Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@clinellc.com

October 18, 2016

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification // Site Number: CT2113
219 Nells Rock Road, Shelton, CT 06484 (Site Name: SHELTON)
N 41.30416666 // W -73.1183333

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the one hundred sixty-two and a half foot (162.5') level of the existing one hundred sixty five foot (165') lattice tower at 219 Nells Roack Road, Shelton, CT 06484. The tower is owned by AT&T as well as the property. AT&T now intends to replace six (6) antennas for its LTE upgrade. These antennas would be installed at the one hundred sixty two and half foot (162.5') level of the tower. AT&T also intends to replace three (3) radios (RRUS) as well as install three RRUS.

The current proposal involves an antenna swap only (six for six); no antennas will be added.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mark A Lauretti, Mayor for the City of Shelton, as well as the tower and ground owner, AT&T.

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

Attached to accommodate this filing are construction drawings dated August 19, 2016, by CENTEK Engineering, a structural analysis dated October 13, 2016 by GPD Engineering and an Emissions Analysis Report dated September 22, 2016 by EBI Consulting.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

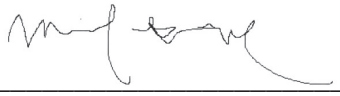
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by GPD Engineering dated October 13, 2016.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



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Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Mark A Lauretti, Mayor, City of Shelton - as elected official
AT&T - as tower owner
AT&T - as property owner

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2113

Shelton
219 Nell Rock Road
Shelton, CT 06484

September 22, 2016

EBI Project Number: 6216004269

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	7.88 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

September 22, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2113 – Shelton**

EBI Consulting was directed to analyze the proposed AT&T facility located at **219 Nell Rock Road, Shelton, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **219 Nell Rock Road, Shelton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

2) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, Quintel QS66512-2 and the Powerwave 7770** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerlines of the proposed antennas are **162 feet & 165 feet** above ground level (AGL) for **Sector A**, **162 feet & 165 feet** above ground level (AGL) for **Sector B** and **162 feet & 165 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	**165 feet**	Height (AGL):	**165 feet**	Height (AGL):	**165 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A1 MPE%	**1.08 %**	Antenna B1 MPE%	**1.08 %**	Antenna C1 MPE%	**1.08 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	11.35 / 14.85 dBd	Gain:	11.35 / 14.85 dBd	Gain:	11.35 / 14.85 dBd
Height (AGL):	**162 feet**	Height (AGL):	**162 feet**	Height (AGL):	**162 feet**
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	4,484.66	ERP (W):	4,484.66	ERP (W):	4,484.66
Antenna A2 MPE%	**0.75 %**	Antenna B2 MPE%	**0.75 %**	Antenna C2 MPE%	**0.75 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	**162 feet**	Height (AGL):	**162 feet**	Height (AGL):	**162 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A3 MPE%	**0.41 %**	Antenna B3 MPE%	**0.41 %**	Antenna C3 MPE%	**0.41 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**2.25 %**
Verizon Wireless	4.24 %
Sprint	0.48 %
Clearwire	0.15 %
PageNet	0.27 %
Arrow Bus	0.04 %
T-Mobile	0.45 %
Metricom	0.00 %
Site Total MPE %:	**7.88 %**

AT&T Sector A Total:	2.25 %
AT&T Sector B Total:	2.25 %
AT&T Sector C Total:	2.25 %
Site Total:	7.88 %

AT&T _ Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 700 MHz LTE	2	940.05	165	2.67	700 MHz	467	0.57%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	165	5.09	1900 MHz (PCS)	1000	0.51%
AT&T 850 MHz GSM	2	409.37	162	1.21	850 MHz	567	0.21%
AT&T 2300 MHz (WCS) LTE	2	1,832.95	162	5.42	2300 MHz (WCS)	1000	0.54%
AT&T 850 MHz UMTS	2	414.12	162	1.22	850 MHz	567	0.22%
AT&T 1900 MHz (PCS) UMTS	2	656.33	162	1.94	1900 MHz (PCS)	1000	0.19%
						Total:	2.25%

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	2.25 %
Sector B:	2.25 %
Sector C:	2.25 %
AT&T Maximum Total (per sector):	2.25 %
Site Total:	7.88 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.88 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Empire Telecom
1150 1st Avenue
King of Prussia, PA 19406
(484) 804-4500

Chris Scheks
520 South Main Street, Suite 2531
Akron, OH 44311
(614) 588-8973
cscheks@gpdgroup.com

GPD #: 2016713.69
October 13, 2016

RIGOROUS STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**SNET025**
	Site FA:	**10137492**
	Site Name:	**SHELTON**
	Dual USID:	**27016**
	Client #:	**CT2113**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-G, 2016 CT Building Code, & 2012 IBC**
		125 mph (Ultimate) 3-Second Gust with 0" ice
		97 mph (Nominal) 3-Second Gust with 0" ice
		50 mph 3-Second Gust with 3/4" ice
SITE DATA:		**2 Oak Valley Rd, Shelton, CT 06484, Fairfield County**
		Latitude 41° 18' 15.012" N, Longitude 73° 7' 6" W
		Market: NEW ENGLAND
		162.5' Modified Self Support Tower

Mr. David Ford,

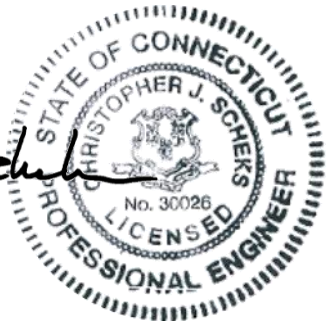
GPD is pleased to submit this Rigorous Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	94.6%	Pass
Foundation Ratio with Proposed Equipment:	56.6%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Empire Telecom. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing modified structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to Empire Telecom. This report was commissioned by Mr. David Ford of Empire Telecom.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

All modifications designed by GPD (Project #: 2013723.SNET025.01, dated 3/1/2013) were considered in the analysis.

All modifications designed by GPD (Project #: 2014701.02, dated 2/10/2014) were considered in the analysis.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Legs	40.5%	Pass
Leg Bolts	50.6%	Pass
Diagonals	96.2%	Pass
Horizontals	70.2%	Pass
Redundant Members	62.8%	Pass
Inner Bracing	57.8%	Pass
Member Bolts	53.3%	Pass
Anchor Rods	43.8%	Pass
Foundations	56.6%	Pass

ANALYSIS METHOD

RISA3D (version 14.0.0) and tnxTower (version 7.0.7.0), commercially available software programs, were used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being provided without the benefit of a recent site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
AT&T Tower Sketch	AT&T Tower Sketch Issue 6, dated 6/6/2010	N/A
RF Data Sheet	RFDS Name: CTV2113, dated 4/14/2016	Empire
Tower Design	Not Provided	N/A
Foundation Mapping	GPD Project #: 2016713.69, dated 9/28/2016	GPD
Geotechnical Report	GPD Project #: 2016713.69, dated 9/28/2016	GPD
Previous Structural Analysis	GPD Project #: 2016723.01.SNET025.08, dated 8/23/2016	GPD
Tower Mapping	GPD Project #: 2016713.69, dated 10/13/2016	GPD
Modification Drawings	GPD Project #: 2013723.01.SNET025.01, dated 3/1/2013	Siterra
Modification Drawings	GPD Project #: 2014701.02, dated 2/10/2014	Siterra
Post Modification Inspection	GPD Project #: 2013723.01.SNET025.03, dated 9/26/2013	Siterra
Post Modification Inspection	GPD Project: #: 2014723.01.SNET025.07, dated 6/4/2014	Siterra

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations.
6. Foundations are properly designed and constructed.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. All existing loading was obtained from the tower mapping by GPD (Project #: 2016713.69, dated 10/13/2016) and site photos, and is assumed to be accurate.
12. The azimuth of tower face A is assumed to be 57 degrees based on the AT&T Tower Sketch Issue 6, dated 6/6/2010.
13. The existing AT&T loading and elevations found in the tower mapping by GPD (Project #: 2016713.69, dated 10/13/2016) were found to vary from the loading and elevations found within the provided RFDS (Name: CTV2113, dated 4/14/2016). The existing AT&T loading and elevation has been modeled based on the loading and elevation reflected within the tower mapping.
14. The final AT&T Mobility configuration has been confirmed by Mr. Mike Gentile of Empire Telecom.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has performed a site visit to the tower to verify the member sizes and antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	SHELTON
Site Number	SNET025
FA Number	10137492
Date of Mapping	10/13/2016
Company Performing Mapping	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info

	Description	
Tower Type (G, SST, MP)	SST	
Tower Height (top of steel AGL)	162.5'	
Tower Manufacturer	N/A	
Tower Model	N/A	
Tower Design	N/A	
Foundation Design	N/A	
Geotech Report	GPD Project #: 2016713.69	9/28/2016
Tower Mapping	GPD Project #: 2016713.69	10/13/2016
Previous Structural Analysis	GPD Project #: 2016723.01.SNET025.08	8/23/2016
Modification Drawings	GPD Project #: 2013723.01.SNET025.01	3/1/2013
Modification Drawings	GPD Project #: 2014701.02	2/10/2014
Post Modification Inspection	GPD Project #: 2014723.01.SNET025.01	6/4/2014
Post Modification Inspection	GPD Project #: 2016723.01.SNET025.08	8/23/2016
Foundation Mapping	GPD Project #: 2016713.69	9/28/2016

Design Parameters

Design Code Used	TIA-222-G 2016 CT Building Code & 2012 IBC
Location of Tower (County, State)	Fairfield, CT
Basic Wind Speed (mph)	97 (Nominal 3-Second Gust)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	96.2%
Tower Base (%)	43.8%
Foundation (%)	56.6%
Foundation Adequate?	Yes

All modifications designed by GPD (Project #: 2013723.SNET025.01, dated 3/1/2013) were considered in the analysis.

All modifications designed by GPD (Project #: 2014701.02, dated 2/10/2014) were considered in the analysis.

Steel Yield Strength (ksi)

Legs	A36
Bracing Members	A36
Member Bolts	A307/A325
Anchor Rods	C-1015

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
Unknown	162.5	170	1	Dipole	Unknown	10' Dipole		1	Unknown	28' Platform w/ rails	1	Unknown	1/2"	Face C
Unknown	162.5	175	1	Light	Unknown	Beacon		1	Unknown	13' W5 x 13' Post	2	Unknown	7/8"	Face C
Unknown	162.5	156	1	Dipole	Unknown	15' Dipole				on the same top platform	1	Conduit	1-1/2"	Face C
Unknown	162.5	184	1	Dipole	Unknown	15' Dipole		2	Unknown	14' Post with (2) 2' Side Arms	1	Unknown	3/4"	Face C
Unknown	162.5	183	1	Omni	Unknown	10' Omni				on the same mounts	1	Unknown	7/8"	Face D
AT&T Mobility	162.5	163	3	Panel	KMW	AM-X-CD-15-85-00T-RET	90/210/340	2	Unknown	W8 19' Beams	12	Unknown	1-5/8"	Face C
AT&T Mobility	162.5	163	6	Panel	Powerwave	RA21.7770.00	25/143/265			on the same mounts				
AT&T Mobility	162.5	163	6	Diplexer	Powerwave	LGP 13519				on the same mounts				
AT&T Mobility	162.5	163	6	TMA	Powerwave	LGP 21401				on the same mounts				
AT&T Mobility	162.5	165	6	RRU	Ericsson	RRUS 11 B12		1	Unknown	RRU Mount	1	Fiber Cable	1/2"	Face C
AT&T Mobility	162.5	167	1	Surge	Raycap	DC6-48-60-18-8F				on the same mount	2	DC Power	7/8"	Face C
Sprint	153	153	3	RRU	Andrew	800MHz 2x50w		3	Commscope	PM-SC2-B-8 and DA-C200				
Sprint	153	153	3	RRU	Panasonic	1900MHz 4x40w				on the same dual pipe mounts				
Sprint	153	153	3	Notch Filter	Andrew	800 MHz Notch Filter				attached to 800MHz RRU				
Sprint	148	149	3	Panel	RFS	APXVSPP18-C-A20	10/130/250	3	Unknown	14' T-Boom	3	Hybriflex	1-1/4"	Face A
Misc	144	144						1	Unknown	30' x 30' Cross Catwalk w/ rails				
T-Mobile	135	135	3	Panel	Ericsson	AIR21 B4A/B2P (Reserved)	60/180/300	3	Unknown	2' Standoffs	6	Unknown	1-5/8"	Face C
T-Mobile	135	135	3	Panel	Andrew	DBXNH-6565A-A2M (Reserved)	60/180/300			on the same mounts				
T-Mobile	135	135	3	RRU	Ericsson	RRUS 11 (Reserved)				on the same mounts				
T-Mobile	135	135	3	RRU	Ericsson	RRUS 11 B12 (Reserved)				on the same mounts				
T-Mobile	135	135	3	TMA	Ericsson	KRY 112 144				on the same mounts				
Verizon	124	125	6	Panel	Andrew	DB846F65ZAXY	20/190/270	3	Unknown	12' T-Frames	18	Unknown	1-5/8"	Face D
Verizon	124	125	3	Panel	Antel	BXA-70063/6CF	20/190/270			on same mounts	1	Hybrid	1-5/8"	Face D
Verizon	124	125	3	Panel	Antel	BXA 171063/8BF	20/190/270			on same mounts				
Verizon	124	125	2	Panel	Antel	BXA 185063/12CF (Reserved)	190/270			on same mounts				
Verizon	124	125	1	Panel	Antel	BXA 185085/12CF (Reserved)	20			on same mounts				
Verizon	124	125	3	RRH	Alcatel Lucent	RRH 2x40 AWS				on same mounts				
Verizon	124	125	3	Distribution Box	Raycap	RRFDC-1064-PF-48				on same mounts				
Verizon	124	125	1	Distribution Box	Raycap	RRFDC-3315-PF-48				on same mounts				
Misc	112.5	112.5						1	Unknown	4.25' x 7' Catwalk				
Misc	87.5	87.5						2	Unknown	23' x 3' Catwalks				
Sprint	65	65	1	GPS	PCTEL	GPS-TMG-HR-26NCM		1	Unknown	Leg Mounted	1	Unknown	1/2"	Face C
Misc	62.5	62.5						1	Unknown	13' x 4.25' Catwalk				
Misc	25	25						1	Unknown	13' x 4.25' Catwalk				

Note: The (3) existing AM-X-CD-15-85-00T-RET Antennas (3) of the existing RA21.7770.00 Antennas, the (6) LGP 13519 Diplexers, and (3) of the existing RRUS 11 RRUs at 162.5' shall be removed prior to the installation of the proposed configuration and have not been considered in this analysis. All other existing/reserved equipment shall be reused.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T Mobility	162.5	163	3	Panel	CCI	HPA-65R-BUU-H6	90/210/340			on the existing mounts	1	Fiber Cable	1/2"	Face C
AT&T Mobility	162.5	163	3	Panel	Quintel	QS66512-2				on the existing mounts	2	DC Power	7/8"	Face C
AT&T Mobility	162.5	163	6	Triplexer	CCI	TPC-070821				on the existing mounts				
AT&T Mobility	162.5	163	3	Kaelus	Bias-T	Smart Bias-T				on the existing mounts				
AT&T Mobility	162.5	167	1	Surge	Raycap	DC6-48-60-18-8F				on the existing mounts				
AT&T Mobility	162.5	165	3	RRU	Ericsson	RRUS 32 WCS				on the existing RRU mount				
AT&T Mobility	162.5	165	3	RRU	Ericsson	RRUS 32 B2				on the existing RRU mount				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face

