661	13	1	1	4.592	259.09	51.82	C
95.00-90.00			B	0.181	2.661		1	1	4.592			
			C	0.181	2.661		1	1	4.592			
T90	125.35	1388.03	A	0.176	2.677	13	1	1	4.475	257.03	51.41	C
90.00-85.00			B	0.176	2.677		1	1	4.475			
			C	0.176	2.677		1	1	4.475			
T91	125.35	1388.03	A	0.176	2.677	13	1	1	4.474	257.57	51.51	C
85.00-80.00			B	0.176	2.677		1	1	4.474			
			C	0.176	2.677		1	1	4.474			
T92	501.40	5552.12	A	0.176	2.677	13	1	1	17.888	1033.36	51.67	C
80.00-60.00			B	0.176	2.677		1	1	17.888			
			C	0.176	2.677		1	1	17.888			
T93	501.40	5552.12	A	0.176	2.677	13	1	1	17.905	1025.50	51.28	C
60.00-40.00			B	0.176	2.677		1	1	17.905			
			C	0.176	2.677		1	1	17.905			
T94	501.40	5552.12	A	0.176	2.677	13	1	1	18.002	955.81	47.79	C
40.00-20.00			B	0.176	2.677		1	1	18.002			
			C	0.176	2.677		1	1	18.002			
T95	125.35	1388.03	A	0.176	2.677	13	1	1	4.468	260.24	52.05	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	123 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
20.00-15.00			B	0.176	2.677		1	1	4.468			
			C	0.176	2.677		1	1	4.468			
T96	200.56	2850.83	A	0.248	2.443	14	1	1	13.347	591.22	73.90	C
15.00-7.00			B	0.248	2.443		1	1	13.347			
			C	0.248	2.443		1	1	13.347			
T97 7.00-0.00	175.49	4952.76	A	1	2.1	15	1	1	43.382	816.74*	116.68	C
			B	1	2.1		1	1	43.382			
			C	1	2.1		1	1	43.382			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					42837.60		

### Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
L1	424.14	10343.38	A	1	0.6	15	1	1	103.500	1055.57	17.00	C
1151.90-1089.80			B	1	0.777		1	1	103.500			
			C	1	0.777		1	1	103.500			
T1	33.47	2474.36	A	0.42	2.025	15	0.8	1	13.161	366.44	74.78	C
1089.80-1084.90			B	0.42	2.025		0.8	1	13.161			
			C	0.42	2.025		0.8	1	13.161			
T2	33.47	1026.80	A	0.161	2.733	15	0.8	1	3.905	158.26	32.30	C
1084.90-1080.00			B	0.161	2.733		0.8	1	3.905			
			C	0.161	2.733		0.8	1	3.905			
T3	162.73	3798.26	A	0.155	2.755	15	0.8	1	15.322	650.61	32.53	C
1080.00-1060.00			B	0.155	2.755		0.8	1	15.322			
			C	0.155	2.755		0.8	1	15.322			
T4	176.80	3798.26	A	0.155	2.755	15	0.8	1	15.329	660.45	33.02	C
1060.00-1040.00			B	0.155	2.755		0.8	1	15.329			
			C	0.155	2.755		0.8	1	15.329			
T5	176.80	3798.26	A	0.155	2.755	15	0.8	1	15.336	657.13	32.86	C
1040.00-1020.00			B	0.155	2.755		0.8	1	15.336			
			C	0.155	2.755		0.8	1	15.336			
T6	176.80	3798.26	A	0.155	2.755	15	0.8	1	15.343	653.77	32.69	C
1020.00-1000.00			B	0.155	2.755		0.8	1	15.343			
			C	0.155	2.755		0.8	1	15.343			
T7	186.88	3798.26	A	0.155	2.755	15	0.8	1	15.350	675.68	33.78	C
1000.00-980.00			B	0.155	2.755		0.8	1	15.350			
			C	0.155	2.755		0.8	1	15.350			
T8	189.40	3798.26	A	0.155	2.755	15	0.8	1	15.357	678.38	33.92	C
980.00-960.00			B	0.155	2.755		0.8	1	15.357			
			C	0.155	2.755		0.8	1	15.357			
T9	189.40	4790.45	A	0.168	2.707	15	0.8	1	16.056	688.95	34.45	C
960.00-940.00			B	0.168	2.707		0.8	1	16.056			
			C	0.168	2.707		0.8	1	16.056			
T10	47.35	1197.61	A	0.168	2.707	15	0.8	1	4.012	171.55	34.31	C
940.00-935.00			B	0.168	2.707		0.8	1	4.012			
			C	0.168	2.707		0.8	1	4.012			
T11	47.35	1197.61	A	0.168	2.707	15	0.8	1	4.012	171.32	34.26	C
935.00-930.00			B	0.168	2.707		0.8	1	4.012			
			C	0.168	2.707		0.8	1	4.012			
T12	47.35	1287.44	A	0.172	2.691	15	0.8	1	4.128	174.13	34.83	C

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	124 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
930.00-925.00			B	0.172	2.691		0.8	1	4.128			
			C	0.172	2.691		0.8	1	4.128			
T13	47.35	1287.44	A	0.172	2.691	15	0.8	1	4.128	173.89	34.78	C
925.00-920.00			B	0.172	2.691		0.8	1	4.128			
			C	0.172	2.691		0.8	1	4.128			
T14	47.35	1287.44	A	0.172	2.691	15	0.8	1	4.129	173.65	34.73	C
920.00-915.00			B	0.172	2.691		0.8	1	4.129			
			C	0.172	2.691		0.8	1	4.129			
T15	47.35	1287.44	A	0.172	2.691	15	0.8	1	4.130	173.41	34.68	C
915.00-910.00			B	0.172	2.691		0.8	1	4.130			
			C	0.172	2.691		0.8	1	4.130			
T16	47.35	1197.61	A	0.168	2.707	15	0.8	1	4.016	170.15	34.03	C
910.00-905.00			B	0.168	2.707		0.8	1	4.016			
			C	0.168	2.707		0.8	1	4.016			
T17	47.35	1197.61	A	0.168	2.707	15	0.8	1	4.016	169.91	33.98	C
905.00-900.00			B	0.168	2.707		0.8	1	4.016			
			C	0.168	2.707		0.8	1	4.016			
T18	189.40	4790.45	A	0.168	2.707	14	0.8	1	16.072	677.27	33.86	C
900.00-880.00			B	0.168	2.707		0.8	1	16.072			
			C	0.168	2.707		0.8	1	16.072			
T19	198.58	4790.45	A	0.168	2.707	14	0.8	1	16.083	699.98	35.00	C
880.00-860.00			B	0.168	2.707		0.8	1	16.083			
			C	0.168	2.707		0.8	1	16.083			
T20	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.094	698.85	34.94	C
860.00-840.00			B	0.168	2.707		0.8	1	16.094			
			C	0.168	2.707		0.8	1	16.094			
T21	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.106	694.73	34.74	C
840.00-820.00			B	0.168	2.707		0.8	1	16.106			
			C	0.168	2.707		0.8	1	16.106			
T22	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.117	690.56	34.53	C
820.00-800.00			B	0.168	2.707		0.8	1	16.117			
			C	0.168	2.707		0.8	1	16.117			
T23	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.129	686.35	34.32	C
800.00-780.00			B	0.168	2.707		0.8	1	16.129			
			C	0.168	2.707		0.8	1	16.129			
T24	49.90	1197.61	A	0.168	2.707	14	0.8	1	4.034	170.92	34.18	C
780.00-775.00			B	0.168	2.707		0.8	1	4.034			
			C	0.168	2.707		0.8	1	4.034			
T25	49.90	1197.61	A	0.168	2.707	14	0.8	1	4.035	170.66	34.13	C
775.00-770.00			B	0.168	2.707		0.8	1	4.035			
			C	0.168	2.707		0.8	1	4.035			
T26	49.90	1287.44	A	0.172	2.691	14	0.8	1	4.150	173.27	34.65	C
770.00-765.00			B	0.172	2.691		0.8	1	4.150			
			C	0.172	2.691		0.8	1	4.150			
T27	49.90	1287.44	A	0.172	2.691	14	0.8	1	4.150	173.00	34.60	C
765.00-760.00			B	0.172	2.691		0.8	1	4.150			
			C	0.172	2.691		0.8	1	4.150			
T28	49.90	1287.44	A	0.172	2.691	14	0.8	1	4.151	172.72	34.54	C
760.00-755.00			B	0.172	2.691		0.8	1	4.151			
			C	0.172	2.691		0.8	1	4.151			
T29	49.90	1287.44	A	0.172	2.691	14	0.8	1	4.152	172.45	34.49	C
755.00-750.00			B	0.172	2.691		0.8	1	4.152			
			C	0.172	2.691		0.8	1	4.152			
T30	49.90	1197.61	A	0.168	2.707	14	0.8	1	4.038	169.32	33.86	C
750.00-745.00			B	0.168	2.707		0.8	1	4.038			
			C	0.168	2.707		0.8	1	4.038			
T31	49.90	1197.61	A	0.168	2.707	14	0.8	1	4.039	169.05	33.81	C
745.00-740.00			B	0.168	2.707		0.8	1	4.039			
			C	0.168	2.707		0.8	1	4.039			
T32	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.164	673.48	33.67	C

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<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
740.00-720.00			B	0.168	2.707		0.8	1	16.164			
			C	0.168	2.707		0.8	1	16.164			
T33	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.176	669.12	33.46	C
720.00-700.00			B	0.168	2.707		0.8	1	16.176			
			C	0.168	2.707		0.8	1	16.176			
T34	199.60	4790.45	A	0.168	2.707	14	0.8	1	16.188	664.73	33.24	C
700.00-680.00			B	0.168	2.707		0.8	1	16.188			
			C	0.168	2.707		0.8	1	16.188			
T35	199.60	4790.45	A	0.168	2.707	13	0.8	1	16.201	660.33	33.02	C
680.00-660.00			B	0.168	2.707		0.8	1	16.201			
			C	0.168	2.707		0.8	1	16.201			
T36	199.60	4790.45	A	0.168	2.707	13	0.8	1	16.213	655.91	32.80	C
660.00-640.00			B	0.168	2.707		0.8	1	16.213			
			C	0.168	2.707		0.8	1	16.213			
T37	199.60	5552.12	A	0.176	2.676	13	0.8	1	16.654	658.78	32.94	C
640.00-620.00			B	0.176	2.676		0.8	1	16.654			
			C	0.176	2.676		0.8	1	16.654			
T38	49.90	1388.03	A	0.176	2.677	13	0.8	1	4.163	163.94	32.79	C
620.00-615.00			B	0.176	2.677		0.8	1	4.163			
			C	0.176	2.677		0.8	1	4.163			
T39	49.90	1388.03	A	0.176	2.677	13	0.8	1	4.164	163.67	32.73	C
615.00-610.00			B	0.176	2.677		0.8	1	4.164			
			C	0.176	2.677		0.8	1	4.164			
T40	49.90	1477.86	A	0.181	2.661	13	0.8	1	4.281	166.12	33.22	C
610.00-605.00			B	0.181	2.661		0.8	1	4.281			
			C	0.181	2.661		0.8	1	4.281			
T41	49.90	1477.86	A	0.181	2.661	13	0.8	1	4.282	165.84	33.17	C
605.00-600.00			B	0.181	2.661		0.8	1	4.282			
			C	0.181	2.661		0.8	1	4.282			
T42	49.90	1477.86	A	0.181	2.661	13	0.8	1	4.283	165.56	33.11	C
600.00-595.00			B	0.181	2.661		0.8	1	4.283			
			C	0.181	2.661		0.8	1	4.283			
T43	49.90	1477.86	A	0.181	2.661	13	0.8	1	4.284	165.28	33.06	C
595.00-590.00			B	0.181	2.661		0.8	1	4.284			
			C	0.181	2.661		0.8	1	4.284			
T44	49.90	1388.03	A	0.176	2.677	13	0.8	1	4.169	162.31	32.46	C
590.00-585.00			B	0.176	2.677		0.8	1	4.169			
			C	0.176	2.677		0.8	1	4.169			
T45	49.90	1388.03	A	0.176	2.677	13	0.8	1	4.170	162.03	32.41	C
585.00-580.00			B	0.176	2.677		0.8	1	4.170			
			C	0.176	2.677		0.8	1	4.170			
T46	199.60	5161.26	A	0.172	2.692	13	0.8	1	16.476	641.97	32.10	C
580.00-560.00			B	0.172	2.692		0.8	1	16.476			
			C	0.172	2.692		0.8	1	16.476			
T47	199.60	5161.26	A	0.172	2.692	13	0.8	1	16.495	637.81	31.89	C
560.00-540.00			B	0.172	2.692		0.8	1	16.495			
			C	0.172	2.692		0.8	1	16.495			
T48	49.90	1228.81	A	0.159	2.738	13	0.8	1	3.796	151.04	30.21	C
540.00-535.00			B	0.159	2.738		0.8	1	3.796			
			C	0.159	2.738		0.8	1	3.796			
T49	49.90	1290.32	A	0.172	2.692	13	0.8	1	4.127	158.53	31.71	C
535.00-530.00			B	0.172	2.692		0.8	1	4.127			
			C	0.172	2.692		0.8	1	4.127			
T50	49.90	1290.32	A	0.172	2.692	13	0.8	1	4.127	158.27	31.65	C
530.00-525.00			B	0.172	2.692		0.8	1	4.127			
			C	0.172	2.692		0.8	1	4.127			
T51	49.90	1290.32	A	0.172	2.692	13	0.8	1	4.128	158.01	31.60	C
525.00-520.00			B	0.172	2.692		0.8	1	4.128			
			C	0.172	2.692		0.8	1	4.128			
T52	199.60	5161.26	A	0.172	2.692	13	0.8	1	16.521	629.49	31.47	C

# tnxTower

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	126 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>c</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
520.00-500.00			B	0.172	2.692		0.8	1	16.521			
			C	0.172	2.692		0.8	1	16.521			
T53	199.60	5161.26	A	0.172	2.692	13	0.8	1	16.533	625.51	31.28	C
500.00-480.00			B	0.172	2.692		0.8	1	16.533			
			C	0.172	2.692		0.8	1	16.533			
T54	199.60	5161.26	A	0.172	2.692	13	0.8	1	16.545	621.69	31.08	C
480.00-460.00			B	0.172	2.692		0.8	1	16.545			
			C	0.172	2.692		0.8	1	16.545			
T55	199.60	5552.12	A	0.176	2.677	12	0.8	1	16.776	621.58	31.08	C
460.00-440.00			B	0.176	2.677		0.8	1	16.776			
			C	0.176	2.677		0.8	1	16.776			
T56	49.90	1388.03	A	0.176	2.677	12	0.8	1	4.195	154.83	30.97	C
440.00-435.00			B	0.176	2.677		0.8	1	4.195			
			C	0.176	2.677		0.8	1	4.195			
T57	49.90	1388.03	A	0.176	2.677	12	0.8	1	4.195	154.62	30.92	C
435.00-430.00			B	0.176	2.677		0.8	1	4.195			
			C	0.176	2.677		0.8	1	4.195			
T58	49.90	1477.86	A	0.181	2.661	12	0.8	1	4.311	156.96	31.39	C
430.00-425.00			B	0.181	2.661		0.8	1	4.311			
			C	0.181	2.661		0.8	1	4.311			
T59	49.90	1477.86	A	0.181	2.661	12	0.8	1	4.312	156.76	31.35	C
425.00-420.00			B	0.181	2.661		0.8	1	4.312			
			C	0.181	2.661		0.8	1	4.312			
T60	49.90	1477.86	A	0.181	2.661	12	0.8	1	4.313	156.56	31.31	C
420.00-415.00			B	0.181	2.661		0.8	1	4.313			
			C	0.181	2.661		0.8	1	4.313			
T61	49.90	1477.86	A	0.181	2.661	12	0.8	1	4.313	156.37	31.27	C
415.00-410.00			B	0.181	2.661		0.8	1	4.313			
			C	0.181	2.661		0.8	1	4.313			
T62	49.90	1388.03	A	0.176	2.677	12	0.8	1	4.199	153.66	30.73	C
410.00-405.00			B	0.176	2.677		0.8	1	4.199			
			C	0.176	2.677		0.8	1	4.199			
T63	49.90	1388.03	A	0.176	2.677	12	0.8	1	4.199	153.48	30.70	C
405.00-400.00			B	0.176	2.677		0.8	1	4.199			
			C	0.176	2.677		0.8	1	4.199			
T64	226.80	5552.12	A	0.176	2.677	12	0.8	1	16.803	629.59	31.48	C
400.00-380.00			B	0.176	2.677		0.8	1	16.803			
			C	0.176	2.677		0.8	1	16.803			
T65	226.80	5552.12	A	0.176	2.677	12	0.8	1	16.811	627.18	31.36	C
380.00-360.00			B	0.176	2.677		0.8	1	16.811			
			C	0.176	2.677		0.8	1	16.811			
T66	231.39	5552.12	A	0.176	2.677	12	0.8	1	16.817	636.46	31.82	C
360.00-340.00			B	0.176	2.677		0.8	1	16.817			
			C	0.176	2.677		0.8	1	16.817			
T67	237.00	5552.12	A	0.176	2.677	12	0.8	1	16.822	648.75	32.44	C
340.00-320.00			B	0.176	2.677		0.8	1	16.822			
			C	0.176	2.677		0.8	1	16.822			
T68	237.00	5552.12	A	0.176	2.677	12	0.8	1	16.824	648.04	32.40	C
320.00-300.00			B	0.176	2.677		0.8	1	16.824			
			C	0.176	2.677		0.8	1	16.824			
T69	237.00	5552.12	A	0.176	2.677	12	0.8	1	16.824	648.12	32.41	C
300.00-280.00			B	0.176	2.677		0.8	1	16.824			
			C	0.176	2.677		0.8	1	16.824			
T70	59.25	1388.03	A	0.176	2.677	12	0.8	1	4.206	162.16	32.43	C
280.00-275.00			B	0.176	2.677		0.8	1	4.206			
			C	0.176	2.677		0.8	1	4.206			
T71	59.25	1388.03	A	0.176	2.677	12	0.8	1	4.205	162.23	32.45	C
275.00-270.00			B	0.176	2.677		0.8	1	4.205			
			C	0.176	2.677		0.8	1	4.205			
T72	59.25	1477.86	A	0.181	2.661	12	0.8	1	4.320	164.82	32.96	C

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<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	127 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
270.00-265.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T73	59.25	1477.86	A	0.181	2.661	12	0.8	1	4.320	164.93	32.99	C
265.00-260.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T74	59.25	1477.86	A	0.181	2.661	12	0.8	1	4.320	165.05	33.01	C
260.00-255.00			B	0.181	2.661		0.8	1	4.320			
			C	0.181	2.661		0.8	1	4.320			
T75	59.25	1477.86	A	0.181	2.661	12	0.8	1	4.319	165.20	33.04	C
255.00-250.00			B	0.181	2.661		0.8	1	4.319			
			C	0.181	2.661		0.8	1	4.319			
T76	59.25	1388.03	A	0.176	2.677	12	0.8	1	4.203	162.86	32.57	C
250.00-245.00			B	0.176	2.677		0.8	1	4.203			
			C	0.176	2.677		0.8	1	4.203			
T77	59.25	1388.03	A	0.176	2.677	12	0.8	1	4.203	163.04	32.61	C
245.00-240.00			B	0.176	2.677		0.8	1	4.203			
			C	0.176	2.677		0.8	1	4.203			
T78	237.00	5552.12	A	0.176	2.677	12	0.8	1	16.804	654.23	32.71	C
240.00-220.00			B	0.176	2.677		0.8	1	16.804			
			C	0.176	2.677		0.8	1	16.804			
T79	237.00	5552.12	A	0.176	2.677	12	0.8	1	16.790	658.59	32.93	C
220.00-200.00			B	0.176	2.677		0.8	1	16.790			
			C	0.176	2.677		0.8	1	16.790			
T80	379.04	5552.12	A	0.176	2.677	12	0.8	1	16.772	799.63	39.98	A
200.00-180.00			B	0.176	2.677		0.8	1	16.772			
			C	0.176	2.677		0.8	1	16.772			
T81	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.749	914.64	45.73	A
180.00-160.00			B	0.176	2.677		0.8	1	16.749			
			C	0.176	2.677		0.8	1	16.749			
T82	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.723	926.09	46.30	A
160.00-140.00			B	0.176	2.677		0.8	1	16.723			
			C	0.176	2.677		0.8	1	16.723			
T83	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.694	964.04	48.20	A
140.00-120.00			B	0.176	2.677		0.8	1	16.694			
			C	0.176	2.677		0.8	1	16.694			
T84	125.35	1388.03	A	0.176	2.677	13	0.8	1	4.169	243.06	48.61	A
120.00-115.00			B	0.176	2.677		0.8	1	4.169			
			C	0.176	2.677		0.8	1	4.169			
T85	125.35	1388.03	A	0.176	2.677	13	0.8	1	4.167	243.87	48.77	A
115.00-110.00			B	0.176	2.677		0.8	1	4.167			
			C	0.176	2.677		0.8	1	4.167			
T86	125.35	1477.86	A	0.181	2.661	13	0.8	1	4.281	247.39	49.48	A
110.00-105.00			B	0.181	2.661		0.8	1	4.281			
			C	0.181	2.661		0.8	1	4.281			
T87	125.35	1477.86	A	0.181	2.661	13	0.8	1	4.279	248.17	49.63	A
105.00-100.00			B	0.181	2.661		0.8	1	4.279			
			C	0.181	2.661		0.8	1	4.279			
T88	125.35	1477.86	A	0.181	2.661	13	0.8	1	4.278	248.92	49.78	A
100.00-95.00			B	0.181	2.661		0.8	1	4.278			
			C	0.181	2.661		0.8	1	4.278			
T89	125.35	1477.86	A	0.181	2.661	13	0.8	1	4.276	249.61	49.92	A
95.00-90.00			B	0.181	2.661		0.8	1	4.276			
			C	0.181	2.661		0.8	1	4.276			
T90	125.35	1388.03	A	0.176	2.677	13	0.8	1	4.159	247.46	49.49	A
90.00-85.00			B	0.176	2.677		0.8	1	4.159			
			C	0.176	2.677		0.8	1	4.159			
T91	125.35	1388.03	A	0.176	2.677	13	0.8	1	4.158	247.99	49.60	A
85.00-80.00			B	0.176	2.677		0.8	1	4.158			
			C	0.176	2.677		0.8	1	4.158			
T92	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.624	994.89	49.74	A



<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	128 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
80.00-60.00			B	0.176	2.677		0.8	1	16.624			
			C	0.176	2.677		0.8	1	16.624			
T93	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.641	987.35	49.37	A
60.00-40.00			B	0.176	2.677		0.8	1	16.641			
			C	0.176	2.677		0.8	1	16.641			
T94	501.40	5552.12	A	0.176	2.677	13	0.8	1	16.738	919.47	45.97	A
40.00-20.00			B	0.176	2.677		0.8	1	16.738			
			C	0.176	2.677		0.8	1	16.738			
T95	125.35	1388.03	A	0.176	2.677	13	0.8	1	4.152	250.55	50.11	A
20.00-15.00			B	0.176	2.677		0.8	1	4.152			
			C	0.176	2.677		0.8	1	4.152			
T96	200.56	2850.83	A	0.248	2.443	14	0.8	1	11.339	532.91	66.61	A
15.00-7.00			B	0.248	2.443		0.8	1	11.339			
			C	0.248	2.443		0.8	1	11.339			
T97	175.49	4952.76	A	1	2.1	15	0.8	1	36.067	816.74*	116.68	C
			B	1	2.1		0.8	1	36.067			
			C	1	2.1		0.8	1	36.067			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					40630.68		

### Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
L1	424.14	10343.38	A	1	0.6	15	1	1	103.500	2254.82	36.31	C
1151.90-1089.80			B	1	0.6		1	1	103.500			
			C	1	1.2		1	1	103.500			
T1	33.47	2474.36	A	0.42	2.025	15	0.85	1	13.865	384.97	78.57	C
1089.80-1084.90			B	0.42	2.025		0.85	1	13.865			
			C	0.42	2.025		0.85	1	13.865			
T2	33.47	1026.80	A	0.161	2.733	15	0.85	1	3.986	161.10	32.88	C
1084.90-1080.00			B	0.161	2.733		0.85	1	3.986			
			C	0.161	2.733		0.85	1	3.986			
T3	162.73	3798.26	A	0.155	2.755	15	0.85	1	15.642	662.04	33.10	C
1080.00-1060.00			B	0.155	2.755		0.85	1	15.642			
			C	0.155	2.755		0.85	1	15.642			
T4	176.80	3798.26	A	0.155	2.755	15	0.85	1	15.649	671.82	33.59	C
1060.00-1040.00			B	0.155	2.755		0.85	1	15.649			
			C	0.155	2.755		0.85	1	15.649			
T5	176.80	3798.26	A	0.155	2.755	15	0.85	1	15.656	668.44	33.42	C
1040.00-1020.00			B	0.155	2.755		0.85	1	15.656			
			C	0.155	2.755		0.85	1	15.656			
T6	176.80	3798.26	A	0.155	2.755	15	0.85	1	15.663	665.02	33.25	C
1020.00-1000.00			B	0.155	2.755		0.85	1	15.663			
			C	0.155	2.755		0.85	1	15.663			
T7	186.88	3798.26	A	0.155	2.755	15	0.85	1	15.670	686.86	34.34	C
1000.00-980.00			B	0.155	2.755		0.85	1	15.670			
			C	0.155	2.755		0.85	1	15.670			
T8	189.40	3798.26	A	0.155	2.755	15	0.85	1	15.678	689.50	34.48	C
980.00-960.00			B	0.155	2.755		0.85	1	15.678			
			C	0.155	2.755		0.85	1	15.678			
T9	189.40	4790.45	A	0.168	2.707	15	0.85	1	16.374	699.75	34.99	C

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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
960.00-940.00			B	0.168	2.707		0.85	1	16.374			
			C	0.168	2.707		0.85	1	16.374			
T10	47.35	1197.61	A	0.168	2.707	15	0.85	1	4.091	174.24	34.85	C
940.00-935.00			B	0.168	2.707		0.85	1	4.091			
			C	0.168	2.707		0.85	1	4.091			
T11	47.35	1197.61	A	0.168	2.707	15	0.85	1	4.092	174.00	34.80	C
935.00-930.00			B	0.168	2.707		0.85	1	4.092			
			C	0.168	2.707		0.85	1	4.092			
T12	47.35	1287.44	A	0.172	2.691	15	0.85	1	4.207	176.79	35.36	C
930.00-925.00			B	0.172	2.691		0.85	1	4.207			
			C	0.172	2.691		0.85	1	4.207			
T13	47.35	1287.44	A	0.172	2.691	15	0.85	1	4.208	176.55	35.31	C
925.00-920.00			B	0.172	2.691		0.85	1	4.208			
			C	0.172	2.691		0.85	1	4.208			
T14	47.35	1287.44	A	0.172	2.691	15	0.85	1	4.208	176.31	35.26	C
920.00-915.00			B	0.172	2.691		0.85	1	4.208			
			C	0.172	2.691		0.85	1	4.208			
T15	47.35	1287.44	A	0.172	2.691	15	0.85	1	4.209	176.06	35.21	C
915.00-910.00			B	0.172	2.691		0.85	1	4.209			
			C	0.172	2.691		0.85	1	4.209			
T16	47.35	1197.61	A	0.168	2.707	15	0.85	1	4.095	172.81	34.56	C
910.00-905.00			B	0.168	2.707		0.85	1	4.095			
			C	0.168	2.707		0.85	1	4.095			
T17	47.35	1197.61	A	0.168	2.707	15	0.85	1	4.096	172.57	34.51	C
905.00-900.00			B	0.168	2.707		0.85	1	4.096			
			C	0.168	2.707		0.85	1	4.096			
T18	189.40	4790.45	A	0.168	2.707	14	0.85	1	16.390	687.86	34.39	C
900.00-880.00			B	0.168	2.707		0.85	1	16.390			
			C	0.168	2.707		0.85	1	16.390			
T19	198.58	4790.45	A	0.168	2.707	14	0.85	1	16.401	710.50	35.53	C
880.00-860.00			B	0.168	2.707		0.85	1	16.401			
			C	0.168	2.707		0.85	1	16.401			
T20	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.412	709.31	35.47	C
860.00-840.00			B	0.168	2.707		0.85	1	16.412			
			C	0.168	2.707		0.85	1	16.412			
T21	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.423	705.12	35.26	C
840.00-820.00			B	0.168	2.707		0.85	1	16.423			
			C	0.168	2.707		0.85	1	16.423			
T22	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.435	700.88	35.04	C
820.00-800.00			B	0.168	2.707		0.85	1	16.435			
			C	0.168	2.707		0.85	1	16.435			
T23	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.446	696.60	34.83	C
800.00-780.00			B	0.168	2.707		0.85	1	16.446			
			C	0.168	2.707		0.85	1	16.446			
T24	49.90	1197.61	A	0.168	2.707	14	0.85	1	4.113	173.48	34.70	C
780.00-775.00			B	0.168	2.707		0.85	1	4.113			
			C	0.168	2.707		0.85	1	4.113			
T25	49.90	1197.61	A	0.168	2.707	14	0.85	1	4.114	173.21	34.64	C
775.00-770.00			B	0.168	2.707		0.85	1	4.114			
			C	0.168	2.707		0.85	1	4.114			
T26	49.90	1287.44	A	0.172	2.691	14	0.85	1	4.229	175.80	35.16	C
770.00-765.00			B	0.172	2.691		0.85	1	4.229			
			C	0.172	2.691		0.85	1	4.229			
T27	49.90	1287.44	A	0.172	2.691	14	0.85	1	4.230	175.52	35.10	C
765.00-760.00			B	0.172	2.691		0.85	1	4.230			
			C	0.172	2.691		0.85	1	4.230			
T28	49.90	1287.44	A	0.172	2.691	14	0.85	1	4.231	175.24	35.05	C
760.00-755.00			B	0.172	2.691		0.85	1	4.231			
			C	0.172	2.691		0.85	1	4.231			
T29	49.90	1287.44	A	0.172	2.691	14	0.85	1	4.231	174.96	34.99	C

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
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 FAX: (919) 466-5414

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	130 of 192
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Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> p <sub>sf</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
755.00-750.00			B	0.172	2.691		0.85	1	4.231			
			C	0.172	2.691		0.85	1	4.231			
T30	49.90	1197.61	A	0.168	2.707	14	0.85	1	4.118	171.84	34.37	C
750.00-745.00			B	0.168	2.707		0.85	1	4.118			
			C	0.168	2.707		0.85	1	4.118			
T31	49.90	1197.61	A	0.168	2.707	14	0.85	1	4.119	171.57	34.31	C
745.00-740.00			B	0.168	2.707		0.85	1	4.119			
			C	0.168	2.707		0.85	1	4.119			
T32	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.482	683.52	34.18	C
740.00-720.00			B	0.168	2.707		0.85	1	16.482			
			C	0.168	2.707		0.85	1	16.482			
T33	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.494	679.09	33.95	C
720.00-700.00			B	0.168	2.707		0.85	1	16.494			
			C	0.168	2.707		0.85	1	16.494			
T34	199.60	4790.45	A	0.168	2.707	14	0.85	1	16.506	674.63	33.73	C
700.00-680.00			B	0.168	2.707		0.85	1	16.506			
			C	0.168	2.707		0.85	1	16.506			
T35	199.60	4790.45	A	0.168	2.707	13	0.85	1	16.518	670.16	33.51	C
680.00-660.00			B	0.168	2.707		0.85	1	16.518			
			C	0.168	2.707		0.85	1	16.518			
T36	199.60	4790.45	A	0.168	2.707	13	0.85	1	16.531	665.67	33.28	C
660.00-640.00			B	0.168	2.707		0.85	1	16.531			
			C	0.168	2.707		0.85	1	16.531			
T37	199.60	5552.12	A	0.176	2.676	13	0.85	1	16.970	668.32	33.42	C
640.00-620.00			B	0.176	2.676		0.85	1	16.970			
			C	0.176	2.676		0.85	1	16.970			
T38	49.90	1388.03	A	0.176	2.677	13	0.85	1	4.242	166.32	33.26	C
620.00-615.00			B	0.176	2.677		0.85	1	4.242			
			C	0.176	2.677		0.85	1	4.242			
T39	49.90	1388.03	A	0.176	2.677	13	0.85	1	4.243	166.04	33.21	C
615.00-610.00			B	0.176	2.677		0.85	1	4.243			
			C	0.176	2.677		0.85	1	4.243			
T40	49.90	1477.86	A	0.181	2.661	13	0.85	1	4.360	168.47	33.69	C
610.00-605.00			B	0.181	2.661		0.85	1	4.360			
			C	0.181	2.661		0.85	1	4.360			
T41	49.90	1477.86	A	0.181	2.661	13	0.85	1	4.361	168.19	33.64	C
605.00-600.00			B	0.181	2.661		0.85	1	4.361			
			C	0.181	2.661		0.85	1	4.361			
T42	49.90	1477.86	A	0.181	2.661	13	0.85	1	4.362	167.90	33.58	C
600.00-595.00			B	0.181	2.661		0.85	1	4.362			
			C	0.181	2.661		0.85	1	4.362			
T43	49.90	1477.86	A	0.181	2.661	13	0.85	1	4.363	167.62	33.52	C
595.00-590.00			B	0.181	2.661		0.85	1	4.363			
			C	0.181	2.661		0.85	1	4.363			
T44	49.90	1388.03	A	0.176	2.677	13	0.85	1	4.248	164.65	32.93	C
590.00-585.00			B	0.176	2.677		0.85	1	4.248			
			C	0.176	2.677		0.85	1	4.248			
T45	49.90	1388.03	A	0.176	2.677	13	0.85	1	4.249	164.37	32.87	C
585.00-580.00			B	0.176	2.677		0.85	1	4.249			
			C	0.176	2.677		0.85	1	4.249			
T46	199.60	5161.26	A	0.172	2.692	13	0.85	1	16.793	651.36	32.57	C
580.00-560.00			B	0.172	2.692		0.85	1	16.793			
			C	0.172	2.692		0.85	1	16.793			
T47	199.60	5161.26	A	0.172	2.692	13	0.85	1	16.812	647.14	32.36	C
560.00-540.00			B	0.172	2.692		0.85	1	16.812			
			C	0.172	2.692		0.85	1	16.812			
T48	49.90	1228.81	A	0.159	2.738	13	0.85	1	3.875	153.40	30.68	C
540.00-535.00			B	0.159	2.738		0.85	1	3.875			
			C	0.159	2.738		0.85	1	3.875			
T49	49.90	1290.32	A	0.172	2.692	13	0.85	1	4.206	160.85	32.17	C

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	131 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
535.00-530.00			B	0.172	2.692		0.85	1	4.206			
			C	0.172	2.692		0.85	1	4.206			
T50	49.90	1290.32	A	0.172	2.692	13	0.85	1	4.207	160.58	32.12	C
530.00-525.00			B	0.172	2.692		0.85	1	4.207			
			C	0.172	2.692		0.85	1	4.207			
T51	49.90	1290.32	A	0.172	2.692	13	0.85	1	4.207	160.32	32.06	C
525.00-520.00			B	0.172	2.692		0.85	1	4.207			
			C	0.172	2.692		0.85	1	4.207			
T52	199.60	5161.26	A	0.172	2.692	13	0.85	1	16.838	638.68	31.93	C
520.00-500.00			B	0.172	2.692		0.85	1	16.838			
			C	0.172	2.692		0.85	1	16.838			
T53	199.60	5161.26	A	0.172	2.692	13	0.85	1	16.850	634.64	31.73	C
500.00-480.00			B	0.172	2.692		0.85	1	16.850			
			C	0.172	2.692		0.85	1	16.850			
T54	199.60	5161.26	A	0.172	2.692	13	0.85	1	16.862	630.75	31.54	C
480.00-460.00			B	0.172	2.692		0.85	1	16.862			
			C	0.172	2.692		0.85	1	16.862			
T55	199.60	5552.12	A	0.176	2.677	12	0.85	1	17.092	630.52	31.53	C
460.00-440.00			B	0.176	2.677		0.85	1	17.092			
			C	0.176	2.677		0.85	1	17.092			
T56	49.90	1388.03	A	0.176	2.677	12	0.85	1	4.274	157.06	31.41	C
440.00-435.00			B	0.176	2.677		0.85	1	4.274			
			C	0.176	2.677		0.85	1	4.274			
T57	49.90	1388.03	A	0.176	2.677	12	0.85	1	4.274	156.85	31.37	C
435.00-430.00			B	0.176	2.677		0.85	1	4.274			
			C	0.176	2.677		0.85	1	4.274			
T58	49.90	1477.86	A	0.181	2.661	12	0.85	1	4.390	159.17	31.83	C
430.00-425.00			B	0.181	2.661		0.85	1	4.390			
			C	0.181	2.661		0.85	1	4.390			
T59	49.90	1477.86	A	0.181	2.661	12	0.85	1	4.391	158.96	31.79	C
425.00-420.00			B	0.181	2.661		0.85	1	4.391			
			C	0.181	2.661		0.85	1	4.391			
T60	49.90	1477.86	A	0.181	2.661	12	0.85	1	4.392	158.76	31.75	C
420.00-415.00			B	0.181	2.661		0.85	1	4.392			
			C	0.181	2.661		0.85	1	4.392			
T61	49.90	1477.86	A	0.181	2.661	12	0.85	1	4.392	158.57	31.71	C
415.00-410.00			B	0.181	2.661		0.85	1	4.392			
			C	0.181	2.661		0.85	1	4.392			
T62	49.90	1388.03	A	0.176	2.677	12	0.85	1	4.278	155.87	31.17	C
410.00-405.00			B	0.176	2.677		0.85	1	4.278			
			C	0.176	2.677		0.85	1	4.278			
T63	49.90	1388.03	A	0.176	2.677	12	0.85	1	4.278	155.69	31.14	C
405.00-400.00			B	0.176	2.677		0.85	1	4.278			
			C	0.176	2.677		0.85	1	4.278			
T64	226.80	5552.12	A	0.176	2.677	12	0.85	1	17.119	638.38	31.92	C
400.00-380.00			B	0.176	2.677		0.85	1	17.119			
			C	0.176	2.677		0.85	1	17.119			
T65	226.80	5552.12	A	0.176	2.677	12	0.85	1	17.127	635.94	31.80	C
380.00-360.00			B	0.176	2.677		0.85	1	17.127			
			C	0.176	2.677		0.85	1	17.127			
T66	231.39	5552.12	A	0.176	2.677	12	0.85	1	17.133	645.19	32.26	C
360.00-340.00			B	0.176	2.677		0.85	1	17.133			
			C	0.176	2.677		0.85	1	17.133			
T67	237.00	5552.12	A	0.176	2.677	12	0.85	1	17.138	657.45	32.87	C
340.00-320.00			B	0.176	2.677		0.85	1	17.138			
			C	0.176	2.677		0.85	1	17.138			
T68	237.00	5552.12	A	0.176	2.677	12	0.85	1	17.140	656.73	32.84	C
320.00-300.00			B	0.176	2.677		0.85	1	17.140			
			C	0.176	2.677		0.85	1	17.140			
T69	237.00	5552.12	A	0.176	2.677	12	0.85	1	17.140	656.82	32.84	C

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	132 of 192
<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
300.00-280.00			B	0.176	2.677		0.85	1	17.140			
			C	0.176	2.677		0.85	1	17.140			
T70	59.25	1388.03	A	0.176	2.677	12	0.85	1	4.285	164.33	32.87	C
280.00-275.00			B	0.176	2.677		0.85	1	4.285			
			C	0.176	2.677		0.85	1	4.285			
T71	59.25	1388.03	A	0.176	2.677	12	0.85	1	4.284	164.41	32.88	C
275.00-270.00			B	0.176	2.677		0.85	1	4.284			
			C	0.176	2.677		0.85	1	4.284			
T72	59.25	1477.86	A	0.181	2.661	12	0.85	1	4.399	166.98	33.40	C
270.00-265.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T73	59.25	1477.86	A	0.181	2.661	12	0.85	1	4.399	167.09	33.42	C
265.00-260.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T74	59.25	1477.86	A	0.181	2.661	12	0.85	1	4.399	167.22	33.44	C
260.00-255.00			B	0.181	2.661		0.85	1	4.399			
			C	0.181	2.661		0.85	1	4.399			
T75	59.25	1477.86	A	0.181	2.661	12	0.85	1	4.398	167.37	33.47	C
255.00-250.00			B	0.181	2.661		0.85	1	4.398			
			C	0.181	2.661		0.85	1	4.398			
T76	59.25	1388.03	A	0.176	2.677	12	0.85	1	4.282	165.04	33.01	C
250.00-245.00			B	0.176	2.677		0.85	1	4.282			
			C	0.176	2.677		0.85	1	4.282			
T77	59.25	1388.03	A	0.176	2.677	12	0.85	1	4.282	165.22	33.04	C
245.00-240.00			B	0.176	2.677		0.85	1	4.282			
			C	0.176	2.677		0.85	1	4.282			
T78	237.00	5552.12	A	0.176	2.677	12	0.85	1	17.120	663.02	33.15	C
240.00-220.00			B	0.176	2.677		0.85	1	17.120			
			C	0.176	2.677		0.85	1	17.120			
T79	237.00	5552.12	A	0.176	2.677	12	0.85	1	17.106	667.44	33.37	C
220.00-200.00			B	0.176	2.677		0.85	1	17.106			
			C	0.176	2.677		0.85	1	17.106			
T80	379.04	5552.12	A	0.176	2.677	12	0.85	1	17.088	809.38	40.47	A
200.00-180.00			B	0.176	2.677		0.85	1	17.088			
			C	0.176	2.677		0.85	1	17.088			
T81	501.40	5552.12	A	0.176	2.677	13	0.85	1	17.065	925.32	46.27	A
180.00-160.00			B	0.176	2.677		0.85	1	17.065			
			C	0.176	2.677		0.85	1	17.065			
T82	501.40	5552.12	A	0.176	2.677	13	0.85	1	17.039	936.91	46.85	A
160.00-140.00			B	0.176	2.677		0.85	1	17.039			
			C	0.176	2.677		0.85	1	17.039			
T83	501.40	5552.12	A	0.176	2.677	13	0.85	1	17.010	975.02	48.75	A
140.00-120.00			B	0.176	2.677		0.85	1	17.010			
			C	0.176	2.677		0.85	1	17.010			
T84	125.35	1388.03	A	0.176	2.677	13	0.85	1	4.248	245.83	49.17	A
120.00-115.00			B	0.176	2.677		0.85	1	4.248			
			C	0.176	2.677		0.85	1	4.248			
T85	125.35	1388.03	A	0.176	2.677	13	0.85	1	4.246	246.66	49.33	A
115.00-110.00			B	0.176	2.677		0.85	1	4.246			
			C	0.176	2.677		0.85	1	4.246			
T86	125.35	1477.86	A	0.181	2.661	13	0.85	1	4.360	250.17	50.03	A
110.00-105.00			B	0.181	2.661		0.85	1	4.360			
			C	0.181	2.661		0.85	1	4.360			
T87	125.35	1477.86	A	0.181	2.661	13	0.85	1	4.358	250.96	50.19	A
105.00-100.00			B	0.181	2.661		0.85	1	4.358			
			C	0.181	2.661		0.85	1	4.358			
T88	125.35	1477.86	A	0.181	2.661	13	0.85	1	4.356	251.71	50.34	A
100.00-95.00			B	0.181	2.661		0.85	1	4.356			
			C	0.181	2.661		0.85	1	4.356			
T89	125.35	1477.86	A	0.181	2.661	13	0.85	1	4.355	252.41	50.48	A

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	133 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
95.00-90.00			B	0.181	2.661		0.85	1	4.355			
			C	0.181	2.661		0.85	1	4.355			
T90	125.35	1388.03	A	0.176	2.677	13	0.85	1	4.238	250.29	50.06	A
90.00-85.00			B	0.176	2.677		0.85	1	4.238			
			C	0.176	2.677		0.85	1	4.238			
T91	125.35	1388.03	A	0.176	2.677	13	0.85	1	4.237	250.82	50.16	A
85.00-80.00			B	0.176	2.677		0.85	1	4.237			
			C	0.176	2.677		0.85	1	4.237			
T92	501.40	5552.12	A	0.176	2.677	13	0.85	1	16.940	1006.26	50.31	A
80.00-60.00			B	0.176	2.677		0.85	1	16.940			
			C	0.176	2.677		0.85	1	16.940			
T93	501.40	5552.12	A	0.176	2.677	13	0.85	1	16.957	998.63	49.93	A
60.00-40.00			B	0.176	2.677		0.85	1	16.957			
			C	0.176	2.677		0.85	1	16.957			
T94	501.40	5552.12	A	0.176	2.677	13	0.85	1	17.054	930.20	46.51	A
40.00-20.00			B	0.176	2.677		0.85	1	17.054			
			C	0.176	2.677		0.85	1	17.054			
T95	125.35	1388.03	A	0.176	2.677	13	0.85	1	4.231	253.41	50.68	A
20.00-15.00			B	0.176	2.677		0.85	1	4.231			
			C	0.176	2.677		0.85	1	4.231			
T96	200.56	2850.83	A	0.248	2.443	14	0.85	1	11.841	548.22	68.53	A
15.00-7.00			B	0.248	2.443		0.85	1	11.841			
			C	0.248	2.443		0.85	1	11.841			
T97 7.00-0.00	175.49	4952.76	A	1	2.1	15	0.85	1	37.895	816.74*	116.68	C
			B	1	2.1		0.85	1	37.895			
			C	1	2.1		0.85	1	37.895			
Sum Weight:	14343.10	294337.78			*2.1A <sub>g</sub> limit					42397.22		

### Discrete Appurtenance Pressures - No Ice

G<sub>H</sub> = 0.850 (base tower), 0.850 (upper structure)

Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>A</sub> A <sub>C</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>C</sub> Side ft <sup>2</sup>
TFU-31ETT/VP-R O6	0.0000	27628.00	0.00	0.00	1169.00	1.995	47	42.81	42.81
ISMD10	60.0000	421.50	5.46	-3.15	1003.00	1.910	45	5.83	1.77
10' - 12' Ice Shield (C30-085-103)	120.0000	667.00	7.46	4.31	889.00	1.845	43	6.22	1.09
Radio 0208	0.0000	19.80	0.00	-8.62	400.00	1.469	37	1.40	0.38
RRUS 4415 B30	0.0000	46.00	0.00	-8.62	400.00	1.469	37	1.84	0.82
ODI2-065R18K-GQ	0.0000	25.10	0.00	-8.62	400.00	1.469	37	4.85	1.02
Radio 0208	120.0000	19.80	7.46	4.31	400.00	1.469	37	1.40	0.38
ODI2-065R18K-GQ	120.0000	25.10	7.46	4.31	400.00	1.469	37	4.85	1.02
Radio 0208	240.0000	19.80	-7.46	4.31	400.00	1.469	37	1.40	0.38
ODI2-065R18K-GQ	240.0000	25.10	-7.46	4.31	400.00	1.469	37	4.85	1.02
ISMD8	30.0000	383.40	0.00	-8.62	356.00	1.420	36	3.73	1.41
DC6-48-60-18-8F (23.5" Height)	-20.0000	20.00	0.00	-8.62	190.00	1.187	37	1.11	1.11
LGP21401	-70.0000	28.20	0.00	-8.62	192.00	1.191	37	2.20	0.70
7770.00	-70.0000	35.00	0.00	-8.62	190.00	1.187	37	5.51	1.70
LGP21401	90.0000	28.20	7.46	4.31	192.00	1.191	37	2.20	0.70
7770.00	90.0000	35.00	7.46	4.31	190.00	1.187	37	5.51	1.70
LGP21401	210.0000	28.20	-7.46	4.31	192.00	1.191	37	2.20	0.70
7770.00	210.0000	35.00	-7.46	4.31	190.00	1.187	37	5.51	1.70

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	134 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>AAc</sub> Front ft <sup>2</sup>	C <sub>AAc</sub> Side ft <sup>2</sup>
Flat Side Arm	-90.0000	150.00	0.00	-8.62	1073.00	1.947	46	2.14	6.30
Flat Side Arm	330.0000	150.00	-7.46	4.31	1073.00	1.947	46	2.14	6.30
Flat Side Arm	90.0000	150.00	0.00	-8.62	1003.00	1.910	45	2.14	6.30
Flat Side Arm	30.0000	150.00	7.46	4.31	1003.00	1.910	45	2.14	6.30
Stand-Off	0.0000	75.00	0.00	-6.62	400.00	1.469	37	1.77	2.50
Stand-Off	120.0000	75.00	5.73	3.31	400.00	1.469	37	1.77	2.50
Stand-Off	240.0000	75.00	-5.73	3.31	400.00	1.469	37	1.77	2.50
Vislink Proscan III	180.0000	185.00	0.00	4.31	1073.00	1.947	46	19.02	19.02
Vislink Proscan III	180.0000	185.00	0.00	4.31	996.00	1.906	45	19.02	19.02
RRUS 8843 B2, B66A	-40.0000	72.00	0.00	-8.62	190.00	1.187	37	1.64	1.35
RRUS 8843 B2, B66A	90.0000	72.00	7.46	4.31	190.00	1.187	37	1.64	1.35
RRUS 8843 B2, B66A	210.0000	72.00	-7.46	4.31	190.00	1.187	37	1.64	1.35
DC6-48-60-18-8C	-20.0000	16.00	0.00	-8.62	190.00	1.187	37	1.27	1.27
RRUS 4449 B5, B12	-40.0000	71.00	0.00	-8.62	190.00	1.187	37	1.97	1.40
RRUS 4449 B5, B12	90.0000	71.00	7.46	4.31	190.00	1.187	37	1.97	1.40
RRUS 4449 B5, B12	210.0000	71.00	-7.46	4.31	190.00	1.187	37	1.97	1.40
RRUS 4478 B14	-40.0000	59.40	0.00	-8.62	190.00	1.187	37	2.02	1.25
RRUS 4478 B14	90.0000	59.40	7.46	4.31	190.00	1.187	37	2.02	1.25
RRUS 4478 B14	210.0000	59.40	-7.46	4.31	190.00	1.187	37	2.02	1.25
RRUS-11 800 MHz	-40.0000	54.00	0.00	-8.62	190.00	1.187	37	2.52	1.30
RRUS-11 800 MHz	90.0000	54.00	7.46	4.31	190.00	1.187	37	2.52	1.30
RRUS-11 800 MHz	210.0000	54.00	-7.46	4.31	190.00	1.187	37	2.52	1.30
DC6-48-60-18-8C-EV	-20.0000	16.00	0.00	-8.62	190.00	1.187	37	4.79	2.73
80010965	90.0000	195.20	7.46	4.31	190.00	1.187	37	27.62	16.26
80010966	210.0000	229.20	-7.46	4.31	190.00	1.187	37	34.72	20.02
80010966	-40.0000	229.20	0.00	-8.62	190.00	1.187	37	34.72	20.02
Round Sector Frame	-40.0000	300.00	0.00	-8.62	190.00	1.187	37	14.40	7.20
Round Sector Frame	90.0000	300.00	7.46	4.31	190.00	1.187	37	14.40	7.20
Round Sector Frame	210.0000	300.00	-7.46	4.31	190.00	1.187	37	14.40	7.20
Sum		33040.00							
Weight:									

### Discrete Appurtenance Pressures - With Ice

G<sub>H</sub> = 0.850 (base tower), 0.850 (upper structure)

Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>AAc</sub> Front ft <sup>2</sup>	C <sub>AAc</sub> Side ft <sup>2</sup>	t <sub>z</sub> in
TFU-31ETT/VP-R O6	0.0000	35250.53	0.00	0.00	1169.00	1.995	11	82.68	82.68	2.1002
ISMD10	60.0000	1592.31	5.46	-3.15	1003.00	1.910	10	11.00	3.32	2.1005
10' - 12' Ice Shield (C30-085-103)	120.0000	1847.02	7.46	4.31	889.00	1.845	10	12.94	2.26	2.0863
Radio 0208	0.0000	55.22	0.00	-8.62	400.00	1.469	9	3.37	0.93	1.9675
RRUS 4415 B30	0.0000	101.48	0.00	-8.62	400.00	1.469	9	4.24	1.88	1.9675
ODI2-065R18K-GQ	0.0000	119.94	0.00	-8.62	400.00	1.469	9	8.27	1.73	1.9675
Radio 0208	120.0000	55.22	7.46	4.31	400.00	1.469	9	3.37	0.93	1.9675
ODI2-065R18K-GQ	120.0000	119.94	7.46	4.31	400.00	1.469	9	8.27	1.73	1.9675
Radio 0208	240.0000	55.22	-7.46	4.31	400.00	1.469	9	3.37	0.93	1.9675
ODI2-065R18K-GQ	240.0000	119.94	-7.46	4.31	400.00	1.469	9	8.27	1.73	1.9675
ISMD8	30.0000	1242.43	0.00	-8.62	356.00	1.420	8	7.62	2.86	1.9649
DC6-48-60-18-8F (23.5" Height)	-20.0000	79.72	0.00	-8.62	190.00	1.187	9	2.49	2.49	1.9776
LGP21401	-70.0000	84.42	0.00	-8.62	192.00	1.191	9	5.61	1.73	1.9797
7770.00	-70.0000	0.00	0.00	-8.62	190.00	1.187	9	9.54	2.93	1.9776
LGP21401	90.0000	84.42	7.46	4.31	192.00	1.191	9	5.61	1.73	1.9797
7770.00	90.0000	0.00	7.46	4.31	190.00	1.187	9	9.54	2.93	1.9776
LGP21401	210.0000	84.42	-7.46	4.31	192.00	1.191	9	5.61	1.73	1.9797
7770.00	210.0000	0.00	-7.46	4.31	190.00	1.187	9	9.54	2.93	1.9776
Flat Side Arm	-90.0000	486.05	0.00	-8.62	1073.00	1.947	11	4.07	9.24	2.1003

<p style="text-align: center;"><b>tnxTower</b></p> <p style="text-align: center;"><b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414</p>	<p><b>Job</b></p> <p style="text-align: center;">Hartford CT2, CT (302534)</p>	<p><b>Page</b></p> <p style="text-align: center;">135 of 192</p>
	<p><b>Project</b></p> <p style="text-align: center;">OAA746560_C3_03</p>	<p><b>Date</b></p> <p style="text-align: center;">15:38:59 06/11/19</p>
	<p><b>Client</b></p> <p style="text-align: center;">DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p style="text-align: center;">Christina.Minor</p>

Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>AAc</sub> Front ft <sup>2</sup>	C <sub>AAc</sub> Side ft <sup>2</sup>	t <sub>z</sub> in
Flat Side Arm	330.0000	486.05	-7.46	4.31	1073.00	1.947	11	4.07	9.24	2.1003
Flat Side Arm	90.0000	486.08	0.00	-8.62	1003.00	1.910	10	4.07	9.24	2.1005
Flat Side Arm	30.0000	486.08	7.46	4.31	1003.00	1.910	10	4.07	9.24	2.1005
Stand-Off	0.0000	393.51	0.00	-6.62	400.00	1.469	9	2.98	6.97	1.9675
Stand-Off	120.0000	393.51	5.73	3.31	400.00	1.469	9	2.98	6.97	1.9675
Stand-Off	240.0000	393.51	-5.73	3.31	400.00	1.469	9	2.98	6.97	1.9675
Vislink Proscan III	180.0000	2060.19	0.00	4.31	1073.00	1.947	11	22.10	22.10	2.1003
Vislink Proscan III	180.0000	2060.34	0.00	4.31	996.00	1.906	10	22.10	22.10	2.1006
RRUS 8843 B2, B66A	-40.0000	158.39	0.00	-8.62	190.00	1.187	9	2.31	1.98	1.9776
RRUS 8843 B2, B66A	90.0000	158.39	7.46	4.31	190.00	1.187	9	2.31	1.98	1.9776
RRUS 8843 B2, B66A	210.0000	158.39	-7.46	4.31	190.00	1.187	9	2.31	1.98	1.9776
DC6-48-60-18-8C	-20.0000	155.31	0.00	-8.62	190.00	1.187	9	2.59	2.59	1.9776
RRUS 4449 B5, B12	-40.0000	161.44	0.00	-8.62	190.00	1.187	9	2.71	2.06	1.9776
RRUS 4449 B5, B12	90.0000	161.44	7.46	4.31	190.00	1.187	9	2.71	2.06	1.9776
RRUS 4449 B5, B12	210.0000	161.44	-7.46	4.31	190.00	1.187	9	2.71	2.06	1.9776
RRUS 4478 B14	-40.0000	146.33	0.00	-8.62	190.00	1.187	9	2.77	1.89	1.9776
RRUS 4478 B14	90.0000	146.33	7.46	4.31	190.00	1.187	9	2.77	1.89	1.9776
RRUS 4478 B14	210.0000	146.33	-7.46	4.31	190.00	1.187	9	2.77	1.89	1.9776
RRUS-11 800 MHz	-40.0000	139.43	0.00	-8.62	190.00	1.187	9	5.57	2.88	1.9776
RRUS-11 800 MHz	90.0000	139.43	7.46	4.31	190.00	1.187	9	5.57	2.88	1.9776
RRUS-11 800 MHz	210.0000	139.43	-7.46	4.31	190.00	1.187	9	5.57	2.88	1.9776
DC6-48-60-18-8C-EV	-20.0000	187.21	0.00	-8.62	190.00	1.187	9	5.94	3.66	1.9776
80010965	90.0000	808.50	7.46	4.31	190.00	1.187	9	35.85	19.98	1.9776
80010966	210.0000	958.39	-7.46	4.31	190.00	1.187	9	42.24	24.45	1.9776
80010966	-40.0000	958.39	0.00	-8.62	190.00	1.187	9	42.24	24.45	1.9776
Round Sector Frame	-40.0000	754.86	0.00	-8.62	190.00	1.187	9	34.57	20.25	1.9776
Round Sector Frame	90.0000	754.86	7.46	4.31	190.00	1.187	9	34.57	20.25	1.9776
Round Sector Frame	210.0000	754.86	-7.46	4.31	190.00	1.187	9	34.57	20.25	1.9776
Sum		55286.67								
Weight:										

**Discrete Appurtenance Pressures - Service** *G<sub>H</sub> = 0.850 (base tower), 0.850 (upper structure)*

Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>AAc</sub> Front ft <sup>2</sup>	C <sub>AAc</sub> Side ft <sup>2</sup>
TFU-31ETT/VP-R O6	0.0000	27628.00	0.00	0.00	1169.00	1.995	16	42.81	42.81
ISMD10	60.0000	421.50	5.46	-3.15	1003.00	1.910	15	5.83	1.77
10' - 12' Ice Shield (C30-085-103)	120.0000	667.00	7.46	4.31	889.00	1.845	14	6.22	1.09
Radio 0208	0.0000	19.80	0.00	-8.62	400.00	1.469	12	1.40	0.38
RRUS 4415 B30	0.0000	46.00	0.00	-8.62	400.00	1.469	12	1.84	0.82
ODI2-065R18K-GQ	0.0000	25.10	0.00	-8.62	400.00	1.469	12	4.85	1.02
Radio 0208	120.0000	19.80	7.46	4.31	400.00	1.469	12	1.40	0.38
ODI2-065R18K-GQ	120.0000	25.10	7.46	4.31	400.00	1.469	12	4.85	1.02
Radio 0208	240.0000	19.80	-7.46	4.31	400.00	1.469	12	1.40	0.38
ODI2-065R18K-GQ	240.0000	25.10	-7.46	4.31	400.00	1.469	12	4.85	1.02
ISMD8	30.0000	383.40	0.00	-8.62	356.00	1.420	12	3.73	1.41
DC6-48-60-18-8F (23.5" Height)	-20.0000	20.00	0.00	-8.62	190.00	1.187	12	1.11	1.11
LGP21401	-70.0000	28.20	0.00	-8.62	192.00	1.191	12	2.20	0.70
7770.00	-70.0000	35.00	0.00	-8.62	190.00	1.187	12	5.51	1.70
LGP21401	90.0000	28.20	7.46	4.31	192.00	1.191	12	2.20	0.70
7770.00	90.0000	35.00	7.46	4.31	190.00	1.187	12	5.51	1.70
LGP21401	210.0000	28.20	-7.46	4.31	192.00	1.191	12	2.20	0.70
7770.00	210.0000	35.00	-7.46	4.31	190.00	1.187	12	5.51	1.70
Flat Side Arm	-90.0000	150.00	0.00	-8.62	1073.00	1.947	15	2.14	6.30
Flat Side Arm	330.0000	150.00	-7.46	4.31	1073.00	1.947	15	2.14	6.30