APPENDIX B

Software Output Files

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 162.50 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 12.25 ft at the top and 36.25 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 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.
Pressures are calculated at each section.
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.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement* ft	*Face Offset* in	*Lateral Offset (Frac FW)*	*#*	*# Per Row*	*Clear Spacing* in	*Width or Diameter* in	*Perimeter* in	*Weight* plf
Feedline Ladder (Af)	A	No	Af (CaAa)	148.00 - 10.00	0.0000	0	1	1	3.0000	3.0000		8.40
1-1/4" Hybrid Cable	A	No	Ar (CaAa)	148.00 - 10.00	0.0000	0.04	3	3	1.2500	1.2500		1.00
LDF4P-50A (1/2 FOAM)	C	No	Ar (CaAa)	65.00 - 10.00	0.0000	-0.45	2	2	0.6300	0.6300		0.15
LDF4P-50A (1/2 FOAM)	C	No	Ar (CaAa)	162.50 - 65.00	0.0000	-0.45	1	1	0.6300	0.6300		0.15
1-1/2" Rigid Conduit	C	No	Ar (CaAa)	162.50 - 10.00	0.0000	-0.44	1	1	1.5000	1.5000		1.00
Feedline Ladder (Af)	C	No	Af (CaAa)	135.00 - 10.00	0.0000	0	1	1	3.0000	3.0000		8.40
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	135.00 - 10.00	0.0000	0.03	6	6	1.9800	1.9800		0.82
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	162.50 - 10.00	0.0000	0.03	2	2	1.0900	1.0900		0.33
Feedline Ladder (Af)	C	No	Af (CaAa)	162.50 - 10.00	-1.0000	0.2	1	1	3.0000	3.0000		8.40
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	162.50 - 10.00	-6.0000	0.2	12	4	1.9800	1.9800		0.82
1/2" Fiber Cable	C	No	Ar (CaAa)	162.50 - 10.00	-5.0000	0.18	2	2	0.6300	0.6300		0.15
7/8" DC Power Cable	C	No	Ar (CaAa)	162.50 - 10.00	-5.0000	0.18	4	2	0.8750	0.8750		0.60
LDF5-50A (7/8 FOAM)	D	No	Ar (CaAa)	162.50 - 10.00	0.0000	0.48	1	1	1.0900	1.0900		0.33
Feedline Ladder (Af)	D	No	Af (CaAa)	124.00 - 10.00	0.0000	0.45	1	1	3.0000	3.0000		8.40
LDF7-50A (1-5/8 FOAM)	D	No	Ar (CaAa)	124.00 - 10.00	0.0000	0.45	18	9	1.9800	1.9800		0.82
1-5/8" Hybrid Cable	D	No	Ar (CaAa)	124.00 - 10.00	0.0000	0.49	1	1	1.9800	1.9800		0.82
3/4" Lighting Cable	C	No	Ar (CaAa)	162.50 - 10.00	0.0000	0.03	1	1	0.7500	0.7500		0.35

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Top Platform w/ Hand Rail	C	None		0.0000	162.50	No Ice	100.20	100.20	11871.000
						1/2" Ice	111.30	111.30	15623.000
						1" Ice	122.40	122.40	19375.000
Flash Beacon Lighting	C	From Leg	0.00	0.0000	162.50	No Ice	2.70	2.70	50.000
			0.00			1/2" Ice	3.10	3.10	70.000
			12.50			1" Ice	3.50	3.50	90.000
W5 x 13' Mount	C	From Leg	0.00	0.0000	162.50	No Ice	5.42	5.42	210.000
			0.00			1/2" Ice	7.00	7.00	280.000
			6.25			1" Ice	8.58	8.58	350.000
15' Dipole	B	From Face	7.00	0.0000	162.50	No Ice	3.00	3.00	40.000
			-3.00			1/2" Ice	4.53	4.53	63.137
			-6.50			1" Ice	6.07	6.07	95.792
10' Dipole	D	From Face	7.00	0.0000	162.50	No Ice	2.00	2.00	20.000
			5.00			1/2" Ice	3.02	3.02	35.501
			7.50			1" Ice	4.07	4.07	57.466
Pipe Mount 14'x2.875"	B	From Face	7.00	0.0000	162.50	No Ice	4.03	4.03	90.000
			-5.00			1/2" Ice	5.46	5.46	119.246
			5.50			1" Ice	6.91	6.91	157.489
2' Standoff - Round (GPD)	B	From Face	6.50	0.0000	162.50	No Ice	1.14	1.62	37.400
			-5.00			1/2" Ice	1.79	2.41	55.340
			9.50			1" Ice	2.44	3.20	73.280
2' Standoff - Round (GPD)	B	From Face	7.50	0.0000	162.50	No Ice	1.14	1.62	37.400
			-5.00			1/2" Ice	1.79	2.41	55.340
			9.50			1" Ice	2.44	3.20	73.280
15' Dipole	B	From Face	7.00	0.0000	162.50	No Ice	3.00	3.00	40.000
			5.00			1/2" Ice	4.53	4.53	63.137
			21.50			1" Ice	6.07	6.07	95.792
Pipe Mount 14'x2.875"	D	From Face	7.00	0.0000	162.50	No Ice	4.03	4.03	90.000
			-5.00			1/2" Ice	5.46	5.46	119.246
			5.50			1" Ice	6.91	6.91	157.489
2' Standoff - Round (GPD)	D	From Face	6.50	0.0000	162.50	No Ice	1.14	1.62	37.400
			-5.00			1/2" Ice	1.79	2.41	55.340
			9.50			1" Ice	2.44	3.20	73.280
2' Standoff - Round (GPD)	D	From Face	7.50	0.0000	162.50	No Ice	1.14	1.62	37.400
			-5.00			1/2" Ice	1.79	2.41	55.340
			9.50			1" Ice	2.44	3.20	73.280
10' Omni	D	From Face	8.00	0.0000	162.50	No Ice	2.00	2.00	25.000
			-5.00			1/2" Ice	3.02	3.02	40.501
			20.50			1" Ice	4.07	4.07	62.466
***									
W8 x 19' Beams	A	From Leg	5.00	13.0000	162.50	No Ice	17.00	1.00	290.000
			0.00			1/2" Ice	19.00	1.50	340.000
			1.00			1" Ice	21.00	2.00	330.000
W8 x 19' Beams	D	From Leg	5.00	-17.0000	162.50	No Ice	17.00	1.00	290.000
			0.00			1/2" Ice	19.00	1.50	340.000
			1.00			1" Ice	21.00	2.00	330.000
RA21.7770.00 w/Mount Pipe	A	From Leg	5.00	13.0000	162.50	No Ice	6.88	5.13	65.550
			0.00			1/2" Ice	7.47	6.25	121.085
			0.50			1" Ice	7.98	7.08	183.814
RA21.7770.00 w/Mount Pipe	D	From Leg	5.00	-17.0000	162.50	No Ice	6.88	5.13	65.550
			0.00			1/2" Ice	7.47	6.25	121.085
			0.50			1" Ice	7.98	7.08	183.814
RA21.7770.00 w/Mount Pipe	C	From Face	7.00	-4.0000	162.50	No Ice	6.88	5.13	65.550
			0.00			1/2" Ice	7.47	6.25	121.085

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.50			1" Ice	7.98	7.08	183.814
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	5.00	78.0000	162.50	No Ice	9.90	8.11	76.550
			9.00			1/2" Ice	10.47	9.30	158.030
			0.50			1" Ice	11.01	10.21	247.793
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	5.00	-32.0000	162.50	No Ice	9.90	8.11	76.550
			-9.00			1/2" Ice	10.47	9.30	158.030
			0.50			1" Ice	11.01	10.21	247.793
HPA-65R-BUU-H6 w/ Mount Pipe	D	From Leg	5.00	-17.0000	162.50	No Ice	9.90	8.11	76.550
			-9.00			1/2" Ice	10.47	9.30	158.030
			0.50			1" Ice	11.01	10.21	247.793
QS66512-2 w/ Mount Pipe	A	From Leg	5.00	13.0000	162.50	No Ice	8.37	8.46	136.550
			0.00			1/2" Ice	8.93	9.66	212.242
			0.50			1" Ice	9.46	10.55	296.075
QS66512-2 w/ Mount Pipe	D	From Leg	5.00	-17.0000	162.50	No Ice	8.37	8.46	136.550
			0.00			1/2" Ice	8.93	9.66	212.242
			0.50			1" Ice	9.46	10.55	296.075
QS66512-2 w/ Mount Pipe	C	From Face	7.00	-4.0000	162.50	No Ice	8.37	8.46	136.550
			0.00			1/2" Ice	8.93	9.66	212.242
			0.50			1" Ice	9.46	10.55	296.075
(3) RRUS 32 WCS	C	None		0.0000	165.00	No Ice	3.31	2.42	77.000
						1/2" Ice	3.56	2.64	104.928
						1" Ice	3.81	2.86	136.466
(3) RRUS 11	C	None		0.0000	165.00	No Ice	2.78	1.19	50.700
						1/2" Ice	2.99	1.33	71.500
						1" Ice	3.21	1.49	95.335
(3) RRUS 32 B2	C	None		0.0000	165.00	No Ice	2.73	1.67	52.900
						1/2" Ice	2.95	1.86	73.957
						1" Ice	3.18	2.05	98.206
(2) LGP21401	A	From Leg	5.00	13.0000	162.50	No Ice	1.10	0.21	14.100
			0.00			1/2" Ice	1.24	0.27	21.263
			0.50			1" Ice	1.38	0.35	30.319
(2) LGP21401	D	From Leg	5.00	-17.0000	162.50	No Ice	1.10	0.21	14.100
			0.00			1/2" Ice	1.24	0.27	21.263
			0.50			1" Ice	1.38	0.35	30.319
(2) LGP21401	C	From Face	7.00	-4.0000	162.50	No Ice	1.10	0.21	14.100
			0.00			1/2" Ice	1.24	0.27	21.263
			0.50			1" Ice	1.38	0.35	30.319
(2) TPC-070821	A	From Leg	5.00	13.0000	162.50	No Ice	0.47	0.10	7.500
			0.00			1/2" Ice	0.56	0.15	10.952
			0.50			1" Ice	0.66	0.20	15.735
(2) TPC-070821	D	From Leg	5.00	-17.0000	162.50	No Ice	0.47	0.10	7.500
			0.00			1/2" Ice	0.56	0.15	10.952
			0.50			1" Ice	0.66	0.20	15.735
(2) TPC-070821	C	From Face	7.00	-4.0000	162.50	No Ice	0.47	0.10	7.500
			0.00			1/2" Ice	0.56	0.15	10.952
			0.50			1" Ice	0.66	0.20	15.735
Smart Bias Tee	A	From Leg	5.00	-17.0000	162.50	No Ice	0.14	0.08	3.300
			0.00			1/2" Ice	0.19	0.12	4.693
			0.50			1" Ice	0.25	0.17	6.947
Smart Bias Tee	D	From Leg	5.00	-4.0000	162.50	No Ice	0.14	0.08	3.300
			0.00			1/2" Ice	0.19	0.12	4.693
			0.50			1" Ice	0.25	0.17	6.947
Smart Bias Tee	C	From Face	7.00	13.0000	162.50	No Ice	0.14	0.08	3.300
			0.00			1/2" Ice	0.19	0.12	4.693
			0.50			1" Ice	0.25	0.17	6.947
(2) DC6-48-60-18-8F Surge Suppression Unit	C	None		0.0000	167.00	No Ice	0.92	0.92	18.900
						1/2" Ice	1.46	1.46	36.615

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1" Ice	1.64	1.64	56.825
***									
Sabre 14' T-Boom (1)	A	From Leg	2.00	-2.0000	148.00	No Ice	25.00	25.00	380.000
			0.00			1/2" Ice	33.12	33.12	556.690
			0.00			1" Ice	41.24	41.24	733.380
Sabre 14' T-Boom (1)	B	From Leg	1.90	18.0000	148.00	No Ice	25.00	25.00	380.000
			0.62			1/2" Ice	33.12	33.12	556.690
			0.00			1" Ice	41.24	41.24	733.380
Sabre 14' T-Boom (1)	C	From Leg	1.41	45.0000	148.00	No Ice	25.00	25.00	380.000
			1.41			1/2" Ice	33.12	33.12	556.690
			0.00			1" Ice	41.24	41.24	733.380
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	-2.0000	148.00	No Ice	8.02	6.71	78.900
			0.00			1/2" Ice	8.48	7.66	144.306
			1.00			1" Ice	8.94	8.49	217.469
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	3.80	18.0000	148.00	No Ice	8.02	6.71	78.900
			1.24			1/2" Ice	8.48	7.66	144.306
			1.00			1" Ice	8.94	8.49	217.469
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	2.82	58.0000	148.00	No Ice	8.02	6.71	78.900
			2.82			1/2" Ice	8.48	7.66	144.306
			1.00			1" Ice	8.94	8.49	217.469
800MHZ 2X50W RRH	A	From Leg	1.00	0.0000	153.00	No Ice	2.13	1.77	53.000
			0.00			1/2" Ice	2.32	1.95	74.187
			0.00			1" Ice	2.51	2.13	98.387
800MHZ 2X50W RRH	B	From Leg	1.00	0.0000	153.00	No Ice	2.13	1.77	53.000
			0.00			1/2" Ice	2.32	1.95	74.187
			0.00			1" Ice	2.51	2.13	98.387
800MHZ 2X50W RRH	C	From Leg	1.00	0.0000	153.00	No Ice	2.13	1.77	53.000
			0.00			1/2" Ice	2.32	1.95	74.187
			0.00			1" Ice	2.51	2.13	98.387
800 External Notch Filter	A	From Leg	1.00	0.0000	153.00	No Ice	0.66	0.32	11.000
			0.00			1/2" Ice	0.76	0.40	16.814
			0.00			1" Ice	0.87	0.48	24.257
800 External Notch Filter	B	From Leg	1.00	0.0000	153.00	No Ice	0.66	0.32	11.000
			0.00			1/2" Ice	0.76	0.40	16.814
			0.00			1" Ice	0.87	0.48	24.257
800 External Notch Filter	C	From Leg	1.00	0.0000	153.00	No Ice	0.66	0.32	11.000
			0.00			1/2" Ice	0.76	0.40	16.814
			0.00			1" Ice	0.87	0.48	24.257
1900MHz 4X40W RRH	A	From Leg	1.00	0.0000	153.00	No Ice	2.32	2.24	59.500
			0.00			1/2" Ice	2.53	2.44	82.622
			0.00			1" Ice	2.74	2.65	108.978
1900MHz 4X40W RRH	B	From Leg	1.00	0.0000	153.00	No Ice	2.32	2.24	59.500
			0.00			1/2" Ice	2.53	2.44	82.622
			0.00			1" Ice	2.74	2.65	108.978
1900MHz 4X40W RRH	C	From Leg	1.00	0.0000	153.00	No Ice	2.32	2.24	59.500
			0.00			1/2" Ice	2.53	2.44	82.622
			0.00			1" Ice	2.74	2.65	108.978
(2) 2.5" x 3.5' Mount Pipe	A	From Leg	0.50	0.0000	153.00	No Ice	0.74	0.74	20.000
			0.00			1/2" Ice	0.96	0.96	26.726
			0.00			1" Ice	1.18	1.18	35.997
(2) 2.5" x 3.5' Mount Pipe	B	From Leg	0.50	0.0000	153.00	No Ice	0.74	0.74	20.000
			0.00			1/2" Ice	0.96	0.96	26.726
			0.00			1" Ice	1.18	1.18	35.997
(2) 2.5" x 3.5' Mount Pipe	C	From Leg	0.50	0.0000	153.00	No Ice	0.74	0.74	20.000
			0.00			1/2" Ice	0.96	0.96	26.726
			0.00			1" Ice	1.18	1.18	35.997
30' x 30' Cross Catwalk w/ Handrails	C	None		0.0000	144.00	No Ice	78.00	78.00	5664.000

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
						1/2" Ice	84.00	84.00	7807.000
						1" Ice	90.00	90.00	9950.000
***									
2' Standoff - Round (GPD)	A	From Leg	1.00	0.0000	135.00	No Ice	1.14	1.62	37.400
			0.00			1/2" Ice	1.79	2.41	55.340
			0.00			1" Ice	2.44	3.20	73.280
2' Standoff - Round (GPD)	B	From Leg	1.00	0.0000	135.00	No Ice	1.14	1.62	37.400
			0.00			1/2" Ice	1.79	2.41	55.340
			0.00			1" Ice	2.44	3.20	73.280
2' Standoff - Round (GPD)	D	From Leg	1.00	0.0000	135.00	No Ice	1.14	1.62	37.400
			0.00			1/2" Ice	1.79	2.41	55.340
			0.00			1" Ice	2.44	3.20	73.280
AIR21 B4A/B2P w/ mount pipe	A	From Leg	2.00	48.0000	135.00	No Ice	6.13	5.54	101.250
			1.00			1/2" Ice	6.52	6.20	156.434
			0.00			1" Ice	6.92	6.87	218.215
AIR21 B4A/B2P w/ mount pipe	B	From Leg	2.00	78.0000	135.00	No Ice	6.13	5.54	101.250
			1.00			1/2" Ice	6.52	6.20	156.434
			0.00			1" Ice	6.92	6.87	218.215
AIR21 B4A/B2P w/ mount pipe	D	From Leg	2.00	18.0000	135.00	No Ice	6.13	5.54	101.250
			1.00			1/2" Ice	6.52	6.20	156.434
			0.00			1" Ice	6.92	6.87	218.215
DBXNH-6565A-A2M w/ mount pipe	A	From Leg	2.00	-72.0000	135.00	No Ice	5.45	4.67	60.255
			-1.00			1/2" Ice	5.80	5.27	110.757
			0.00			1" Ice	6.17	5.88	167.983
DBXNH-6565A-A2M w/ mount pipe	B	From Leg	2.00	-42.0000	135.00	No Ice	5.45	4.67	60.255
			-1.00			1/2" Ice	5.80	5.27	110.757
			0.00			1" Ice	6.17	5.88	167.983
DBXNH-6565A-A2M w/ mount pipe	D	From Leg	2.00	18.0000	135.00	No Ice	5.45	4.67	60.255
			-1.00			1/2" Ice	5.80	5.27	110.757
			0.00			1" Ice	6.17	5.88	167.983
RRUS 11 B2	A	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
RRUS 11 B2	B	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
RRUS 11 B2	D	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
RRUS 11 B12	A	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
RRUS 11 B12	B	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
RRUS 11 B12	D	From Leg	2.00	0.0000	135.00	No Ice	2.83	1.18	50.700
			0.00			1/2" Ice	3.04	1.33	71.570
			0.00			1" Ice	3.26	1.48	95.487
KRY 112 144/1	A	From Leg	2.00	0.0000	135.00	No Ice	0.35	0.17	11.000
			0.00			1/2" Ice	0.43	0.23	14.176
			0.00			1" Ice	0.51	0.30	18.583
KRY 112 144/1	B	From Leg	2.00	0.0000	135.00	No Ice	0.35	0.17	11.000
			0.00			1/2" Ice	0.43	0.23	14.176
			0.00			1" Ice	0.51	0.30	18.583
KRY 112 144/1	D	From Leg	2.00	0.0000	135.00	No Ice	0.35	0.17	11.000
			0.00			1/2" Ice	0.43	0.23	14.176
			0.00			1" Ice	0.51	0.30	18.583