<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	136 of 192
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Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	z ft	K <sub>z</sub>	q <sub>z</sub> psf	C <sub>AAc</sub> Front ft <sup>2</sup>	C <sub>AAc</sub> Side ft <sup>2</sup>
Flat Side Arm	90.0000	150.00	0.00	-8.62	1003.00	1.910	15	2.14	6.30
Flat Side Arm	30.0000	150.00	7.46	4.31	1003.00	1.910	15	2.14	6.30
Stand-Off	0.0000	75.00	0.00	-6.62	400.00	1.469	12	1.77	2.50
Stand-Off	120.0000	75.00	5.73	3.31	400.00	1.469	12	1.77	2.50
Stand-Off	240.0000	75.00	-5.73	3.31	400.00	1.469	12	1.77	2.50
Vislink Proscan III	180.0000	185.00	0.00	4.31	1073.00	1.947	15	19.02	19.02
Vislink Proscan III	180.0000	185.00	0.00	4.31	996.00	1.906	15	19.02	19.02
RRUS 8843 B2, B66A	-40.0000	72.00	0.00	-8.62	190.00	1.187	12	1.64	1.35
RRUS 8843 B2, B66A	90.0000	72.00	7.46	4.31	190.00	1.187	12	1.64	1.35
RRUS 8843 B2, B66A	210.0000	72.00	-7.46	4.31	190.00	1.187	12	1.64	1.35
DC6-48-60-18-8C	-20.0000	16.00	0.00	-8.62	190.00	1.187	12	1.27	1.27
RRUS 4449 B5, B12	-40.0000	71.00	0.00	-8.62	190.00	1.187	12	1.97	1.40
RRUS 4449 B5, B12	90.0000	71.00	7.46	4.31	190.00	1.187	12	1.97	1.40
RRUS 4449 B5, B12	210.0000	71.00	-7.46	4.31	190.00	1.187	12	1.97	1.40
RRUS 4478 B14	-40.0000	59.40	0.00	-8.62	190.00	1.187	12	2.02	1.25
RRUS 4478 B14	90.0000	59.40	7.46	4.31	190.00	1.187	12	2.02	1.25
RRUS 4478 B14	210.0000	59.40	-7.46	4.31	190.00	1.187	12	2.02	1.25
RRUS-11 800 MHz	-40.0000	54.00	0.00	-8.62	190.00	1.187	12	2.52	1.30
RRUS-11 800 MHz	90.0000	54.00	7.46	4.31	190.00	1.187	12	2.52	1.30
RRUS-11 800 MHz	210.0000	54.00	-7.46	4.31	190.00	1.187	12	2.52	1.30
DC6-48-60-18-8C-EV	-20.0000	16.00	0.00	-8.62	190.00	1.187	12	4.79	2.73
80010965	90.0000	195.20	7.46	4.31	190.00	1.187	12	27.62	16.26
80010966	210.0000	229.20	-7.46	4.31	190.00	1.187	12	34.72	20.02
80010966	-40.0000	229.20	0.00	-8.62	190.00	1.187	12	34.72	20.02
Round Sector Frame	-40.0000	300.00	0.00	-8.62	190.00	1.187	12	14.40	7.20
Round Sector Frame	90.0000	300.00	7.46	4.31	190.00	1.187	12	14.40	7.20
Round Sector Frame	210.0000	300.00	-7.46	4.31	190.00	1.187	12	14.40	7.20
Sum Weight:		33040.00							

### Dish Pressures - No Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	K <sub>z</sub>	A <sub>A</sub> ft <sup>2</sup>	q <sub>z</sub> psf
878.00	8' Dish w/ Radome	120.0000	304.00	4.87	2.81	1.838	50.27	43
349.00	8' Dish w/ Radome	30.0000	304.00	0.00	-5.62	1.412	50.27	36
	Sum		608.00					
	Weight:							

### Dish Pressures - With Ice

Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	K <sub>z</sub>	A <sub>A</sub> ft <sup>2</sup>	q <sub>z</sub> psf	t <sub>z</sub> in
878.00	8' Dish w/ Radome	120.0000	1801.08	4.87	2.81	1.838	54.65	10	2.0839
349.00	8' Dish w/ Radome	30.0000	1712.75	0.00	-5.62	1.412	54.39	8	1.9610
	Sum		3513.83						
	Weight:								

### Dish Pressures - Service

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Elevation ft	Dish Description	Aiming Azimuth °	Weight lb	Offset <sub>x</sub> ft	Offset <sub>z</sub> ft	K <sub>z</sub>	A <sub>A</sub> ft <sup>2</sup>	q <sub>z</sub> psf
878.00	8' Dish w/ Radome	120.0000	304.00	4.87	2.81	1.838	50.27	14
349.00	8' Dish w/ Radome	30.0000	304.00	0.00	-5.62	1.412	50.27	12
	Sum Weight:		608.00					

### 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 kip-ft
Leg Weight	203147.33			
Bracing Weight	91190.45			
Total Member Self-Weight	294337.78			
Guy Weight	108994.45			
Total Weight	451323.32			
Wind 0 deg - No Ice		-2368.51	-139024.40	12.94
Wind 30 deg - No Ice		66663.43	-115258.21	-18.36
Wind 60 deg - No Ice		113191.30	-64958.41	-49.29
Wind 90 deg - No Ice		134483.48	-146.70	-65.19
Wind 120 deg - No Ice		118796.06	68471.84	-63.54
Wind 150 deg - No Ice		65379.28	116920.37	-36.88
Wind 180 deg - No Ice		-919.15	132360.58	-10.09
Wind 210 deg - No Ice		-67012.27	115949.24	20.53
Wind 240 deg - No Ice		-120684.90	68208.48	53.28
Wind 270 deg - No Ice		-135984.07	521.36	72.53
Wind 300 deg - No Ice		-113831.28	-65647.59	63.43
Wind 330 deg - No Ice		-68240.95	-115527.10	39.97
Member Ice	249791.71			
Guy Ice	162266.64			
Total Weight Ice	973551.92			
Wind 0 deg - Ice		-595.57	-73015.40	6.39
Wind 30 deg - Ice		35898.94	-62056.42	-15.31
Wind 60 deg - Ice		61503.73	-35369.29	-34.34
Wind 90 deg - Ice		71539.75	-36.18	-43.35
Wind 120 deg - Ice		62394.96	35954.13	-41.06
Wind 150 deg - Ice		35559.30	62439.09	-25.47
Wind 180 deg - Ice		-229.09	71866.11	-5.68
Wind 210 deg - Ice		-35986.13	62229.26	15.85
Wind 240 deg - Ice		-62931.06	35921.30	35.35
Wind 270 deg - Ice		-71916.04	128.21	45.20
Wind 300 deg - Ice		-61603.00	-35507.43	41.04
Wind 330 deg - Ice		-36276.88	-62090.72	26.24
Total Weight	451323.32			
Wind 0 deg - Service		-788.33	-46272.91	4.31
Wind 30 deg - Service		22188.27	-38362.57	-6.11
Wind 60 deg - Service		37674.62	-21620.77	-16.41
Wind 90 deg - Service		44761.51	-48.83	-21.70
Wind 120 deg - Service		39540.11	22790.18	-21.15
Wind 150 deg - Service		21760.85	38915.80	-12.28
Wind 180 deg - Service		-305.93	44054.93	-3.36
Wind 210 deg - Service		-22304.38	38592.57	6.83
Wind 240 deg - Service		-40168.79	22702.53	17.73
Wind 270 deg - Service		-45260.97	173.53	24.14
Wind 300 deg - Service		-37887.63	-21850.16	21.11
Wind 330 deg - Service		-22713.33	-38452.07	13.30

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## Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2D+1.6W (pattern 1) 0 deg - No Ice+1.0 Guy
3	1.2D+1.6W (pattern 2) 0 deg - No Ice+1.0 Guy
4	1.2D+1.6W (pattern 3) 0 deg - No Ice+1.0 Guy
5	1.2D+1.6W (pattern 1) 30 deg - No Ice+1.0 Guy
6	1.2D+1.6W (pattern 2) 30 deg - No Ice+1.0 Guy
7	1.2D+1.6W (pattern 3) 30 deg - No Ice+1.0 Guy
8	1.2D+1.6W (pattern 1) 60 deg - No Ice+1.0 Guy
9	1.2D+1.6W (pattern 2) 60 deg - No Ice+1.0 Guy
10	1.2D+1.6W (pattern 3) 60 deg - No Ice+1.0 Guy
11	1.2D+1.6W (pattern 1) 90 deg - No Ice+1.0 Guy
12	1.2D+1.6W (pattern 2) 90 deg - No Ice+1.0 Guy
13	1.2D+1.6W (pattern 3) 90 deg - No Ice+1.0 Guy
14	1.2D+1.6W (pattern 1) 120 deg - No Ice+1.0 Guy
15	1.2D+1.6W (pattern 2) 120 deg - No Ice+1.0 Guy
16	1.2D+1.6W (pattern 3) 120 deg - No Ice+1.0 Guy
17	1.2D+1.6W (pattern 1) 150 deg - No Ice+1.0 Guy
18	1.2D+1.6W (pattern 2) 150 deg - No Ice+1.0 Guy
19	1.2D+1.6W (pattern 3) 150 deg - No Ice+1.0 Guy
20	1.2D+1.6W (pattern 1) 180 deg - No Ice+1.0 Guy
21	1.2D+1.6W (pattern 2) 180 deg - No Ice+1.0 Guy
22	1.2D+1.6W (pattern 3) 180 deg - No Ice+1.0 Guy
23	1.2D+1.6W (pattern 1) 210 deg - No Ice+1.0 Guy
24	1.2D+1.6W (pattern 2) 210 deg - No Ice+1.0 Guy
25	1.2D+1.6W (pattern 3) 210 deg - No Ice+1.0 Guy
26	1.2D+1.6W (pattern 1) 240 deg - No Ice+1.0 Guy
27	1.2D+1.6W (pattern 2) 240 deg - No Ice+1.0 Guy
28	1.2D+1.6W (pattern 3) 240 deg - No Ice+1.0 Guy
29	1.2D+1.6W (pattern 1) 270 deg - No Ice+1.0 Guy
30	1.2D+1.6W (pattern 2) 270 deg - No Ice+1.0 Guy
31	1.2D+1.6W (pattern 3) 270 deg - No Ice+1.0 Guy
32	1.2D+1.6W (pattern 1) 300 deg - No Ice+1.0 Guy
33	1.2D+1.6W (pattern 2) 300 deg - No Ice+1.0 Guy
34	1.2D+1.6W (pattern 3) 300 deg - No Ice+1.0 Guy
35	1.2D+1.6W (pattern 1) 330 deg - No Ice+1.0 Guy
36	1.2D+1.6W (pattern 2) 330 deg - No Ice+1.0 Guy
37	1.2D+1.6W (pattern 3) 330 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Ice+1.0 Temp+Guy
39	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
40	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
41	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
42	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
43	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
44	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
45	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
46	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
47	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
48	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
49	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
51	Dead+Wind 0 deg - Service+Guy
52	Dead+Wind 30 deg - Service+Guy
53	Dead+Wind 60 deg - Service+Guy
54	Dead+Wind 90 deg - Service+Guy
55	Dead+Wind 120 deg - Service+Guy

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Comb. No.	Description
56	Dead+Wind 150 deg - Service+Guy
57	Dead+Wind 180 deg - Service+Guy
58	Dead+Wind 210 deg - Service+Guy
59	Dead+Wind 240 deg - Service+Guy
60	Dead+Wind 270 deg - Service+Guy
61	Dead+Wind 300 deg - Service+Guy
62	Dead+Wind 330 deg - Service+Guy

## Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	47	1720030.69	1059.81	-540.40
	Max. H <sub>x</sub>	31	1193557.32	7887.37	572.68
	Max. H <sub>z</sub>	3	1115247.92	-30.80	11003.74
	Max. M <sub>x</sub>	1	0.00	4.33	-29.94
	Max. M <sub>z</sub>	1	0.00	4.33	-29.94
	Max. Torsion	12	38.65	-8484.33	8.81
	Min. Vert	1	887919.96	4.33	-29.94
	Min. H <sub>x</sub>	13	1186512.17	-8488.32	-78.39
	Min. H <sub>z</sub>	21	1237235.98	-343.29	-8265.37
	Min. M <sub>x</sub>	1	0.00	4.33	-29.94
	Min. M <sub>z</sub>	1	0.00	4.33	-29.94
	Min. Torsion	30	-39.28	7877.98	657.49
	Guy C @ 694 ft Elev 20 ft Azimuth 240 deg	Max. Vert	28	-28668.01	-17954.22
Max. H <sub>x</sub>		28	-28668.01	-17954.22	10339.43
Max. H <sub>z</sub>		10	-282847.22	-229526.83	132466.90
Min. Vert		10	-282847.22	-229526.83	132466.90
Min. H <sub>x</sub>		10	-282847.22	-229526.83	132466.90
Min. H <sub>z</sub>		28	-28668.01	-17954.22	10339.43
Guy B @ 694 ft Elev 19 ft Azimuth 120 deg	Max. Vert	16	-28951.81	18210.29	10482.80
	Max. H <sub>x</sub>	34	-286291.89	231895.56	133855.90
	Max. H <sub>z</sub>	34	-286291.89	231895.56	133855.90
	Min. Vert	34	-286291.89	231895.56	133855.90
	Min. H <sub>x</sub>	16	-28951.81	18210.29	10482.80
	Min. H <sub>z</sub>	16	-28951.81	18210.29	10482.80
Guy A @ 630 ft Elev -86 ft Azimuth 0 deg	Max. Vert	4	-54501.33	6.15	-28806.64
	Max. H <sub>x</sub>	31	-202375.04	20159.26	-146172.87
	Max. H <sub>z</sub>	4	-54501.33	6.15	-28806.64
	Min. Vert	22	-349487.53	-19.26	-264028.73
	Min. H <sub>x</sub>	13	-205012.68	-20164.81	-147961.67
	Min. H <sub>z</sub>	22	-349487.53	-19.26	-264028.73
Guy C @ 500 ft Elev 33 ft Azimuth 240 deg	Max. Vert	26	-4881.03	-19521.37	11263.08
	Max. H <sub>x</sub>	26	-4881.03	-19521.37	11263.08
	Max. H <sub>z</sub>	8	-71997.93	-149716.29	86479.43
	Min. Vert	8	-71997.93	-149716.29	86479.43
	Min. H <sub>x</sub>	8	-71997.93	-149716.29	86479.43
	Min. H <sub>z</sub>	26	-4881.03	-19521.37	11263.08
Guy B @ 500 ft Elev 6 ft	Max. Vert	14	-5692.45	18804.21	10849.15

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	140 of 192
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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Azimuth 120 deg	Max. H <sub>x</sub>	32	-79474.85	148026.81	85507.03
	Max. H <sub>z</sub>	32	-79474.85	148026.81	85507.03
	Min. Vert	32	-79474.85	148026.81	85507.03
	Min. H <sub>x</sub>	14	-5692.45	18804.21	10849.15
	Min. H <sub>z</sub>	14	-5692.45	18804.21	10849.15
Guy A @ 500 ft Elev -70 ft Azimuth 0 deg	Max. Vert	2	-8784.57	1.06	-19115.60
	Max. H <sub>x</sub>	29	-60079.68	7425.54	-100294.58
	Max. H <sub>z</sub>	2	-8784.57	1.06	-19115.60
	Min. Vert	20	-104860.52	17.09	-172511.01
	Min. H <sub>x</sub>	11	-57783.64	-7399.95	-97099.25
	Min. H <sub>z</sub>	20	-104860.52	17.09	-172511.01

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	887919.96	-4.33	29.94	0.00	0.00	0.01
1.2D+1.6W (pattern 1) 0 deg - No Ice+1.0 Guy	1125133.14	42.51	-10715.32	0.00	0.00	11.53
1.2D+1.6W (pattern 2) 0 deg - No Ice+1.0 Guy	1115247.92	30.80	-11003.74	0.00	0.00	11.58
1.2D+1.6W (pattern 3) 0 deg - No Ice+1.0 Guy	1129618.70	32.01	-10947.31	0.00	0.00	11.55
1.2D+1.6W (pattern 1) 30 deg - No Ice+1.0 Guy	1170006.84	5110.41	-7946.08	0.00	0.00	2.32
1.2D+1.6W (pattern 2) 30 deg - No Ice+1.0 Guy	1165173.53	5125.94	-8127.42	0.00	0.00	2.45
1.2D+1.6W (pattern 3) 30 deg - No Ice+1.0 Guy	1174446.47	5056.79	-8126.01	0.00	0.00	2.55
1.2D+1.6W (pattern 1) 60 deg - No Ice+1.0 Guy	1201501.85	7587.74	-4017.93	0.00	0.00	-20.87
1.2D+1.6W (pattern 2) 60 deg - No Ice+1.0 Guy	1198770.98	7659.79	-4053.61	0.00	0.00	-20.77
1.2D+1.6W (pattern 3) 60 deg - No Ice+1.0 Guy	1205774.30	7604.35	-4021.39	0.00	0.00	-20.58
1.2D+1.6W (pattern 1) 90 deg - No Ice+1.0 Guy	1185543.18	8289.69	-112.93	0.00	0.00	-38.54
1.2D+1.6W (pattern 2) 90 deg - No Ice+1.0 Guy	1178528.14	8484.33	-8.81	0.00	0.00	-38.65
1.2D+1.6W (pattern 3) 90 deg - No Ice+1.0 Guy	1186512.17	8488.32	78.39	0.00	0.00	-38.37
1.2D+1.6W (pattern 1) 120 deg - No Ice+1.0 Guy	1137687.59	8020.27	4429.05	0.00	0.00	-32.19
1.2D+1.6W (pattern 2) 120 deg - No Ice+1.0 Guy	1127682.21	8293.98	4616.28	0.00	0.00	-32.50
1.2D+1.6W (pattern 3) 120 deg - No Ice+1.0 Guy	1143875.68	8311.02	4642.63	0.00	0.00	-32.21
1.2D+1.6W (pattern 1) 150 deg - No Ice+1.0 Guy	1202907.26	4661.43	7330.57	0.00	0.00	-12.26
1.2D+1.6W (pattern 2) 150 deg - No Ice+1.0 Guy	1198333.19	4856.76	7487.57	0.00	0.00	-12.56
1.2D+1.6W (pattern 3) 150 deg - No Ice+1.0 Guy	1210419.99	4908.96	7412.57	0.00	0.00	-12.46

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
1.2D+1.6W (pattern 1) 180 deg - No Ice+1.0 Guy	1240300.93	335.20	8133.10	0.00	0.00	-8.07
1.2D+1.6W (pattern 2) 180 deg - No Ice+1.0 Guy	1237235.98	343.29	8265.37	0.00	0.00	-8.30
1.2D+1.6W (pattern 3) 180 deg - No Ice+1.0 Guy	1246605.15	345.76	8174.97	0.00	0.00	-8.30
1.2D+1.6W (pattern 1) 210 deg - No Ice+1.0 Guy	1206994.63	-4036.98	7338.57	0.00	0.00	-1.61
1.2D+1.6W (pattern 2) 210 deg - No Ice+1.0 Guy	1201562.32	-4217.64	7496.99	0.00	0.00	-1.76
1.2D+1.6W (pattern 3) 210 deg - No Ice+1.0 Guy	1213203.55	-4265.75	7427.13	0.00	0.00	-1.84
1.2D+1.6W (pattern 1) 240 deg - No Ice+1.0 Guy	1148690.45	-7235.16	3733.64	0.00	0.00	21.81
1.2D+1.6W (pattern 2) 240 deg - No Ice+1.0 Guy	1138164.64	-7519.32	3907.22	0.00	0.00	22.09
1.2D+1.6W (pattern 3) 240 deg - No Ice+1.0 Guy	1153865.67	-7543.30	3932.01	0.00	0.00	21.85
1.2D+1.6W (pattern 1) 270 deg - No Ice+1.0 Guy	1192666.10	-7679.68	-745.98	0.00	0.00	38.91
1.2D+1.6W (pattern 2) 270 deg - No Ice+1.0 Guy	1185836.12	-7877.98	-657.49	0.00	0.00	39.28
1.2D+1.6W (pattern 3) 270 deg - No Ice+1.0 Guy	1193557.32	-7887.37	-572.68	0.00	0.00	39.03
1.2D+1.6W (pattern 1) 300 deg - No Ice+1.0 Guy	1205975.62	-7508.95	-3812.96	0.00	0.00	30.46
1.2D+1.6W (pattern 2) 300 deg - No Ice+1.0 Guy	1204134.47	-7576.96	-3859.45	0.00	0.00	30.62
1.2D+1.6W (pattern 3) 300 deg - No Ice+1.0 Guy	1211167.17	-7520.14	-3828.10	0.00	0.00	30.42
1.2D+1.6W (pattern 1) 330 deg - No Ice+1.0 Guy	1172926.43	-5002.78	-7751.34	0.00	0.00	16.33
1.2D+1.6W (pattern 2) 330 deg - No Ice+1.0 Guy	1169126.67	-5022.75	-7933.42	0.00	0.00	16.38
1.2D+1.6W (pattern 3) 330 deg - No Ice+1.0 Guy	1178478.95	-4953.76	-7931.71	0.00	0.00	16.27
1.2 Dead+1.0 Ice+1.0 Temp+Guy	1687236.66	-41.01	59.20	0.00	0.00	-0.04
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	1692626.30	-36.11	-1517.67	0.00	0.00	4.62
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	1690419.27	628.92	-1301.67	0.00	0.00	1.32
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	1691891.15	1075.16	-559.48	0.00	0.00	-7.67
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	1704097.77	1217.23	181.06	0.00	0.00	-13.99
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	1717383.71	1060.48	636.54	0.00	0.00	-11.60
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	1717852.10	769.71	1023.35	0.00	0.00	-5.80
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	1715893.30	0.44	1232.38	0.00	0.00	-4.19
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	1719445.56	-759.09	1032.49	0.00	0.00	-1.47
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	1720030.69	-1059.81	540.40	0.00	0.00	7.24
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	1706887.57	-1205.19	62.80	0.00	0.00	14.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	1694059.28	-1144.80	-553.85	0.00	0.00	11.89
1.2 Dead+1.0 Wind 330	1691597.76	-711.82	-1268.78	0.00	0.00	6.56

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Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp+1.0 Guy						
Dead+Wind 0 deg - Service+Guy	893210.27	0.11	-2558.94	0.00	0.00	2.67
Dead+Wind 30 deg - Service+Guy	891754.11	1264.43	-2117.27	0.00	0.00	0.20
Dead+Wind 60 deg - Service+Guy	891532.03	2002.83	-1089.97	0.00	0.00	-6.38
Dead+Wind 90 deg - Service+Guy	897044.20	2200.91	32.31	0.00	0.00	-11.24
Dead+Wind 120 deg - Service+Guy	903393.91	2090.52	1200.90	0.00	0.00	-8.67
Dead+Wind 150 deg - Service+Guy	903090.93	1285.97	2094.56	0.00	0.00	-3.02
Dead+Wind 180 deg - Service+Guy	901647.61	30.17	2443.79	0.00	0.00	-1.78
Dead+Wind 210 deg - Service+Guy	903859.79	-1231.86	2116.34	0.00	0.00	0.07
Dead+Wind 240 deg - Service+Guy	904691.42	-2057.89	1126.98	0.00	0.00	6.36
Dead+Wind 270 deg - Service+Guy	898412.98	-2169.41	-48.28	0.00	0.00	11.65
Dead+Wind 300 deg - Service+Guy	892572.74	-2029.15	-1087.78	0.00	0.00	8.71
Dead+Wind 330 deg - Service+Guy	892333.88	-1273.34	-2106.05	0.00	0.00	4.07

## 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	-451300.32	0.00	-0.43	451300.42	-10.63	0.002%
2	-2038.03	-523104.20	-321080.51	2039.36	523100.15	320941.83	0.023%
3	-3888.70	-523104.20	-319366.40	3891.54	523101.83	319251.47	0.019%
4	-3839.36	-523104.20	-330642.32	3842.28	523099.36	330479.17	0.026%
5	155567.04	-518139.79	-270789.85	-155609.35	518137.22	270652.41	0.024%
6	154321.76	-518139.79	-268599.38	-154368.90	518138.27	268459.10	0.025%
7	159613.95	-518139.79	-277768.05	-159661.85	518137.04	277613.55	0.027%
8	264622.75	-513504.25	-154096.55	-264524.54	513503.94	154269.66	0.033%
9	263037.48	-513504.25	-152797.12	-262939.09	513503.81	152964.10	0.032%
10	271497.27	-513504.25	-157739.71	-271395.18	513503.92	157921.57	0.035%
11	310344.00	-519430.95	-384.87	-310234.71	519426.45	507.05	0.027%
12	308709.51	-519430.95	-211.82	-308610.41	519427.96	330.36	0.026%
13	316094.45	-519430.95	-261.16	-315978.24	519426.94	394.50	0.029%
14	272469.48	-525447.80	158802.51	-272361.93	525443.61	-158728.49	0.021%
15	271174.00	-525447.80	158053.21	-271079.16	525445.56	-157987.50	0.019%
16	280412.76	-525447.80	163388.56	-280274.61	525443.04	-163295.17	0.027%
17	153038.22	-521057.26	272897.06	-152854.83	521053.36	-272843.98	0.031%
18	152370.84	-521057.26	271392.69	-152171.64	521054.59	-271338.19	0.034%
19	157577.56	-521057.26	280512.02	-157370.91	521052.98	-280452.20	0.035%
20	-1703.08	-516428.00	311685.38	1715.43	516420.72	-311457.03	0.038%
21	-1371.54	-516428.00	309660.76	1413.03	516422.01	-309444.71	0.037%
22	-1420.88	-516428.00	319980.22	1467.20	516420.27	-319741.90	0.040%
23	-156152.25	-521392.41	271879.87	155977.73	521388.76	-271830.19	0.030%
24	-154879.91	-521392.41	269705.03	154683.77	521390.01	-269651.01	0.034%
25	-160172.09	-521392.41	278873.69	159968.61	521388.40	-278816.61	0.035%
26	-274755.71	-526027.95	159978.79	274647.57	526023.65	-159902.59	0.022%
27	-274198.92	-526027.95	157519.00	274107.11	526025.82	-157450.99	0.019%

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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	
28	-283487.02	-526027.95	162939.82	283351.76	526023.31	-162844.01	0.027%
29	-312124.02	-520101.25	1992.41	312013.28	520096.72	-1866.91	0.028%
30	-311110.47	-520101.25	811.27	311013.71	520098.46	-691.86	0.025%
31	-318495.40	-520101.25	860.61	318383.99	520097.52	-729.41	0.028%
32	-264577.08	-514084.39	-154313.29	264479.19	514084.12	154486.93	0.033%
33	-264058.66	-514084.39	-154012.63	263959.45	514084.04	154183.75	0.033%
34	-272469.12	-514084.39	-158869.75	272365.76	514084.16	159056.64	0.035%
35	-156433.39	-518474.94	-270634.12	156476.91	518472.35	270494.93	0.024%
36	-156949.51	-518474.94	-269163.45	157000.03	518473.39	269018.56	0.025%
37	-162156.23	-518474.94	-278282.77	162207.48	518472.11	278122.41	0.028%
38	-0.00	-1041961.38	0.00	1.60	1041960.92	71.23	0.007%
39	-620.29	-1043591.85	-126095.70	618.59	1043591.34	126156.30	0.006%
40	61879.31	-1041142.81	-107850.20	-61830.37	1041142.33	107891.88	0.006%
41	106067.40	-1038858.61	-61902.10	-105853.69	1038856.96	62067.86	0.026%
42	122559.59	-1041782.72	-51.49	-122354.36	1041781.22	251.19	0.027%
43	106928.67	-1044755.11	62498.19	-106892.40	1044754.53	-62417.74	0.008%
44	61546.21	-1042601.29	108274.80	-61541.97	1042600.29	-108176.59	0.009%
45	-204.37	-1040330.91	124946.42	207.71	1040329.67	-124841.57	0.010%
46	-61966.51	-1042779.94	108023.03	61968.21	1042778.95	-107925.03	0.009%
47	-107494.73	-1045064.15	62454.11	107460.99	1045063.61	-62374.63	0.008%
48	-122935.87	-1042140.03	143.52	122724.96	1042138.58	62.96	0.028%
49	-106136.71	-1039167.65	-62051.49	105926.56	1039166.07	62215.09	0.025%
50	-62263.79	-1041321.47	-107926.43	62212.90	1041320.98	107970.25	0.006%
51	-798.68	-451994.73	-69148.80	776.58	451993.90	69235.81	0.020%
52	33387.16	-450962.01	-58100.47	-33288.94	450961.32	58168.46	0.026%
53	56889.63	-449997.70	-33051.33	-56780.46	449997.20	33118.23	0.028%
54	66770.26	-451230.60	-54.33	-66743.63	451230.51	78.14	0.008%
55	58744.28	-452482.26	34226.43	-58729.08	452482.13	-34186.46	0.009%
56	32963.54	-451568.92	58671.29	-32966.09	451568.66	-58622.97	0.011%
57	-295.58	-450605.92	66930.82	296.59	450605.59	-66878.06	0.012%
58	-33503.27	-451638.64	58330.47	33507.52	451638.38	-58282.54	0.011%
59	-59383.80	-452602.95	34133.08	59367.86	452602.83	-34094.48	0.009%
60	-67269.72	-451370.04	179.03	67243.31	451369.96	-156.40	0.008%
61	-57091.80	-450118.39	-33286.41	56979.48	450117.88	33352.10	0.029%
62	-33916.02	-451031.73	-58207.55	33817.48	451031.06	58270.76	0.026%

## Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	21	0.00019126	0.00001265
2	Yes	103	0.00019505	0.00002651
3	Yes	95	0.00019468	0.00001928
4	Yes	104	0.00019913	0.00002829
5	Yes	90	0.00019595	0.00002764
6	Yes	78	0.00019570	0.00002098
7	Yes	91	0.00019299	0.00002636
8	Yes	64	0.00019968	0.00002250
9	Yes	64	0.00019599	0.00002191
10	Yes	66	0.00019662	0.00002400
11	Yes	122	0.00019526	0.00003402
12	Yes	111	0.00019825	0.00002743
13	Yes	117	0.00019951	0.00003048
14	Yes	124	0.00019450	0.00002964
15	Yes	108	0.00019531	0.00001861
16	Yes	129	0.00019645	0.00002708



<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	144 of 192
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17	Yes	104	0.00019926	0.00003538
18	Yes	89	0.00019869	0.00002795
19	Yes	107	0.00019381	0.00003344
20	Yes	47	0.00019177	0.00004754
21	Yes	48	0.00018816	0.00004265
22	Yes	46	0.00019176	0.00005018
23	Yes	104	0.00019295	0.00003439
24	Yes	86	0.00019835	0.00002691
25	Yes	105	0.00019613	0.00003345
26	Yes	123	0.00019903	0.00003089
27	Yes	106	0.00019657	0.00001867
28	Yes	128	0.00019910	0.00002721
29	Yes	121	0.00019975	0.00003496
30	Yes	110	0.00019687	0.00002740
31	Yes	117	0.00019457	0.00002976
32	Yes	64	0.00019698	0.00002235
33	Yes	63	0.00019299	0.00002189
34	Yes	65	0.00019571	0.00002419
35	Yes	90	0.00019430	0.00002773
36	Yes	78	0.00019409	0.00002159
37	Yes	91	0.00019314	0.00002695
38	Yes	72	0.00019717	0.00000975
39	Yes	65	0.00019586	0.00000984
40	Yes	77	0.00019084	0.00000954
41	Yes	55	0.00020000	0.00002899
42	Yes	55	0.00020000	0.00002751
43	Yes	76	0.00019717	0.00001072
44	Yes	76	0.00019664	0.00001399
45	Yes	76	0.00019547	0.00001490
46	Yes	76	0.00019720	0.00001411
47	Yes	76	0.00019233	0.00001050
48	Yes	54	0.00020000	0.00002732
49	Yes	55	0.00020000	0.00002792
50	Yes	76	0.00019574	0.00000974
51	Yes	27	0.00020000	0.00002105
52	Yes	35	0.00020000	0.00002104
53	Yes	37	0.00020000	0.00002201
54	Yes	54	0.00019466	0.00000648
55	Yes	53	0.00019460	0.00000803
56	Yes	54	0.00019491	0.00000915
57	Yes	54	0.00019655	0.00000981
58	Yes	54	0.00019576	0.00000910
59	Yes	53	0.00019065	0.00000782
60	Yes	54	0.00018672	0.00000624
61	Yes	37	0.00020000	0.00002222
62	Yes	36	0.00020000	0.00002065

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
L1	1151.9 - 1089.8	0.838	57	0.3076	0.4533
T1	1089.8 - 1084.9	0.752	57	0.1169	0.4568
T2	1084.9 - 1080	0.756	57	0.1173	0.4575
T3	1080 - 1060	0.760	57	0.1170	0.4590
T4	1060 - 1040	0.775	57	0.1115	0.4678
T5	1040 - 1020	0.784	57	0.1011	0.4764
T6	1020 - 1000	0.788	57	0.0875	0.4837
T7	1000 - 980	0.786	57	0.0724	0.4897

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Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T8	980 - 960	0.777	57	0.0578	0.4965
T9	960 - 940	0.764	57	0.0458	0.5027
T10	940 - 935	0.748	57	0.0434	0.5074
T11	935 - 930	0.744	57	0.0437	0.5084
T12	930 - 925	0.739	57	0.0436	0.5093
T13	925 - 920	0.735	57	0.0432	0.5099
T14	920 - 915	0.731	57	0.0425	0.5106
T15	915 - 910	0.727	57	0.0436	0.5124
T16	910 - 905	0.724	57	0.0448	0.5143
T17	905 - 900	0.720	57	0.0461	0.5164
T18	900 - 880	0.716	57	0.0477	0.5185
T19	880 - 860	0.699	57	0.0548	0.5262
T20	860 - 840	0.678	57	0.0624	0.5316
T21	840 - 820	0.655	57	0.0691	0.5354
T22	820 - 800	0.629	57	0.0739	0.5378
T23	800 - 780	0.601	57	0.0755	0.5386
T24	780 - 775	0.573	57	0.0729	0.5381
T25	775 - 770	0.566	57	0.0715	0.5377
T26	770 - 765	0.560	57	0.0697	0.5372
T27	765 - 760	0.553	57	0.0676	0.5368
T28	760 - 755	0.547	57	0.0651	0.5363
T29	755 - 750	0.541	57	0.0641	0.5373
T30	750 - 745	0.536	57	0.0633	0.5384
T31	745 - 740	0.531	57	0.0626	0.5395
T32	740 - 720	0.526	57	0.0621	0.5406
T33	720 - 700	0.505	57	0.0612	0.5440
T34	700 - 680	0.483	57	0.0614	0.5460
T35	680 - 660	0.462	57	0.0614	0.5465
T36	660 - 640	0.440	57	0.0604	0.5457
T37	640 - 620	0.418	57	0.0573	0.5434
T38	620 - 615	0.398	57	0.0522	0.5398
T39	615 - 610	0.393	57	0.0505	0.5387
T40	610 - 605	0.388	57	0.0485	0.5375
T41	605 - 600	0.384	57	0.0463	0.5364
T42	600 - 595	0.379	57	0.0439	0.5354
T43	595 - 590	0.376	57	0.0426	0.5360
T44	590 - 585	0.372	57	0.0414	0.5366
T45	585 - 580	0.369	57	0.0404	0.5373
T46	580 - 560	0.366	57	0.0395	0.5379
T47	560 - 540	0.354	57	0.0391	0.5394
T48	540 - 535	0.342	57	0.0390	0.5395
T49	535 - 530	0.339	57	0.0387	0.5393
T50	530 - 525	0.335	57	0.0383	0.5390
T51	525 - 520	0.332	57	0.0379	0.5387
T52	520 - 500	0.329	57	0.0373	0.5383
T53	500 - 480	0.316	57	0.0371	0.5358
T54	480 - 460	0.303	57	0.0363	0.5319
T55	460 - 440	0.290	57	0.0336	0.5268
T56	440 - 435	0.278	57	0.0288	0.5203
T57	435 - 430	0.275	57	0.0287	0.5184
T58	430 - 425	0.272	57	0.0292	0.5166
T59	425 - 420	0.270	57	0.0298	0.5149
T60	420 - 415	0.268	57	0.0307	0.5134
T61	415 - 410	0.266	57	0.0313	0.5128
T62	410 - 405	0.265	57	0.0317	0.5123
T63	405 - 400	0.264	57	0.0319	0.5116
T64	400 - 380	0.263	57	0.0319	0.5107
T65	380 - 360	0.259	57	0.0301	0.5064
T66	360 - 340	0.255	57	0.0263	0.5007
T67	340 - 320	0.250	57	0.0216	0.4891
T68	320 - 300	0.244	57	0.0184	0.4710

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Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T69	300 - 280	0.237	57	0.0185	0.4514
T70	280 - 275	0.230	57	0.0171	0.4303
T71	275 - 270	0.229	57	0.0164	0.4248
T72	270 - 265	0.227	57	0.0157	0.4194
T73	265 - 260	0.226	57	0.0152	0.4147
T74	260 - 255	0.225	57	0.0161	0.4102
T75	255 - 250	0.225	57	0.0169	0.4064
T76	250 - 245	0.224	57	0.0174	0.4026
T77	245 - 240	0.224	57	0.0175	0.3979
T78	240 - 220	0.224	57	0.0172	0.3931
T79	220 - 200	0.223	57	0.0147	0.3727
T80	200 - 180	0.220	57	0.0195	0.3509
T81	180 - 160	0.212	57	0.0303	0.3255
T82	160 - 140	0.199	57	0.0417	0.2966
T83	140 - 120	0.182	57	0.0521	0.2664
T84	120 - 115	0.161	57	0.0601	0.2347
T85	115 - 110	0.155	57	0.0616	0.2265
T86	110 - 105	0.149	57	0.0627	0.2184
T87	105 - 100	0.143	57	0.0636	0.2117
T88	100 - 95	0.137	57	0.0643	0.2049
T89	95 - 90	0.132	57	0.0653	0.1983
T90	90 - 85	0.126	57	0.0665	0.1915
T91	85 - 80	0.121	57	0.0678	0.1831
T92	80 - 60	0.115	57	0.0692	0.1745
T93	60 - 40	0.090	57	0.0755	0.1393
T94	40 - 20	0.062	57	0.0817	0.1026
T95	20 - 15	0.032	57	0.0863	0.0643
T96	15 - 7	0.024	57	0.0871	0.0551
T97	7 - 0	0.011	57	0.0882	0.0422

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
1169.00	TFU-31ETT/VP-R O6	57	0.838	0.3076	0.4533	75957
1089.80	Guy	57	0.752	0.1169	0.4568	7839
1073.00	Flat Side Arm	57	0.766	0.1157	0.4618	124738
1003.00	ISMD10	57	0.786	0.0746	0.4888	63397
996.00	Vislink Proscan III	57	0.785	0.0693	0.4910	65512
920.00	Guy	57	0.731	0.0425	0.5106	43977
889.00	10' - 12' Ice Shield (C30-085-103)	57	0.707	0.0514	0.5230	129695
878.00	8' Dish w/ Radome	57	0.697	0.0555	0.5269	112518
760.00	Guy	57	0.547	0.0651	0.5363	33672
600.00	Guy	57	0.379	0.0439	0.5354	32302
420.00	Guy	57	0.268	0.0307	0.5134	32580
400.00	Radio 0208	57	0.263	0.0319	0.5107	471786
356.00	ISMD8	57	0.254	0.0254	0.4990	177431
349.00	8' Dish w/ Radome	57	0.252	0.0237	0.4953	176079
260.00	Guy	57	0.225	0.0161	0.4102	27942
192.00	(2) LGP21401	57	0.217	0.0236	0.3412	77021
190.00	DC6-48-60-18-8F (23.5" Height)	57	0.217	0.0247	0.3387	75866
100.00	Guy	57	0.137	0.0643	0.2049	42403

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## Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
L1	1151.9 - 1089.8	7.565	29	2.5747	1.5984
T1	1089.8 - 1084.9	5.608	20	0.8545	1.6199
T2	1084.9 - 1080	5.581	20	0.8501	1.6247
T3	1080 - 1060	5.554	20	0.8476	1.6341
T4	1060 - 1040	5.438	20	0.8485	1.6836
T5	1040 - 1020	5.339	22	0.8600	1.7300
T6	1020 - 1000	5.263	22	0.8754	1.7702
T7	1000 - 980	5.160	22	0.8878	1.8038
T8	980 - 960	5.028	22	0.8888	1.8370
T9	960 - 940	4.872	22	0.8685	1.8652
T10	940 - 935	4.703	22	0.8411	1.8866
T11	935 - 930	4.659	22	0.8320	1.8910
T12	930 - 925	4.616	22	0.8211	1.8949
T13	925 - 920	4.573	22	0.8083	1.8976
T14	920 - 915	4.530	22	0.7938	1.9005
T15	915 - 910	4.491	22	0.7837	1.9110
T16	910 - 905	4.451	22	0.7737	1.9218
T17	905 - 900	4.411	22	0.7640	1.9347
T18	900 - 880	4.370	22	0.7543	1.9471
T19	880 - 860	4.202	22	0.7159	1.9929
T20	860 - 840	4.021	22	0.6751	2.0278
T21	840 - 820	3.828	22	0.6353	2.0552
T22	820 - 800	3.627	22	0.6427	2.0755
T23	800 - 780	3.421	22	0.6401	2.0895
T24	780 - 775	3.215	22	0.6133	2.1124
T25	775 - 770	3.164	22	0.6022	2.1205
T26	770 - 765	3.114	22	0.5892	2.1282
T27	765 - 760	3.066	22	0.5743	2.1321
T28	760 - 755	3.020	22	0.5574	2.1321
T29	755 - 750	2.978	22	0.5439	2.1402
T30	750 - 745	2.937	22	0.5308	2.1487
T31	745 - 740	2.897	22	0.5185	2.1585
T32	740 - 720	2.857	22	0.5066	2.1680
T33	720 - 700	2.703	22	0.4632	2.2015
T34	700 - 680	2.554	22	0.4225	2.2282
T35	680 - 660	2.410	22	0.4024	2.2481
T36	660 - 640	2.286	21	0.3795	2.2612
T37	640 - 620	2.167	21	0.3475	2.2675
T38	620 - 615	2.054	21	0.3107	2.2673
T39	615 - 610	2.027	21	0.2993	2.2671
T40	610 - 605	2.001	21	0.2870	2.2667
T41	605 - 600	1.976	21	0.2737	2.2651
T42	600 - 595	1.953	21	0.2595	2.2638
T43	595 - 590	1.934	21	0.2487	2.2713
T44	590 - 585	1.915	21	0.2389	2.2787
T45	585 - 580	1.898	21	0.2300	2.2865
T46	580 - 560	1.881	21	0.2220	2.2944
T47	560 - 540	1.818	21	0.2205	2.3250
T48	540 - 535	1.757	21	0.2251	2.3505
T49	535 - 530	1.743	21	0.2247	2.3577
T50	530 - 525	1.728	21	0.2235	2.3627
T51	525 - 520	1.713	21	0.2218	2.3672
T52	520 - 500	1.698	21	0.2197	2.3714
T53	500 - 480	1.638	21	0.2084	2.3838
T54	480 - 460	1.577	21	0.1963	2.3898
T55	460 - 440	1.517	21	0.1881	2.3893
T56	440 - 435	1.463	20	0.1884	2.3825
T57	435 - 430	1.451	20	0.1902	2.3798

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Section No.	Elevation ft	Horz. Deflection ft	Gov. Load Comb.	Tilt °	Twist °
T58	430 - 425	1.440	20	0.1928	2.3769
T59	425 - 420	1.429	20	0.1962	2.3739
T60	420 - 415	1.420	20	0.2004	2.3714
T61	415 - 410	1.413	20	0.2022	2.3757
T62	410 - 405	1.408	20	0.2027	2.3783
T63	405 - 400	1.404	20	0.2020	2.3806
T64	400 - 380	1.400	20	0.2001	2.3830
T65	380 - 360	1.382	20	0.1822	2.3955
T66	360 - 340	1.359	20	0.1663	2.4037
T67	340 - 320	1.330	20	0.1459	2.3829
T68	320 - 300	1.293	20	0.1247	2.3304
T69	300 - 280	1.252	20	0.1075	2.2639
T70	280 - 275	1.208	20	0.0989	2.1670
T71	275 - 270	1.204	26	0.0987	2.1365
T72	270 - 265	1.202	26	0.0993	2.1061
T73	265 - 260	1.201	26	0.1008	2.0828
T74	260 - 255	1.201	26	0.1033	2.0651
T75	255 - 250	1.207	26	0.1040	2.0433
T76	250 - 245	1.213	26	0.1029	2.0122
T77	245 - 240	1.221	26	0.1000	1.9736
T78	240 - 220	1.227	26	0.0954	1.9340
T79	220 - 200	1.242	26	0.0762	1.7782
T80	200 - 180	1.233	26	0.1146	1.6397
T81	180 - 160	1.193	26	0.1689	1.5387
T82	160 - 140	1.120	26	0.2347	1.4467
T83	140 - 120	1.018	26	0.2974	1.3039
T84	120 - 115	0.890	26	0.3439	1.1013
T85	115 - 110	0.854	26	0.3521	1.0444
T86	110 - 105	0.818	26	0.3588	0.9895
T87	105 - 100	0.781	26	0.3638	0.9465
T88	100 - 95	0.746	26	0.3673	0.9163
T89	95 - 90	0.715	26	0.3712	0.8898
T90	90 - 85	0.684	26	0.3757	0.8542
T91	85 - 80	0.652	26	0.3809	0.8100
T92	80 - 60	0.620	26	0.3867	0.7663
T93	60 - 40	0.483	26	0.4133	0.6064
T94	40 - 20	0.333	26	0.4406	0.4422
T95	20 - 15	0.168	26	0.4616	0.2289
T96	15 - 7	0.126	26	0.4652	0.1868
T97	7 - 0	0.058	26	0.4698	0.1424

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection ft	Tilt °	Twist °	Radius of Curvature ft
1169.00	TFU-31ETT/VP-R O6	29	7.565	2.5747	1.5984	13060
1089.80	Guy	20	5.608	0.8545	1.6199	1343
1073.00	Flat Side Arm	20	5.515	0.8455	1.6507	29257
1003.00	ISMD10	22	5.177	0.8864	1.7989	12150
996.00	Vislink Proscan III	22	5.135	0.8893	1.8105	12360
920.00	Guy	22	4.530	0.7938	1.9005	6448
889.00	10' - 12' Ice Shield (C30-085-103)	22	4.279	0.7332	1.9733	27240
878.00	8' Dish w/ Radome	22	4.185	0.7120	1.9969	21467
760.00	Guy	22	3.020	0.5574	2.1321	4458
600.00	Guy	21	1.953	0.2595	2.2638	5228
420.00	Guy	20	1.420	0.2004	2.3714	6755

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Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	ft	°	°	ft
400.00	Radio 0208	20	1.400	0.2001	2.3830	32272
356.00	ISMD8	20	1.354	0.1626	2.4024	24359
349.00	8' Dish w/ Radome	20	1.344	0.1556	2.3968	23586
260.00	Guy	26	1.201	0.1033	2.0651	4564
192.00	(2) LGP21401	26	1.221	0.1351	1.5953	11812
190.00	DC6-48-60-18-8F (23.5" Height)	26	1.217	0.1406	1.5851	11862
100.00	Guy	26	0.746	0.3673	0.9163	6044

### Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
	ft			in							
T1	1089.8	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	10670.70	35784.70	0.298	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	0.90	17892.40	0.000	✓	1	Bolt Shear
T2	1084.9	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	6671.67	17892.40	0.373	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	2639.45	26168.00	0.101	✓	1	Member Block Shear
T3	1080	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	5871.77	17892.40	0.328	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4763.58	35784.70	0.133	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	5502.55	35784.70	0.154	✓	1	Bolt Shear
T4	1060	Leg	A325N	0.8750	4	458.02	40589.10	0.011	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4479.61	17892.40	0.250	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4729.44	35784.70	0.132	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4646.53	35784.70	0.130	✓	1	Bolt Shear
T5	1040	Leg	A325N	0.8750	4	3750.67	40589.10	0.092	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	3816.82	17892.40	0.213	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4783.15	35784.70	0.134	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4749.51	35784.70	0.133	✓	1	Bolt Shear
T6	1020	Leg	A325N	0.8750	4	4313.97	40589.10	0.106	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	3581.66	17892.40	0.200	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4797.14	35784.70	0.134	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4784.70	35784.70	0.134	✓	1	Bolt Shear
T7	1000	Leg	A325N	0.8750	4	913.16	40589.10	0.022	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4744.04	17892.40	0.265	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4790.89	35784.70	0.134	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4782.82	35784.70	0.134	✓	1	Bolt Shear
T8	980	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	5879.34	17892.40	0.329	✓	1	Bolt Shear

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T9	960	Horizontal	A325N	0.7500	2	4863.96	35784.70	0.136	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4600.97	35784.70	0.129	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	7038.15	17892.40	0.393	✓	1	Bolt Shear
T10	940	Horizontal	A325N	0.7500	2	5837.57	35784.70	0.163	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	5110.27	35784.70	0.143	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7323.96	17892.40	0.409	✓	1	Bolt Shear
T11	935	Top Girt	A325N	0.7500	2	6090.16	35784.70	0.170	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7511.40	17892.40	0.420	✓	1	Bolt Shear
T12	930	Top Girt	A325N	0.7500	2	6264.77	35784.70	0.175	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7846.03	17892.40	0.439	✓	1	Bolt Shear
T13	925	Top Girt	A325N	0.7500	2	6569.54	35784.70	0.184	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	8074.52	17892.40	0.451	✓	1	Bolt Shear
T14	920	Top Girt	A325N	0.7500	2	7221.25	35784.70	0.202	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7081.24	17892.40	0.396	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	8557.27	26168.00	0.327	✓	1	Member Block Shear
T15	915	Diagonal	A325N	0.7500	2	5679.11	17892.40	0.317	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	6259.35	35784.70	0.175	✓	1	Bolt Shear
T16	910	Diagonal	A325N	0.7500	2	5241.71	17892.40	0.293	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4642.33	35784.70	0.130	✓	1	Bolt Shear
T17	905	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4985.43	17892.40	0.279	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4278.20	35784.70	0.120	✓	1	Bolt Shear
T18	900	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4623.85	17892.40	0.258	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4182.31	35784.70	0.117	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4192.12	35784.70	0.117	✓	1	Bolt Shear
T19	880	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	3578.65	17892.40	0.200	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4330.35	35784.70	0.121	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4415.45	35784.70	0.123	✓	1	Bolt Shear
T20	860	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4122.61	17892.40	0.230	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4238.52	35784.70	0.118	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4192.68	35784.70	0.117	✓	1	Bolt Shear
T21	840	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	5018.02	17892.40	0.280	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	4325.45	35784.70	0.121	✓	1	Bolt Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T22	820	Top Girt	A325N	0.7500	2	4257.71	35784.70	0.119	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	6102.35	17892.40	0.341	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	5092.83	35784.70	0.142	✓	1	Bolt Shear
T23	800	Top Girt	A325N	0.7500	2	4405.47	35784.70	0.123	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	7393.07	17892.40	0.413	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	6112.06	35784.70	0.171	✓	1	Bolt Shear
T24	780	Top Girt	A325N	0.7500	2	5315.10	35784.70	0.149	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7742.78	17892.40	0.433	✓	1	Bolt Shear
T25	775	Top Girt	A325N	0.7500	2	6421.04	35784.70	0.179	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	7972.28	17892.40	0.446	✓	1	Bolt Shear
T26	770	Top Girt	A325N	0.7500	2	6636.71	35784.70	0.185	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	8371.67	17892.40	0.468	✓	1	Bolt Shear
T27	765	Top Girt	A325N	0.7500	2	6998.65	35784.70	0.196	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	8359.98	17892.40	0.467	✓	1	Bolt Shear
T28	760	Top Girt	A325N	0.7500	2	7006.70	35784.70	0.196	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	6377.83	17892.40	0.356	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	8032.70	26168.00	0.307	✓	1	Member Block Shear
T29	755	Diagonal	A325N	0.7500	2	5150.88	17892.40	0.288	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	6085.77	35784.70	0.170	✓	1	Bolt Shear
T30	750	Diagonal	A325N	0.7500	2	4828.31	17892.40	0.270	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4445.46	35784.70	0.124	✓	1	Bolt Shear
T31	745	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4632.75	17892.40	0.259	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4045.26	35784.70	0.113	✓	1	Bolt Shear
T32	740	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4341.67	17892.40	0.243	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	3076.21	20934.40	0.147	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	4023.18	35784.70	0.112	✓	1	Bolt Shear
T33	720	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	3389.10	17892.40	0.189	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2851.52	20934.40	0.136	✓	1	Member Block Shear
T34	700	Top Girt	A325N	0.7500	2	3861.27	35784.70	0.108	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	2883.29	17892.40	0.161	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2700.19	20934.40	0.129	✓	1	Member Block Shear



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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T35	680	Top Girt	A325N	0.7500	2	3741.76	35784.70	0.105	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	3324.57	17892.40	0.186	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2765.75	20934.40	0.132	✓	1	Member Block Shear
T36	660	Top Girt	A325N	0.7500	2	3661.82	35784.70	0.102	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4264.88	17892.40	0.238	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	2985.13	20934.40	0.143	✓	1	Member Block Shear
T37	640	Top Girt	A325N	0.7500	2	3653.03	35784.70	0.102	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	5572.99	17892.40	0.311	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	3285.20	20934.40	0.157	✓	1	Member Block Shear
T38	620	Top Girt	A325N	0.7500	2	3870.25	35784.70	0.108	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	5889.46	17892.40	0.329	✓	1	Bolt Shear
T39	615	Top Girt	A325N	0.7500	2	4868.79	35784.70	0.136	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	6082.44	17892.40	0.340	✓	1	Bolt Shear
T40	610	Top Girt	A325N	0.7500	2	5046.82	35784.70	0.141	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	6473.66	17892.40	0.362	✓	1	Bolt Shear
T41	605	Top Girt	A325N	0.7500	2	5417.29	35784.70	0.151	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	6835.51	17892.40	0.382	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	6319.21	35784.70	0.177	✓	1	Bolt Shear
T42	600	Diagonal	A325N	0.7500	2	6600.05	17892.40	0.369	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	9315.93	26168.00	0.356	✓	1	Member Block Shear
		Diagonal	A325N	0.7500	2	6205.81	17892.40	0.347	✓	1	Bolt Shear
T43	595	Top Girt	A325N	0.7500	2	5771.72	35784.70	0.161	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	5848.18	17892.40	0.327	✓	1	Bolt Shear
T44	590	Top Girt	A325N	0.7500	2	5172.52	35784.70	0.145	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
T45	585	Diagonal	A325N	0.7500	2	5696.14	17892.40	0.318	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4882.65	35784.70	0.136	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
T46	580	Diagonal	A325N	0.7500	2	5350.24	17892.40	0.299	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	3392.57	20934.40	0.162	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	4680.69	35784.70	0.131	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
T47	560	Diagonal	A325N	0.7500	2	4116.64	17892.40	0.230	✓	1	Bolt Shear
		Horizontal	A325N	0.7500	2	3249.65	20934.40	0.155	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	4680.69	35784.70	0.131	✓	1	Bolt Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T48	540	Top Girt	A325N	0.7500	2	3621.00	35784.70	0.101	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	1972.94	17892.40	0.110	✓	1	Bolt Shear
T49	535	Top Girt	A325N	0.7500	2	2824.42	35784.70	0.079	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	3221.53	17892.40	0.180	✓	1	Bolt Shear
T50	530	Top Girt	A325N	0.7500	2	1752.12	35784.70	0.049	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	2853.89	17892.40	0.160	✓	1	Bolt Shear
T51	525	Top Girt	A325N	0.7500	2	3312.43	35784.70	0.093	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
T52	520	Diagonal	A325N	0.7500	2	2764.02	17892.40	0.154	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	3173.87	35784.70	0.089	✓	1	Bolt Shear
T53	500	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	2629.32	17892.40	0.147	✓	1	Bolt Shear
T54	480	Horizontal	A325N	0.7500	2	3338.97	20934.40	0.159	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	3146.17	35784.70	0.088	✓	1	Bolt Shear
T55	460	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4418.36	17892.40	0.247	✓	1	Bolt Shear
T56	440	Horizontal	A325N	0.7500	2	3639.17	20934.40	0.174	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	3177.97	35784.70	0.089	✓	1	Bolt Shear
T57	435	Diagonal	A325N	0.7500	2	4731.12	17892.40	0.264	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	3884.81	35784.70	0.109	✓	1	Bolt Shear
T58	430	Diagonal	A325N	0.7500	2	4944.22	17892.40	0.276	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4076.46	35784.70	0.114	✓	1	Bolt Shear
T59	425	Diagonal	A325N	0.7500	2	5340.94	17892.40	0.299	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	4425.44	35784.70	0.124	✓	1	Bolt Shear
T60	420	Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	5786.25	17892.40	0.323	✓	1	Bolt Shear
T61	415	Top Girt	A325N	0.7500	2	5079.65	35784.70	0.142	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	6444.42	17892.40	0.360	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	6924.35	26168.00	0.265	✓	1	Member Block Shear
		Diagonal	A325N	0.7500	2	6617.15	17892.40	0.370	✓	1	Bolt Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T62	410	Top Girt	A325N	0.7500	2	5444.01	35784.70	0.152	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	6233.43	17892.40	0.348	✓	1 Bolt Shear
T63	405	Top Girt	A325N	0.7500	2	5483.56	35784.70	0.153	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
T64	400	Diagonal	A325N	0.7500	2	6017.33	17892.40	0.336	✓	1 Bolt Shear
		Top Girt	A325N	0.7500	2	5186.25	35784.70	0.145	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	5359.01	17892.40	0.300	✓	1 Bolt Shear
T65	380	Horizontal	A325N	0.7500	2	3972.67	20934.40	0.190	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	4817.69	35784.70	0.135	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	3895.54	17892.40	0.218	✓	1 Bolt Shear
T66	360	Horizontal	A325N	0.7500	2	3930.27	20934.40	0.188	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	3456.98	35784.70	0.097	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	2953.12	17892.40	0.165	✓	1 Bolt Shear
T67	340	Horizontal	A325N	0.7500	2	3970.47	20934.40	0.190	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	3122.93	35784.70	0.087	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	3371.24	17892.40	0.188	✓	1 Bolt Shear
T68	320	Horizontal	A325N	0.7500	2	3998.35	20934.40	0.191	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	3102.08	35784.70	0.087	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	4755.01	17892.40	0.266	✓	1 Bolt Shear
T69	300	Horizontal	A325N	0.7500	2	4012.11	20934.40	0.192	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	3075.37	35784.70	0.086	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	6258.07	17892.40	0.350	✓	1 Bolt Shear
T70	280	Horizontal	A325N	0.7500	2	4087.78	20934.40	0.195	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	4239.09	35784.70	0.118	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	6626.59	17892.40	0.370	✓	1 Bolt Shear
T71	275	Top Girt	A325N	0.7500	2	5512.59	35784.70	0.154	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	6831.54	17892.40	0.382	✓	1 Bolt Shear
T72	270	Top Girt	A325N	0.7500	2	5710.17	35784.70	0.160	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	7296.72	17892.40	0.408	✓	1 Bolt Shear
T73	265	Top Girt	A325N	0.7500	2	6100.62	35784.70	0.170	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	6976.71	17892.40	0.390	✓	1 Bolt Shear

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T74	260	Top Girt	A325N	0.7500	2	5894.16	35784.70	0.165	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	9388.39	17892.40	0.525	✓	1	Bolt Shear
T75	255	Top Girt	A325N	0.7500	2	9722.46	26168.00	0.372	✓	1	Member Block Shear
		Diagonal	A325N	0.7500	2	9875.26	17892.40	0.552	✓	1	Bolt Shear
T76	250	Top Girt	A325N	0.7500	2	8064.24	35784.70	0.225	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	9473.35	17892.40	0.529	✓	1	Bolt Shear
T77	245	Top Girt	A325N	0.7500	2	8230.43	35784.70	0.230	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
T78	240	Diagonal	A325N	0.7500	2	9403.70	17892.40	0.526	✓	1	Bolt Shear
		Top Girt	A325N	0.7500	2	7994.90	35784.70	0.223	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	9075.14	17892.40	0.507	✓	1	Bolt Shear
T79	220	Horizontal	A325N	0.7500	2	4611.69	20934.40	0.220	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	7817.35	35784.70	0.218	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	7749.34	17892.40	0.433	✓	1	Bolt Shear
T80	200	Horizontal	A325N	0.7500	2	4807.43	20934.40	0.230	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	6712.05	35784.70	0.188	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	6230.29	17892.40	0.348	✓	1	Bolt Shear
T81	180	Horizontal	A325N	0.7500	2	4969.54	20934.40	0.237	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	5457.81	35784.70	0.153	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	4149.72	17892.40	0.232	✓	1	Bolt Shear
T82	160	Horizontal	A325N	0.7500	2	5025.72	20934.40	0.240	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	3008.35	35784.70	0.084	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	6248.69	17892.40	0.349	✓	1	Bolt Shear
T83	140	Horizontal	A325N	0.7500	2	5030.68	20934.40	0.240	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	3827.59	35784.70	0.107	✓	1	Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	2	8407.27	17892.40	0.470	✓	1	Bolt Shear
T84	120	Horizontal	A325N	0.7500	2	5009.28	20934.40	0.239	✓	1	Member Block Shear
		Top Girt	A325N	0.7500	2	5595.62	35784.70	0.156	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	8965.30	17892.40	0.501	✓	1	Bolt Shear
T85	115	Top Girt	A325N	0.7500	2	7448.18	35784.70	0.208	✓	1	Bolt Shear
		Diagonal	A325N	0.7500	2	9301.67	17892.40	0.520	✓	1	Bolt Shear