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
***									
Sabre 12' T-Boom (1)	A	From Leg	0.50	8.0000	124.00	No Ice	18.81	10.62	513.500
			0.00			1/2" Ice	24.75	15.16	719.590
			0.00			1" Ice	30.69	19.70	925.680
Sabre 12' T-Boom (1)	C	From Leg	0.50	-2.0000	124.00	No Ice	18.81	10.62	513.500
			0.00			1/2" Ice	24.75	15.16	719.590
			0.00			1" Ice	30.69	19.70	925.680
Sabre 12' T-Boom (1)	D	From Leg	0.50	-12.0000	124.00	No Ice	18.81	10.62	513.500
			0.00			1/2" Ice	24.75	15.16	719.590
			0.00			1" Ice	30.69	19.70	925.680
(2) DB846F65ZAXY w/Mount Pipe	A	From Leg	1.00	8.0000	124.00	No Ice	7.27	7.82	46.550
			0.00			1/2" Ice	7.88	9.01	113.929
			1.00			1" Ice	8.48	9.91	189.249
(2) DB846F65ZAXY w/Mount Pipe	C	From Leg	1.00	-2.0000	124.00	No Ice	7.27	7.82	46.550
			0.00			1/2" Ice	7.88	9.01	113.929
			1.00			1" Ice	8.48	9.91	189.249
(2) DB846F65ZAXY w/Mount Pipe	D	From Leg	1.00	-12.0000	124.00	No Ice	7.27	7.82	46.550
			0.00			1/2" Ice	7.88	9.01	113.929
			1.00			1" Ice	8.48	9.91	189.249
BXA-70063-6CF-EDIN-4 w/ Mount Pipe	A	From Leg	1.00	8.0000	124.00	No Ice	7.81	5.40	42.246
			0.00			1/2" Ice	8.36	6.55	101.122
			1.00			1" Ice	8.87	7.41	167.674
BXA-70063-6CF-EDIN-4 w/ Mount Pipe	C	From Leg	1.00	-2.0000	124.00	No Ice	7.81	5.40	42.246
			0.00			1/2" Ice	8.36	6.55	101.122
			1.00			1" Ice	8.87	7.41	167.674
BXA-70063-6CF-EDIN-4 w/ Mount Pipe	D	From Leg	1.00	-12.0000	124.00	No Ice	7.81	5.40	42.246
			0.00			1/2" Ice	8.36	6.55	101.122
			1.00			1" Ice	8.87	7.41	167.674
BXA-171063/8CF w/Mount Pipe	A	From Leg	1.00	8.0000	124.00	No Ice	3.14	3.51	28.902
			0.00			1/2" Ice	3.52	4.13	61.615
			1.00			1" Ice	3.89	4.76	99.831
BXA-171063/8CF w/Mount Pipe	C	From Leg	1.00	-2.0000	124.00	No Ice	3.14	3.51	28.902
			0.00			1/2" Ice	3.52	4.13	61.615
			1.00			1" Ice	3.89	4.76	99.831
BXA-171063/8CF w/Mount Pipe	D	From Leg	1.00	-12.0000	124.00	No Ice	3.14	3.51	28.902
			0.00			1/2" Ice	3.52	4.13	61.615
			1.00			1" Ice	3.89	4.76	99.831
BXA-185085/12CF w/ Mount Pipe	A	From Leg	1.00	8.0000	124.00	No Ice	4.77	5.36	47.740
			0.00			1/2" Ice	5.22	6.17	93.913
			1.00			1" Ice	5.68	6.98	148.113
BXA-185063/12CF w/ mount pipe	C	From Leg	1.00	-2.0000	124.00	No Ice	5.00	5.30	40.550
			0.00			1/2" Ice	5.55	6.47	86.486
			1.00			1" Ice	6.07	7.35	139.852
BXA-185063/12CF w/ mount pipe	D	From Leg	1.00	-12.0000	124.00	No Ice	5.00	5.30	40.550
			0.00			1/2" Ice	5.55	6.47	86.486
			1.00			1" Ice	6.07	7.35	139.852
RRH2x40-AWS	A	From Leg	1.00	8.0000	124.00	No Ice	2.16	1.42	43.000
			0.00			1/2" Ice	2.36	1.59	60.396
			1.00			1" Ice	2.57	1.77	80.692
RRH2x40-AWS	C	From Leg	1.00	-2.0000	124.00	No Ice	2.16	1.42	43.000
			0.00			1/2" Ice	2.36	1.59	60.396
			1.00			1" Ice	2.57	1.77	80.692
RRH2x40-AWS	D	From Leg	1.00	-12.0000	124.00	No Ice	2.16	1.42	43.000
			0.00			1/2" Ice	2.36	1.59	60.396
			1.00			1" Ice	2.57	1.77	80.692
RRFDC-1064-PF-48	A	From Leg	1.00	8.0000	124.00	No Ice	1.35	1.08	14.000
			0.00			1/2" Ice	1.50	1.22	27.282

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			1.00			1" Ice	1.65	1.37	42.979
RRFDC-1064-PF-48	C	From Leg	1.00	-2.0000	124.00	No Ice	1.35	1.08	14.000
			0.00			1/2" Ice	1.50	1.22	27.282
			1.00			1" Ice	1.65	1.37	42.979
RRFDC-1064-PF-48	D	From Leg	1.00	-12.0000	124.00	No Ice	1.35	1.08	14.000
			0.00			1/2" Ice	1.50	1.22	27.282
			1.00			1" Ice	1.65	1.37	42.979
RRFDC-3315-PF-48	A	From Leg	1.00	8.0000	124.00	No Ice	3.71	2.19	21.400
			0.00			1/2" Ice	3.95	2.39	51.861
			1.00			1" Ice	4.20	2.61	85.968
***									
4.25' x 7' Catwalk	B	From Face	0.00	0.0000	112.50	No Ice	11.50	8.90	750.000
			0.00			1/2" Ice	13.40	10.50	1000.000
			0.00			1" Ice	15.30	12.10	1250.000
23' x 3' Catwalk	A	From Face	0.00	0.0000	87.50	No Ice	31.40	12.80	1784.000
			0.00			1/2" Ice	36.80	15.70	2514.000
			0.00			1" Ice	42.20	18.60	3244.000
23' x 3' Catwalk	B	From Face	0.00	0.0000	87.50	No Ice	31.40	12.80	1784.000
			0.00			1/2" Ice	36.80	15.70	2514.000
			0.00			1" Ice	42.20	18.60	3244.000
GPS-TMG-HR-26N	B	From Leg	0.50	0.0000	65.00	No Ice	0.13	0.13	0.600
			0.00			1/2" Ice	0.18	0.18	2.371
			0.00			1" Ice	0.24	0.24	5.075
13' x 4.25' Catwalk	B	From Face	0.00	0.0000	62.50	No Ice	18.85	7.00	1250.000
			0.00			1/2" Ice	26.00	8.00	1750.000
			0.00			1" Ice	33.15	9.00	2250.000
13' x 4.25' Catwalk	B	From Face	0.00	0.0000	25.00	No Ice	18.85	7.00	1250.000
			0.00			1/2" Ice	26.00	8.00	1750.000
			0.00			1" Ice	33.15	9.00	2250.000
Side Light	A	From Leg	1.00	0.0000	92.00	No Ice	0.33	0.33	7.000
			0.00			1/2" Ice	0.47	0.47	7.050
			0.00			1" Ice	0.60	0.60	7.100
Side Light	D	From Leg	1.00	0.0000	92.00	No Ice	0.33	0.33	7.000
			0.00			1/2" Ice	0.47	0.47	7.050
			0.00			1" Ice	0.60	0.60	7.100

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36	29000	11200	.295	.65	.49	36	1.5	58	1.2

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]
1	A36_Gen_Mod1	29000	11153.846	.3	.65	.994

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TWR_LEG_T1	L6x6x1/2	Column	Single Angle	A36	Typical	5.75	19.9	19.9	.501
2	TWR_TOP_GIRT_T1	MC18x58_HRA	Beam	Channel	A36	Typical	17.1	17.8	676	2.81
3	TWR_DIAG_T1	L 3-1/2x3-1/2x1/4	Column	Single Angle	A36	Typical	1.688	2.01	2.01	.035
4	TWR_STEP_T1	L3x2-1/2x1/4	Beam	Single Angle	A36	Typical	1.313	.743	1.173	.027
5	TWR_RED_VERT_T1	L2.5x2.5x3	Beam	Single Angle	A36	Typical	.901	.535	.535	.011
6	TWR_LEG_T2	L6x6x1/2	Column	Single Angle	A36	Typical	5.75	19.9	19.9	.501
7	TWR_TOP_GIRT_T2	2L3-1/2x3x5/16x3/8	Beam	None	A36	Typical	3.87	6.995	4.66	.126
8	TWR_DIAG_T2	L3-1/2x3x1/4	Column	Single Angle	A36	Typical	1.563	1.304	1.913	.033
9	TWR_STEP_T2	C6x8.2	Beam	Channel	A36	Typical	2.39	.687	13.1	.074
10	TWR_RED_VERT_T2	L2.5x2.5x3	Beam	Channel	A36	Typical	.901	.535	.535	.011
11	TWR_LEG_T3	L6x6x5/8	Column	Single Angle	A36	Typical	7.109	24.158	24.158	.926
12	TWR_TOP_GIRT_T3	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
13	TWR_INNER_SUPP...	2L2-1/2x2x3/16x3/8	Beam	None	A36	Typical	1.64	1.374	1.017	.019
14	TWR_DIAG_T3	L4x3x1/4	Column	Single Angle	A36	Typical	1.688	1.355	2.769	.035
15	TWR_STEP_T3	L3x2-1/2x1/4	Beam	Single Angle	A36	Typical	1.313	.743	1.173	.027
16	TWR_RED_VERT_T3	L2.5x2.5x3	Beam	Single Angle	A36	Typical	.901	.535	.535	.011
17	TWR_INNER_SQ_T3	L3x2.5x4	Beam	Single Angle	A36	Typical	1.32	.734	1.16	.03
18	TWR_INNER_COR...	L2.5x2.5x3	Beam	Single Angle	A36	Typical	.901	.535	.535	.011
19	TWR_INNER_TRI_T3	L2X2.5X3	Beam	Single Angle	A36	Typical	.809	.509	.291	.009
20	TWR_INNER_LADD...	L2X2.5X3	Beam	Single Angle	A36	Typical	.809	.509	.291	.009
21	TWR_LEG_T4	L6x6x5/8	Column	Single Angle	A36	Typical	7.109	24.158	24.158	.926
22	TWR_DIAG_T4mods	L4x3x1/4	Column	Single Angle	A36	Typical	1.688	1.355	2.769	.035
23	TWR_TOP_GIRT_T4	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
24	TWR_RED_VERT_T4	L2.5x2.5x3	Beam	None	A36	Typical	.901	.535	.535	.011
25	TWR_STEP_T4	L3x2-1/2x1/4	Beam	Single Angle	A36	Typical	1.313	.743	1.173	.027
26	TWR_LEG_T5	L6x6x3/4	Column	Single Angle	A36	Typical	8.44	28.2	28.2	1.61
27	TWR_HORZ_T5	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
28	TWR_DIAG_T5	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
29	TWR_RED_HORZ_T5	L2-1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.009
30	TWR_RED_DIAG_T5	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
31	TWR_INNER_SUPP...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
32	TWR_INNER_SQ_T5	LL2.5x2x3x3	Beam	None	A36	Typical	1.64	1.38	1.02	.021
33	TWR_INNER_COR...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
34	TWR_INNER_TRI_T5	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
35	TWR_INNER_LADD...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
36	TWR_LEG_T6	L6x6x3/4	Column	Single Angle	A36	Typical	8.44	28.2	28.2	1.61
37	TWR_HORZ_T6	2L2-1/2x2-1/2x1/4x...	Beam	None	A36	Typical	2.38	3.347	1.41	.049
38	TWR_DIAG_T6	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
39	TWR_RED_HORZ_T6	L2-1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.009
40	TWR_RED_DIAG_T6	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
41	TWR_INNER_SUPP...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
42	TWR_INNER_SQ_T6	LL2.5x2x3x3	Beam	None	A36	Typical	1.64	1.38	1.02	.021
43	TWR_INNER_COR...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
44	TWR_INNER_TRI_T6	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
45	TWR_INNER_LADD...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
46	TWR_LEG_T7	L6x6x7/8	Column	Single Angle	A36	Typical	9.734	31.917	31.917	2.484
47	TWR_HORZ_T7	2L2-1/2x2-1/2x1/4x...	Beam	None	A36	Typical	2.38	3.347	1.41	.049
48	TWR_DIAG_T7	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
49	TWR_RED_HORZ_T7	L2-1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.009
50	TWR_RED_DIAG_T7	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
51	TWR_INNER_SUPP...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
52	TWR_INNER_SQ_T7	LL2.5x2x3x3	Beam	None	A36	Typical	1.64	1.38	1.02	.021
53	TWR_INNER_COR...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
54	TWR_INNER_BRAC...	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026
55	TWR_INNER_GIRT...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
56	TWR_INNER_TRI_T7	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
57	TWR_INNER_LADD...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
58	TWR_LEG_T8	L6x6x7/8	Column	Single Angle	A36	Typical	9.734	31.917	31.917	2.484
59	TWR_HORZ_T8	2L2-1/2x2-1/2x1/4x...	Beam	None	A36	Typical	2.38	3.347	1.41	.049
60	TWR_DIAG_T8	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
61	TWR_RED_HORZ_T8	L2-1/2x2x3/16	Beam	Single Angle	A36	Typical	.809	.291	.509	.009
62	TWR_RED_DIAG_T8	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
63	TWR_INNER_SUPP...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
64	TWR_INNER_SQ_T8	LL2.5x2x3x3	Beam	None	A36	Typical	1.64	1.38	1.02	.021
65	TWR_INNER_COR...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
66	TWR_INNER_TRI_T8	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
67	TWR_INNER_LADD...	L2X2.5X3	Beam	None	A36	Typical	.809	.509	.291	.009
68	TWR_LEG_T9	L8x8x3/4	Column	Single Angle	A36	Typical	11.4	69.7	69.7	2.21
69	TWR_HORZ_T9	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
70	TWR_DIAG_T9	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
71	TWR_RED_HORZ_T9	L2-1/2x2-1/2x1/4	Beam	Single Angle	A36	Typical	1.188	.703	.703	.025
72	TWR_RED_DIAG_T9	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
73	TWR_INNER_SUPP...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
74	TWR_INNER_SQ_T9	LL2.5x2x3x3	Beam	None	A36	Typical	1.64	1.38	1.02	.021
75	TWR_INNER_COR...	L3x3x4	Beam	None	A36	Typical	1.44	1.23	1.23	.031
76	TWR_INNER_BRAC...	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026
77	TWR_INNER_TRI_T9	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026
78	TWR_INNER_LADD...	2L2-1/2x2-1/2x3/16...	Beam	None	A36	Typical	1.8	2.499	1.09	.021
79	TWR_LEG_T10	L8x8x7/8	Column	Single Angle	A36	Typical	13.234	79.581	79.581	3.378
80	TWR_HORZ_T10	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
81	TWR_DIAG_T10	2L3x3x3/8x3/8	Column	None	A36	Typical	4.22	8.394	3.52	.198
82	TWR_RED_HORZ_...	L2-1/2x2x3/16	Beam	None	A36	Typical	.809	.291	.509	.009
83	TWR_RED_HORZ_...	2L2-1/2x2-1/2x1/4x...	Beam	None	A36	Typical	2.38	3.347	1.41	.049
84	TWR_RED_DIAG_T...	L2-1/2x2-1/2x3/16	Column	Single Angle	A36	Typical	.902	.547	.547	.011
85	TWR_RED_DIAG_2...	L3x3-1/2x1/4	Column	Single Angle	A36	Typical	1.563	1.913	1.304	.033
86	TWR_RED_HIP_2_...	L4x4x3/8	Beam	Single Angle	A36	Typical	2.86	4.36	4.36	.141
87	TWR_RED_HIPDIA_...	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
88	TWR_INNER_SUPP...	L3x3x1/4	Beam	Single Angle	A36	Typical	1.44	1.24	1.24	.032
89	TWR_INNER_SQ_T...	2L3x2-1/2x1/4x3/8	Beam	Single Angle	A36	Typical	2.63	3.373	2.35	.055
90	TWR_INNER_COR...	L3x3x1/4	Beam	Single Angle	A36	Typical	1.44	1.24	1.24	.032
91	TWR_INNER_BRAC...	L2.5x2.5x3	Beam	Single Angle	A36	Typical	.901	.535	.535	.011
92	TWR_INNER_TRI_T...	L2.5x2.5x3	Beam	Single Angle	A36	Typical	.901	.535	.535	.011
93	TWR_INNER_LADD...	L4x4x6	Beam	Single Angle	A36	Typical	2.86	4.32	4.32	.141
94	TWR_LEG_T11	L8X8X1_HRA	Column	Single Angle	A36	Typical	15	89	89	5.08
95	TWR_HORZ_T11	2L3x3x3/8x3/8	Beam	None	A36	Typical	4.22	8.394	3.52	.198
96	TWR_DIAG_T11	2L3x3-1/2x3/8x3/8	Column	None	A36	Typical	4.59	12.838	3.69	.215
97	TWR_RED_HORZ_...	L2-1/2x2-1/2x3/16	Beam	None	A36	Typical	.902	.547	.547	.011
98	TWR_RED_HORZ_...	2L2-1/2x2-1/2x1/4x...	Beam	None	A36	Typical	2.38	3.347	1.41	.049
99	TWR_RED_DIAG_T...	L2-1/2x2-1/2x3/16	Column	None	A36	Typical	.902	.547	.547	.011
100	TWR_RED_DIAG_2...	2L2-1/2x2x1/4x3/8	Column	None	A36	Typical	2.13	1.858	1.31	.044
101	TWR_RED_SUBHO...	2L2-1/2x3-1/2x1/4x...	Beam	None	A36	Typical	2.88	8.466	1.55	.06
102	TWR_RED_BRACE...	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
103	TWR_RED_VERT_T...	L3x3x1/4	Beam	None	A36	Typical	1.44	1.24	1.24	.032
104	TWR_RED_HIP_2_...	L4x4x3/8	Beam	Single Angle	A36	Typical	2.86	4.36	4.36	.141
105	TWR_RED_HIPDIA_...	2L2-1/2x2-1/2x1/4x...	Column	None	A36	Typical	2.38	3.347	1.41	.049
106	TWR_RED_HIPBRA...	L2x2x3	Column	None	A36	Typical	.722	.271	.271	.009
107	TWR_INNER_SUPP...	2L3x2-1/2x1/4x3/8	Beam	None	A36	Typical	2.63	3.373	2.35	.055
108	TWR_INNER_SQ_T...	LL2.5x2.5x4x3	Beam	None	A36	Typical	2.38	3.31	1.38	.052
109	TWR_INNER_COR...	L3.5x3.5x5	Beam	None	A36	Typical	2.1	2.44	2.44	.073
110	TWR_INNER_BRAC...	L2.5x2.5x3	Beam	None	A36	Typical	.901	.535	.535	.011
111	TWR_INNER_TRI_T...	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026
112	TWR_INNER_LADD...	L2.5x2.5x4	Beam	None	A36	Typical	1.19	.692	.692	.026