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T86	110	Top Girt	A325N	0.7500	2	7758.34	35784.70	0.217	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	9992.88	17892.40	0.558	✓	1 Bolt Shear
T87	105	Top Girt	A325N	0.7500	2	8319.26	35784.70	0.232	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
T88	100	Diagonal	A325N	0.7500	2	9676.96	17892.40	0.541	✓	1 Bolt Shear
		Top Girt	A325N	0.7500	2	8215.97	35784.70	0.230	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	6470.95	17892.40	0.362	✓	1 Bolt Shear
T89	95	Top Girt	A325N	0.7500	2	11820.80	26168.00	0.452	✓	1 Member Block Shear
		Diagonal	A325N	0.7500	2	6507.15	17892.40	0.364	✓	1 Bolt Shear
T90	90	Top Girt	A325N	0.7500	2	5352.88	35784.70	0.150	✓	1 Bolt Shear
		Diagonal	A325N	0.7500	2	6039.24	17892.40	0.338	✓	1 Bolt Shear
T91	85	Top Girt	A325N	0.7500	2	5357.17	35784.70	0.150	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
T92	80	Diagonal	A325N	0.7500	2	5749.10	17892.40	0.321	✓	1 Bolt Shear
		Top Girt	A325N	0.7500	2	4984.26	35784.70	0.139	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
T93	60	Diagonal	A325N	0.7500	2	5273.83	17892.40	0.295	✓	1 Bolt Shear
		Horizontal	A325N	0.7500	2	5150.34	20934.40	0.246	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	4667.02	35784.70	0.130	✓	1 Bolt Shear
		Leg	A325N	0.8750	4	0.00	40589.10	0.000	✓	1 Bolt Tension
T94	40	Diagonal	A325N	0.7500	2	4466.14	17892.40	0.250	✓	1 Bolt Shear
		Horizontal	A325N	0.7500	2	5154.00	20934.40	0.246	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	3107.71	35784.70	0.087	✓	1 Bolt Shear
T95	20	Diagonal	A325N	0.7500	2	6432.78	17892.40	0.360	✓	1 Bolt Shear
		Horizontal	A325N	0.7500	2	5134.39	20934.40	0.245	✓	1 Member Block Shear
		Top Girt	A325N	0.7500	2	4071.44	35784.70	0.114	✓	1 Bolt Shear
T95	20	Leg	A325N	0.8750	6	0.00	40589.10	0.000	✓	1 Bolt Tension
		Diagonal	A325N	0.7500	2	6457.37	17892.40	0.361	✓	1 Bolt Shear
		Top Girt	A325N	0.7500	2	5300.21	35784.70	0.148	✓	1 Bolt Shear

### Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual $T_u$ lb	Allowable $\phi T_n$ lb	Required S.F.	Actual S.F.
T1	1089.80 (A) (2281)	1 3/4 BS	37600.00	376000.31	131100.00	225600.00	1.000	1.721 ✓

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual $T_u$ lb	Allowable $\phi T_n$ lb	Required S.F.	Actual S.F.
T14	1089.80 (B) (2280)	1 3/4 BS	37600.00	376000.31	119303.00	225600.00	1.000	1.891 ✓
	1089.80 (C) (2279)	1 3/4 BS	37600.00	376000.31	119347.00	225600.00	1.000	1.890 ✓
	920.00 (A) (2284)	1 3/4 BS	37600.00	376000.31	127243.00	225600.00	1.000	1.773 ✓
T28	920.00 (B) (2283)	1 3/4 BS	37600.00	376000.31	114995.00	225600.00	1.000	1.962 ✓
	920.00 (C) (2282)	1 3/4 BS	37600.00	376000.31	112888.00	225600.00	1.000	1.998 ✓
	760.00 (A) (2287)	1 3/4 BS	37600.00	376000.31	111781.00	225600.00	1.000	2.018 ✓
T42	760.00 (B) (2286)	1 3/4 BS	37600.00	376000.31	100131.00	225600.00	1.000	2.253 ✓
	760.00 (C) (2285)	1 3/4 BS	37600.00	376000.31	98393.70	225600.00	1.000	2.293 ✓
	600.00 (A) (2290)	1 3/4 BS	37600.00	376000.31	96996.90	225600.00	1.000	2.326 ✓
T60	600.00 (B) (2289)	1 3/4 BS	37600.00	376000.31	85825.20	225600.00	1.000	2.629 ✓
	600.00 (C) (2288)	1 3/4 BS	37600.00	376000.31	85295.70	225600.00	1.000	2.645 ✓
	420.00 (A) (2293)	1 1/2 BS	27600.00	275999.41	71992.60	165600.00	1.000	2.300 ✓
T74	420.00 (B) (2292)	1 1/2 BS	27600.00	275999.41	66927.70	165600.00	1.000	2.474 ✓
	420.00 (C) (2291)	1 1/2 BS	27600.00	275999.41	66990.50	165600.00	1.000	2.472 ✓
	260.00 (A) (2296)	1 1/2 BS	27600.00	275999.41	74940.80	165600.00	1.000	2.210 ✓
T88	260.00 (B) (2295)	1 1/2 BS	27600.00	275999.41	70080.90	165600.00	1.000	2.363 ✓
	260.00 (C) (2294)	1 1/2 BS	27600.00	275999.41	69574.90	165600.00	1.000	2.380 ✓
	100.00 (A) (2299)	1 1/2 BS	27600.00	275999.41	62783.30	165600.00	1.000	2.638 ✓
T88	100.00 (B) (2298)	1 1/2 BS	27600.00	275999.41	59890.80	165600.00	1.000	2.765 ✓
	100.00 (C) (2297)	1 1/2 BS	27600.00	275999.41	59159.70	165600.00	1.000	2.799 ✓

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	$L_u$ ft	Kl/r	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
L1	1151.9 - 1148.8	P20x.812	62.10	0.00	0.0	48.9481	-33684.50	2202660.00	0.015
	48.9481					-34306.90	2202660.00	0.016	
	48.9481					-34929.80	2202660.00	0.016	

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
	1142.59								
	1142.59 -					48.9481	-35553.50	2202660.00	0.016
	1139.48								
	1139.48 -					48.9481	-36178.30	2202660.00	0.016
	1136.38								
	1136.38 -					48.9481	-36804.30	2202660.00	0.017
	1133.27								
	1133.27 -					48.9481	-37431.80	2202660.00	0.017
	1130.17								
	1130.17 -					48.9481	-38061.20	2202660.00	0.017
	1127.06								
	1127.06 -					48.9481	-38692.60	2202660.00	0.018
	1123.95								
	1123.95 -					48.9481	-39326.50	2202660.00	0.018
	1120.85								
	1120.85 -					48.9481	-39962.80	2202660.00	0.018
	1117.75								
	1117.75 -					48.9481	-40602.50	2202660.00	0.018
	1114.64								
	1114.64 -					48.9481	-41245.80	2202660.00	0.019
	1111.54								
	1111.54 -					48.9481	-41892.90	2202660.00	0.019
	1108.43								
	1108.43 -					48.9481	-42544.40	2202660.00	0.019
	1105.33								
	1105.33 -					48.9481	-43200.50	2202660.00	0.020
	1102.22								
	1102.22 -					48.9481	-43861.70	2202660.00	0.020
	1099.12								
	1099.12 -					48.9481	-44528.30	2202660.00	0.020
	1096.01								
	1096.01 -					48.9481	-45200.90	2202660.00	0.021
	1092.91								
	1092.91 -					48.9481	-45879.80	2202660.00	0.021
	1089.8								

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	1151.9 -	P20x.812	33.15	1121.78	0.030	0.00	1121.78	0.000
	1148.8							
	1148.8 -		44.58	1121.78	0.040	0.00	1121.78	0.000
	1145.69							
	1145.69 -		57.76	1121.78	0.051	0.00	1121.78	0.000
	1142.59							
	1142.59 -		72.67	1121.78	0.065	0.00	1121.78	0.000
	1139.48							
	1139.48 -		89.29	1121.78	0.080	0.00	1121.78	0.000
	1136.38							
	1136.38 -		107.60	1121.78	0.096	0.00	1121.78	0.000
	1133.27							
	1133.27 -		127.60	1121.78	0.114	0.00	1121.78	0.000
	1130.17							
	1130.17 -		149.26	1121.78	0.133	0.00	1121.78	0.000

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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{rx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	$M_{uy}$ kip-ft	$\phi M_{ry}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
	1127.06							
	1127.06 - 1123.95		172.55	1121.78	0.154	0.00	1121.78	0.000
	1123.95 - 1120.85		197.46	1121.78	0.176	0.00	1121.78	0.000
	1120.85 - 1117.75		223.95	1121.78	0.200	0.00	1121.78	0.000
	1117.75 - 1114.64		252.01	1121.78	0.225	0.00	1121.78	0.000
	1114.64 - 1111.54		281.60	1121.78	0.251	0.00	1121.78	0.000
	1111.54 - 1108.43		312.68	1121.78	0.279	0.00	1121.78	0.000
	1108.43 - 1105.33		345.21	1121.78	0.308	0.00	1121.78	0.000
	1105.33 - 1102.22		379.17	1121.78	0.338	0.00	1121.78	0.000
	1102.22 - 1099.12		414.51	1121.78	0.370	0.00	1121.78	0.000
	1099.12 - 1096.01		451.17	1121.78	0.402	0.00	1121.78	0.000
	1096.01 - 1092.91		489.13	1121.78	0.436	0.00	1121.78	0.000
	1092.91 - 1089.8		528.31	1121.78	0.471	0.00	1121.78	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	1151.9 - 1148.8	P20x.812	3471.12	1101330.00	0.003	0.03	1692.56	0.000
	1148.8 - 1145.69		4034.13	1101330.00	0.004	0.14	1692.56	0.000
	1145.69 - 1142.59		4593.63	1101330.00	0.004	0.30	1692.56	0.000
	1142.59 - 1139.48		5149.31	1101330.00	0.005	0.47	1692.56	0.000
	1139.48 - 1136.38		5700.51	1101330.00	0.005	0.63	1692.56	0.000
	1136.38 - 1133.27		6246.56	1101330.00	0.006	0.80	1692.56	0.000
	1133.27 - 1130.17		6786.81	1101330.00	0.006	0.96	1692.56	0.001
	1130.17 - 1127.06		7320.53	1101330.00	0.007	1.13	1692.56	0.001
	1127.06 - 1123.95		7847.02	1101330.00	0.007	1.30	1692.56	0.001
	1123.95 - 1120.85		8365.54	1101330.00	0.008	1.47	1692.56	0.001
	1120.85 - 1117.75		8869.26	1101330.00	0.008	1.66	1692.56	0.001
	1117.75 - 1114.64		9369.75	1101330.00	0.009	1.84	1692.56	0.001
	1114.64 -		9859.93	1101330.00	0.009	2.01	1692.56	0.001



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Section No.	Elevation ft	Size	Actual $V_u$ lb	$\phi V_n$ lb	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	1111.54							
	1111.54 - 1108.43		10339.00	1101330.00	0.009	2.19	1692.56	0.001
	1108.43 - 1105.33		10806.00	1101330.00	0.010	2.38	1692.56	0.001
	1105.33 - 1102.22		11260.30	1101330.00	0.010	2.57	1692.56	0.002
	1102.22 - 1099.12		11700.80	1101330.00	0.011	2.76	1692.56	0.002
	1099.12 - 1096.01		12126.60	1101330.00	0.011	2.96	1692.56	0.002
	1096.01 - 1092.91		12537.00	1101330.00	0.011	3.17	1692.56	0.002
	1092.91 - 1089.8		12930.80	1101330.00	0.012	3.38	1692.56	0.002

### Pole Interaction Design Data

Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	1151.9 - 1148.8	0.015	0.030	0.000	0.003	0.000	0.045	1.000	4.8.2 ✓
	1148.8 - 1145.69	0.016	0.040	0.000	0.004	0.000	0.055	1.000	4.8.2 ✓
	1145.69 - 1142.59	0.016	0.051	0.000	0.004	0.000	0.067	1.000	4.8.2 ✓
	1142.59 - 1139.48	0.016	0.065	0.000	0.005	0.000	0.081	1.000	4.8.2 ✓
	1139.48 - 1136.38	0.016	0.080	0.000	0.005	0.000	0.096	1.000	4.8.2 ✓
	1136.38 - 1133.27	0.017	0.096	0.000	0.006	0.000	0.113	1.000	4.8.2 ✓
	1133.27 - 1130.17	0.017	0.114	0.000	0.006	0.001	0.131	1.000	4.8.2 ✓
	1130.17 - 1127.06	0.017	0.133	0.000	0.007	0.001	0.150	1.000	4.8.2 ✓
	1127.06 - 1123.95	0.018	0.154	0.000	0.007	0.001	0.171	1.000	4.8.2 ✓
	1123.95 - 1120.85	0.018	0.176	0.000	0.008	0.001	0.194	1.000	4.8.2 ✓
	1120.85 - 1117.75	0.018	0.200	0.000	0.008	0.001	0.218	1.000	4.8.2 ✓
	1117.75 - 1114.64	0.018	0.225	0.000	0.009	0.001	0.243	1.000	4.8.2 ✓
	1114.64 - 1111.54	0.019	0.251	0.000	0.009	0.001	0.270	1.000	4.8.2 ✓
	1111.54 - 1108.43	0.019	0.279	0.000	0.009	0.001	0.298	1.000	4.8.2 ✓
	1108.43 - 1105.33	0.019	0.308	0.000	0.010	0.001	0.327	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio $P_u$ $\phi P_n$	Ratio $M_{ux}$ $\phi M_{nx}$	Ratio $M_{uy}$ $\phi M_{ny}$	Ratio $V_u$ $\phi V_n$	Ratio $T_u$ $\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	1105.33 - 1102.22	0.020	0.338	0.000	0.010	0.002	0.358	1.000	4.8.2 ✓
	1102.22 - 1099.12	0.020	0.370	0.000	0.011	0.002	0.390	1.000	4.8.2 ✓
	1099.12 - 1096.01	0.020	0.402	0.000	0.011	0.002	0.423	1.000	4.8.2 ✓
	1096.01 - 1092.91	0.021	0.436	0.000	0.011	0.002	0.457	1.000	4.8.2 ✓
	1092.91 - 1089.8	0.021	0.471	0.000	0.012	0.002	0.492	1.000	4.8.2 ✓

### Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A $in^2$	$P_u$ lb	$\phi P_n$ lb	Ratio $P_u$ $\phi P_n$
T1	1089.8 - 1084.9	3 3/4	4.90	4.90	62.7 K=1.00	11.0447	-88806.50	372777.00	0.238 <sup>1</sup>
T2	1084.9 - 1080	3 3/4	4.90	4.90	62.7 K=1.00	11.0447	-127621.00	372777.00	0.342 <sup>1</sup>
T3	1080 - 1060	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-158389.00	368382.00	0.430 <sup>1</sup>
T4	1060 - 1040	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-179413.00	368382.00	0.487 <sup>1</sup>
T5	1040 - 1020	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-190389.00	368382.00	0.517 <sup>1</sup>
T6	1020 - 1000	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-192074.00	368382.00	0.521 <sup>1</sup>
T7	1000 - 980	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-189794.00	368382.00	0.515 <sup>1</sup>
T8	980 - 960	3 3/4	20.00	5.00	64.0 K=1.00	11.0447	-172514.00	368382.00	0.468 <sup>1</sup>
T9	960 - 940	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-179483.00	581305.00	0.309 <sup>1</sup>
T10	940 - 935	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-190668.00	581305.00	0.328 <sup>1</sup>
T11	935 - 930	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-202299.00	581305.00	0.348 <sup>1</sup>
T12	930 - 925	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-214976.00	581305.00	0.370 <sup>1</sup>
T13	925 - 920	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-228221.00	581305.00	0.393 <sup>1</sup>
T14	920 - 915	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-252896.00	581305.00	0.435 <sup>1</sup>
T15	915 - 910	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-248843.00	581305.00	0.428 <sup>1</sup>
T16	910 - 905	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-246076.00	581305.00	0.423 <sup>1</sup>
T17	905 - 900	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-244517.00	581305.00	0.421 <sup>1</sup>

**tnxTower**

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T18	900 - 880	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-243126.00	581305.00	0.418 <sup>1</sup>
T19	880 - 860	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-244107.00	581305.00	0.420 <sup>1</sup>
T20	860 - 840	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-253936.00	581305.00	0.437 <sup>1</sup>
T21	840 - 820	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-277987.00	581305.00	0.478 <sup>1</sup>
T22	820 - 800	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-307430.00	581305.00	0.529 <sup>1</sup>
T23	800 - 780	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-342120.00	581305.00	0.589 <sup>1</sup>
T24	780 - 775	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-351587.00	581305.00	0.605 <sup>1</sup>
T25	775 - 770	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-361262.00	581305.00	0.621 <sup>1</sup>
T26	770 - 765	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-371541.00	581305.00	0.639 <sup>1</sup>
T27	765 - 760	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-382866.00	581305.00	0.659 <sup>1</sup>
T28	760 - 755	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-389814.00	581305.00	0.671 <sup>1</sup>
T29	755 - 750	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-380164.00	581305.00	0.654 <sup>1</sup>
T30	750 - 745	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-371183.00	581305.00	0.639 <sup>1</sup>
T31	745 - 740	4 1/2	5.00	5.00	53.3 K=1.00	15.9043	-362987.00	581305.00	0.624 <sup>1</sup>
T32	740 - 720	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-355210.00	581305.00	0.611 <sup>1</sup>
T33	720 - 700	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-329266.00	581305.00	0.566 <sup>1</sup>
T34	700 - 680	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-311791.00	581305.00	0.536 <sup>1</sup>
T35	680 - 660	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-319362.00	581305.00	0.549 <sup>1</sup>
T36	660 - 640	4 1/2	20.00	5.00	53.3 K=1.00	15.9043	-344693.00	581305.00	0.593 <sup>1</sup>
T37	640 - 620	5	20.00	5.00	48.0 K=1.00	19.6350	-379343.00	746587.00	0.508 <sup>1</sup>
T38	620 - 615	5	5.00	5.00	48.0 K=1.00	19.6350	-389273.00	746587.00	0.521 <sup>1</sup>
T39	615 - 610	5	5.00	5.00	48.0 K=1.00	19.6350	-399515.00	746587.00	0.535 <sup>1</sup>
T40	610 - 605	5	5.00	5.00	48.0 K=1.00	19.6350	-410496.00	746587.00	0.550 <sup>1</sup>
T41	605 - 600	5	5.00	5.00	48.0 K=1.00	19.6350	-422580.00	746587.00	0.566 <sup>1</sup>
T42	600 - 595	5	5.00	5.00	48.0 K=1.00	19.6350	-432390.00	746587.00	0.579 <sup>1</sup>
T43	595 - 590	5	5.00	5.00	48.0 K=1.00	19.6350	-421679.00	746587.00	0.565 <sup>1</sup>
T44	590 - 585	5	5.00	5.00	48.0 K=1.00	19.6350	-411204.00	746587.00	0.551 <sup>1</sup>
T45	585 - 580	5	5.00	5.00	48.0 K=1.00	19.6350	-401372.00	746587.00	0.538 <sup>1</sup>
T46	580 - 560	4 3/4	20.00	5.00	50.5 K=1.00	17.7205	-391740.00	661643.00	0.592 <sup>1</sup>
T47	560 - 540	4 3/4	20.00	5.00	50.5 K=1.00	17.7205	-375238.00	661643.00	0.567 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T48	540 - 535	4 3/4	5.00	5.00	50.5 K=1.00	17.7205	-373049.00	661643.00	0.564 <sup>1</sup>
T49	535 - 530	4 3/4	5.00	5.00	50.5 K=1.00	17.7205	-377566.00	661643.00	0.571 <sup>1</sup>
T50	530 - 525	4 3/4	5.00	5.00	50.5 K=1.00	17.7205	-378587.00	661643.00	0.572 <sup>1</sup>
T51	525 - 520	4 3/4	5.00	5.00	50.5 K=1.00	17.7205	-380024.00	661643.00	0.574 <sup>1</sup>
T52	520 - 500	4 3/4	20.00	5.00	50.5 K=1.00	17.7205	-385552.00	661643.00	0.583 <sup>1</sup>
T53	500 - 480	4 3/4	20.00	5.00	50.5 K=1.00	17.7205	-391313.00	661643.00	0.591 <sup>1</sup>
T54	480 - 460	4 3/4	20.00	5.00	50.5 K=1.00	17.7205	-404082.00	661643.00	0.611 <sup>1</sup>
T55	460 - 440	5	20.00	5.00	48.0 K=1.00	19.6350	-420215.00	746587.00	0.563 <sup>1</sup>
T56	440 - 435	5	5.00	5.00	48.0 K=1.00	19.6350	-424523.00	746587.00	0.569 <sup>1</sup>
T57	435 - 430	5	5.00	5.00	48.0 K=1.00	19.6350	-429016.00	746587.00	0.575 <sup>1</sup>
T58	430 - 425	5	5.00	5.00	48.0 K=1.00	19.6350	-434042.00	746587.00	0.581 <sup>1</sup>
T59	425 - 420	5	5.00	5.00	48.0 K=1.00	19.6350	-441058.00	746587.00	0.591 <sup>1</sup>
T60	420 - 415	5	5.00	5.00	48.0 K=1.00	19.6350	-468943.00	746587.00	0.628 <sup>1</sup>
T61	415 - 410	5	5.00	5.00	48.0 K=1.00	19.6350	-464399.00	746587.00	0.622 <sup>1</sup>
T62	410 - 405	5	5.00	5.00	48.0 K=1.00	19.6350	-461931.00	746587.00	0.619 <sup>1</sup>
T63	405 - 400	5	5.00	5.00	48.0 K=1.00	19.6350	-459971.00	746587.00	0.616 <sup>1</sup>
T64	400 - 380	5	20.00	5.00	48.0 K=1.00	19.6350	-458724.00	746587.00	0.614 <sup>1</sup>
T65	380 - 360	5	20.00	5.00	48.0 K=1.00	19.6350	-453829.00	746587.00	0.608 <sup>1</sup>
T66	360 - 340	5	20.00	5.00	48.0 K=1.00	19.6350	-458470.00	746587.00	0.614 <sup>1</sup>
T67	340 - 320	5	20.00	5.00	48.0 K=1.00	19.6350	-461690.00	746587.00	0.618 <sup>1</sup>
T68	320 - 300	5	20.00	5.00	48.0 K=1.00	19.6350	-463279.00	746587.00	0.621 <sup>1</sup>
T69	300 - 280	5	20.00	5.00	48.0 K=1.00	19.6350	-472016.00	866222.00	0.545 <sup>1</sup>
T70	280 - 275	5	5.00	5.00	48.0 K=1.00	19.6350	-475025.00	866222.00	0.548 <sup>1</sup>
T71	275 - 270	5	5.00	5.00	48.0 K=1.00	19.6350	-478250.00	866222.00	0.552 <sup>1</sup>
T72	270 - 265	5	5.00	5.00	48.0 K=1.00	19.6350	-481861.00	866222.00	0.556 <sup>1</sup>
T73	265 - 260	5	5.00	5.00	48.0 K=1.00	19.6350	-488268.00	866222.00	0.564 <sup>1</sup>
T74	260 - 255	5	5.00	5.00	48.0 K=1.00	19.6350	-507824.00	866222.00	0.586 <sup>1</sup>
T75	255 - 250	5	5.00	5.00	48.0 K=1.00	19.6350	-500943.00	866222.00	0.578 <sup>1</sup>
T76	250 - 245	5	5.00	5.00	48.0 K=1.00	19.6350	-499442.00	866222.00	0.577 <sup>1</sup>
T77	245 - 240	5	5.00	5.00	48.0 K=1.00	19.6350	-505079.00	866222.00	0.583 <sup>1</sup>

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	164 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T78	240 - 220	5	20.00	5.00	48.0 K=1.00	19.6350	-532512.00	866222.00	0.615 <sup>1</sup>
T79	220 - 200	5	20.00	5.00	48.0 K=1.00	19.6350	-555114.00	866222.00	0.641 <sup>1</sup>
T80	200 - 180	5	20.00	5.00	48.0 K=1.00	19.6350	-573833.00	866222.00	0.662 <sup>1</sup>
T81	180 - 160	5	20.00	5.00	48.0 K=1.00	19.6350	-580320.00	866222.00	0.670 <sup>1</sup>
T82	160 - 140	5	20.00	5.00	48.0 K=1.00	19.6350	-580893.00	866222.00	0.671 <sup>1</sup>
T83	140 - 120	5	20.00	5.00	48.0 K=1.00	19.6350	-578422.00	866222.00	0.668 <sup>1</sup>
T84	120 - 115	5	5.00	5.00	48.0 K=1.00	19.6350	-569505.00	866222.00	0.657 <sup>1</sup>
T85	115 - 110	5	5.00	5.00	48.0 K=1.00	19.6350	-566117.00	866222.00	0.654 <sup>1</sup>
T86	110 - 105	5	5.00	5.00	48.0 K=1.00	19.6350	-562384.00	866222.00	0.649 <sup>1</sup>
T87	105 - 100	5	5.00	5.00	48.0 K=1.00	19.6350	-560527.00	866222.00	0.647 <sup>1</sup>
T88	100 - 95	5	5.00	5.00	48.0 K=1.00	19.6350	-583576.00	866222.00	0.674 <sup>1</sup>
T89	95 - 90	5	5.00	5.00	48.0 K=1.00	19.6350	-583070.00	866222.00	0.673 <sup>1</sup>
T90	90 - 85	5	5.00	5.00	48.0 K=1.00	19.6350	-586153.00	866222.00	0.677 <sup>1</sup>
T91	85 - 80	5	5.00	5.00	48.0 K=1.00	19.6350	-588725.00	866222.00	0.680 <sup>1</sup>
T92	80 - 60	5	20.00	5.00	48.0 K=1.00	19.6350	-594710.00	866222.00	0.687 <sup>1</sup>
T93	60 - 40	5	20.00	5.00	48.0 K=1.00	19.6350	-595133.00	866222.00	0.687 <sup>1</sup>
T94	40 - 20	5	20.00	5.00	48.0 K=1.00	19.6350	-592868.00	866222.00	0.684 <sup>1</sup>
T95	20 - 15	5	5.00	5.00	48.0 K=1.00	19.6350	-584949.00	866222.00	0.675 <sup>1</sup>
T96	15 - 7	5	8.00	3.94	37.8 K=1.00	19.6350	-519527.00	935357.00	0.555 <sup>1</sup>
T97	7 - 0	5	8.39	1.19	11.4 K=1.00	19.6350	-684439.00	1048230.00	0.653 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>ux</sub> kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M <sub>uy</sub> kip-ft	φM <sub>uy</sub> kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	1089.8 - 1084.9	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T2	1084.9 - 1080	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T3	1080 - 1060	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T4	1060 - 1040	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T5	1040 - 1020	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T6	1020 - 1000	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T7	1000 - 980	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000

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Section No.	Elevation ft	Size	$M_{ux}$	$\phi M_{rx}$	Ratio	$M_{uy}$	$\phi M_{ry}$	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{rx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ry}}$
T8	980 - 960	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T9	960 - 940	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T10	940 - 935	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T11	935 - 930	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T12	930 - 925	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T13	925 - 920	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T14	920 - 915	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T15	915 - 910	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T16	910 - 905	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T17	905 - 900	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T18	900 - 880	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T19	880 - 860	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T20	860 - 840	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T21	840 - 820	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T22	820 - 800	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T23	800 - 780	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T24	780 - 775	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T25	775 - 770	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T26	770 - 765	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T27	765 - 760	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T28	760 - 755	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T29	755 - 750	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T30	750 - 745	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T31	745 - 740	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T32	740 - 720	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T33	720 - 700	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T34	700 - 680	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T35	680 - 660	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T36	660 - 640	4 1/2	0.00	56.95	0.000	0.00	56.95	0.000
T37	640 - 620	5	0.00	78.13	0.000	0.00	78.13	0.000
T38	620 - 615	5	0.00	78.13	0.000	0.00	78.13	0.000
T39	615 - 610	5	0.00	78.13	0.000	0.00	78.13	0.000
T40	610 - 605	5	0.00	78.13	0.000	0.00	78.13	0.000
T41	605 - 600	5	0.00	78.13	0.000	0.00	78.13	0.000
T42	600 - 595	5	0.00	78.13	0.000	0.00	78.13	0.000
T43	595 - 590	5	0.00	78.13	0.000	0.00	78.13	0.000
T44	590 - 585	5	0.00	78.13	0.000	0.00	78.13	0.000
T45	585 - 580	5	0.00	78.13	0.000	0.00	78.13	0.000
T46	580 - 560	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T47	560 - 540	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T48	540 - 535	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T49	535 - 530	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T50	530 - 525	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T51	525 - 520	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T52	520 - 500	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T53	500 - 480	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T54	480 - 460	4 3/4	0.00	66.98	0.000	0.00	66.98	0.000
T55	460 - 440	5	0.00	78.13	0.000	0.00	78.13	0.000
T56	440 - 435	5	0.00	78.13	0.000	0.00	78.13	0.000
T57	435 - 430	5	0.00	78.13	0.000	0.00	78.13	0.000
T58	430 - 425	5	0.00	78.13	0.000	0.00	78.13	0.000
T59	425 - 420	5	0.00	78.13	0.000	0.00	78.13	0.000
T60	420 - 415	5	0.00	78.13	0.000	0.00	78.13	0.000
T61	415 - 410	5	0.00	78.13	0.000	0.00	78.13	0.000
T62	410 - 405	5	0.00	78.13	0.000	0.00	78.13	0.000
T63	405 - 400	5	0.00	78.13	0.000	0.00	78.13	0.000
T64	400 - 380	5	0.00	78.13	0.000	0.00	78.13	0.000
T65	380 - 360	5	0.00	78.13	0.000	0.00	78.13	0.000
T66	360 - 340	5	0.00	78.13	0.000	0.00	78.13	0.000
T67	340 - 320	5	0.00	78.13	0.000	0.00	78.13	0.000

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	166 of 192
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Section No.	Elevation ft	Size	$M_{ux}$	$\phi M_{rx}$	Ratio	$M_{uy}$	$\phi M_{ry}$	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{rx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ry}}$
T68	320 - 300	5	0.00	78.13	0.000	0.00	78.13	0.000
T69	300 - 280	5	0.00	93.75	0.000	0.00	93.75	0.000
T70	280 - 275	5	0.00	93.75	0.000	0.00	93.75	0.000
T71	275 - 270	5	0.00	93.75	0.000	0.00	93.75	0.000
T72	270 - 265	5	0.00	93.75	0.000	0.00	93.75	0.000
T73	265 - 260	5	0.00	93.75	0.000	0.00	93.75	0.000
T74	260 - 255	5	0.00	93.75	0.000	0.00	93.75	0.000
T75	255 - 250	5	0.00	93.75	0.000	0.00	93.75	0.000
T76	250 - 245	5	0.00	93.75	0.000	0.00	93.75	0.000
T77	245 - 240	5	0.00	93.75	0.000	0.00	93.75	0.000
T78	240 - 220	5	0.00	93.75	0.000	0.00	93.75	0.000
T79	220 - 200	5	0.00	93.75	0.000	0.00	93.75	0.000
T80	200 - 180	5	0.00	93.75	0.000	0.00	93.75	0.000
T81	180 - 160	5	0.00	93.75	0.000	0.00	93.75	0.000
T82	160 - 140	5	0.00	93.75	0.000	0.00	93.75	0.000
T83	140 - 120	5	0.00	93.75	0.000	0.00	93.75	0.000
T84	120 - 115	5	0.00	93.75	0.000	0.00	93.75	0.000
T85	115 - 110	5	0.00	93.75	0.000	0.00	93.75	0.000
T86	110 - 105	5	0.00	93.75	0.000	0.00	93.75	0.000
T87	105 - 100	5	0.00	93.75	0.000	0.00	93.75	0.000
T88	100 - 95	5	0.00	93.75	0.000	0.00	93.75	0.000
T89	95 - 90	5	0.00	93.75	0.000	0.00	93.75	0.000
T90	90 - 85	5	0.00	93.75	0.000	0.00	93.75	0.000
T91	85 - 80	5	0.00	93.75	0.000	0.00	93.75	0.000
T92	80 - 60	5	0.00	93.75	0.000	0.00	93.75	0.000
T93	60 - 40	5	0.00	93.75	0.000	0.00	93.75	0.000
T94	40 - 20	5	0.00	93.75	0.000	0.00	93.75	0.000
T95	20 - 15	5	0.00	93.75	0.000	0.00	93.75	0.000
T96	15 - 7	5	0.00	93.75	0.000	0.00	93.75	0.000
T97	7 - 0	5	0.00	93.75	0.000	0.00	93.75	0.000

### Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{rx}}$	$\frac{M_{uy}}{\phi M_{ry}}$			
T1	1089.8 - 1084.9	3 3/4	0.238	0.000	0.000	0.238 <sup>1</sup>	1.000	4.8.1 ✓
T2	1084.9 - 1080	3 3/4	0.342	0.000	0.000	0.342 <sup>1</sup>	1.000	4.8.1 ✓
T3	1080 - 1060	3 3/4	0.430	0.000	0.000	0.430 <sup>1</sup>	1.000	4.8.1 ✓
T4	1060 - 1040	3 3/4	0.487	0.000	0.000	0.487 <sup>1</sup>	1.000	4.8.1 ✓
T5	1040 - 1020	3 3/4	0.517	0.000	0.000	0.517 <sup>1</sup>	1.000	4.8.1 ✓
T6	1020 - 1000	3 3/4	0.521	0.000	0.000	0.521 <sup>1</sup>	1.000	4.8.1 ✓
T7	1000 - 980	3 3/4	0.515	0.000	0.000	0.515 <sup>1</sup>	1.000	4.8.1 ✓
T8	980 - 960	3 3/4	0.468	0.000	0.000	0.468 <sup>1</sup>	1.000	4.8.1 ✓
T9	960 - 940	4 1/2	0.309	0.000	0.000	0.309 <sup>1</sup>	1.000	4.8.1 ✓

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$P_u$	$M_{ux}$	$M_{uy}$			
			$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$			
T10	940 - 935	4 1/2	0.328	0.000	0.000	0.328 <sup>1</sup>	1.000	4.8.1 ✓
T11	935 - 930	4 1/2	0.348	0.000	0.000	0.348 <sup>1</sup>	1.000	4.8.1 ✓
T12	930 - 925	4 1/2	0.370	0.000	0.000	0.370 <sup>1</sup>	1.000	4.8.1 ✓
T13	925 - 920	4 1/2	0.393	0.000	0.000	0.393 <sup>1</sup>	1.000	4.8.1 ✓
T14	920 - 915	4 1/2	0.435	0.000	0.000	0.435 <sup>1</sup>	1.000	4.8.1 ✓
T15	915 - 910	4 1/2	0.428	0.000	0.000	0.428 <sup>1</sup>	1.000	4.8.1 ✓
T16	910 - 905	4 1/2	0.423	0.000	0.000	0.423 <sup>1</sup>	1.000	4.8.1 ✓
T17	905 - 900	4 1/2	0.421	0.000	0.000	0.421 <sup>1</sup>	1.000	4.8.1 ✓
T18	900 - 880	4 1/2	0.418	0.000	0.000	0.418 <sup>1</sup>	1.000	4.8.1 ✓
T19	880 - 860	4 1/2	0.420	0.000	0.000	0.420 <sup>1</sup>	1.000	4.8.1 ✓
T20	860 - 840	4 1/2	0.437	0.000	0.000	0.437 <sup>1</sup>	1.000	4.8.1 ✓
T21	840 - 820	4 1/2	0.478	0.000	0.000	0.478 <sup>1</sup>	1.000	4.8.1 ✓
T22	820 - 800	4 1/2	0.529	0.000	0.000	0.529 <sup>1</sup>	1.000	4.8.1 ✓
T23	800 - 780	4 1/2	0.589	0.000	0.000	0.589 <sup>1</sup>	1.000	4.8.1 ✓
T24	780 - 775	4 1/2	0.605	0.000	0.000	0.605 <sup>1</sup>	1.000	4.8.1 ✓
T25	775 - 770	4 1/2	0.621	0.000	0.000	0.621 <sup>1</sup>	1.000	4.8.1 ✓
T26	770 - 765	4 1/2	0.639	0.000	0.000	0.639 <sup>1</sup>	1.000	4.8.1 ✓
T27	765 - 760	4 1/2	0.659	0.000	0.000	0.659 <sup>1</sup>	1.000	4.8.1 ✓
T28	760 - 755	4 1/2	0.671	0.000	0.000	0.671 <sup>1</sup>	1.000	4.8.1 ✓
T29	755 - 750	4 1/2	0.654	0.000	0.000	0.654 <sup>1</sup>	1.000	4.8.1 ✓
T30	750 - 745	4 1/2	0.639	0.000	0.000	0.639 <sup>1</sup>	1.000	4.8.1 ✓
T31	745 - 740	4 1/2	0.624	0.000	0.000	0.624 <sup>1</sup>	1.000	4.8.1 ✓
T32	740 - 720	4 1/2	0.611	0.000	0.000	0.611 <sup>1</sup>	1.000	4.8.1 ✓
T33	720 - 700	4 1/2	0.566	0.000	0.000	0.566 <sup>1</sup>	1.000	4.8.1 ✓
T34	700 - 680	4 1/2	0.536	0.000	0.000	0.536 <sup>1</sup>	1.000	4.8.1 ✓
T35	680 - 660	4 1/2	0.549	0.000	0.000	0.549 <sup>1</sup>	1.000	4.8.1 ✓



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Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\phi P_n$	$\phi M_{ux}$	$\phi M_{uy}$			
T36	660 - 640	4 1/2	0.593	0.000	0.000	0.593 <sup>1</sup>	1.000	4.8.1 ✓
T37	640 - 620	5	0.508	0.000	0.000	0.508 <sup>1</sup>	1.000	4.8.1 ✓
T38	620 - 615	5	0.521	0.000	0.000	0.521 <sup>1</sup>	1.000	4.8.1 ✓
T39	615 - 610	5	0.535	0.000	0.000	0.535 <sup>1</sup>	1.000	4.8.1 ✓
T40	610 - 605	5	0.550	0.000	0.000	0.550 <sup>1</sup>	1.000	4.8.1 ✓
T41	605 - 600	5	0.566	0.000	0.000	0.566 <sup>1</sup>	1.000	4.8.1 ✓
T42	600 - 595	5	0.579	0.000	0.000	0.579 <sup>1</sup>	1.000	4.8.1 ✓
T43	595 - 590	5	0.565	0.000	0.000	0.565 <sup>1</sup>	1.000	4.8.1 ✓
T44	590 - 585	5	0.551	0.000	0.000	0.551 <sup>1</sup>	1.000	4.8.1 ✓
T45	585 - 580	5	0.538	0.000	0.000	0.538 <sup>1</sup>	1.000	4.8.1 ✓
T46	580 - 560	4 3/4	0.592	0.000	0.000	0.592 <sup>1</sup>	1.000	4.8.1 ✓
T47	560 - 540	4 3/4	0.567	0.000	0.000	0.567 <sup>1</sup>	1.000	4.8.1 ✓
T48	540 - 535	4 3/4	0.564	0.000	0.000	0.564 <sup>1</sup>	1.000	4.8.1 ✓
T49	535 - 530	4 3/4	0.571	0.000	0.000	0.571 <sup>1</sup>	1.000	4.8.1 ✓
T50	530 - 525	4 3/4	0.572	0.000	0.000	0.572 <sup>1</sup>	1.000	4.8.1 ✓
T51	525 - 520	4 3/4	0.574	0.000	0.000	0.574 <sup>1</sup>	1.000	4.8.1 ✓
T52	520 - 500	4 3/4	0.583	0.000	0.000	0.583 <sup>1</sup>	1.000	4.8.1 ✓
T53	500 - 480	4 3/4	0.591	0.000	0.000	0.591 <sup>1</sup>	1.000	4.8.1 ✓
T54	480 - 460	4 3/4	0.611	0.000	0.000	0.611 <sup>1</sup>	1.000	4.8.1 ✓
T55	460 - 440	5	0.563	0.000	0.000	0.563 <sup>1</sup>	1.000	4.8.1 ✓
T56	440 - 435	5	0.569	0.000	0.000	0.569 <sup>1</sup>	1.000	4.8.1 ✓
T57	435 - 430	5	0.575	0.000	0.000	0.575 <sup>1</sup>	1.000	4.8.1 ✓
T58	430 - 425	5	0.581	0.000	0.000	0.581 <sup>1</sup>	1.000	4.8.1 ✓
T59	425 - 420	5	0.591	0.000	0.000	0.591 <sup>1</sup>	1.000	4.8.1 ✓
T60	420 - 415	5	0.628	0.000	0.000	0.628 <sup>1</sup>	1.000	4.8.1 ✓
T61	415 - 410	5	0.622	0.000	0.000	0.622 <sup>1</sup>	1.000	4.8.1 ✓

# tnxTower

**American Tower**  
 3500 Regency Parkway, Suite 100  
 Cary, NC 27518  
 Phone: (919) 468-0112  
 FAX: (919) 466-5414

<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	169 of 192
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<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\phi P_n$	$\phi M_{ux}$	$\phi M_{uy}$			
T62	410 - 405	5	0.619	0.000	0.000	0.619 <sup>1</sup>	1.000	4.8.1 ✓
T63	405 - 400	5	0.616	0.000	0.000	0.616 <sup>1</sup>	1.000	4.8.1 ✓
T64	400 - 380	5	0.614	0.000	0.000	0.614 <sup>1</sup>	1.000	4.8.1 ✓
T65	380 - 360	5	0.608	0.000	0.000	0.608 <sup>1</sup>	1.000	4.8.1 ✓
T66	360 - 340	5	0.614	0.000	0.000	0.614 <sup>1</sup>	1.000	4.8.1 ✓
T67	340 - 320	5	0.618	0.000	0.000	0.618 <sup>1</sup>	1.000	4.8.1 ✓
T68	320 - 300	5	0.621	0.000	0.000	0.621 <sup>1</sup>	1.000	4.8.1 ✓
T69	300 - 280	5	0.545	0.000	0.000	0.545 <sup>1</sup>	1.000	4.8.1 ✓
T70	280 - 275	5	0.548	0.000	0.000	0.548 <sup>1</sup>	1.000	4.8.1 ✓
T71	275 - 270	5	0.552	0.000	0.000	0.552 <sup>1</sup>	1.000	4.8.1 ✓
T72	270 - 265	5	0.556	0.000	0.000	0.556 <sup>1</sup>	1.000	4.8.1 ✓
T73	265 - 260	5	0.564	0.000	0.000	0.564 <sup>1</sup>	1.000	4.8.1 ✓
T74	260 - 255	5	0.586	0.000	0.000	0.586 <sup>1</sup>	1.000	4.8.1 ✓
T75	255 - 250	5	0.578	0.000	0.000	0.578 <sup>1</sup>	1.000	4.8.1 ✓
T76	250 - 245	5	0.577	0.000	0.000	0.577 <sup>1</sup>	1.000	4.8.1 ✓
T77	245 - 240	5	0.583	0.000	0.000	0.583 <sup>1</sup>	1.000	4.8.1 ✓
T78	240 - 220	5	0.615	0.000	0.000	0.615 <sup>1</sup>	1.000	4.8.1 ✓
T79	220 - 200	5	0.641	0.000	0.000	0.641 <sup>1</sup>	1.000	4.8.1 ✓
T80	200 - 180	5	0.662	0.000	0.000	0.662 <sup>1</sup>	1.000	4.8.1 ✓
T81	180 - 160	5	0.670	0.000	0.000	0.670 <sup>1</sup>	1.000	4.8.1 ✓
T82	160 - 140	5	0.671	0.000	0.000	0.671 <sup>1</sup>	1.000	4.8.1 ✓
T83	140 - 120	5	0.668	0.000	0.000	0.668 <sup>1</sup>	1.000	4.8.1 ✓
T84	120 - 115	5	0.657	0.000	0.000	0.657 <sup>1</sup>	1.000	4.8.1 ✓
T85	115 - 110	5	0.654	0.000	0.000	0.654 <sup>1</sup>	1.000	4.8.1 ✓
T86	110 - 105	5	0.649	0.000	0.000	0.649 <sup>1</sup>	1.000	4.8.1 ✓
T87	105 - 100	5	0.647	0.000	0.000	0.647 <sup>1</sup>	1.000	4.8.1 ✓

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	170 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$			
T88	100 - 95	5	0.674	0.000	0.000	0.674 <sup>1</sup>	1.000	4.8.1 ✓
T89	95 - 90	5	0.673	0.000	0.000	0.673 <sup>1</sup>	1.000	4.8.1 ✓
T90	90 - 85	5	0.677	0.000	0.000	0.677 <sup>1</sup>	1.000	4.8.1 ✓
T91	85 - 80	5	0.680	0.000	0.000	0.680 <sup>1</sup>	1.000	4.8.1 ✓
T92	80 - 60	5	0.687	0.000	0.000	0.687 <sup>1</sup>	1.000	4.8.1 ✓
T93	60 - 40	5	0.687	0.000	0.000	0.687 <sup>1</sup>	1.000	4.8.1 ✓
T94	40 - 20	5	0.684	0.000	0.000	0.684 <sup>1</sup>	1.000	4.8.1 ✓
T95	20 - 15	5	0.675	0.000	0.000	0.675 <sup>1</sup>	1.000	4.8.1 ✓
T96	15 - 7	5	0.555	0.000	0.000	0.555 <sup>1</sup>	1.000	4.8.1 ✓
T97	7 - 0	5	0.653	0.000	0.000	0.653 <sup>1</sup>	1.000	4.8.1 ✓

<sup>1</sup>  $P_u / \phi P_n$  controls

### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio
									$\frac{P_u}{\phi P_n}$
T1	1089.8 - 1084.9	2L2 1/2x2 1/2x5/16	6.33	5.62	88.6 K=1.00	2.9300	-21341.40	62785.60	0.340 <sup>1</sup> ✓
T48	540 - 535	1 1/8	6.40	6.09	181.8 K=0.70	0.9940	-3945.87	6796.01	0.581 <sup>1</sup> ✓
T96	15 - 7	2L2 1/2x2 1/2x1/4	8.83	8.37	95.7 K=1.00	2.3800	-39010.60	47619.70	0.819 <sup>1</sup> ✓

<sup>1</sup>  $P_u / \phi P_n$  controls

### Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio
									$\frac{P_u}{\phi P_n}$
T3	1080 - 1060	2L2 1/2x2 1/2x1/4	8.00	7.23	112.8 K=1.00	2.3800	-9527.16	39461.10	0.241 <sup>1</sup> ✓
T4	1060 - 1040	2L2 1/2x2 1/2x1/4	8.00	7.23	112.8 K=1.00	2.3800	-9458.88	39461.10	0.240 <sup>1</sup> ✓
T5	1040 - 1020	2L2 1/2x2 1/2x1/4	8.00	7.23	112.8	2.3800	-9566.29	39461.10	0.242 <sup>1</sup> ✓

<p><b>tnxTower</b></p> <p><b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414</p>	<p><b>Job</b></p> <p>Hartford CT2, CT (302534)</p>	<p><b>Page</b></p> <p>171 of 192</p>
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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T6	1020 - 1000	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9594.28	39461.10	0.243 <sup>1</sup>
T7	1000 - 980	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9581.78	39461.10	0.243 <sup>1</sup>
T8	980 - 960	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9727.92	39461.10	0.247 <sup>1</sup>
T9	960 - 940	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-11675.10	39918.80	0.292 <sup>1</sup>
T18	900 - 880	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-8364.62	39918.80	0.210 <sup>1</sup>
T19	880 - 860	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-8660.69	39918.80	0.217 <sup>1</sup>
T20	860 - 840	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-8477.03	39918.80	0.212 <sup>1</sup>
T21	840 - 820	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-8650.90	39918.80	0.217 <sup>1</sup>
T22	820 - 800	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-10185.70	39918.80	0.255 <sup>1</sup>
T23	800 - 780	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-12224.10	39918.80	0.306 <sup>1</sup>
T32	740 - 720	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-7952.64	39918.80	0.199 <sup>1</sup>
T33	720 - 700	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-7658.10	39918.80	0.192 <sup>1</sup>
T34	700 - 680	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-7436.08	39918.80	0.186 <sup>1</sup>
T35	680 - 660	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-7296.83	39918.80	0.183 <sup>1</sup>
T36	660 - 640	2L2 1/2x2 1/2x1/4	8.00	7.17	K=1.00 111.8	2.3800	-7357.62	39918.80	0.184 <sup>1</sup>
T37	640 - 620	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-9171.41	40224.70	0.228 <sup>1</sup>
T46	580 - 560	2L2 1/2x2 1/2x1/4	8.00	7.15	K=1.00 111.5	2.3800	-8822.25	40071.70	0.220 <sup>1</sup>
T47	560 - 540	2L2 1/2x2 1/2x1/4	8.00	7.15	K=1.00 111.5	2.3800	-6897.35	40071.70	0.172 <sup>1</sup>
T52	520 - 500	2L2 1/2x2 1/2x1/4	8.00	7.15	K=1.00 111.5	2.3800	-6677.95	40071.70	0.167 <sup>1</sup>
T53	500 - 480	2L2 1/2x2 1/2x1/4	8.00	7.15	K=1.00 111.5	2.3800	-6777.74	40071.70	0.169 <sup>1</sup>
T54	480 - 460	2L2 1/2x2 1/2x1/4	8.00	7.15	K=1.00 111.5	2.3800	-6998.90	40071.70	0.175 <sup>1</sup>
T55	460 - 440	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-7278.35	40224.70	0.181 <sup>1</sup>
T64	400 - 380	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-8757.15	40224.70	0.218 <sup>1</sup>
T65	380 - 360	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-7860.54	40224.70	0.195 <sup>1</sup>
T66	360 - 340	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-7940.93	40224.70	0.197 <sup>1</sup>
T67	340 - 320	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2	2.3800	-7996.71	40224.70	0.199 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T68	320 - 300	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-8024.23	40224.70	0.199 <sup>1</sup>
T69	300 - 280	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10376.10	40224.70	0.258 <sup>1</sup>
T78	240 - 220	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-15101.70	40224.70	0.375 <sup>1</sup>
T79	220 - 200	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-12823.70	40224.70	0.319 <sup>1</sup>
T80	200 - 180	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-9982.93	40224.70	0.248 <sup>1</sup>
T81	180 - 160	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10051.40	40224.70	0.250 <sup>1</sup>
T82	160 - 140	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10311.40	40224.70	0.256 <sup>1</sup>
T83	140 - 120	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-13918.40	40224.70	0.346 <sup>1</sup>
T92	80 - 60	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10300.70	40224.70	0.256 <sup>1</sup>
T93	60 - 40	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10308.00	40224.70	0.256 <sup>1</sup>
T94	40 - 20	2L2 1/2x2 1/2x1/4	8.00	7.13	K=1.00 111.2	2.3800	-10805.30	40224.70	0.269 <sup>1</sup>
T97	7 - 0	C15x33.9	1.19	0.78	K=1.00 10.3	9.9600	-3977.75	320901.00	0.012 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	1089.8 - 1084.9	MC18x42.7	8.00	3.84	K=1.00 43.1	12.6000	-1.80	370194.00	0.000 <sup>1</sup>
T2	1084.9 - 1080	2L2 1/2x2 1/2x5/16	8.00	7.23	K=1.00 114.0	2.9300	-1118.91	47897.20	0.023 <sup>1</sup>
T3	1080 - 1060	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-11005.10	39461.10	0.279 <sup>1</sup>
T4	1060 - 1040	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9293.06	39461.10	0.235 <sup>1</sup>
T5	1040 - 1020	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9499.01	39461.10	0.241 <sup>1</sup>
T6	1020 - 1000	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9569.40	39461.10	0.243 <sup>1</sup>
T7	1000 - 980	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9565.65	39461.10	0.242 <sup>1</sup>
T8	980 - 960	2L2 1/2x2 1/2x1/4	8.00	7.23	K=1.00 112.8	2.3800	-9201.94	39461.10	0.233 <sup>1</sup>

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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T9	960 - 940	2L2 1/2x2 1/2x1/4	8.00	7.23	112.8 K=1.00	2.3800	-10220.50	39461.10	0.259 <sup>1</sup>
T10	940 - 935	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-12180.30	39918.80	0.305 <sup>1</sup>
T11	935 - 930	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-12529.50	39918.80	0.314 <sup>1</sup>
T12	930 - 925	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-13139.10	48464.60	0.271 <sup>1</sup>
T13	925 - 920	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-14442.50	48464.60	0.298 <sup>1</sup>
T14	920 - 915	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-1484.76	48464.60	0.031 <sup>1</sup>
T15	915 - 910	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-12518.70	48464.60	0.258 <sup>1</sup>
T16	910 - 905	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-9284.66	39918.80	0.233 <sup>1</sup>
T17	905 - 900	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8556.40	39918.80	0.214 <sup>1</sup>
T18	900 - 880	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8384.24	39918.80	0.210 <sup>1</sup>
T19	880 - 860	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8830.91	39918.80	0.221 <sup>1</sup>
T20	860 - 840	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8385.37	39918.80	0.210 <sup>1</sup>
T21	840 - 820	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8515.43	39918.80	0.213 <sup>1</sup>
T22	820 - 800	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8810.95	39918.80	0.221 <sup>1</sup>
T23	800 - 780	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-10630.20	39918.80	0.266 <sup>1</sup>
T24	780 - 775	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-12842.10	39918.80	0.322 <sup>1</sup>
T25	775 - 770	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-13273.40	39918.80	0.333 <sup>1</sup>
T26	770 - 765	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-13997.30	48464.60	0.289 <sup>1</sup>
T27	765 - 760	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-14013.40	48464.60	0.289 <sup>1</sup>
T29	755 - 750	2L2 1/2x2 1/2x5/16	8.00	7.17	113.0 K=1.00	2.9300	-12171.50	48464.60	0.251 <sup>1</sup>
T30	750 - 745	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8890.92	39918.80	0.223 <sup>1</sup>
T31	745 - 740	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8090.52	39918.80	0.203 <sup>1</sup>
T32	740 - 720	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-8046.36	39918.80	0.202 <sup>1</sup>
T33	720 - 700	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-7722.55	39918.80	0.193 <sup>1</sup>
T34	700 - 680	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-7483.53	39918.80	0.187 <sup>1</sup>
T35	680 - 660	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-7323.65	39918.80	0.183 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T36	660 - 640	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-7306.05	39918.80	0.183 <sup>1</sup>
T37	640 - 620	2L2 1/2x2 1/2x1/4	8.00	7.17	111.8 K=1.00	2.3800	-7740.50	39918.80	0.194 <sup>1</sup>
T38	620 - 615	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9737.57	40224.70	0.242 <sup>1</sup>
T39	615 - 610	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10093.60	40224.70	0.251 <sup>1</sup>
T40	610 - 605	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-10834.60	48843.90	0.222 <sup>1</sup>
T41	605 - 600	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-12638.40	48843.90	0.259 <sup>1</sup>
T43	595 - 590	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-11543.40	48843.90	0.236 <sup>1</sup>
T44	590 - 585	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10345.00	40224.70	0.257 <sup>1</sup>
T45	585 - 580	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9765.30	40224.70	0.243 <sup>1</sup>
T46	580 - 560	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9361.38	40224.70	0.233 <sup>1</sup>
T47	560 - 540	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-7242.00	40071.70	0.181 <sup>1</sup>
T48	540 - 535	2L2 1/2x2 1/2x1/4	8.00	5.47	62.6 K=1.00	2.3800	-5648.85	62754.10	0.090 <sup>1</sup>
T49	535 - 530	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-3504.23	40071.70	0.087 <sup>1</sup>
T50	530 - 525	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6624.85	40071.70	0.165 <sup>1</sup>
T51	525 - 520	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6347.73	40071.70	0.158 <sup>1</sup>
T52	520 - 500	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6292.33	40071.70	0.157 <sup>1</sup>
T53	500 - 480	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6199.73	40071.70	0.155 <sup>1</sup>
T54	480 - 460	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6152.56	40071.70	0.154 <sup>1</sup>
T55	460 - 440	2L2 1/2x2 1/2x1/4	8.00	7.15	111.5 K=1.00	2.3800	-6355.95	40071.70	0.159 <sup>1</sup>
T56	440 - 435	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-7769.63	40224.70	0.193 <sup>1</sup>
T57	435 - 430	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-8152.93	40224.70	0.203 <sup>1</sup>
T58	430 - 425	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-8850.87	48843.90	0.181 <sup>1</sup>
T59	425 - 420	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-10159.30	48843.90	0.208 <sup>1</sup>
T61	415 - 410	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-10888.00	48843.90	0.223 <sup>1</sup>
T62	410 - 405	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10967.10	40224.70	0.273 <sup>1</sup>
T63	405 - 400	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10372.50	40224.70	0.258 <sup>1</sup>

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T64	400 - 380	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9635.37	40224.70	0.240 <sup>1</sup>
T65	380 - 360	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6913.97	40224.70	0.172 <sup>1</sup>
T66	360 - 340	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6245.86	40224.70	0.155 <sup>1</sup>
T67	340 - 320	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6204.16	40224.70	0.154 <sup>1</sup>
T68	320 - 300	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6150.74	40224.70	0.153 <sup>1</sup>
T69	300 - 280	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-8478.17	40224.70	0.211 <sup>1</sup>
T70	280 - 275	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-11025.20	40224.70	0.274 <sup>1</sup>
T71	275 - 270	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-11420.30	40224.70	0.284 <sup>1</sup>
T72	270 - 265	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-12201.20	48843.90	0.250 <sup>1</sup>
T73	265 - 260	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-11788.30	48843.90	0.241 <sup>1</sup>
T75	255 - 250	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-16128.50	48843.90	0.330 <sup>1</sup>
T76	250 - 245	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-16460.90	40224.70	0.409 <sup>1</sup>
T77	245 - 240	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-15989.80	40224.70	0.398 <sup>1</sup>
T78	240 - 220	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-15634.70	40224.70	0.389 <sup>1</sup>
T79	220 - 200	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-13424.10	40224.70	0.334 <sup>1</sup>
T80	200 - 180	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10915.60	40224.70	0.271 <sup>1</sup>
T81	180 - 160	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6016.69	40224.70	0.150 <sup>1</sup>
T82	160 - 140	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-7655.17	40224.70	0.190 <sup>1</sup>
T83	140 - 120	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-11191.20	40224.70	0.278 <sup>1</sup>
T84	120 - 115	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-14896.40	40224.70	0.370 <sup>1</sup>
T85	115 - 110	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-15516.70	40224.70	0.386 <sup>1</sup>
T86	110 - 105	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-16638.50	48843.90	0.341 <sup>1</sup>
T87	105 - 100	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-16431.90	48843.90	0.336 <sup>1</sup>
T89	95 - 90	2L2 1/2x2 1/2x5/16	8.00	7.13	112.4 K=1.00	2.9300	-10705.80	48843.90	0.219 <sup>1</sup>
T90	90 - 85	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10714.30	40224.70	0.266 <sup>1</sup>
T91	85 - 80	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9968.52	40224.70	0.248 <sup>1</sup>



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T92	80 - 60	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-9334.04	40224.70	0.232 <sup>1</sup>
T93	60 - 40	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-6215.42	40224.70	0.155 <sup>1</sup>
T94	40 - 20	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-8142.87	40224.70	0.202 <sup>1</sup>
T95	20 - 15	2L2 1/2x2 1/2x1/4	8.00	7.13	111.2 K=1.00	2.3800	-10600.40	40224.70	0.264 <sup>1</sup>
T96	15 - 7	2L2 1/2x2 1/2x1/4	8.00	5.69	65.0 K=1.00	2.3800	-2196.85	61734.10	0.036 <sup>1</sup>

\* DL controls

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L2 1/2x2 1/2x1/4	2.00	1.79	28.0 K=1.00	2.3800	-8998.47	74003.20	0.122 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L2 1/2x2 1/2x1/4	4.42	3.96	61.7 K=1.00	2.3800	-34785.50	63093.00	0.551 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Redundant Sub-Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L3x3x1/4	4.00	4.00	51.6 K=1.00	2.8800	-27860.00	81102.20	0.344 <sup>1</sup>

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<sup>1</sup>  $P_u / \phi P_n$  controls

### Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T1	1089.8 - 1084.9	MC18x42.7	4.00	4.00	44.9 K=1.00	12.6000	-1.44	489418.00	0.000 <sup>1</sup> 

<sup>1</sup>  $P_u / \phi P_n$  controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T4	1060 - 1040	3 3/4	20.00	5.00	64.0	11.0447	1832.06	497010.00	0.004 <sup>1</sup>
T5	1040 - 1020	3 3/4	20.00	5.00	64.0	11.0447	15002.70	497010.00	0.030 <sup>1</sup>
T6	1020 - 1000	3 3/4	20.00	5.00	64.0	11.0447	17801.90	497010.00	0.036 <sup>1</sup>
T7	1000 - 980	3 3/4	20.00	5.00	64.0	11.0447	15001.80	497010.00	0.030 <sup>1</sup>

<sup>1</sup>  $P_u / \phi P_n$  controls

### Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	$M_{ux}$ kip-ft	$\phi M_{nx}$ kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	$M_{uy}$ kip-ft	$\phi M_{ny}$ kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T4	1060 - 1040	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T5	1040 - 1020	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T6	1020 - 1000	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000
T7	1000 - 980	3 3/4	0.00	32.96	0.000	0.00	32.96	0.000

### Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T4	1060 - 1040	3 3/4	0.004	0.000	0.000	0.004 <sup>1</sup> 	1.000	4.8.1
T5	1040 - 1020	3 3/4	0.030	0.000	0.000	0.030 <sup>1</sup> 	1.000	4.8.1

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Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$			
T6	1020 - 1000	3 3/4	0.036	0.000	0.000	0.036 <sup>1</sup>	1.000	4.8.1 ✓
T7	1000 - 980	3 3/4	0.030	0.000	0.000	0.030 <sup>1</sup>	1.000	4.8.1 ✓