General Section Sets

	Label	Shape	Type	Material	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TWR_DIAG_T4	L3x4x1/4 w/ L2x3x3/8 (r Only) (G	Column	A36_Gen...	1.688	4.477	3.145	10

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
1	M9	N2	N3		84.18	TWR_DIAG_T1	Column	Single Angle	A36	Typical
2	M10	N4	N1		95.82	TWR_DIAG_T1	Column	Single Angle	A36	Typical
3	M11	N4	N5		84.18	TWR_DIAG_T1	Column	Single Angle	A36	Typical
4	M12	N6	N3		95.82	TWR_DIAG_T1	Column	Single Angle	A36	Typical
5	M13	N6	N7		84.18	TWR_DIAG_T1	Column	Single Angle	A36	Typical
6	M14	N8	N5		95.82	TWR_DIAG_T1	Column	Single Angle	A36	Typical
7	M15	N8	N1		84.18	TWR_DIAG_T1	Column	Single Angle	A36	Typical
8	M16	N2	N7		95.82	TWR_DIAG_T1	Column	Single Angle	A36	Typical
9	M29	N17	N4		84.506	TWR_DIAG_T2	Column	Single Angle	A36	Typical
10	M30	N18	N2		95.494	TWR_DIAG_T2	Column	Single Angle	A36	Typical
11	M31	N18	N6		84.506	TWR_DIAG_T2	Column	Single Angle	A36	Typical
12	M32	N19	N4		95.494	TWR_DIAG_T2	Column	Single Angle	A36	Typical
13	M33	N19	N8		84.506	TWR_DIAG_T2	Column	Single Angle	A36	Typical
14	M34	N20	N6		95.494	TWR_DIAG_T2	Column	Single Angle	A36	Typical
15	M35	N20	N2		84.506	TWR_DIAG_T2	Column	Single Angle	A36	Typical
16	M36	N17	N8		95.494	TWR_DIAG_T2	Column	Single Angle	A36	Typical
17	M54	N29	N18		84.743	TWR_DIAG_T3	Column	Single Angle	A36	Typical
18	M55	N30	N17		95.257	TWR_DIAG_T3	Column	Single Angle	A36	Typical
19	M56	N30	N19		84.743	TWR_DIAG_T3	Column	Single Angle	A36	Typical
20	M57	N31	N18		95.257	TWR_DIAG_T3	Column	Single Angle	A36	Typical
21	M58	N31	N20		84.743	TWR_DIAG_T3	Column	Single Angle	A36	Typical
22	M59	N32	N19		95.257	TWR_DIAG_T3	Column	Single Angle	A36	Typical
23	M60	N32	N17		84.743	TWR_DIAG_T3	Column	Single Angle	A36	Typical
24	M61	N29	N20		95.257	TWR_DIAG_T3	Column	Single Angle	A36	Typical
25	M74	N45	N30		354.921	TWR_DIAG_T4	Column	None	A36_G...	DR1
26	M75	N46	N29		5.079	TWR_DIAG_T4	Column	None	A36_G...	DR1
27	M76	N46	N31		354.921	TWR_DIAG_T4	Column	None	A36_G...	DR1
28	M77	N47	N30		5.079	TWR_DIAG_T4	Column	None	A36_G...	DR1
29	M78	N47	N32		354.921	TWR_DIAG_T4	Column	None	A36_G...	DR1
30	M79	N48	N31		5.079	TWR_DIAG_T4	Column	None	A36_G...	DR1
31	M80	N48	N29		354.921	TWR_DIAG_T4	Column	None	A36_G...	DR1
32	M81	N45	N32		5.079	TWR_DIAG_T4	Column	None	A36_G...	DR1
33	M91	N57	N61		353.525	TWR_DIAG_T5	Column	None	A36	Typical
34	M94	N58	N61		6.475	TWR_DIAG_T5	Column	None	A36	Typical
35	M98	N58	N66		353.525	TWR_DIAG_T5	Column	None	A36	Typical
36	M101	N59	N66		6.475	TWR_DIAG_T5	Column	None	A36	Typical
37	M105	N59	N70		353.525	TWR_DIAG_T5	Column	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
38	M108	N60	N70		6.475	TWR_DIAG_T5	Column	None	A36	Typical
39	M112	N60	N74		353.525	TWR_DIAG_T5	Column	None	A36	Typical
40	M115	N57	N74		6.475	TWR_DIAG_T5	Column	None	A36	Typical
41	M128	N77	N81		353.813	TWR_DIAG_T6	Column	None	A36	Typical
42	M131	N78	N81		6.187	TWR_DIAG_T6	Column	None	A36	Typical
43	M135	N78	N86		353.813	TWR_DIAG_T6	Column	None	A36	Typical
44	M138	N79	N86		6.187	TWR_DIAG_T6	Column	None	A36	Typical
45	M142	N79	N90		353.813	TWR_DIAG_T6	Column	None	A36	Typical
46	M145	N80	N90		6.187	TWR_DIAG_T6	Column	None	A36	Typical
47	M149	N80	N94		353.813	TWR_DIAG_T6	Column	None	A36	Typical
48	M152	N77	N94		6.187	TWR_DIAG_T6	Column	None	A36	Typical
49	M165	N97	N101		354.05	TWR_DIAG_T7	Column	None	A36	Typical
50	M168	N98	N101		5.95	TWR_DIAG_T7	Column	None	A36	Typical
51	M172	N98	N106		354.05	TWR_DIAG_T7	Column	None	A36	Typical
52	M175	N99	N106		5.95	TWR_DIAG_T7	Column	None	A36	Typical
53	M179	N99	N110		354.05	TWR_DIAG_T7	Column	None	A36	Typical
54	M182	N100	N110		5.95	TWR_DIAG_T7	Column	None	A36	Typical
55	M186	N100	N114		354.05	TWR_DIAG_T7	Column	None	A36	Typical
56	M189	N97	N114		5.95	TWR_DIAG_T7	Column	None	A36	Typical
57	M202	N117	N121		354.248	TWR_DIAG_T8	Column	None	A36	Typical
58	M205	N118	N121		5.752	TWR_DIAG_T8	Column	None	A36	Typical
59	M209	N118	N126		354.248	TWR_DIAG_T8	Column	None	A36	Typical
60	M212	N119	N126		5.752	TWR_DIAG_T8	Column	None	A36	Typical
61	M216	N119	N130		354.248	TWR_DIAG_T8	Column	None	A36	Typical
62	M219	N120	N130		5.752	TWR_DIAG_T8	Column	None	A36	Typical
63	M223	N120	N134		354.248	TWR_DIAG_T8	Column	None	A36	Typical
64	M226	N117	N134		5.752	TWR_DIAG_T8	Column	None	A36	Typical
65	M239	N137	N141		354.414	TWR_DIAG_T9	Column	None	A36	Typical
66	M242	N138	N141		5.586	TWR_DIAG_T9	Column	None	A36	Typical
67	M246	N138	N146		354.414	TWR_DIAG_T9	Column	None	A36	Typical
68	M249	N139	N146		5.586	TWR_DIAG_T9	Column	None	A36	Typical
69	M253	N139	N150		354.414	TWR_DIAG_T9	Column	None	A36	Typical
70	M256	N140	N150		5.586	TWR_DIAG_T9	Column	None	A36	Typical
71	M260	N140	N154		354.414	TWR_DIAG_T9	Column	None	A36	Typical
72	M263	N137	N154		5.586	TWR_DIAG_T9	Column	None	A36	Typical
73	M276	N157	N161		352.278	TWR_DIAG_T10	Column	None	A36	Typical
74	M281	N158	N161		7.722	TWR_DIAG_T10	Column	None	A36	Typical
75	M287	N158	N170		352.278	TWR_DIAG_T10	Column	None	A36	Typical
76	M292	N159	N170		7.722	TWR_DIAG_T10	Column	None	A36	Typical
77	M300	N159	N177		352.278	TWR_DIAG_T10	Column	None	A36	Typical
78	M305	N160	N177		7.722	TWR_DIAG_T10	Column	None	A36	Typical
79	M313	N160	N184		352.278	TWR_DIAG_T10	Column	None	A36	Typical
80	M318	N157	N184		7.722	TWR_DIAG_T10	Column	None	A36	Typical
81	M337	N189	N193		352.817	TWR_DIAG_T11	Column	None	A36	Typical
82	M342	N190	N193		7.183	TWR_DIAG_T11	Column	None	A36	Typical
83	M349	N190	N202		352.817	TWR_DIAG_T11	Column	None	A36	Typical
84	M354	N191	N202		7.183	TWR_DIAG_T11	Column	None	A36	Typical
85	M363	N191	N209		352.817	TWR_DIAG_T11	Column	None	A36	Typical
86	M368	N192	N209		7.183	TWR_DIAG_T11	Column	None	A36	Typical
87	M377	N192	N216		352.817	TWR_DIAG_T11	Column	None	A36	Typical
88	M382	N189	N216		7.183	TWR_DIAG_T11	Column	None	A36	Typical
89	M90	N45	N46		355.777	TWR_HORZ_T5	Beam	None	A36	Typical
90	M97	N46	N47		355.777	TWR_HORZ_T5	Beam	None	A36	Typical
91	M104	N47	N48		355.777	TWR_HORZ_T5	Beam	None	A36	Typical
92	M111	N48	N45		355.777	TWR_HORZ_T5	Beam	None	A36	Typical
93	M127	N57	N58		355.777	TWR_HORZ_T6	Beam	None	A36	Typical
94	M134	N58	N59		355.777	TWR_HORZ_T6	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
95	M141	N59	N60		355.777	TWR_HORZ_T6	Beam	None	A36	Typical
96	M148	N60	N57		355.777	TWR_HORZ_T6	Beam	None	A36	Typical
97	M164	N77	N78		355.777	TWR_HORZ_T7	Beam	None	A36	Typical
98	M171	N78	N79		355.777	TWR_HORZ_T7	Beam	None	A36	Typical
99	M178	N79	N80		355.777	TWR_HORZ_T7	Beam	None	A36	Typical
100	M185	N80	N77		355.777	TWR_HORZ_T7	Beam	None	A36	Typical
101	M201	N97	N98		355.777	TWR_HORZ_T8	Beam	None	A36	Typical
102	M208	N98	N99		355.777	TWR_HORZ_T8	Beam	None	A36	Typical
103	M215	N99	N100		355.777	TWR_HORZ_T8	Beam	None	A36	Typical
104	M222	N100	N97		355.777	TWR_HORZ_T8	Beam	None	A36	Typical
105	M238	N117	N118		355.777	TWR_HORZ_T9	Beam	None	A36	Typical
106	M245	N118	N119		355.777	TWR_HORZ_T9	Beam	None	A36	Typical
107	M252	N119	N120		355.777	TWR_HORZ_T9	Beam	None	A36	Typical
108	M259	N120	N117		355.777	TWR_HORZ_T9	Beam	None	A36	Typical
109	M275	N137	N138		355.777	TWR_HORZ_T10	Beam	None	A36	Typical
110	M286	N138	N139		355.777	TWR_HORZ_T10	Beam	None	A36	Typical
111	M299	N139	N140		355.777	TWR_HORZ_T10	Beam	None	A36	Typical
112	M312	N140	N137		355.777	TWR_HORZ_T10	Beam	None	A36	Typical
113	M336	N157	N158		355.777	TWR_HORZ_T11	Beam	None	A36	Typical
114	M348	N158	N159		355.777	TWR_HORZ_T11	Beam	None	A36	Typical
115	M362	N159	N160		355.777	TWR_HORZ_T11	Beam	None	A36	Typical
116	M376	N160	N157		355.777	TWR_HORZ_T11	Beam	None	A36	Typical
117	M490	N110	N295			TWR_INNER_BRACE_T7	Beam	None	A36	Typical
118	M491	N114	N296			TWR_INNER_BRACE_T7	Beam	None	A36	Typical
119	M466	N141	N279			TWR_INNER_BRACE_T9	Beam	None	A36	Typical
120	M467	N154	N280			TWR_INNER_BRACE_T9	Beam	None	A36	Typical
121	M468	N146	N281			TWR_INNER_BRACE_T9	Beam	None	A36	Typical
122	M469	N150	N282			TWR_INNER_BRACE_T9	Beam	None	A36	Typical
123	M452	N161	N269			TWR_INNER_BRACE_T10	Beam	Single Angle	A36	Typical
124	M453	N170	N270			TWR_INNER_BRACE_T10	Beam	Single Angle	A36	Typical
125	M454	N177	N271			TWR_INNER_BRACE_T10	Beam	Single Angle	A36	Typical
126	M455	N184	N272			TWR_INNER_BRACE_T10	Beam	Single Angle	A36	Typical
127	M420	N193	N245			TWR_INNER_BRACE_T11	Beam	None	A36	Typical
128	M421	N202	N246			TWR_INNER_BRACE_T11	Beam	None	A36	Typical
129	M422	N209	N247			TWR_INNER_BRACE_T11	Beam	None	A36	Typical
130	M423	N216	N248			TWR_INNER_BRACE_T11	Beam	None	A36	Typical
131	M530	N18	N318			TWR_INNER_CORNER_T3	Beam	Single Angle	A36	Typical
132	M531	N17	N321			TWR_INNER_CORNER_T3	Beam	Single Angle	A36	Typical
133	M532	N20	N320			TWR_INNER_CORNER_T3	Beam	Single Angle	A36	Typical
134	M512	N308	N46			TWR_INNER_CORNER_T5	Beam	None	A36	Typical
135	M513	N45	N311			TWR_INNER_CORNER_T5	Beam	None	A36	Typical
136	M514	N310	N48			TWR_INNER_CORNER_T5	Beam	None	A36	Typical
137	M502	N58	N302			TWR_INNER_CORNER_T6	Beam	None	A36	Typical
138	M503	N57	N305			TWR_INNER_CORNER_T6	Beam	None	A36	Typical
139	M504	N60	N304			TWR_INNER_CORNER_T6	Beam	None	A36	Typical
140	M487	N78	N294			TWR_INNER_CORNER_T7	Beam	None	A36	Typical
141	M488	N77	N293			TWR_INNER_CORNER_T7	Beam	None	A36	Typical
142	M489	N292	N80			TWR_INNER_CORNER_T7	Beam	None	A36	Typical
143	M477	N98	N285			TWR_INNER_CORNER_T8	Beam	None	A36	Typical
144	M478	N97	N288			TWR_INNER_CORNER_T8	Beam	None	A36	Typical
145	M479	N287	N100			TWR_INNER_CORNER_T8	Beam	None	A36	Typical
146	M463	N117	N278			TWR_INNER_CORNER_T9	Beam	None	A36	Typical
147	M464	N118	N275			TWR_INNER_CORNER_T9	Beam	None	A36	Typical
148	M465	N277	N120			TWR_INNER_CORNER_T9	Beam	None	A36	Typical
149	M449	N138	N265			TWR_INNER_CORNER_T10	Beam	Single Angle	A36	Typical
150	M450	N137	N266			TWR_INNER_CORNER_T10	Beam	Single Angle	A36	Typical
151	M451	N140	N267			TWR_INNER_CORNER_T10	Beam	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
152	M417	N158	N241			TWR_INNER_CORNER_T11	Beam	None	A36	Typical
153	M418	N157	N242			TWR_INNER_CORNER_T11	Beam	None	A36	Typical
154	M419	N160	N243			TWR_INNER_CORNER_T11	Beam	None	A36	Typical
155	M492	N293	N297			TWR_INNER_GIRT_T7	Beam	None	A36	Typical
156	M493	N298	N292			TWR_INNER_GIRT_T7	Beam	None	A36	Typical
157	M494	N292	N299			TWR_INNER_GIRT_T7	Beam	None	A36	Typical
158	M535	N322	N323			TWR_INNER_LADDER_T3	Beam	Single Angle	A36	Typical
159	M517	N312	N313			TWR_INNER_LADDER_T5	Beam	None	A36	Typical
160	M507	N306	N307			TWR_INNER_LADDER_T6	Beam	None	A36	Typical
161	M497	N301	N300			TWR_INNER_LADDER_T7	Beam	None	A36	Typical
162	M482	N289	N290			TWR_INNER_LADDER_T8	Beam	None	A36	Typical
163	M472	N283	N284			TWR_INNER_LADDER_T9	Beam	None	A36	Typical
164	M458	N273	N274			TWR_INNER_LADDER_T10	Beam	Single Angle	A36	Typical
165	M426	N249	N250			TWR_INNER_LADDER_T11	Beam	None	A36	Typical
166	M526	N318	N319			TWR_INNER_SQ_T3	Beam	Single Angle	A36	Typical
167	M527	N319	N320			TWR_INNER_SQ_T3	Beam	Single Angle	A36	Typical
168	M528	N320	N321			TWR_INNER_SQ_T3	Beam	Single Angle	A36	Typical
169	M529	N321	N318			TWR_INNER_SQ_T3	Beam	Single Angle	A36	Typical
170	M508	N308	N309		90	TWR_INNER_SQ_T5	Beam	None	A36	Typical
171	M509	N309	N310		90	TWR_INNER_SQ_T5	Beam	None	A36	Typical
172	M510	N310	N311		90	TWR_INNER_SQ_T5	Beam	None	A36	Typical
173	M511	N311	N308		90	TWR_INNER_SQ_T5	Beam	None	A36	Typical
174	M498	N302	N303		90	TWR_INNER_SQ_T6	Beam	None	A36	Typical
175	M499	N303	N304		90	TWR_INNER_SQ_T6	Beam	None	A36	Typical
176	M500	N304	N305		90	TWR_INNER_SQ_T6	Beam	None	A36	Typical
177	M501	N305	N302		90	TWR_INNER_SQ_T6	Beam	None	A36	Typical
178	M483	N291	N292		90	TWR_INNER_SQ_T7	Beam	None	A36	Typical
179	M484	N292	N293		90	TWR_INNER_SQ_T7	Beam	None	A36	Typical
180	M485	N293	N294		90	TWR_INNER_SQ_T7	Beam	None	A36	Typical
181	M486	N294	N291		90	TWR_INNER_SQ_T7	Beam	None	A36	Typical
182	M473	N285	N286		90	TWR_INNER_SQ_T8	Beam	None	A36	Typical
183	M474	N286	N287		90	TWR_INNER_SQ_T8	Beam	None	A36	Typical
184	M475	N287	N288		90	TWR_INNER_SQ_T8	Beam	None	A36	Typical
185	M476	N288	N285		90	TWR_INNER_SQ_T8	Beam	None	A36	Typical
186	M459	N275	N276		90	TWR_INNER_SQ_T9	Beam	None	A36	Typical
187	M460	N276	N277		90	TWR_INNER_SQ_T9	Beam	None	A36	Typical
188	M461	N277	N278		90	TWR_INNER_SQ_T9	Beam	None	A36	Typical
189	M462	N278	N275		90	TWR_INNER_SQ_T9	Beam	None	A36	Typical
190	M441	N265	N266		90	TWR_INNER_SQ_T10	Beam	Single Angle	A36	Typical
191	M442	N266	N267		90	TWR_INNER_SQ_T10	Beam	Single Angle	A36	Typical
192	M443	N267	N268		90	TWR_INNER_SQ_T10	Beam	Single Angle	A36	Typical
193	M444	N268	N265		90	TWR_INNER_SQ_T10	Beam	Single Angle	A36	Typical
194	M409	N241	N242		90	TWR_INNER_SQ_T11	Beam	None	A36	Typical
195	M410	N242	N243		90	TWR_INNER_SQ_T11	Beam	None	A36	Typical
196	M411	N243	N244		90	TWR_INNER_SQ_T11	Beam	None	A36	Typical
197	M412	N244	N241		90	TWR_INNER_SQ_T11	Beam	None	A36	Typical
198	M49	N33	N34		90	TWR_INNER_SUPP_T3	Beam	None	A36	Typical
199	M50	N34	N35		90	TWR_INNER_SUPP_T3	Beam	None	A36	Typical
200	M51	N35	N36		90	TWR_INNER_SUPP_T3	Beam	None	A36	Typical
201	M52	N36	N33		90	TWR_INNER_SUPP_T3	Beam	None	A36	Typical
202	M118	N61	N66		90	TWR_INNER_SUPP_T5	Beam	None	A36	Typical
203	M119	N66	N70		90	TWR_INNER_SUPP_T5	Beam	None	A36	Typical
204	M120	N70	N74		90	TWR_INNER_SUPP_T5	Beam	None	A36	Typical
205	M121	N74	N61		90	TWR_INNER_SUPP_T5	Beam	None	A36	Typical
206	M155	N81	N86		90	TWR_INNER_SUPP_T6	Beam	None	A36	Typical
207	M156	N86	N90		90	TWR_INNER_SUPP_T6	Beam	None	A36	Typical
208	M157	N90	N94		90	TWR_INNER_SUPP_T6	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
209	M158	N94	N81		90	TWR_INNER_SUPP_T6	Beam	None	A36	Typical
210	M192	N101	N106		90	TWR_INNER_SUPP_T7	Beam	None	A36	Typical
211	M193	N106	N110		90	TWR_INNER_SUPP_T7	Beam	None	A36	Typical
212	M194	N110	N114		90	TWR_INNER_SUPP_T7	Beam	None	A36	Typical
213	M195	N114	N101		90	TWR_INNER_SUPP_T7	Beam	None	A36	Typical
214	M229	N121	N126		90	TWR_INNER_SUPP_T8	Beam	None	A36	Typical
215	M230	N126	N130		90	TWR_INNER_SUPP_T8	Beam	None	A36	Typical
216	M231	N130	N134		90	TWR_INNER_SUPP_T8	Beam	None	A36	Typical
217	M232	N134	N121		90	TWR_INNER_SUPP_T8	Beam	None	A36	Typical
218	M266	N141	N146		90	TWR_INNER_SUPP_T9	Beam	None	A36	Typical
219	M267	N146	N150		90	TWR_INNER_SUPP_T9	Beam	None	A36	Typical
220	M268	N150	N154		90	TWR_INNER_SUPP_T9	Beam	None	A36	Typical
221	M269	N154	N141		90	TWR_INNER_SUPP_T9	Beam	None	A36	Typical
222	M327	N161	N170		90	TWR_INNER_SUPP_T10	Beam	Single Angle	A36	Typical
223	M328	N170	N177		90	TWR_INNER_SUPP_T10	Beam	Single Angle	A36	Typical
224	M329	N177	N184		90	TWR_INNER_SUPP_T10	Beam	Single Angle	A36	Typical
225	M330	N184	N161		90	TWR_INNER_SUPP_T10	Beam	Single Angle	A36	Typical
226	M392	N193	N202		90	TWR_INNER_SUPP_T11	Beam	None	A36	Typical
227	M393	N202	N209		90	TWR_INNER_SUPP_T11	Beam	None	A36	Typical
228	M394	N209	N216		90	TWR_INNER_SUPP_T11	Beam	None	A36	Typical
229	M395	N216	N193		90	TWR_INNER_SUPP_T11	Beam	None	A36	Typical
230	M533	N322	N319			TWR_INNER_TRI_T3	Beam	Single Angle	A36	Typical
231	M534	N319	N323			TWR_INNER_TRI_T3	Beam	Single Angle	A36	Typical
232	M515	N312	N309			TWR_INNER_TRI_T5	Beam	None	A36	Typical
233	M516	N309	N313			TWR_INNER_TRI_T5	Beam	None	A36	Typical
234	M505	N306	N303			TWR_INNER_TRI_T6	Beam	None	A36	Typical
235	M506	N303	N307			TWR_INNER_TRI_T6	Beam	None	A36	Typical
236	M495	N300	N291			TWR_INNER_TRI_T7	Beam	None	A36	Typical
237	M496	N291	N301			TWR_INNER_TRI_T7	Beam	None	A36	Typical
238	M480	N289	N286			TWR_INNER_TRI_T8	Beam	None	A36	Typical
239	M481	N286	N290			TWR_INNER_TRI_T8	Beam	None	A36	Typical
240	M470	N283	N276			TWR_INNER_TRI_T9	Beam	None	A36	Typical
241	M471	N276	N284			TWR_INNER_TRI_T9	Beam	None	A36	Typical
242	M456	N273	N268			TWR_INNER_TRI_T10	Beam	Single Angle	A36	Typical
243	M457	N268	N274			TWR_INNER_TRI_T10	Beam	Single Angle	A36	Typical
244	M424	N249	N244			TWR_INNER_TRI_T11	Beam	None	A36	Typical
245	M425	N244	N250			TWR_INNER_TRI_T11	Beam	None	A36	Typical
246	M1	N2	N1		135	TWR_LEG_T1	Column	Single Angle	A36	Typical
247	M2	N4	N3		135	TWR_LEG_T1	Column	Single Angle	A36	Typical
248	M3	N6	N5		135	TWR_LEG_T1	Column	Single Angle	A36	Typical
249	M4	N8	N7		135	TWR_LEG_T1	Column	Single Angle	A36	Typical
250	M21	N17	N2		135	TWR_LEG_T2	Column	Single Angle	A36	Typical
251	M22	N18	N4		135	TWR_LEG_T2	Column	Single Angle	A36	Typical
252	M23	N19	N6		135	TWR_LEG_T2	Column	Single Angle	A36	Typical
253	M24	N20	N8		135	TWR_LEG_T2	Column	Single Angle	A36	Typical
254	M41	N29	N17		135	TWR_LEG_T3	Column	Single Angle	A36	Typical
255	M42	N30	N18		135	TWR_LEG_T3	Column	Single Angle	A36	Typical
256	M43	N31	N19		135	TWR_LEG_T3	Column	Single Angle	A36	Typical
257	M44	N32	N20		135	TWR_LEG_T3	Column	Single Angle	A36	Typical
258	M66	N45	N29		135	TWR_LEG_T4	Column	Single Angle	A36	Typical
259	M67	N46	N30		135	TWR_LEG_T4	Column	Single Angle	A36	Typical
260	M68	N47	N31		135	TWR_LEG_T4	Column	Single Angle	A36	Typical
261	M69	N48	N32		135	TWR_LEG_T4	Column	Single Angle	A36	Typical
262	M86	N57	N45		135	TWR_LEG_T5	Column	Single Angle	A36	Typical
263	M87	N58	N46		135	TWR_LEG_T5	Column	Single Angle	A36	Typical
264	M88	N59	N47		135	TWR_LEG_T5	Column	Single Angle	A36	Typical
265	M89	N60	N48		135	TWR_LEG_T5	Column	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
266	M123	N77	N57		135	TWR_LEG_T6	Column	Single Angle	A36	Typical
267	M124	N78	N58		135	TWR_LEG_T6	Column	Single Angle	A36	Typical
268	M125	N79	N59		135	TWR_LEG_T6	Column	Single Angle	A36	Typical
269	M126	N80	N60		135	TWR_LEG_T6	Column	Single Angle	A36	Typical
270	M160	N97	N77		135	TWR_LEG_T7	Column	Single Angle	A36	Typical
271	M161	N98	N78		135	TWR_LEG_T7	Column	Single Angle	A36	Typical
272	M162	N99	N79		135	TWR_LEG_T7	Column	Single Angle	A36	Typical
273	M163	N100	N80		135	TWR_LEG_T7	Column	Single Angle	A36	Typical
274	M197	N117	N97		135	TWR_LEG_T8	Column	Single Angle	A36	Typical
275	M198	N118	N98		135	TWR_LEG_T8	Column	Single Angle	A36	Typical
276	M199	N119	N99		135	TWR_LEG_T8	Column	Single Angle	A36	Typical
277	M200	N120	N100		135	TWR_LEG_T8	Column	Single Angle	A36	Typical
278	M234	N137	N117		135	TWR_LEG_T9	Column	Single Angle	A36	Typical
279	M235	N138	N118		135	TWR_LEG_T9	Column	Single Angle	A36	Typical
280	M236	N139	N119		135	TWR_LEG_T9	Column	Single Angle	A36	Typical
281	M237	N140	N120		135	TWR_LEG_T9	Column	Single Angle	A36	Typical
282	M271	N157	N137		135	TWR_LEG_T10	Column	Single Angle	A36	Typical
283	M272	N158	N138		135	TWR_LEG_T10	Column	Single Angle	A36	Typical
284	M273	N159	N139		135	TWR_LEG_T10	Column	Single Angle	A36	Typical
285	M274	N160	N140		135	TWR_LEG_T10	Column	Single Angle	A36	Typical
286	M332	N189	N157		135	TWR_LEG_T11	Column	Single Angle	A36	Typical
287	M333	N190	N158		135	TWR_LEG_T11	Column	Single Angle	A36	Typical
288	M334	N191	N159		135	TWR_LEG_T11	Column	Single Angle	A36	Typical
289	M335	N192	N160		135	TWR_LEG_T11	Column	Single Angle	A36	Typical
290	M401	N199	N233			TWR_RED_BRACE_T11	Beam	None	A36	Typical
291	M402	N233	N234			TWR_RED_BRACE_T11	Beam	None	A36	Typical
292	M403	N194	N235			TWR_RED_BRACE_T11	Beam	None	A36	Typical
293	M404	N235	N236			TWR_RED_BRACE_T11	Beam	None	A36	Typical
294	M405	N206	N237			TWR_RED_BRACE_T11	Beam	None	A36	Typical
295	M406	N237	N238			TWR_RED_BRACE_T11	Beam	None	A36	Typical
296	M407	N213	N239			TWR_RED_BRACE_T11	Beam	None	A36	Typical
297	M408	N239	N240			TWR_RED_BRACE_T11	Beam	None	A36	Typical
298	M280	N165	N137		95.752	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
299	M285	N168	N138		84.248	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
300	M291	N172	N138		95.752	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
301	M296	N175	N139		84.248	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
302	M304	N179	N139		95.752	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
303	M309	N182	N140		84.248	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
304	M317	N186	N140		95.752	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
305	M322	N188	N137		84.248	TWR_RED_DIAG_2_T10	Column	Single Angle	A36	Typical
306	M341	N197	N157		5.445	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
307	M346	N200	N158		354.555	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
308	M353	N204	N158		5.445	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
309	M358	N207	N159		354.555	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
310	M367	N211	N159		5.445	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
311	M372	N214	N160		354.555	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
312	M381	N218	N160		5.445	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
313	M386	N220	N157		354.555	TWR_RED_DIAG_2_T11	Column	None	A36	Typical
314	M93	N63	N45		97.272	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
315	M96	N64	N46		82.728	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
316	M100	N67	N46		97.272	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
317	M103	N68	N47		82.728	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
318	M107	N71	N47		97.272	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
319	M110	N72	N48		82.728	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
320	M114	N75	N48		97.272	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
321	M117	N76	N45		82.728	TWR_RED_DIAG_T5	Column	Single Angle	A36	Typical
322	M130	N83	N57		96.829	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
323	M133	N84	N58		83.171	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
324	M137	N87	N58		96.829	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
325	M140	N88	N59		83.171	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
326	M144	N91	N59		96.829	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
327	M147	N92	N60		83.171	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
328	M151	N95	N60		96.829	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
329	M154	N96	N57		83.171	TWR_RED_DIAG_T6	Column	Single Angle	A36	Typical
330	M167	N103	N77		96.475	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
331	M170	N104	N78		83.525	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
332	M174	N107	N78		96.475	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
333	M177	N108	N79		83.525	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
334	M181	N111	N79		96.475	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
335	M184	N112	N80		83.525	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
336	M188	N115	N80		96.475	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
337	M191	N116	N77		83.525	TWR_RED_DIAG_T7	Column	Single Angle	A36	Typical
338	M204	N123	N97		96.187	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
339	M207	N124	N98		83.813	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
340	M211	N127	N98		96.187	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
341	M214	N128	N99		83.813	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
342	M218	N131	N99		96.187	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
343	M221	N132	N100		83.813	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
344	M225	N135	N100		96.187	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
345	M228	N136	N97		83.813	TWR_RED_DIAG_T8	Column	Single Angle	A36	Typical
346	M241	N143	N117		95.95	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
347	M244	N144	N118		84.05	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
348	M248	N147	N118		95.95	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
349	M251	N148	N119		84.05	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
350	M255	N151	N119		95.95	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
351	M258	N152	N120		84.05	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
352	M262	N155	N120		95.95	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
353	M265	N156	N117		84.05	TWR_RED_DIAG_T9	Column	Single Angle	A36	Typical
354	M279	N163	N164		99.346	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
355	M284	N166	N169		80.654	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
356	M290	N171	N169		99.346	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
357	M295	N173	N176		80.654	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
358	M303	N178	N176		99.346	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
359	M308	N180	N183		80.654	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
360	M316	N185	N183		99.346	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
361	M321	N187	N164		80.654	TWR_RED_DIAG_T10	Column	Single Angle	A36	Typical
362	M340	N195	N196		8.419	TWR_RED_DIAG_T11	Column	None	A36	Typical
363	M345	N198	N201		351.581	TWR_RED_DIAG_T11	Column	None	A36	Typical
364	M352	N203	N201		8.419	TWR_RED_DIAG_T11	Column	None	A36	Typical
365	M357	N205	N208		351.581	TWR_RED_DIAG_T11	Column	None	A36	Typical
366	M366	N210	N208		8.419	TWR_RED_DIAG_T11	Column	None	A36	Typical