<sup>1</sup>  $P_u / \phi P_n$  controls

### Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio
									$\frac{P_u}{\phi P_n}$
T2	1084.9 - 1080	1 1/4	9.38	9.01	346.2	1.2272	13343.30	39760.80	0.336 <sup>1</sup>
T3	1080 - 1060	1 1/8	9.43	9.07	386.8	0.9940	11743.50	32206.20	0.365 <sup>1</sup>
T4	1060 - 1040	1 1/8	9.43	9.07	386.8	0.9940	8959.23	32206.20	0.278 <sup>1</sup>
T5	1040 - 1020	1 1/8	9.43	9.07	386.8	0.9940	7633.65	32206.20	0.237 <sup>1</sup>
T6	1020 - 1000	1 1/8	9.43	9.07	386.8	0.9940	7163.33	32206.20	0.222 <sup>1</sup>
T7	1000 - 980	1 1/8	9.43	9.07	386.8	0.9940	9488.07	32206.20	0.295 <sup>1</sup>
T8	980 - 960	1 1/8	9.43	9.07	386.8	0.9940	11758.70	32206.20	0.365 <sup>1</sup>
T9	960 - 940	1 1/8	9.43	8.99	383.6	0.9940	14076.30	32206.20	0.437 <sup>1</sup>
T10	940 - 935	1 1/8	9.43	8.99	383.6	0.9940	14647.90	32206.20	0.455 <sup>1</sup>
T11	935 - 930	1 1/8	9.43	8.99	383.6	0.9940	15022.80	32206.20	0.466 <sup>1</sup>
T12	930 - 925	1 1/4	9.43	8.99	345.3	1.2272	15692.10	39760.80	0.395 <sup>1</sup>
T13	925 - 920	1 1/4	9.43	8.99	345.3	1.2272	16149.00	39760.80	0.406 <sup>1</sup>
T14	920 - 915	1 1/4	9.43	8.99	345.3	1.2272	14162.50	39760.80	0.356 <sup>1</sup>
T15	915 - 910	1 1/4	9.43	8.99	345.3	1.2272	11358.20	39760.80	0.286 <sup>1</sup>
T16	910 - 905	1 1/8	9.43	8.99	383.6	0.9940	10483.40	32206.20	0.326 <sup>1</sup>
T17	905 - 900	1 1/8	9.43	8.99	383.6	0.9940	9970.86	32206.20	0.310 <sup>1</sup>
T18	900 - 880	1 1/8	9.43	8.99	383.6	0.9940	9247.70	32206.20	0.287 <sup>1</sup>
T19	880 - 860	1 1/8	9.43	8.99	383.6	0.9940	7157.30	32206.20	0.222 <sup>1</sup>

<p><b>tnxTower</b></p> <p><b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414</p>	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	179 of 192
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	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T20	860 - 840	1 1/8	9.43	8.99	383.6	0.9940	8245.22	32206.20	0.256 <sup>1</sup>
T21	840 - 820	1 1/8	9.43	8.99	383.6	0.9940	10036.00	32206.20	0.312 <sup>1</sup>
T22	820 - 800	1 1/8	9.43	8.99	383.6	0.9940	12204.70	32206.20	0.379 <sup>1</sup>
T23	800 - 780	1 1/8	9.43	8.99	383.6	0.9940	14786.10	32206.20	0.459 <sup>1</sup>
T24	780 - 775	1 1/8	9.43	8.99	383.6	0.9940	15485.60	32206.20	0.481 <sup>1</sup>
T25	775 - 770	1 1/8	9.43	8.99	383.6	0.9940	15944.60	32206.20	0.495 <sup>1</sup>
T26	770 - 765	1 1/4	9.43	8.99	345.3	1.2272	16743.30	39760.80	0.421 <sup>1</sup>
T27	765 - 760	1 1/4	9.43	8.99	345.3	1.2272	16720.00	39760.80	0.421 <sup>1</sup>
T28	760 - 755	1 1/4	9.43	8.99	345.3	1.2272	12755.70	39760.80	0.321 <sup>1</sup>
T29	755 - 750	1 1/4	9.43	8.99	345.3	1.2272	10301.80	39760.80	0.259 <sup>1</sup>
T30	750 - 745	1 1/8	9.43	8.99	383.6	0.9940	9656.63	32206.20	0.300 <sup>1</sup>
T31	745 - 740	1 1/8	9.43	8.99	383.6	0.9940	9265.50	32206.20	0.288 <sup>1</sup>
T32	740 - 720	1 1/8	9.43	8.99	383.6	0.9940	8683.34	32206.20	0.270 <sup>1</sup>
T33	720 - 700	1 1/8	9.43	8.99	383.6	0.9940	6778.21	32206.20	0.210 <sup>1</sup>
T34	700 - 680	1 1/8	9.43	8.99	383.6	0.9940	5766.58	32206.20	0.179 <sup>1</sup>
T35	680 - 660	1 1/8	9.43	8.99	383.6	0.9940	6649.14	32206.20	0.206 <sup>1</sup>
T36	660 - 640	1 1/8	9.43	8.99	383.6	0.9940	8529.76	32206.20	0.265 <sup>1</sup>
T37	640 - 620	1 1/8	9.43	8.94	381.6	0.9940	11146.00	32206.20	0.346 <sup>1</sup>
T38	620 - 615	1 1/8	9.43	8.94	381.6	0.9940	11778.90	32206.20	0.366 <sup>1</sup>
T39	615 - 610	1 1/8	9.43	8.94	381.6	0.9940	12164.90	32206.20	0.378 <sup>1</sup>
T40	610 - 605	1 1/4	9.43	8.94	343.4	1.2272	12947.30	39760.80	0.326 <sup>1</sup>
T41	605 - 600	1 1/4	9.43	8.94	343.4	1.2272	13671.00	39760.80	0.344 <sup>1</sup>
T42	600 - 595	1 1/4	9.43	8.94	343.4	1.2272	13200.10	39760.80	0.332 <sup>1</sup>
T43	595 - 590	1 1/4	9.43	8.94	343.4	1.2272	12411.60	39760.80	0.312 <sup>1</sup>
T44	590 - 585	1 1/8	9.43	8.94	381.6	0.9940	11696.40	32206.20	0.363 <sup>1</sup>
T45	585 - 580	1 1/8	9.43	8.94	381.6	0.9940	11392.30	32206.20	0.354 <sup>1</sup>

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	<p><b>Project</b></p> <p>OAA746560_C3_03</p>	<p><b>Date</b></p> <p>15:38:59 06/11/19</p>
	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T46	580 - 560	1 1/8	9.43	8.97	382.6	0.9940	10700.50	32206.20	0.332 <sup>1</sup>
T47	560 - 540	1 1/8	9.43	8.97	382.6	0.9940	8233.29	32206.20	0.256 <sup>1</sup>
T48	540 - 535	1 1/8	6.40	6.09	259.7	0.9940	3760.55	32206.20	0.117 <sup>1</sup>
T49	535 - 530	1 1/8	9.43	8.97	382.6	0.9940	6443.05	32206.20	0.200 <sup>1</sup>
T50	530 - 525	1 1/8	9.43	8.97	382.6	0.9940	5707.78	32206.20	0.177 <sup>1</sup>
T51	525 - 520	1 1/8	9.43	8.97	382.6	0.9940	5528.05	32206.20	0.172 <sup>1</sup>
T52	520 - 500	1 1/8	9.43	8.97	382.6	0.9940	5274.04	32206.20	0.164 <sup>1</sup>
T53	500 - 480	1 1/8	9.43	8.97	382.6	0.9940	5258.63	32206.20	0.163 <sup>1</sup>
T54	480 - 460	1 1/8	9.43	8.97	382.6	0.9940	6476.55	32206.20	0.201 <sup>1</sup>
T55	460 - 440	1 1/8	9.43	8.94	381.6	0.9940	8836.71	32206.20	0.274 <sup>1</sup>
T56	440 - 435	1 1/8	9.43	8.94	381.6	0.9940	9462.23	32206.20	0.294 <sup>1</sup>
T57	435 - 430	1 1/8	9.43	8.94	381.6	0.9940	9888.43	32206.20	0.307 <sup>1</sup>
T58	430 - 425	1 1/4	9.43	8.94	343.4	1.2272	10681.90	39760.80	0.269 <sup>1</sup>
T59	425 - 420	1 1/4	9.43	8.94	343.4	1.2272	11572.50	39760.80	0.291 <sup>1</sup>
T60	420 - 415	1 1/4	9.43	8.94	343.4	1.2272	12888.80	39760.80	0.324 <sup>1</sup>
T61	415 - 410	1 1/4	9.43	8.94	343.4	1.2272	13234.30	39760.80	0.333 <sup>1</sup>
T62	410 - 405	1 1/8	9.43	8.94	381.6	0.9940	12466.90	32206.20	0.387 <sup>1</sup>
T63	405 - 400	1 1/8	9.43	8.94	381.6	0.9940	12034.70	32206.20	0.374 <sup>1</sup>
T64	400 - 380	1 1/8	9.43	8.94	381.6	0.9940	10718.00	32206.20	0.333 <sup>1</sup>
T65	380 - 360	1 1/8	9.43	8.94	381.6	0.9940	7791.08	32206.20	0.242 <sup>1</sup>
T66	360 - 340	1 1/8	9.43	8.94	381.6	0.9940	5906.25	32206.20	0.183 <sup>1</sup>
T67	340 - 320	1 1/8	9.43	8.94	381.6	0.9940	6742.48	32206.20	0.209 <sup>1</sup>
T68	320 - 300	1 1/8	9.43	8.94	381.6	0.9940	9510.02	32206.20	0.295 <sup>1</sup>
T69	300 - 280	1 1/8	9.43	8.94	381.6	0.9940	12516.10	32206.20	0.389 <sup>1</sup>
T70	280 - 275	1 1/8	9.43	8.94	381.6	0.9940	13253.20	32206.20	0.412 <sup>1</sup>
T71	275 - 270	1 1/8	9.43	8.94	381.6	0.9940	13663.10	32206.20	0.424 <sup>1</sup>

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	<p><b>Project</b></p> <p>OAA746560_C3_03</p>	<p><b>Date</b></p> <p>15:38:59 06/11/19</p>
	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T72	270 - 265	1 1/4	9.43	8.94	343.4	1.2272	14593.40	39760.80	0.367 <sup>1</sup>
T73	265 - 260	1 1/4	9.43	8.94	343.4	1.2272	13953.40	39760.80	0.351 <sup>1</sup>
T74	260 - 255	1 1/4	9.43	8.94	343.4	1.2272	18776.80	39760.80	0.472 <sup>1</sup>
T75	255 - 250	1 1/4	9.43	8.94	343.4	1.2272	19750.50	39760.80	0.497 <sup>1</sup>
T76	250 - 245	1 1/8	9.43	8.94	381.6	0.9940	18946.70	32206.20	0.588 <sup>1</sup>
T77	245 - 240	1 1/8	9.43	8.94	381.6	0.9940	18807.40	32206.20	0.584 <sup>1</sup>
T78	240 - 220	1 1/8	9.43	8.94	381.6	0.9940	18150.30	32206.20	0.564 <sup>1</sup>
T79	220 - 200	1 1/8	9.43	8.94	381.6	0.9940	15498.70	32206.20	0.481 <sup>1</sup>
T80	200 - 180	1 1/8	9.43	8.94	381.6	0.9940	12460.60	32206.20	0.387 <sup>1</sup>
T81	180 - 160	1 1/8	9.43	8.94	381.6	0.9940	8299.43	32206.20	0.258 <sup>1</sup>
T82	160 - 140	1 1/8	9.43	8.94	381.6	0.9940	12497.40	32206.20	0.388 <sup>1</sup>
T83	140 - 120	1 1/8	9.43	8.94	381.6	0.9940	16814.50	32206.20	0.522 <sup>1</sup>
T84	120 - 115	1 1/8	9.43	8.94	381.6	0.9940	17930.60	32206.20	0.557 <sup>1</sup>
T85	115 - 110	1 1/8	9.43	8.94	381.6	0.9940	18603.30	32206.20	0.578 <sup>1</sup>
T86	110 - 105	1 1/4	9.43	8.94	343.4	1.2272	19985.80	39760.80	0.503 <sup>1</sup>
T87	105 - 100	1 1/4	9.43	8.94	343.4	1.2272	19353.90	39760.80	0.487 <sup>1</sup>
T88	100 - 95	1 1/4	9.43	8.94	343.4	1.2272	12941.90	39760.80	0.325 <sup>1</sup>
T89	95 - 90	1 1/4	9.43	8.94	343.4	1.2272	13014.30	39760.80	0.327 <sup>1</sup>
T90	90 - 85	1 1/8	9.43	8.94	381.6	0.9940	12078.50	32206.20	0.375 <sup>1</sup>
T91	85 - 80	1 1/8	9.43	8.94	381.6	0.9940	11498.20	32206.20	0.357 <sup>1</sup>
T92	80 - 60	1 1/8	9.43	8.94	381.6	0.9940	10547.70	32206.20	0.328 <sup>1</sup>
T93	60 - 40	1 1/8	9.43	8.94	381.6	0.9940	8932.28	32206.20	0.277 <sup>1</sup>
T94	40 - 20	1 1/8	9.43	8.94	381.6	0.9940	12865.60	32206.20	0.399 <sup>1</sup>
T95	20 - 15	1 1/8	9.43	8.94	381.6	0.9940	12914.70	32206.20	0.401 <sup>1</sup>
T96	15 - 7	2L2 1/2x2 1/2x1/4	8.83	8.37	95.7	2.3800	12791.00	77112.00	0.166 <sup>1</sup>

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	<p><b>Client</b></p> <p>DISH NETWORK CORPORATION</p>	<p><b>Designed by</b></p> <p>Christina.Minor</p>

<sup>1</sup>  $P_u / \phi P_n$  controls

### Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	$L_u$ ft	$Kl/r$	A in <sup>2</sup>	$P_u$ lb	$\phi P_n$ lb	Ratio $\frac{P_u}{\phi P_n}$
T3	1080 - 1060	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	2743.38	63374.10	0.043 <sup>1</sup>
T4	1060 - 1040	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	3107.53	63374.10	0.049 <sup>1</sup>
T5	1040 - 1020	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	3297.63	63374.10	0.052 <sup>1</sup>
T6	1020 - 1000	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	3326.82	63374.10	0.052 <sup>1</sup>
T7	1000 - 980	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	3287.32	63374.10	0.052 <sup>1</sup>
T8	980 - 960	2L2 1/2x2 1/2x1/4	8.00	7.23	120.0	1.4569	2988.03	63374.10	0.047 <sup>1</sup>
T9	960 - 940	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	3108.73	63374.10	0.049 <sup>1</sup>
T18	900 - 880	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	4211.07	63374.10	0.066 <sup>1</sup>
T19	880 - 860	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	4228.05	63374.10	0.067 <sup>1</sup>
T20	860 - 840	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	4398.30	63374.10	0.069 <sup>1</sup>
T21	840 - 820	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	4814.88	63374.10	0.076 <sup>1</sup>
T22	820 - 800	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5324.84	63374.10	0.084 <sup>1</sup>
T23	800 - 780	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5925.69	63374.10	0.094 <sup>1</sup>
T32	740 - 720	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	6152.42	63374.10	0.097 <sup>1</sup>
T33	720 - 700	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5703.05	63374.10	0.090 <sup>1</sup>
T34	700 - 680	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5400.37	63374.10	0.085 <sup>1</sup>
T35	680 - 660	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5531.51	63374.10	0.087 <sup>1</sup>
T36	660 - 640	2L2 1/2x2 1/2x1/4	8.00	7.17	119.0	1.4569	5970.26	63374.10	0.094 <sup>1</sup>
T37	640 - 620	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	6570.40	63374.10	0.104 <sup>1</sup>
T46	580 - 560	2L2 1/2x2 1/2x1/4	8.00	7.15	118.7	1.4569	6785.13	63374.10	0.107 <sup>1</sup>
T47	560 - 540	2L2 1/2x2 1/2x1/4	8.00	7.15	118.7	1.4569	6499.31	63374.10	0.103 <sup>1</sup>
T52	520 - 500	2L2 1/2x2 1/2x1/4	8.00	7.15	118.7	1.4569	6677.95	63374.10	0.105 <sup>1</sup>
T53	500 - 480	2L2 1/2x2 1/2x1/4	8.00	7.15	118.7	1.4569	6777.74	63374.10	0.107 <sup>1</sup>
T54	480 - 460	2L2 1/2x2 1/2x1/4	8.00	7.15	118.7	1.4569	6998.90	63374.10	0.110 <sup>1</sup>

<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	183 of 192
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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T55	460 - 440	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	7278.35	63374.10	0.115 <sup>1</sup>
T64	400 - 380	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	7945.34	63374.10	0.125 <sup>1</sup>
T65	380 - 360	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	7860.54	63374.10	0.124 <sup>1</sup>
T66	360 - 340	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	7940.93	63374.10	0.125 <sup>1</sup>
T67	340 - 320	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	7996.71	63374.10	0.126 <sup>1</sup>
T68	320 - 300	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	8024.23	63374.10	0.127 <sup>1</sup>
T69	300 - 280	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	8175.56	63374.10	0.129 <sup>1</sup>
T78	240 - 220	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	9223.38	63374.10	0.146 <sup>1</sup>
T79	220 - 200	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	9614.86	63374.10	0.152 <sup>1</sup>
T80	200 - 180	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	9939.07	63374.10	0.157 <sup>1</sup>
T81	180 - 160	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10051.40	63374.10	0.159 <sup>1</sup>
T82	160 - 140	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10061.40	63374.10	0.159 <sup>1</sup>
T83	140 - 120	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10018.60	63374.10	0.158 <sup>1</sup>
T92	80 - 60	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10300.70	63374.10	0.163 <sup>1</sup>
T93	60 - 40	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10308.00	63374.10	0.163 <sup>1</sup>
T94	40 - 20	2L2 1/2x2 1/2x1/4	8.00	7.13	118.3	1.4569	10268.80	63374.10	0.162 <sup>1</sup>
T97	7 - 0	C15x33.9	6.87	6.45	85.6	9.9600	37766.90	322704.00	0.117 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	1089.8 - 1084.9	MC18x42.7	8.00	3.84	43.1	9.1547	1.79	398229.00	0.000 <sup>1</sup>
T2	1084.9 - 1080	2L2 1/2x2 1/2x5/16	8.00	7.23	121.2	1.7873	5278.91	77749.50	0.068 <sup>1</sup>
T14	920 - 915	2L2 1/2x2 1/2x5/16	8.00	7.17	120.2	1.7873	17114.50	77749.50	0.220 <sup>1</sup>



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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T28	760 - 755	2L2 1/2x2 1/2x5/16	8.00	7.17	120.2	1.7873	16065.40	77749.50	0.207 <sup>1</sup>
T42	600 - 595	2L2 1/2x2 1/2x5/16	8.00	7.13	119.6	1.7873	18631.90	77749.50	0.240 <sup>1</sup> ✓
T60	420 - 415	2L2 1/2x2 1/2x5/16	8.00	7.13	119.6	1.7873	13848.70	77749.50	0.178 <sup>1</sup> ✓
T74	260 - 255	2L2 1/2x2 1/2x5/16	8.00	7.13	119.6	1.7873	19444.90	77749.50	0.250 <sup>1</sup> ✓
T88	100 - 95	2L2 1/2x2 1/2x5/16	8.00	7.13	119.6	1.7873	23641.70	77749.50	0.304 <sup>1</sup> ✓
T96	15 - 7	2L2 1/2x2 1/2x1/4	8.00	5.69	65.0	2.3800	13792.40	77112.00	0.179 <sup>1</sup> ✓
T97	7 - 0	C15x33.9	8.00	7.58	100.7	9.9600	149572.00	322704.00	0.463 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L2 1/2x2 1/2x1/4	8.00	7.58	118.3	2.3800	37710.60	77112.00	0.489 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L2 1/2x2 1/2x1/4	2.00	1.79	28.0	2.3800	8998.47	77112.00	0.117 <sup>1</sup> ✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T96	15 - 7	2L2 1/2x2 1/2x1/4	4.42	3.96	61.7	2.3800	11186.10	77112.00	0.145 <sup>1</sup>

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Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
									✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio $\frac{P_u}{\phi P_n}$
T1	1089.8 - 1084.9	MC18x42.7	4.00	4.00	44.9	12.6000	1.44	567000.00	0.000 <sup>1</sup>
									✓

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP <sub>allow</sub> lb	% Capacity	Pass Fail
L1	1151.9 - 1089.8	Pole	P20x.812	1	-45879.80	2202660.00	49.2	Pass
T1	1089.8 - 1084.9	Leg	3 3/4	2	-88806.50	372777.00	23.8	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	10	-21341.40	62785.60	34.0	Pass
		Top Girt	MC18x42.7	6	1.41	398229.00	7.9	Pass
		Inner Bracing	MC18x42.7	14	-1.18	489418.00	0.2	Pass
		Guy A@1089.8	1 3/4	2281	131100.00	225600.00	58.1	Pass
		Guy B@1089.8	1 3/4	2280	119303.00	225600.00	52.9	Pass
		Guy C@1089.8	1 3/4	2279	119347.00	225600.00	52.9	Pass
T2	1084.9 - 1080	Leg	3 3/4	19	-127621.00	372777.00	34.2	Pass
		Diagonal	1 1/4	26	13343.30	39760.80	33.6	Pass
							37.3 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	22	5278.91	77749.50	6.8	Pass
							10.1 (b)	
T3	1080 - 1060	Leg	3 3/4	31	-158389.00	368382.00	43.0	Pass
		Diagonal	1 1/8	65	11743.50	32206.20	36.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	60	-9527.16	39461.10	24.1	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	33	-11005.10	39461.10	27.9	Pass
T4	1060 - 1040	Leg	3 3/4	70	-179413.00	368382.00	48.7	Pass
		Diagonal	1 1/8	103	8959.23	32206.20	27.8	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	80	-9458.88	39461.10	24.0	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	71	-9293.06	39461.10	23.5	Pass
T5	1040 - 1020	Leg	3 3/4	109	-190389.00	368382.00	51.7	Pass
		Diagonal	1 1/8	142	7633.65	32206.20	23.7	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	119	-9566.29	39461.10	24.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	110	-9499.01	39461.10	24.1	Pass
T6	1020 - 1000	Leg	3 3/4	148	-192074.00	368382.00	52.1	Pass
		Diagonal	1 1/8	153	7163.33	32206.20	22.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	158	-9594.28	39461.10	24.3	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	149	-9569.40	39461.10	24.3	Pass
T7	1000 - 980	Leg	3 3/4	187	-189794.00	368382.00	51.5	Pass
		Diagonal	1 1/8	192	9488.07	32206.20	29.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	215	-9581.78	39461.10	24.3	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	188	-9565.65	39461.10	24.2	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T8	980 - 960	Leg	3 3/4	226	-172514.00	368382.00	46.8	Pass
		Diagonal	1 1/8	231	11758.70	32206.20	36.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	236	-9727.92	39461.10	24.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	227	-9201.94	39461.10	23.3	Pass
T9	960 - 940	Leg	4 1/2	263	-179483.00	581305.00	30.9	Pass
		Diagonal	1 1/8	270	14076.30	32206.20	43.7	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	275	-11675.10	39918.80	29.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	266	-10220.50	39461.10	25.9	Pass
T10	940 - 935	Leg	4 1/2	302	-190668.00	581305.00	32.8	Pass
		Diagonal	1 1/8	309	14647.90	32206.20	45.5	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	305	-12180.30	39918.80	30.5	Pass
T11	935 - 930	Leg	4 1/2	314	-202299.00	581305.00	34.8	Pass
		Diagonal	1 1/8	321	15022.80	32206.20	46.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	317	-12529.50	39918.80	31.4	Pass
T12	930 - 925	Leg	4 1/2	326	-214976.00	581305.00	37.0	Pass
		Diagonal	1 1/4	333	15692.10	39760.80	39.5	Pass
T13	925 - 920	Top Girt	2L2 1/2x2 1/2x5/16	329	-13139.10	48464.60	27.1	Pass
		Leg	4 1/2	338	-228221.00	581305.00	39.3	Pass
		Diagonal	1 1/4	345	16149.00	39760.80	40.6	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	342	-14442.50	48464.60	29.8	Pass
T14	920 - 915	Leg	4 1/2	350	-252896.00	581305.00	43.5	Pass
		Diagonal	1 1/4	359	14162.50	39760.80	35.6	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	353	17114.50	77749.50	22.0	Pass
		Guy A@920	1 3/4	2284	127243.00	225600.00	56.4	Pass
T15	915 - 910	Guy B@920	1 3/4	2283	114995.00	225600.00	51.0	Pass
		Guy C@920	1 3/4	2282	112888.00	225600.00	50.0	Pass
		Leg	4 1/2	362	-248843.00	581305.00	42.8	Pass
		Diagonal	1 1/4	371	11358.20	39760.80	28.6	Pass
T16	910 - 905	Top Girt	2L2 1/2x2 1/2x5/16	366	-12518.70	48464.60	25.8	Pass
		Leg	4 1/2	374	-246076.00	581305.00	42.3	Pass
		Diagonal	1 1/8	383	10483.40	32206.20	32.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	378	-9284.66	39918.80	23.3	Pass
T17	905 - 900	Leg	4 1/2	386	-244517.00	581305.00	42.1	Pass
		Diagonal	1 1/8	395	9970.86	32206.20	31.0	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	390	-8556.40	39918.80	21.4	Pass
T18	900 - 880	Leg	4 1/2	398	-243126.00	581305.00	41.8	Pass
		Diagonal	1 1/8	434	9247.70	32206.20	28.7	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	411	-8364.62	39918.80	21.0	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	402	-8384.24	39918.80	21.0	Pass
T19	880 - 860	Leg	4 1/2	437	-244107.00	581305.00	42.0	Pass
		Diagonal	1 1/8	444	7157.30	32206.20	22.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	469	-8660.69	39918.80	21.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	442	-8830.91	39918.80	22.1	Pass
T20	860 - 840	Leg	4 1/2	476	-253936.00	581305.00	43.7	Pass
		Diagonal	1 1/8	483	8245.22	32206.20	25.6	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	489	-8477.03	39918.80	21.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	480	-8385.37	39918.80	21.0	Pass
T21	840 - 820	Leg	4 1/2	515	-277987.00	581305.00	47.8	Pass
		Diagonal	1 1/8	522	10036.00	32206.20	31.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	528	-8650.90	39918.80	21.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	519	-8515.43	39918.80	21.3	Pass
T22	820 - 800	Leg	4 1/2	554	-307430.00	581305.00	52.9	Pass
		Diagonal	1 1/8	561	12204.70	32206.20	37.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	566	-10185.70	39918.80	25.5	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	557	-8810.95	39918.80	22.1	Pass
T23	800 - 780	Leg	4 1/2	593	-342120.00	581305.00	58.9	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T24	780 - 775	Diagonal	1 1/8	602	14786.10	32206.20	45.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	606	-12224.10	39918.80	30.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	596	-10630.20	39918.80	26.6	Pass
		Leg	4 1/2	632	-351587.00	581305.00	60.5	Pass
T25	775 - 770	Diagonal	1 1/8	641	15485.60	32206.20	48.1	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	636	-12842.10	39918.80	32.2	Pass
		Leg	4 1/2	644	-361262.00	581305.00	62.1	Pass
T26	770 - 765	Diagonal	1 1/8	653	15944.60	32206.20	49.5	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	648	-13273.40	39918.80	33.3	Pass
		Leg	4 1/2	656	-371541.00	581305.00	63.9	Pass
T27	765 - 760	Diagonal	1 1/4	665	16743.30	39760.80	42.1	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	660	-13997.30	48464.60	28.9	Pass
		Leg	4 1/2	668	-382866.00	581305.00	65.9	Pass
T28	760 - 755	Diagonal	1 1/4	677	16720.00	39760.80	42.1	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	672	-14013.40	48464.60	28.9	Pass
		Leg	4 1/2	680	-389814.00	581305.00	67.1	Pass
T29	755 - 750	Diagonal	1 1/4	690	12755.70	39760.80	32.1	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	685	16065.40	77749.50	20.7	Pass
		Guy A@760	1 3/4	2287	111781.00	225600.00	49.5	Pass
		Guy B@760	1 3/4	2286	100131.00	225600.00	44.4	Pass
T30	750 - 745	Guy C@760	1 3/4	2285	98393.70	225600.00	43.6	Pass
		Leg	4 1/2	692	-380164.00	581305.00	65.4	Pass
		Diagonal	1 1/4	700	10301.80	39760.80	25.9	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	696	-12171.50	48464.60	25.1	Pass
T31	745 - 740	Leg	4 1/2	704	-371183.00	581305.00	63.9	Pass
		Diagonal	1 1/8	712	9656.63	32206.20	30.0	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	708	-8890.92	39918.80	22.3	Pass
T32	740 - 720	Leg	4 1/2	716	-362987.00	581305.00	62.4	Pass
		Diagonal	1 1/8	724	9265.50	32206.20	28.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	720	-8090.52	39918.80	20.3	Pass
T33	720 - 700	Leg	4 1/2	728	-355210.00	581305.00	61.1	Pass
		Diagonal	1 1/8	763	8683.34	32206.20	27.0	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	759	-7952.64	39918.80	19.9	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	732	-8046.36	39918.80	20.2	Pass
T34	700 - 680	Leg	4 1/2	767	-329266.00	581305.00	56.6	Pass
		Diagonal	1 1/8	802	6778.21	32206.20	21.0	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	798	-7658.10	39918.80	19.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	771	-7722.55	39918.80	19.3	Pass
T35	680 - 660	Leg	4 1/2	806	-311791.00	581305.00	53.6	Pass
		Diagonal	1 1/8	843	5766.58	32206.20	17.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	837	-7436.08	39918.80	18.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	810	-7483.53	39918.80	18.7	Pass
T36	660 - 640	Leg	4 1/2	847	-319362.00	581305.00	54.9	Pass
		Diagonal	1 1/8	854	6649.14	32206.20	20.6	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	876	-7296.83	39918.80	18.3	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	849	-7323.65	39918.80	18.3	Pass
T37	640 - 620	Leg	4 1/2	886	-344693.00	581305.00	59.3	Pass
		Diagonal	1 1/8	893	8529.76	32206.20	26.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	896	-7357.62	39918.80	18.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	888	-7306.05	39918.80	18.3	Pass
T38	620 - 615	Leg	5	925	-379343.00	746587.00	50.8	Pass
		Diagonal	1 1/8	932	11146.00	32206.20	34.6	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	936	-9171.41	40224.70	22.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	926	-7740.50	39918.80	19.4	Pass
		Leg	5	964	-389273.00	746587.00	52.1	Pass
		Diagonal	1 1/8	971	11778.90	32206.20	36.6	Pass