367	M371	N212	N215		351.581	TWR_RED_DIAG_T11	Column	None	A36	Typical
368	M380	N217	N215		8.419	TWR_RED_DIAG_T11	Column	None	A36	Typical
369	M385	N219	N196		351.581	TWR_RED_DIAG_T11	Column	None	A36	Typical
370	M427	N201	N251			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
371	M428	N196	N252			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
372	M429	N215	N253			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
373	M430	N254	N255			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
374	M431	N255	N256			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
375	M432	N256	N254			TWR_RED_HIPBRACE_T11	Column	None	A36	Typical
376	M298	N172	N265			TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
377	M311	N179	N268			TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
378	M324	N186	N267			TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
379	M326	N165	N266			TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
380	M445	N182	N267		90	TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
381	M446	N175	N268		90	TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
382	M447	N188	N266		90	TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
383	M448	N168	N265		90	TWR_RED_HIPDIA_2_T10	Column	None	A36	Typical
384	M361	N204	N241			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
385	M375	N211	N244			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
386	M389	N218	N243			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
387	M391	N197	N242			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
388	M413	N244	N207			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
389	M414	N214	N243			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
390	M415	N220	N242			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
391	M416	N200	N241			TWR_RED_HIPDIA_2_T11	Column	None	A36	Typical
392	M297	N168	N172		90	TWR_RED_HIP_2_T10	Beam	Single Angle	A36	Typical
393	M310	N175	N179		90	TWR_RED_HIP_2_T10	Beam	Single Angle	A36	Typical
394	M323	N182	N186		90	TWR_RED_HIP_2_T10	Beam	Single Angle	A36	Typical
395	M325	N165	N188		90	TWR_RED_HIP_2_T10	Beam	Single Angle	A36	Typical
396	M360	N200	N204		90	TWR_RED_HIP_2_T11	Beam	Single Angle	A36	Typical
397	M374	N207	N211		90	TWR_RED_HIP_2_T11	Beam	Single Angle	A36	Typical
398	M388	N214	N218		90	TWR_RED_HIP_2_T11	Beam	Single Angle	A36	Typical
399	M390	N197	N220		90	TWR_RED_HIP_2_T11	Beam	Single Angle	A36	Typical
400	M278	N164	N165		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
401	M283	N168	N169		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
402	M289	N169	N172		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
403	M294	N175	N176		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
404	M302	N176	N179		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
405	M307	N182	N183		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
406	M315	N183	N186		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
407	M320	N188	N164		355.777	TWR_RED_HORZ_2_T10	Beam	None	A36	Typical
408	M339	N196	N197		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
409	M344	N200	N201		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
410	M351	N201	N204		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
411	M356	N207	N208		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
412	M365	N208	N211		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
413	M370	N214	N215		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
414	M379	N215	N218		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
415	M384	N220	N196		355.777	TWR_RED_HORZ_2_T11	Beam	None	A36	Typical
416	M92	N62	N63		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
417	M95	N64	N65		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
418	M99	N65	N67		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
419	M102	N68	N69		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
420	M106	N69	N71		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
421	M109	N72	N73		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
422	M113	N73	N75		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
423	M116	N76	N62		85.777	TWR_RED_HORZ_T5	Beam	Single Angle	A36	Typical
424	M129	N82	N83		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
425	M132	N84	N85		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
426	M136	N85	N87		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
427	M139	N88	N89		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
428	M143	N89	N91		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
429	M146	N92	N93		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
430	M150	N93	N95		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
431	M153	N96	N82		85.777	TWR_RED_HORZ_T6	Beam	Single Angle	A36	Typical
432	M166	N102	N103		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
433	M169	N104	N105		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
434	M173	N105	N107		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
435	M176	N108	N109		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
436	M180	N109	N111		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
437	M183	N112	N113		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
438	M187	N113	N115		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
439	M190	N116	N102		85.777	TWR_RED_HORZ_T7	Beam	Single Angle	A36	Typical
440	M203	N122	N123		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
441	M206	N124	N125		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
442	M210	N125	N127		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
443	M213	N128	N129		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
444	M217	N129	N131		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
445	M220	N132	N133		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
446	M224	N133	N135		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
447	M227	N136	N122		85.777	TWR_RED_HORZ_T8	Beam	Single Angle	A36	Typical
448	M240	N142	N143		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
449	M243	N144	N145		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
450	M247	N145	N147		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
451	M250	N148	N149		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
452	M254	N149	N151		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
453	M257	N152	N153		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
454	M261	N153	N155		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
455	M264	N156	N142		85.777	TWR_RED_HORZ_T9	Beam	Single Angle	A36	Typical
456	M277	N162	N163		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
457	M282	N166	N167		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
458	M288	N167	N171		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
459	M293	N173	N174		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
460	M301	N174	N178		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
461	M306	N180	N181		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
462	M314	N181	N185		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
463	M319	N187	N162		355.777	TWR_RED_HORZ_T10	Beam	None	A36	Typical
464	M338	N194	N195		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
465	M343	N198	N199		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
466	M350	N199	N203		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
467	M355	N205	N206		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
468	M364	N206	N210		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
469	M369	N212	N213		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
470	M378	N213	N217		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
471	M383	N219	N194		355.777	TWR_RED_HORZ_T11	Beam	None	A36	Typical
472	M347	N221	N222		355.777	TWR_RED_SUBHOR_T11	Beam	None	A36	Typical
473	M359	N223	N224		355.777	TWR_RED_SUBHOR_T11	Beam	None	A36	Typical
474	M373	N225	N226		355.777	TWR_RED_SUBHOR_T11	Beam	None	A36	Typical
475	M387	N227	N228		355.777	TWR_RED_SUBHOR_T11	Beam	None	A36	Typical
476	M540	N324	N9			TWR_RED_VERT_T1	Beam	Single Angle	A36	Typical
477	M541	N325	N10			TWR_RED_VERT_T1	Beam	Single Angle	A36	Typical
478	M542	N326	N11			TWR_RED_VERT_T1	Beam	Single Angle	A36	Typical
479	M543	N327	N12			TWR_RED_VERT_T1	Beam	Single Angle	A36	Typical
480	M536	N33	N21			TWR_RED_VERT_T2	Beam	Channel	A36	Typical
481	M537	N34	N22			TWR_RED_VERT_T2	Beam	Channel	A36	Typical
482	M538	N35	N23			TWR_RED_VERT_T2	Beam	Channel	A36	Typical
483	M539	N36	N24			TWR_RED_VERT_T2	Beam	Channel	A36	Typical
484	M522	N314	N37			TWR_RED_VERT_T3	Beam	Single Angle	A36	Typical
485	M523	N315	N38			TWR_RED_VERT_T3	Beam	Single Angle	A36	Typical
486	M524	N316	N39			TWR_RED_VERT_T3	Beam	Single Angle	A36	Typical
487	M525	N317	N40			TWR_RED_VERT_T3	Beam	Single Angle	A36	Typical
488	M518	N61	N49			TWR_RED_VERT_T4	Beam	None	A36	Typical
489	M519	N66	N50			TWR_RED_VERT_T4	Beam	None	A36	Typical
490	M520	N70	N51			TWR_RED_VERT_T4	Beam	None	A36	Typical
491	M521	N74	N52			TWR_RED_VERT_T4	Beam	None	A36	Typical
492	M397	N229	N193			TWR_RED_VERT_T11	Beam	None	A36	Typical
493	M398	N230	N202			TWR_RED_VERT_T11	Beam	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(...	Section/Shape	Type	Design List	Material	Design R...
494	M399	N231	N216			TWR_RED_VERT_T11	Beam	None	A36	Typical
495	M400	N232	N209			TWR_RED_VERT_T11	Beam	None	A36	Typical
496	M433	N200	N257			TWR_RED_VERT_T11	Beam	None	A36	Typical
497	M434	N204	N258			TWR_RED_VERT_T11	Beam	None	A36	Typical
498	M435	N197	N259			TWR_RED_VERT_T11	Beam	None	A36	Typical
499	M436	N220	N260			TWR_RED_VERT_T11	Beam	None	A36	Typical
500	M437	N218	N261			TWR_RED_VERT_T11	Beam	None	A36	Typical
501	M438	N214	N262			TWR_RED_VERT_T11	Beam	None	A36	Typical
502	M439	N211	N263			TWR_RED_VERT_T11	Beam	None	A36	Typical
503	M440	N207	N264			TWR_RED_VERT_T11	Beam	None	A36	Typical
504	M17	N13	N14		85.777	TWR_STEP_T1	Beam	Single Angle	A36	Typical
505	M18	N14	N15		85.777	TWR_STEP_T1	Beam	Single Angle	A36	Typical
506	M19	N15	N16		85.777	TWR_STEP_T1	Beam	Single Angle	A36	Typical
507	M20	N16	N13		85.777	TWR_STEP_T1	Beam	Single Angle	A36	Typical
508	M37	N25	N26		175.777	TWR_STEP_T2	Beam	Channel	A36	Typical
509	M38	N26	N27		175.777	TWR_STEP_T2	Beam	Channel	A36	Typical
510	M39	N27	N28		175.777	TWR_STEP_T2	Beam	Channel	A36	Typical
511	M40	N28	N25		175.777	TWR_STEP_T2	Beam	Channel	A36	Typical
512	M62	N41	N42		85.777	TWR_STEP_T3	Beam	Single Angle	A36	Typical
513	M63	N42	N43		85.777	TWR_STEP_T3	Beam	Single Angle	A36	Typical
514	M64	N43	N44		85.777	TWR_STEP_T3	Beam	Single Angle	A36	Typical
515	M65	N44	N41		85.777	TWR_STEP_T3	Beam	Single Angle	A36	Typical
516	M82	N53	N54		85.777	TWR_STEP_T4	Beam	Single Angle	A36	Typical
517	M83	N54	N55		85.777	TWR_STEP_T4	Beam	Single Angle	A36	Typical
518	M84	N55	N56		85.777	TWR_STEP_T4	Beam	Single Angle	A36	Typical
519	M85	N56	N53		85.777	TWR_STEP_T4	Beam	Single Angle	A36	Typical
520	M5	N1	N3		175.777	TWR_TOP_GIRT_T1	Beam	Channel	A36	Typical
521	M6	N3	N5		175.777	TWR_TOP_GIRT_T1	Beam	Channel	A36	Typical
522	M7	N5	N7		175.777	TWR_TOP_GIRT_T1	Beam	Channel	A36	Typical
523	M8	N7	N1		175.777	TWR_TOP_GIRT_T1	Beam	Channel	A36	Typical
524	M25	N2	N4		355.777	TWR_TOP_GIRT_T2	Beam	None	A36	Typical
525	M26	N4	N6		355.777	TWR_TOP_GIRT_T2	Beam	None	A36	Typical
526	M27	N6	N8		355.777	TWR_TOP_GIRT_T2	Beam	None	A36	Typical
527	M28	N8	N2		355.777	TWR_TOP_GIRT_T2	Beam	None	A36	Typical
528	M45	N17	N18		355.777	TWR_TOP_GIRT_T3	Beam	None	A36	Typical
529	M46	N18	N19		355.777	TWR_TOP_GIRT_T3	Beam	None	A36	Typical
530	M47	N19	N20		355.777	TWR_TOP_GIRT_T3	Beam	None	A36	Typical
531	M48	N20	N17		355.777	TWR_TOP_GIRT_T3	Beam	None	A36	Typical
532	M70	N29	N30		355.777	TWR_TOP_GIRT_T4	Beam	None	A36	Typical
533	M71	N30	N31		355.777	TWR_TOP_GIRT_T4	Beam	None	A36	Typical
534	M72	N31	N32		355.777	TWR_TOP_GIRT_T4	Beam	None	A36	Typical
535	M73	N32	N29		355.777	TWR_TOP_GIRT_T4	Beam	None	A36	Typical
536	M53	N33	N35		90	TWR_INNER_SUPP_T3	Beam	None	A36	Typical
537	M122	N61	N70		90	TWR_INNER_SUPP_T5	Beam	None	A36	Typical
538	M159	N81	N90			TWR_INNER_SUPP_T6	Beam	None	A36	Typical
539	M196	N101	N110			TWR_INNER_SUPP_T7	Beam	None	A36	Typical
540	M233	N121	N130			TWR_INNER_SUPP_T8	Beam	None	A36	Typical
541	M270	N141	N150			TWR_INNER_SUPP_T9	Beam	None	A36	Typical
542	M331	N161	N177		90	TWR_INNER_SUPP_T10	Beam	Single Angle	A36	Typical
543	M396	N193	N209			TWR_INNER_SUPP_T11	Beam	None	A36	Typical

Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
1	M9	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
2	M10	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
3	M11	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
4	M12	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
5	M13	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
6	M14	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
7	M15	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
8	M16	TWR_DIAG_T1	18.183	8.87	8.87	8.87	8.87	8.87	.95	.95		Lateral
9	M29	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
10	M30	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
11	M31	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
12	M32	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
13	M33	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
14	M34	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
15	M35	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
16	M36	TWR_DIAG_T2	19.562	9.64	9.64	9.64	9.64	9.64	.92	.92		Lateral
17	M54	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
18	M55	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
19	M56	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
20	M57	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
21	M58	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
22	M59	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
23	M60	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
24	M61	TWR_DIAG_T3	21.013	10.26	10.26	10.26	10.26	10.26	.91	.91		Lateral
25	M91	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
26	M94	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
27	M98	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
28	M101	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
29	M105	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
30	M108	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
31	M112	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
32	M115	TWR_DIAG_T5	16.506	15.67	7.835	7.835	7.835	7.835	1.02	1		Lateral
33	M128	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
34	M131	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
35	M135	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
36	M138	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
37	M142	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
38	M145	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
39	M149	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
40	M152	TWR_DIAG_T6	17.121	16.3	8.15	8.15	8.15	8.15	1.02	1		Lateral
41	M165	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
42	M168	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
43	M172	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
44	M175	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
45	M179	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
46	M182	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
47	M186	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
48	M189	TWR_DIAG_T7	17.763	16.95	8.475	8.475	8.475	8.475	1.02	1		Lateral
49	M202	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
50	M205	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
51	M209	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
52	M212	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
53	M216	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
54	M219	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
55	M223	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
56	M226	TWR_DIAG_T8	18.429	17.63	8.815	8.815	8.815	8.815	1.02	1		Lateral
57	M239	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
58	M242	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
59	M246	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
60	M249	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
61	M253	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
62	M256	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
63	M260	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
64	M263	TWR_DIAG_T9	19.116	18.03	9.015	9.015	9.015	9.015	1.01	1		Lateral
65	M276	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
66	M281	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
67	M287	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
68	M292	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
69	M300	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
70	M305	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
71	M313	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
72	M318	TWR_DIAG_T10	29.89	19	9.963	9.963	9.963	9.963	1.01	1		Lateral
73	M337	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
74	M342	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
75	M349	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
76	M354	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
77	M363	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
78	M368	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
79	M377	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
80	M382	TWR_DIAG_T11	30.934	19.555	10.311	10.311	10.311	10.311	1.04	1		Lateral
81	M90	TWR_HORZ_T5	19.635	9.34	9.34	9.34	9.34	9.34	1.1	1		Lateral
82	M97	TWR_HORZ_T5	19.635	9.34	9.34	9.34	9.34	9.34	1.1	1		Lateral
83	M104	TWR_HORZ_T5	19.635	9.34	9.34	9.34	9.34	9.34	1.1	1		Lateral
84	M111	TWR_HORZ_T5	19.635	9.34	9.34	9.34	9.34	9.34	1.1	1		Lateral
85	M127	TWR_HORZ_T6	21.481	10.26	10.26	10.26	10.26	10.26	1.04	1		Lateral
86	M134	TWR_HORZ_T6	21.481	10.26	10.26	10.26	10.26	10.26	1.04	1		Lateral
87	M141	TWR_HORZ_T6	21.481	10.26	10.26	10.26	10.26	10.26	1.04	1		Lateral
88	M148	TWR_HORZ_T6	21.481	10.26	10.26	10.26	10.26	10.26	1.04	1		Lateral
89	M164	TWR_HORZ_T7	23.327	11.18	11.18	11.18	11.18	11.18	1.04	1		Lateral
90	M171	TWR_HORZ_T7	23.327	11.18	11.18	11.18	11.18	11.18	1.04	1		Lateral
91	M178	TWR_HORZ_T7	23.327	11.18	11.18	11.18	11.18	11.18	1.04	1		Lateral
92	M185	TWR_HORZ_T7	23.327	11.18	11.18	11.18	11.18	11.18	1.04	1		Lateral
93	M201	TWR_HORZ_T8	25.173	12.11	12.11	12.11	12.11	12.11	1.03	1		Lateral
94	M208	TWR_HORZ_T8	25.173	12.11	12.11	12.11	12.11	12.11	1.03	1		Lateral
95	M215	TWR_HORZ_T8	25.173	12.11	12.11	12.11	12.11	12.11	1.03	1		Lateral
96	M222	TWR_HORZ_T8	25.173	12.11	12.11	12.11	12.11	12.11	1.03	1		Lateral
97	M238	TWR_HORZ_T9	27.019	13.03	13.03	13.03	13.03	13.03	1.05	1		Lateral
98	M245	TWR_HORZ_T9	27.019	13.03	13.03	13.03	13.03	13.03	1.05	1		Lateral
99	M252	TWR_HORZ_T9	27.019	13.03	13.03	13.03	13.03	13.03	1.05	1		Lateral
100	M259	TWR_HORZ_T9	27.019	13.03	13.03	13.03	13.03	13.03	1.05	1		Lateral
101	M275	TWR_HORZ_T10	28.865	13.78	13.78	13.78	13.78	13.78	1.05	1		Lateral
102	M286	TWR_HORZ_T10	28.865	13.78	13.78	13.78	13.78	13.78	1.05	1		Lateral
103	M299	TWR_HORZ_T10	28.865	13.78	13.78	13.78	13.78	13.78	1.05	1		Lateral
104	M312	TWR_HORZ_T10	28.865	13.78	13.78	13.78	13.78	13.78	1.05	1		Lateral
105	M336	TWR_HORZ_T11	32.558	15.62	Segment	Segment	Segment	Seg...	1.02	1		Lateral
106	M348	TWR_HORZ_T11	32.558	15.62	Segment	Segment	Segment	Seg...	1.02	1		Lateral
107	M362	TWR_HORZ_T11	32.558	15.62	Segment	Segment	Segment	Seg...	1.02	1		Lateral
108	M376	TWR_HORZ_T11	32.558	15.62	Segment	Segment	Segment	Seg...	1.02	1		Lateral
109	M490	TWR_INNER_BRACE_T7	5.832	5.832	5.832	5.832	5.832	5.832	1	1		Lateral
110	M491	TWR_INNER_BRACE_T7	5.832	5.832	5.832	5.832	5.832	5.832	1	1		Lateral
111	M466	TWR_INNER_BRACE_T9	6.755	6.755	6.755	6.755	6.755	6.755	1	1		Lateral
112	M467	TWR_INNER_BRACE_T9	6.755	6.755	6.755	6.755	6.755	6.755	1	1		Lateral
113	M468	TWR_INNER_BRACE_T9	6.755	6.755	6.755	6.755	6.755	6.755	1	1		Lateral
114	M469	TWR_INNER_BRACE_T9	6.755	6.755	6.755	6.755	6.755	6.755	1	1		Lateral
115	M452	TWR_INNER_BRACE_T...	7.216	7.216	7.216	7.216	7.216	7.216	1	1		Lateral
116	M453	TWR_INNER_BRACE_T...	7.216	7.216	7.216	7.216	7.216	7.216	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
117	M454	TWR_INNER_BRACE_T...	7.216	7.216	7.216	7.216	7.216	7.216	1	1		Lateral
118	M455	TWR_INNER_BRACE_T...	7.216	7.216	7.216	7.216	7.216	7.216	1	1		Lateral
119	M420	TWR_INNER_BRACE_T...	8.139	8.139	8.139	8.139	8.139	8.139	1	1		Lateral
120	M421	TWR_INNER_BRACE_T...	8.139	8.139	8.139	8.139	8.139	8.139	1	1		Lateral
121	M422	TWR_INNER_BRACE_T...	8.139	8.139	8.139	8.139	8.139	8.139	1	1		Lateral
122	M423	TWR_INNER_BRACE_T...	8.139	8.139	8.139	8.139	8.139	8.139	1	1		Lateral
123	M530	TWR_INNER_CORNER...	5.636			Lbyy			1	1		Lateral
124	M531	TWR_INNER_CORNER...	5.636			Lbyy			1	1		Lateral
125	M532	TWR_INNER_CORNER...	5.636			Lbyy			1	1		Lateral
126	M512	TWR_INNER_CORNER...	6.942			Lbyy			1	1		Lateral
127	M513	TWR_INNER_CORNER...	6.942			Lbyy			1	1		Lateral
128	M514	TWR_INNER_CORNER...	6.942			Lbyy			1	1		Lateral
129	M502	TWR_INNER_CORNER...	7.595			Lbyy			1	1		Lateral
130	M503	TWR_INNER_CORNER...	7.595			Lbyy			1	1		Lateral
131	M504	TWR_INNER_CORNER...	7.595			Lbyy			1	1		Lateral
132	M487	TWR_INNER_CORNER...	8.247			Lbyy			1	1		Lateral
133	M488	TWR_INNER_CORNER...	8.247			Lbyy			1	1		Lateral
134	M489	TWR_INNER_CORNER...	8.247			Lbyy			1	1		Lateral
135	M477	TWR_INNER_CORNER...	8.9			Lbyy			1	1		Lateral
136	M478	TWR_INNER_CORNER...	8.9			Lbyy			1	1		Lateral
137	M479	TWR_INNER_CORNER...	8.9			Lbyy			1	1		Lateral
138	M463	TWR_INNER_CORNER...	9.553			Lbyy			1	1		Lateral
139	M464	TWR_INNER_CORNER...	9.553			Lbyy			1	1		Lateral
140	M465	TWR_INNER_CORNER...	9.553			Lbyy			1	1		Lateral
141	M449	TWR_INNER_CORNER...	10.205			Lbyy			1	1		Lateral
142	M450	TWR_INNER_CORNER...	10.205			Lbyy			1	1		Lateral
143	M451	TWR_INNER_CORNER...	10.205			Lbyy			1	1		Lateral
144	M417	TWR_INNER_CORNER...	11.511			Lbyy			1	1		Lateral
145	M418	TWR_INNER_CORNER...	11.511			Lbyy			1	1		Lateral
146	M419	TWR_INNER_CORNER...	11.511			Lbyy			1	1		Lateral
147	M492	TWR_INNER_GIRT_T7	5.832	5.832	5.832	5.832	5.832	5.832	1	1		Lateral
148	M493	TWR_INNER_GIRT_T7	5.832	5.832	5.832	5.832	5.832	5.832	1	1		Lateral
149	M494	TWR_INNER_GIRT_T7	5.832	5.832	5.832	5.832	5.832	5.832	1	1		Lateral
150	M535	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
151	M517	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
152	M507	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
153	M497	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
154	M482	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
155	M472	TWR_INNER_LADDER_...	8	8	8	8	8	8	1.07	1		Lateral
156	M458	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
157	M426	TWR_INNER_LADDER_...	8	8	8	8	8	8	1	1		Lateral
158	M526	TWR_INNER_SQ_T3	7.971	7.971	7.971	7.971	7.971	7.971	1	1		Lateral
159	M527	TWR_INNER_SQ_T3	7.971	7.971	7.971	7.971	7.971	7.971	1	1		Lateral
160	M528	TWR_INNER_SQ_T3	7.971	7.971	7.971	7.971	7.971	7.971	1	1		Lateral
161	M529	TWR_INNER_SQ_T3	7.971	7.971	7.971	7.971	7.971	7.971	1	1		Lateral
162	M508	TWR_INNER_SQ_T5	9.817	9.817	9.817	9.817	9.817	9.817	1.09	1		Lateral
163	M509	TWR_INNER_SQ_T5	9.817	9.817	9.817	9.817	9.817	9.817	1.09	1		Lateral
164	M510	TWR_INNER_SQ_T5	9.817	9.817	9.817	9.817	9.817	9.817	1.09	1		Lateral
165	M511	TWR_INNER_SQ_T5	9.817	9.817	9.817	9.817	9.817	9.817	1.09	1		Lateral
166	M498	TWR_INNER_SQ_T6	10.74	10.74	10.74	10.74	10.74	10.74	1.08	1		Lateral
167	M499	TWR_INNER_SQ_T6	10.74	10.74	10.74	10.74	10.74	10.74	1.08	1		Lateral
168	M500	TWR_INNER_SQ_T6	10.74	10.74	10.74	10.74	10.74	10.74	1.08	1		Lateral
169	M501	TWR_INNER_SQ_T6	10.74	10.74	10.74	10.74	10.74	10.74	1.08	1		Lateral
170	M483	TWR_INNER_SQ_T7	11.663	11.663	11.663	11.663	11.663	11.663	1.07	1		Lateral
171	M484	TWR_INNER_SQ_T7	11.663	11.663	11.663	11.663	11.663	11.663	1.07	1		Lateral
172	M485	TWR_INNER_SQ_T7	11.663	11.663	11.663	11.663	11.663	11.663	1.07	1		Lateral
173	M486	TWR_INNER_SQ_T7	11.663	11.663	11.663	11.663	11.663	11.663	1.07	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
174	M473	TWR_INNER_SQ_T8	12.587	12.587	12.587	12.587	12.587	12.587	1.06	1		Lateral
175	M474	TWR_INNER_SQ_T8	12.587	12.587	12.587	12.587	12.587	12.587	1.06	1		Lateral
176	M475	TWR_INNER_SQ_T8	12.587	12.587	12.587	12.587	12.587	12.587	1.06	1		Lateral
177	M476	TWR_INNER_SQ_T8	12.587	12.587	12.587	12.587	12.587	12.587	1.06	1		Lateral
178	M459	TWR_INNER_SQ_T9	13.51	13.51	6.755	6.755	6.755	6.755	1.05	1		Lateral
179	M460	TWR_INNER_SQ_T9	13.51	13.51	6.755	6.755	6.755	6.755	1.05	1		Lateral
180	M461	TWR_INNER_SQ_T9	13.51	13.51	6.755	6.755	6.755	6.755	1.05	1		Lateral
181	M462	TWR_INNER_SQ_T9	13.51	13.51	6.755	6.755	6.755	6.755	1.05	1		Lateral
182	M441	TWR_INNER_SQ_T10	14.433	14.433	7.216	7.216	7.216	7.216	1.04	1		Lateral
183	M442	TWR_INNER_SQ_T10	14.433	14.433	7.216	7.216	7.216	7.216	1.04	1		Lateral
184	M443	TWR_INNER_SQ_T10	14.433	14.433	7.216	7.216	7.216	7.216	1.04	1		Lateral
185	M444	TWR_INNER_SQ_T10	14.433	14.433	7.216	7.216	7.216	7.216	1.04	1		Lateral
186	M409	TWR_INNER_SQ_T11	16.279	16.279	8.14	8.14	8.14	8.14	1.02	1		Lateral
187	M410	TWR_INNER_SQ_T11	16.279	16.279	8.14	8.14	8.14	8.14	1.02	1		Lateral
188	M411	TWR_INNER_SQ_T11	16.279	16.279	8.14	8.14	8.14	8.14	1.02	1		Lateral
189	M412	TWR_INNER_SQ_T11	16.279	16.279	8.14	8.14	8.14	8.14	1.02	1		Lateral
190	M49	TWR_INNER_SUPP_T3	11.273	11.273	5.636	5.636	5.636	5.636	1.07	1		Lateral
191	M50	TWR_INNER_SUPP_T3	11.273	11.273	5.636	5.636	5.636	5.636	1.07	1		Lateral
192	M51	TWR_INNER_SUPP_T3	11.273	11.273	5.636	5.636	5.636	5.636	1.07	1		Lateral
193	M52	TWR_INNER_SUPP_T3	11.273	11.273	5.636	5.636	5.636	5.636	1.07	1		Lateral
194	M118	TWR_INNER_SUPP_T5	13.884	13.884	6.942	6.942	6.942	6.942	1.02	1		Lateral
195	M119	TWR_INNER_SUPP_T5	13.884	13.884	6.942	6.942	6.942	6.942	1.02	1		Lateral
196	M120	TWR_INNER_SUPP_T5	13.884	13.884	6.942	6.942	6.942	6.942	1.02	1		Lateral
197	M121	TWR_INNER_SUPP_T5	13.884	13.884	6.942	6.942	6.942	6.942	1.02	1		Lateral
198	M155	TWR_INNER_SUPP_T6	15.189	15.189	7.595	7.595	7.595	7.595	1.02	1		Lateral
199	M156	TWR_INNER_SUPP_T6	15.189	15.189	7.595	7.595	7.595	7.595	1.02	1		Lateral
200	M157	TWR_INNER_SUPP_T6	15.189	15.189	7.595	7.595	7.595	7.595	1.02	1		Lateral
201	M158	TWR_INNER_SUPP_T6	15.189	15.189	7.595	7.595	7.595	7.595	1.02	1		Lateral
202	M192	TWR_INNER_SUPP_T7	16.495	16.495	8.248	8.248	8.248	8.248	1.02	1		Lateral
203	M193	TWR_INNER_SUPP_T7	16.495	16.495	8.248	8.248	8.248	8.248	1.02	1		Lateral
204	M194	TWR_INNER_SUPP_T7	16.495	16.495	8.248	8.248	8.248	8.248	1.02	1		Lateral
205	M195	TWR_INNER_SUPP_T7	16.495	16.495	8.248	8.248	8.248	8.248	1.02	1		Lateral
206	M229	TWR_INNER_SUPP_T8	17.8	17.8	8.9	8.9	8.9	8.9	1.01	1		Lateral
207	M230	TWR_INNER_SUPP_T8	17.8	17.8	8.9	8.9	8.9	8.9	1.01	1		Lateral
208	M231	TWR_INNER_SUPP_T8	17.8	17.8	8.9	8.9	8.9	8.9	1.01	1		Lateral
209	M232	TWR_INNER_SUPP_T8	17.8	17.8	8.9	8.9	8.9	8.9	1.01	1		Lateral
210	M266	TWR_INNER_SUPP_T9	19.105	19.105	9.553	9.553	9.553	9.553	1.01	1		Lateral
211	M267	TWR_INNER_SUPP_T9	19.105	19.105	9.553	9.553	9.553	9.553	1.01	1		Lateral
212	M268	TWR_INNER_SUPP_T9	19.105	19.105	9.553	9.553	9.553	9.553	1.01	1		Lateral
213	M269	TWR_INNER_SUPP_T9	19.105	19.105	9.553	9.553	9.553	9.553	1.01	1		Lateral
214	M327	TWR_INNER_SUPP_T10	20.411	10.206	10.206	10.206	10.206	10.206	1	1		Lateral
215	M328	TWR_INNER_SUPP_T10	20.411	10.206	10.206	10.206	10.206	10.206	1	1		Lateral
216	M329	TWR_INNER_SUPP_T10	20.411	10.206	10.206	10.206	10.206	10.206	1	1		Lateral
217	M330	TWR_INNER_SUPP_T10	20.411	10.206	10.206	10.206	10.206	10.206	1	1		Lateral
218	M392	TWR_INNER_SUPP_T11	23.022	11.511	11.511	11.511	11.511	11.511	1.07	1		Lateral
219	M393	TWR_INNER_SUPP_T11	23.022	11.511	11.511	11.511	11.511	11.511	1.07	1		Lateral
220	M394	TWR_INNER_SUPP_T11	23.022	11.511	11.511	11.511	11.511	11.511	1.07	1		Lateral
221	M395	TWR_INNER_SUPP_T11	23.022	11.511	11.511	11.511	11.511	11.511	1.07	1		Lateral
222	M533	TWR_INNER_TRI_T3	4.322	4.322	4.322	4.322	4.322	4.322	1	1		Lateral
223	M534	TWR_INNER_TRI_T3	4.322	4.322	4.322	4.322	4.322	4.322	1	1		Lateral
224	M515	TWR_INNER_TRI_T5	4.965	4.965	4.965	4.965	4.965	4.965	1	1		Lateral
225	M516	TWR_INNER_TRI_T5	4.965	4.965	4.965	4.965	4.965	4.965	1	1		Lateral
226	M505	TWR_INNER_TRI_T6	5.378	5.378	5.378	5.378	5.378	5.378	1	1		Lateral
227	M506	TWR_INNER_TRI_T6	5.378	5.378	5.378	5.378	5.378	5.378	1	1		Lateral
228	M495	TWR_INNER_TRI_T7	5.834	5.834	5.834	5.834	5.834	5.834	1	1		Lateral