<p><b>tnxTower</b></p> <p><b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414</p>	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	188 of 192
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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T39	615 - 610	Top Girt	2L2 1/2x2 1/2x1/4	966	-9737.57	40224.70	24.2	Pass
		Leg	5	976	-399515.00	746587.00	53.5	Pass
T40	610 - 605	Diagonal	1 1/8	983	12164.90	32206.20	37.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	978	-10093.60	40224.70	25.1	Pass
		Leg	5	988	-410496.00	746587.00	55.0	Pass
T41	605 - 600	Diagonal	1 1/4	995	12947.30	39760.80	32.6	Pass
							36.2 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	990	-10834.60	48843.90	22.2	Pass
T42	600 - 595	Leg	5	1000	-422580.00	746587.00	56.6	Pass
		Diagonal	1 1/4	1007	13671.00	39760.80	34.4	Pass
							38.2 (b)	
T43	595 - 590	Top Girt	2L2 1/2x2 1/2x5/16	1001	-12638.40	48843.90	25.9	Pass
		Leg	5	1012	-432390.00	746587.00	57.9	Pass
		Diagonal	1 1/4	1020	13200.10	39760.80	33.2	Pass
T44	590 - 585	Top Girt	2L2 1/2x2 1/2x5/16	1014	18631.90	77749.50	24.0	Pass
							35.6 (b)	
		Guy A@600	1 3/4	2290	96996.90	225600.00	43.0	Pass
		Guy B@600	1 3/4	2289	85825.20	225600.00	38.0	Pass
		Guy C@600	1 3/4	2288	85295.70	225600.00	37.8	Pass
		Leg	5	1024	-421679.00	746587.00	56.5	Pass
T45	585 - 580	Diagonal	1 1/4	1031	12411.60	39760.80	31.2	Pass
							34.7 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	1025	-11543.40	48843.90	23.6	Pass
T46	580 - 560	Leg	5	1036	-411204.00	746587.00	55.1	Pass
		Diagonal	1 1/8	1043	11696.40	32206.20	36.3	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1038	-10345.00	40224.70	25.7	Pass
T47	560 - 540	Leg	5	1048	-401372.00	746587.00	53.8	Pass
		Diagonal	1 1/8	1055	11392.30	32206.20	35.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1050	-9765.30	40224.70	24.3	Pass
T48	540 - 535	Leg	4 3/4	1060	-391740.00	661643.00	59.2	Pass
		Diagonal	1 1/8	1094	10700.50	32206.20	33.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1089	-8822.25	40071.70	22.0	Pass
T49	535 - 530	Top Girt	2L2 1/2x2 1/2x1/4	1062	-9361.38	40224.70	23.3	Pass
		Leg	4 3/4	1097	-375238.00	661643.00	56.7	Pass
		Diagonal	1 1/8	1133	8233.29	32206.20	25.6	Pass
T50	530 - 525	Horizontal	2L2 1/2x2 1/2x1/4	1109	-6897.35	40071.70	17.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1101	-7242.00	40071.70	18.1	Pass
		Leg	4 3/4	1136	-373049.00	661643.00	56.4	Pass
T51	525 - 520	Diagonal	1 1/8	1144	-3945.87	6796.01	58.1	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1140	-5648.85	62754.10	9.0	Pass
		Leg	4 3/4	1148	-377566.00	661643.00	57.1	Pass
T52	520 - 500	Diagonal	1 1/8	1157	6443.05	32206.20	20.0	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1151	-3504.23	40071.70	8.7	Pass
		Leg	4 3/4	1161	-378587.00	661643.00	57.2	Pass
T53	500 - 480	Diagonal	1 1/8	1169	5707.78	32206.20	17.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1163	-6624.85	40071.70	16.5	Pass
		Leg	4 3/4	1173	-380024.00	661643.00	57.4	Pass
T54	480 - 460	Diagonal	1 1/8	1181	5528.05	32206.20	17.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1175	-6347.73	40071.70	15.8	Pass
		Leg	4 3/4	1185	-385552.00	661643.00	58.3	Pass
T55	460 - 440	Diagonal	1 1/8	1220	5274.04	32206.20	16.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1196	-6677.95	40071.70	16.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1187	-6292.33	40071.70	15.7	Pass
T56	440 - 420	Leg	4 3/4	1224	-391313.00	661643.00	59.1	Pass
		Diagonal	1 1/8	1232	5258.63	32206.20	16.3	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1244	-6777.74	40071.70	16.9	Pass
T57	420 - 400	Top Girt	2L2 1/2x2 1/2x1/4	1228	-6199.73	40071.70	15.5	Pass
		Leg	4 3/4	1263	-404082.00	661643.00	61.1	Pass
		Diagonal	1 1/8	1271	6476.55	32206.20	20.1	Pass
T58	400 - 380	Horizontal	2L2 1/2x2 1/2x1/4	1275	-6998.90	40071.70	17.5	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T55	460 - 440	Top Girt	2L2 1/2x2 1/2x1/4	1267	-6152.56	40071.70	15.4	Pass
		Leg	5	1302	-420215.00	746587.00	56.3	Pass
		Diagonal	1 1/8	1310	8836.71	32206.20	27.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1323	-7278.35	40224.70	18.1	Pass
T56	440 - 435	Top Girt	2L2 1/2x2 1/2x1/4	1304	-6355.95	40071.70	15.9	Pass
		Leg	5	1341	-424523.00	746587.00	56.9	Pass
		Diagonal	1 1/8	1349	9462.23	32206.20	29.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1344	-7769.63	40224.70	19.3	Pass
T57	435 - 430	Leg	5	1353	-429016.00	746587.00	57.5	Pass
		Diagonal	1 1/8	1361	9888.43	32206.20	30.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1356	-8152.93	40224.70	20.3	Pass
		Leg	5	1365	-434042.00	746587.00	58.1	Pass
T58	430 - 425	Diagonal	1 1/4	1373	10681.90	39760.80	26.9	Pass
							29.9 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	1368	-8850.87	48843.90	18.1	Pass
		Leg	5	1377	-441058.00	746587.00	59.1	Pass
T59	425 - 420	Diagonal	1 1/4	1387	11572.50	39760.80	29.1	Pass
							29.1	Pass
							32.3 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	1381	-10159.30	48843.90	20.8	Pass
T60	420 - 415	Leg	5	1389	-468943.00	746587.00	62.8	Pass
		Diagonal	1 1/4	1399	12888.80	39760.80	32.4	Pass
							32.4	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	1392	13848.70	77749.50	17.8	Pass
T61	415 - 410						26.5 (b)	
		Guy A@420	1 1/2	2293	71992.60	165600.00	43.5	Pass
		Guy B@420	1 1/2	2292	66927.70	165600.00	40.4	Pass
		Guy C@420	1 1/2	2291	66990.50	165600.00	40.5	Pass
		Leg	5	1401	-464399.00	746587.00	62.2	Pass
		Diagonal	1 1/4	1411	13234.30	39760.80	33.3	Pass
T62	410 - 405						37.0 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	1405	-10888.00	48843.90	22.3	Pass
		Leg	5	1413	-461931.00	746587.00	61.9	Pass
		Diagonal	1 1/8	1423	12466.90	32206.20	38.7	Pass
T63	405 - 400	Top Girt	2L2 1/2x2 1/2x1/4	1417	-10967.10	40224.70	27.3	Pass
		Leg	5	1425	-459971.00	746587.00	61.6	Pass
		Diagonal	1 1/8	1435	12034.70	32206.20	37.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1429	-10372.50	40224.70	25.8	Pass
T64	400 - 380	Leg	5	1437	-458724.00	746587.00	61.4	Pass
		Diagonal	1 1/8	1474	10718.00	32206.20	33.3	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1468	-8757.15	40224.70	21.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1441	-9635.37	40224.70	24.0	Pass
T65	380 - 360	Leg	5	1476	-453829.00	746587.00	60.8	Pass
		Diagonal	1 1/8	1513	7791.08	32206.20	24.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1487	-7860.54	40224.70	19.5	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1480	-6913.97	40224.70	17.2	Pass
T66	360 - 340	Leg	5	1515	-458470.00	746587.00	61.4	Pass
		Diagonal	1 1/8	1547	5906.25	32206.20	18.3	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1527	-7940.93	40224.70	19.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1517	-6245.86	40224.70	15.5	Pass
T67	340 - 320	Leg	5	1554	-461690.00	746587.00	61.8	Pass
		Diagonal	1 1/8	1563	6742.48	32206.20	20.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1565	-7996.71	40224.70	19.9	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1556	-6204.16	40224.70	15.4	Pass
T68	320 - 300	Leg	5	1593	-463279.00	746587.00	62.1	Pass
		Diagonal	1 1/8	1602	9510.02	32206.20	29.5	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1604	-8024.23	40224.70	19.9	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1595	-6150.74	40224.70	15.3	Pass
T69	300 - 280	Leg	5	1632	-472016.00	866222.00	54.5	Pass
		Diagonal	1 1/8	1641	12516.10	32206.20	38.9	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1645	-10376.10	40224.70	25.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1636	-8478.17	40224.70	21.1	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
T70	280 - 275	Leg	5	1671	-475025.00	866222.00	54.8	Pass
		Diagonal	1 1/8	1680	13253.20	32206.20	41.2	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1675	-11025.20	40224.70	27.4	Pass
T71	275 - 270	Leg	5	1683	-478250.00	866222.00	55.2	Pass
		Diagonal	1 1/8	1692	13663.10	32206.20	42.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1687	-11420.30	40224.70	28.4	Pass
T72	270 - 265	Leg	5	1695	-481861.00	866222.00	55.6	Pass
		Diagonal	1 1/4	1704	14593.40	39760.80	36.7	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	1699	-12201.20	48843.90	25.0	Pass
T73	265 - 260	Leg	5	1707	-488268.00	866222.00	56.4	Pass
		Diagonal	1 1/4	1716	13953.40	39760.80	35.1	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	1711	-11788.30	48843.90	24.1	Pass
T74	260 - 255	Leg	5	1719	-507824.00	866222.00	58.6	Pass
		Diagonal	1 1/4	1725	18776.80	39760.80	47.2	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	1722	19444.90	77749.50	25.0	Pass
		Guy A@260	1 1/2	2296	74940.80	165600.00	45.3	Pass
		Guy B@260	1 1/2	2295	70080.90	165600.00	42.3	Pass
		Guy C@260	1 1/2	2294	69574.90	165600.00	42.0	Pass
T75	255 - 250	Leg	5	1731	-500943.00	866222.00	57.8	Pass
		Diagonal	1 1/4	1737	19750.50	39760.80	49.7	Pass
		Top Girt	2L2 1/2x2 1/2x5/16	1733	-16128.50	48843.90	33.0	Pass
T76	250 - 245	Leg	5	1743	-499442.00	866222.00	57.7	Pass
		Diagonal	1 1/8	1749	18946.70	32206.20	58.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1745	-16460.90	40224.70	40.9	Pass
T77	245 - 240	Leg	5	1756	-505079.00	866222.00	58.3	Pass
		Diagonal	1 1/8	1761	18807.40	32206.20	58.4	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1757	-15989.80	40224.70	39.8	Pass
T78	240 - 220	Leg	5	1768	-532512.00	866222.00	61.5	Pass
		Diagonal	1 1/8	1800	18150.30	32206.20	56.4	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1796	-15101.70	40224.70	37.5	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1769	-15634.70	40224.70	38.9	Pass
T79	220 - 200	Leg	5	1807	-555114.00	866222.00	64.1	Pass
		Diagonal	1 1/8	1839	15498.70	32206.20	48.1	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1835	-12823.70	40224.70	31.9	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1808	-13424.10	40224.70	33.4	Pass
T80	200 - 180	Leg	5	1846	-573833.00	866222.00	66.2	Pass
		Diagonal	1 1/8	1878	12460.60	32206.20	38.7	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1874	-9982.93	40224.70	24.8	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1847	-10915.60	40224.70	27.1	Pass
T81	180 - 160	Leg	5	1885	-580320.00	866222.00	67.0	Pass
		Diagonal	1 1/8	1893	8299.43	32206.20	25.8	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1896	-10051.40	40224.70	25.0	Pass
T82	160 - 140	Top Girt	2L2 1/2x2 1/2x1/4	1888	-6016.69	40224.70	15.0	Pass
		Leg	5	1924	-580893.00	866222.00	67.1	Pass
		Diagonal	1 1/8	1932	12497.40	32206.20	38.8	Pass
T83	140 - 120	Horizontal	2L2 1/2x2 1/2x1/4	1936	-10311.40	40224.70	25.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1927	-7655.17	40224.70	19.0	Pass
		Leg	5	1963	-578422.00	866222.00	66.8	Pass
T84	120 - 115	Diagonal	1 1/8	1970	16814.50	32206.20	52.2	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	1974	-13918.40	40224.70	34.6	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	1966	-11191.20	40224.70	27.8	Pass
		Leg	5	2002	-569505.00	866222.00	65.7	Pass
T85	115 - 110	Diagonal	1 1/8	2009	17930.60	32206.20	55.7	Pass
		Top Girt	2L2 1/2x2 1/2x1/4	2004	-14896.40	40224.70	37.0	Pass
		Leg	5	2014	-566117.00	866222.00	65.4	Pass
		Diagonal	1 1/8	2021	18603.30	32206.20	57.8	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail		
T86	110 - 105	Top Girt	2L2 1/2x2 1/2x1/4	2016	-15516.70	40224.70	38.6	Pass		
		Leg	5	2026	-562384.00	866222.00	64.9	Pass		
		Diagonal	1 1/4	2033	19985.80	39760.80	50.3	Pass		
							55.8 (b)			
T87	105 - 100	Top Girt	2L2 1/2x2 1/2x5/16	2028	-16638.50	48843.90	34.1	Pass		
		Leg	5	2038	-560527.00	866222.00	64.7	Pass		
		Diagonal	1 1/4	2045	19353.90	39760.80	48.7	Pass		
							54.1 (b)			
T88	100 - 95	Top Girt	2L2 1/2x2 1/2x5/16	2040	-16431.90	48843.90	33.6	Pass		
		Leg	5	2050	-583576.00	866222.00	67.4	Pass		
		Diagonal	1 1/4	2054	12941.90	39760.80	32.5	Pass		
							36.2 (b)			
T89	95 - 90	Top Girt	2L2 1/2x2 1/2x5/16	2052	23641.70	77749.50	30.4	Pass		
									45.2 (b)	
		Guy A@100	1 1/2	2299	62783.30	165600.00	37.9	Pass		
		Guy B@100	1 1/2	2298	59890.80	165600.00	36.2	Pass		
		Guy C@100	1 1/2	2297	59159.70	165600.00	35.7	Pass		
		Leg	5	2062	-583070.00	866222.00	67.3	Pass		
T90	90 - 85	Diagonal	1 1/4	2066	13014.30	39760.80	32.7	Pass		
									36.4 (b)	
		Top Girt	2L2 1/2x2 1/2x5/16	2063	-10705.80	48843.90	21.9	Pass		
T91	85 - 80	Leg	5	2074	-586153.00	866222.00	67.7	Pass		
		Diagonal	1 1/8	2078	12078.50	32206.20	37.5	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2075	-10714.30	40224.70	26.6	Pass		
T92	80 - 60	Leg	5	2086	-588725.00	866222.00	68.0	Pass		
		Diagonal	1 1/8	2090	11498.20	32206.20	35.7	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2087	-9968.52	40224.70	24.8	Pass		
T93	60 - 40	Leg	5	2098	-594710.00	866222.00	68.7	Pass		
		Diagonal	1 1/8	2129	10547.70	32206.20	32.8	Pass		
		Horizontal	2L2 1/2x2 1/2x1/4	2118	-10300.70	40224.70	25.6	Pass		
T94	40 - 20	Top Girt	2L2 1/2x2 1/2x1/4	2099	-9334.04	40224.70	23.2	Pass		
		Leg	5	2137	-595133.00	866222.00	68.7	Pass		
		Diagonal	1 1/8	2144	8932.28	32206.20	27.7	Pass		
T95	20 - 15	Horizontal	2L2 1/2x2 1/2x1/4	2158	-10308.00	40224.70	25.6	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2138	-6215.42	40224.70	15.5	Pass		
		Leg	5	2176	-592868.00	866222.00	68.4	Pass		
T96	15 - 7	Diagonal	1 1/8	2183	12865.60	32206.20	39.9	Pass		
		Horizontal	2L2 1/2x2 1/2x1/4	2187	-10805.30	40224.70	26.9	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2178	-8142.87	40224.70	20.2	Pass		
T97	7 - 0	Leg	5	2215	-584949.00	866222.00	67.5	Pass		
		Diagonal	1 1/8	2222	12914.70	32206.20	40.1	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2217	-10600.40	40224.70	26.4	Pass		
T96	15 - 7	Leg	5	2227	-519527.00	935357.00	55.5	Pass		
		Diagonal	2L2 1/2x2 1/2x1/4	2241	-39010.60	47619.70	81.9	Pass		
		Top Girt	2L2 1/2x2 1/2x1/4	2229	13792.40	77112.00	17.9	Pass		
		Bottom Girt	2L2 1/2x2 1/2x1/4	2232	37710.60	77112.00	48.9	Pass		
		Redund Horz 1	2L2 1/2x2 1/2x1/4	2245	-8998.47	74003.20	12.2	Pass		
		Bracing								
T96	15 - 7	Redund Diag 1	2L2 1/2x2 1/2x1/4	2246	-34785.50	63093.00	55.1	Pass		
		Bracing								
		Redund Sub Horz	2L3x3x1/4	2247	-27860.00	81102.20	34.4	Pass		
T97	7 - 0	Bracing								
		Leg	5	2257	-684439.00	1048230.00	65.3	Pass		
		Horizontal	C15x33.9	2262	-3976.32	320901.00	28.6	Pass		
T97	7 - 0	Top Girt	C15x33.9	2259	149572.00	322704.00	46.3	Pass		
									Summary	
									Pole (L1)	49.2
							Leg (T93)	68.7	Pass	
							Diagonal (T96)	81.9	Pass	
							Horizontal	37.5	Pass	

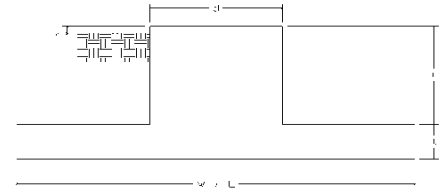


<b>tnxTower</b>  <b>American Tower</b> 3500 Regency Parkway, Suite 100 Cary, NC 27518 Phone: (919) 468-0112 FAX: (919) 466-5414	<b>Job</b>	Hartford CT2, CT (302534)	<b>Page</b>	192 of 192
	<b>Project</b>	OAA746560_C3_03	<b>Date</b>	15:38:59 06/11/19
	<b>Client</b>	DISH NETWORK CORPORATION	<b>Designed by</b>	Christina.Minor

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
						(T78)		
						Top Girt	46.3	Pass
						(T97)		
						Bottom Girt	48.9	Pass
						(T96)		
						Redund Horz 1	12.2	Pass
						Bracing (T96)		
						Redund Diag 1	55.1	Pass
						Bracing (T96)		
						Redund Sub Horz	34.4	Pass
						Bracing (T96)		
						Inner	0.2	Pass
						Bracing (T1)		
						Guy A (T1)	58.1	Pass
						Guy B (T1)	52.9	Pass
						Guy C (T1)	52.9	Pass
						Bolt Checks	55.8	Pass
						<b>RATING =</b>	<b>81.9</b>	<b>Pass</b>

Site Name: Hartford CT2  
 Site Number: 302534  
 Engineering Number: OAA746560  
 Engineer: CM  
 Date: 06/12/19  
 Tower Type: GT

Program Last Updated: 2/26/2019



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

Design / Analysis / Mapping:	Analysis		
Compression/Leg:	1720.0 k	Concrete Strength ( $f'_c$ ):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	26.0 in
Total Shear:	11.0 k	$\phi_{\text{Shear}}$ :	0.75
Moment:	0.0 k-ft	$\phi_{\text{Flexure / Tension}}$ :	0.9
Total Combined Axial Compressive Load:	1720.0 k	$\phi_{\text{Compression}}$ :	0.65
Depth to Base of Foundation (l + t - h):	5.5 ft	$\beta$ :	0.85
Diameter of Pier (d):	8 ft	Bottom Pad Rebar Size #:	7
Length of Pier (l):	3.5 ft	Dead Load Factor:	0.9
Height of Pier above Ground (h):	0.5 ft	# of Bottom Pad Rebar:	43
Width of Pad (W):	22 ft	Pad Bottom Steel Area:	25.8 in <sup>2</sup>
Length of Pad (L):	22 ft	Pad Steel $F_y$ :	60000 psi
Thickness of Pad (t):	2.5 ft	Top Pad Rebar Size #:	7
Tower Leg Center to Center:	0 ft	# of Top Pad Rebar:	0
Number of Tower Legs:	1 (1 if MP or GT)	Pad Top Steel Area:	0 in <sup>2</sup>
Tower Center from Mat Center:	0 ft	Pier Rebar Size #:	6
Depth Below Ground Surface to Water Table:	10 ft	Pier Steel Area (Single Bar):	0.44 in <sup>2</sup>
Unit Weight of Concrete:	150 pcf	# of Pier Rebar:	105
Unit Weight of Soil Above Water Table:	125 pcf	Pier Steel $F_y$ :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	88.0 in
Unit Weight of Soil Below Water Table:	62.6 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	27 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.5	Tie Rebar Size #:	4
Ultimate Compressive Bearing Pressure:	8000 psf	Tie Steel Area (Single Bar):	0.2 in <sup>2</sup>
Ultimate Passive Pressure on Pad Face:	0 psf	Tie Spacing:	9 in
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9	Tie Steel $F_y$ :	60000 psi
$\phi_{\text{Soil}}$ :	0.6		

**Overtuning Moment Usage**

Design OTM:	66.0 k-ft
OTM Resistance:	18084.2 k-ft
Design OTM / OTM Resistance:	0.00 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure:	3785 psf
Factored Nominal Bearing Pressure:	4800 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.79 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

**Sliding Factor of Safety**

Total Factored Sliding Resistance:	649.4 k
Sliding Design / Sliding Resistance:	0.02 Result: OK

**Design Tools Only, Space Intentionally Left Blank**

**One Way Shear, Flexual Capacity, and Punching Shear**

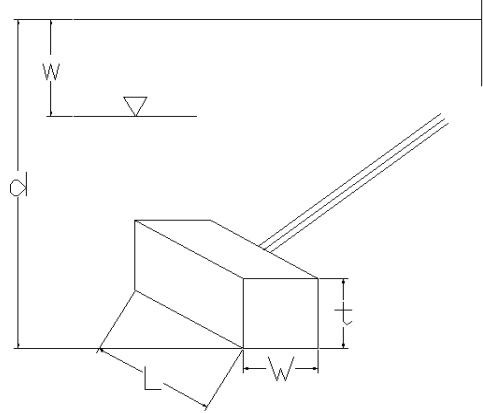
Factored One Way Shear ( $V_u$ ):	402.4 k
One Way Shear Capacity ( $\phi V_c$ ):	563.9 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.71 Result: OK
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	2039.5 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	2905.1 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.70 Result: OK
Load Direction Controlling Flexural Capacity:	Parallel to Pad Edge
Lower Pad Flexural Reinforcement Ratio:	0.0038 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Pad Shrinkage Reinforcement Ratio:	0.0038 OK - Shrinkage Reinforcement Ratio Met - ACI7.12.2.1
Lower Pad Reinforcement Spacing:	6 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	-256 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	1412.9 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	1637.4 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.86 Result: OK
Factored Moment in Pier ( $M_u$ ):	38.5 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	8770.5 k-ft
$M_u / \phi M_n$ :	0.00 Result: OK
Factored Shear in Pier ( $V_u$ ):	11.0 k
Pier Shear Capacity ( $\phi V_n$ ):	665.3 k
$V_u / \phi V_c$ :	0.02 Result: OK
Pier Shear Reinforcement Ratio:	0.0003 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	2494.8 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	1720.0 k
Pier Compression Capacity ( $\phi P_n$ ):	9536.6 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.18 Result: OK
Pier Compression Reinforcement Ratio:	0.006 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
Minimum Depth to Develop Vertical Rebar:	14 in - ACI12.2.3
Minimum Hook Development Length:	12 in - ACI12.5
Minimum Mat Thickness / Edge Distance from Pier:	15.0 in
Minimum Foundation Depth:	2.68 ft
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.00 Result: OK

Site Name: Hartford CT2  
 Site Number: 302534  
 Engineering Number: OAA746560  
 Engineer: CM  
 Date: 06/12/19

Program Last Updated: 2/26/2019  
 American Tower Corporation

**Design Standard per TIA-222-G**

Anchor Radius:	500 ft
Uplift (Factored - $P_u$ ):	104.9 k
Shear (Factored - $V_u$ ):	172.5 k
Berm Present:	N
Design Anchor Rod:	N
Mapped Foundation:	N
Anchor Base Depth (d):	12 ft
Width of Anchor (W):	5 ft
Length of Anchor (L):	43 ft
Thickness of Anchor (t):	6 ft
Depth Below Ground Surface to Water Table (w):	10 ft
Soil Uplift at Base / Top of Anchor (B/T):	T
Unit Weight of Concrete:	150 pcf
Unit Weight of Soil Above Water Table:	125 pcf
Unit Weight of Water:	62.4 pcf
Submerged Soil Unit Weight:	62.6 pcf
Internal Angle of Friction:	37 Degrees
Cohesion:	0 psf
Ultimate Skin Friction of Pad Sides to Soil:	2000 psf
Ultimate Coefficient of Shear Friction:	0.5
Maximum Top Conical Failure Angle:	27 Degrees
Maximum Base Conical Failure Angle:	27 Degrees
Allowable Capacity Increase:	1 (Due to Transient Loads)
Uplift Strength Reduction Factor ( $\phi_u$ ):	0.75
Shear Strength Reduction Factor ( $\phi_v$ ):	0.75
Concrete Uplift Strength Reduction Factor ( $\phi_u$ ):	0.90



**Uplift**

Weight of Concrete (Buoyancy Effect Considered):	166.7 k
Weight of Soil (Buoyancy Effect Considered):	654.0 k
Ultimate Uplift Resistance from Skin Friction:	636.0 k
Nominal Factored Uplift Resistance ( $\phi_u P_n$ ):	640.5 k
$P_u / \phi_u P_n$ :	0.16 Result: OK

**Shear**

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	124.6 k
Passive Pressure:	4526 psf
Ultimate Passive Pressure Resistance:	1167.6 k
Nominal Shear Resistance ( $\phi_v V_n$ ):	969.2 k
$V_u / \phi_v V_n$ :	0.18 Result: OK

## Strength Analysis of Reinforced Concrete

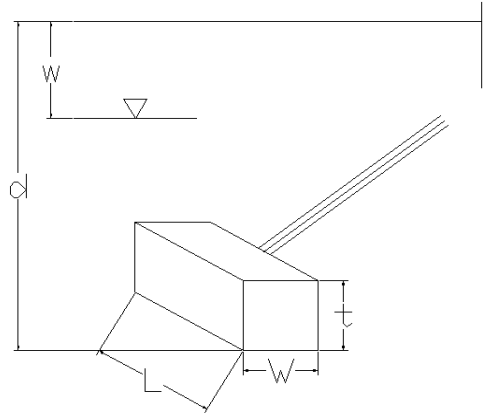
Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	10
# Longitudinal Rebar (1 Side):	9
Rebar Size:	8
Strength Reduction Factor for Shear ( $\phi_v$ ):	0.75
Strength Reduction Factor for Flexure ( $\phi_b$ ):	0.9
Compression Zone Factor ( $\beta_1$ ):	0.85
Area of Single Rebar:	0.79 in <sup>2</sup>
One Way Shear due to Shear Load ( $V_u$ ):	76.9 k
Nominal One Way Shear Capacity for Shear Load ( $\phi_c V_n$ ):	331.3 k
$V_u/\phi_v V_n$ :	0.23 Result: OK
One Way Shear due to Uplift ( $V_u$ ):	45.5 k
Nominal One Way Shear Capacity for Uplift ( $\phi_c V_n$ ):	335.2 k
$V_u/\phi_v V_n$ :	0.14 Result: OK
Pad Flexure due to Shear Load ( $M_u$ ):	927.2 k-ft
Nominal Flexural Capacity for Shear Load ( $\phi_b M_n$ ):	1791.1 k-ft
Pad Flexure due to Uplift ( $M_u$ ):	563.6 k-ft
Nominal Flexural Capacity for Uplift ( $\phi_b M_n$ ):	2416.6 k-ft
$M_u/\phi_b M_n$ (Max.):	0.52 Result: OK

Site Name: Hartford CT2  
 Site Number: 302534  
 Engineering Number: OAA746560  
 Engineer: CM  
 Date: 06/12/19

Program Last Updated: 2/26/2019  
 American Tower Corporation

**Design Standard per TIA-222-G**

Anchor Radius:	630 ft
Uplift (Factored - $P_u$ ):	349.5 k
Shear (Factored - $V_u$ ):	264.0 k
Berm Present:	N
Design Anchor Rod:	N
Mapped Foundation:	N
Anchor Base Depth (d):	12.5 ft
Width of Anchor (W):	8 ft
Length of Anchor (L):	67 ft
Thickness of Anchor (t):	5 ft
Depth Below Ground Surface to Water Table (w):	10 ft
Soil Uplift at Base / Top of Anchor (B/T):	T
Unit Weight of Concrete:	150 pcf
Unit Weight of Soil Above Water Table:	125 pcf
Unit Weight of Water:	62.4 pcf
Submerged Soil Unit Weight:	62.6 pcf
Internal Angle of Friction:	37 Degrees
Cohesion:	0 psf
Ultimate Skin Friction of Pad Sides to Soil:	2000 psf
Ultimate Coefficient of Shear Friction:	0.5
Maximum Top Conical Failure Angle:	27 Degrees
Maximum Base Conical Failure Angle:	27 Degrees
Allowable Capacity Increase:	1 (Due to Transient Loads)
Uplift Strength Reduction Factor ( $\phi_u$ ):	0.75
Shear Strength Reduction Factor ( $\phi_v$ ):	0.75
Concrete Uplift Strength Reduction Factor ( $\phi_u$ ):	0.9



**Uplift**

Weight of Concrete (Buoyancy Effect Considered):	318.4 k
Weight of Soil (Buoyancy Effect Considered):	1300.1 k
Ultimate Uplift Resistance from Skin Friction:	830.0 k
Nominal Factored Uplift Resistance ( $\phi_u P_n$ ):	1261.6 k
$P_u / \phi_u P_n$ :	0.28 Result: OK

**Shear**

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	279.4 k
Passive Pressure:	5028 psf
Ultimate Passive Pressure Resistance:	1684.5 k
Nominal Shear Resistance ( $\phi_v V_n$ ):	1472.9 k
$V_u / \phi_v V_n$ :	0.18 Result: OK

## Strength Analysis of Reinforced Concrete

Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	13
# Longitudinal Rebar (1 Side):	10
Rebar Size:	9
Strength Reduction Factor for Shear ( $\phi_v$ ):	0.75
Strength Reduction Factor for Flexure ( $\phi_b$ ):	0.9
Compression Zone Factor ( $\beta_1$ ):	0.85
Area of Single Rebar:	1.00 in <sup>2</sup>
One Way Shear due to Shear Load ( $V_u$ ):	116.9 k
Nominal One Way Shear Capacity for Shear Load ( $\phi_c V_n$ ):	453.5 k
$V_u/\phi_v V_n$ :	0.26 Result: OK
One Way Shear due to Uplift ( $V_u$ ):	162.6 k
Nominal One Way Shear Capacity for Uplift ( $\phi_c V_n$ ):	441.7 k
$V_u/\phi_v V_n$ :	0.37 Result: OK
Pad Flexure due to Shear Load ( $M_u$ ):	2211.2 k-ft
Nominal Flexural Capacity for Shear Load ( $\phi_b M_n$ ):	4139.0 k-ft
Pad Flexure due to Uplift ( $M_u$ ):	2927.0 k-ft
Nominal Flexural Capacity for Uplift ( $\phi_b M_n$ ):	3274.3 k-ft
$M_u/\phi_b M_n$ (Max.):	0.89 Result: OK