229	M496	TWR_INNER_TRI_T7	5.834	5.834	5.834	5.834	5.834	5.834	1	1		Lateral
230	M480	TWR_INNER_TRI_T8	6.325	6.325	6.325	6.325	6.325	6.325	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
231	M481	TWR_INNER_TRI_T8	6.325	6.325	6.325	6.325	6.325	6.325	1	1		Lateral
232	M470	TWR_INNER_TRI_T9	6.843	6.843	6.843	6.843	6.843	6.843	1	1		Lateral
233	M471	TWR_INNER_TRI_T9	6.843	6.843	6.843	6.843	6.843	6.843	1	1		Lateral
234	M456	TWR_INNER_TRI_T10	7.383	7.383	7.383	7.383	7.383	7.383	1	1		Lateral
235	M457	TWR_INNER_TRI_T10	7.383	7.383	7.383	7.383	7.383	7.383	1	1		Lateral
236	M424	TWR_INNER_TRI_T11	8.51	8.51	8.51	8.51	8.51	8.51	1	1		Lateral
237	M425	TWR_INNER_TRI_T11	8.51	8.51	8.51	8.51	8.51	8.51	1	1		Lateral
238	M1	TWR_LEG_T1	12.568	6.724	6.724	6.724	6.724	6.724	1	1		Lateral
239	M2	TWR_LEG_T1	12.568	6.724	6.724	6.724	6.724	6.724	1	1		Lateral
240	M3	TWR_LEG_T1	12.568	6.724	6.724	6.724	6.724	6.724	1	1		Lateral
241	M4	TWR_LEG_T1	12.568	6.724	6.724	6.724	6.724	6.724	1	1		Lateral
242	M21	TWR_LEG_T2	12.568	6.67	6.67	6.67	6.67	6.67	1	1		Lateral
243	M22	TWR_LEG_T2	12.568	6.67	6.67	6.67	6.67	6.67	1	1		Lateral
244	M23	TWR_LEG_T2	12.568	6.67	6.67	6.67	6.67	6.67	1	1		Lateral
245	M24	TWR_LEG_T2	12.568	6.67	6.67	6.67	6.67	6.67	1	1		Lateral
246	M41	TWR_LEG_T3	12.568	6.628	6.628	6.628	6.628	6.628	1	1		Lateral
247	M42	TWR_LEG_T3	12.568	6.628	6.628	6.628	6.628	6.628	1	1		Lateral
248	M43	TWR_LEG_T3	12.568	6.628	6.628	6.628	6.628	6.628	1	1		Lateral
249	M44	TWR_LEG_T3	12.568	6.628	6.628	6.628	6.628	6.628	1	1		Lateral
250	M66	TWR_LEG_T4	12.568	6.594	6.594	6.594	6.594	6.594	1	1		Lateral
251	M67	TWR_LEG_T4	12.568	6.594	6.594	6.594	6.594	6.594	1	1		Lateral
252	M68	TWR_LEG_T4	12.568	6.594	6.594	6.594	6.594	6.594	1	1		Lateral
253	M69	TWR_LEG_T4	12.568	6.594	6.594	6.594	6.594	6.594	1	1		Lateral
254	M86	TWR_LEG_T5	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
255	M87	TWR_LEG_T5	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
256	M88	TWR_LEG_T5	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
257	M89	TWR_LEG_T5	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
258	M123	TWR_LEG_T6	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
259	M124	TWR_LEG_T6	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
260	M125	TWR_LEG_T6	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
261	M126	TWR_LEG_T6	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
262	M160	TWR_LEG_T7	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
263	M161	TWR_LEG_T7	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
264	M162	TWR_LEG_T7	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
265	M163	TWR_LEG_T7	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
266	M197	TWR_LEG_T8	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
267	M198	TWR_LEG_T8	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
268	M199	TWR_LEG_T8	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
269	M200	TWR_LEG_T8	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
270	M234	TWR_LEG_T9	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
271	M235	TWR_LEG_T9	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
272	M236	TWR_LEG_T9	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
273	M237	TWR_LEG_T9	12.568	6.284	6.284	6.284	6.284	6.284	1	1		Lateral
274	M271	TWR_LEG_T10	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
275	M272	TWR_LEG_T10	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
276	M273	TWR_LEG_T10	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
277	M274	TWR_LEG_T10	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
278	M332	TWR_LEG_T11	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
279	M333	TWR_LEG_T11	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
280	M334	TWR_LEG_T11	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
281	M335	TWR_LEG_T11	25.136	8.379	8.379	8.379	8.379	8.379	1	1		Lateral
282	M401	TWR_RED_BRACE_T11	5.156	5.156	5.156	5.156	5.156	5.156	1	1		Lateral
283	M402	TWR_RED_BRACE_T11	2.713	2.713	2.713	2.713	2.713	2.713	1	1		Lateral
284	M403	TWR_RED_BRACE_T11	5.156	5.156	5.156	5.156	5.156	5.156	1	1		Lateral
285	M404	TWR_RED_BRACE_T11	2.713	2.713	2.713	2.713	2.713	2.713	1	1		Lateral
286	M405	TWR_RED_BRACE_T11	5.156	5.156	5.156	5.156	5.156	5.156	1	1		Lateral
287	M406	TWR_RED_BRACE_T11	2.713	2.713	2.713	2.713	2.713	2.713	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
288	M407	TWR_RED_BRACE_T11	5.156	5.156	5.156	5.156	5.156	5.156	1	1		Lateral
289	M408	TWR_RED_BRACE_T11	2.713	2.713	2.713	2.713	2.713	2.713	1	1		Lateral
290	M280	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
291	M285	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
292	M291	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
293	M296	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
294	M304	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
295	M309	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
296	M317	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
297	M322	TWR_RED_DIAG_2_T10	12.286	11.83	11.83	11.83	11.83	11.83	1	1		Lateral
298	M341	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
299	M346	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
300	M353	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
301	M358	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
302	M367	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
303	M372	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
304	M381	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
305	M386	TWR_RED_DIAG_2_T11	13.214	12.78	12.78	12.78	12.78	12.78	1.06	1		Lateral
306	M93	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
307	M96	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
308	M100	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
309	M103	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
310	M107	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
311	M110	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
312	M114	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
313	M117	TWR_RED_DIAG_T5	7.685	7.25	7.25	7.25	7.25	7.25	1	1		Lateral
314	M130	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
315	M133	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
316	M137	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
317	M140	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
318	M144	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
319	M147	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
320	M151	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
321	M154	TWR_RED_DIAG_T6	7.961	7.56	7.56	7.56	7.56	7.56	1	1		Lateral
322	M167	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
323	M170	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
324	M174	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
325	M177	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
326	M181	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
327	M184	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
328	M188	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
329	M191	TWR_RED_DIAG_T7	8.253	7.87	7.87	7.87	7.87	7.87	1	1		Lateral
330	M204	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
331	M207	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
332	M211	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
333	M214	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
334	M218	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
335	M221	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
336	M225	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
337	M228	TWR_RED_DIAG_T8	8.561	8.19	8.19	8.19	8.19	8.19	1	1		Lateral
338	M241	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
339	M244	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
340	M248	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
341	M251	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
342	M255	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
343	M258	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
344	M262	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
345	M265	TWR_RED_DIAG_T9	8.881	8.53	8.53	8.53	8.53	8.53	1	1		Lateral
346	M279	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
347	M284	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
348	M290	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
349	M295	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
350	M303	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
351	M308	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
352	M316	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
353	M321	TWR_RED_DIAG_T10	9.35	8.62	8.62	8.62	8.62	8.62	1	1		Lateral
354	M340	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
355	M345	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
356	M352	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
357	M357	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
358	M366	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
359	M371	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
360	M380	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
361	M385	TWR_RED_DIAG_T11	9.642	8.98	8.98	8.98	8.98	8.98	1	1		Lateral
362	M427	TWR_RED_HIPBRACE_...	7.674	7.674	7.674	7.674	7.674	7.674	1	1		Lateral
363	M428	TWR_RED_HIPBRACE_...	7.674	7.674	7.674	7.674	7.674	7.674	1	1		Lateral
364	M429	TWR_RED_HIPBRACE_...	7.674	7.674	7.674	7.674	7.674	7.674	1	1		Lateral
365	M430	TWR_RED_HIPBRACE_...	5.431	5.431	5.431	5.431	5.431	5.431	1	1		Lateral
366	M431	TWR_RED_HIPBRACE_...	5.431	5.431	5.431	5.431	5.431	5.431	1	1		Lateral
367	M432	TWR_RED_HIPBRACE_...	8	8	8	8	8	8	1	1		Lateral
368	M298	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
369	M311	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
370	M324	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
371	M326	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
372	M445	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
373	M446	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
374	M447	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
375	M448	TWR_RED_HIPDIA_2_T...	11.575	11.575	11.575	11.575	11.575	11.575	1.03	1		Lateral
376	M361	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
377	M375	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
378	M389	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
379	M391	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
380	M413	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
381	M414	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
382	M415	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
383	M416	TWR_RED_HIPDIA_2_T...	12.268	12.268	12.268	12.268	12.268	12.268	1.03	1		Lateral
384	M297	TWR_RED_HIP_2_T10	13.607	13.607	13.607	13.607	13.607	13.607	1	1		Lateral
385	M310	TWR_RED_HIP_2_T10	13.607	13.607	13.607	13.607	13.607	13.607	1	1		Lateral
386	M323	TWR_RED_HIP_2_T10	13.607	13.607	13.607	13.607	13.607	13.607	1	1		Lateral
387	M325	TWR_RED_HIP_2_T10	13.607	13.607	13.607	13.607	13.607	13.607	1	1		Lateral
388	M360	TWR_RED_HIP_2_T11	15.348	15.348	15.348	15.348	15.348	15.348	1	1		Lateral
389	M374	TWR_RED_HIP_2_T11	15.348	15.348	15.348	15.348	15.348	15.348	1	1		Lateral
390	M388	TWR_RED_HIP_2_T11	15.348	15.348	15.348	15.348	15.348	15.348	1	1		Lateral
391	M390	TWR_RED_HIP_2_T11	15.348	15.348	15.348	15.348	15.348	15.348	1	1		Lateral
392	M278	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
393	M283	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
394	M289	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
395	M294	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
396	M302	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
397	M307	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
398	M315	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
399	M320	TWR_RED_HORZ_2_T10	9.622	9.29	9.29	9.29	9.29	9.29	1.05	1		Lateral
400	M339	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
401	M344	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
402	M351	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
403	M356	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
404	M365	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
405	M370	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
406	M379	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
407	M384	TWR_RED_HORZ_2_T11	10.853	10.52	10.52	10.52	10.52	10.52	1.04	1		Lateral
408	M92	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
409	M95	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
410	M99	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
411	M102	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
412	M106	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
413	M109	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
414	M113	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
415	M116	TWR_RED_HORZ_T5	4.909	4.66	4.66	4.66	4.66	4.66	1	1		Lateral
416	M129	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
417	M132	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
418	M136	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
419	M139	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
420	M143	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
421	M146	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
422	M150	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
423	M153	TWR_RED_HORZ_T6	5.37	5.12	5.12	5.12	5.12	5.12	1	1		Lateral
424	M166	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
425	M169	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
426	M173	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
427	M176	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
428	M180	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
429	M183	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
430	M187	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
431	M190	TWR_RED_HORZ_T7	5.832	5.58	5.58	5.58	5.58	5.58	1	1		Lateral
432	M203	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
433	M206	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
434	M210	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
435	M213	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
436	M217	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
437	M220	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
438	M224	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
439	M227	TWR_RED_HORZ_T8	6.293	6.04	6.04	6.04	6.04	6.04	1	1		Lateral
440	M240	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
441	M243	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
442	M247	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
443	M250	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
444	M254	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
445	M257	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
446	M261	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
447	M264	TWR_RED_HORZ_T9	6.755	6.42	6.42	6.42	6.42	6.42	1	1		Lateral
448	M277	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
449	M282	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
450	M288	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
451	M293	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
452	M301	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
453	M306	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
454	M314	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
455	M319	TWR_RED_HORZ_T10	4.811	4.48	4.48	4.48	4.48	4.48	1	1		Lateral
456	M338	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
457	M343	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
458	M350	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
459	M355	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
460	M364	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
461	M369	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
462	M378	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
463	M383	TWR_RED_HORZ_T11	5.426	5.09	5.09	5.09	5.09	5.09	1	1		Lateral
464	M347	TWR_RED_SUBHOR_T...	18.125	18.125	18.125	18.125	18.125	18.125	1.06	1		Lateral
465	M359	TWR_RED_SUBHOR_T...	18.125	18.125	18.125	18.125	18.125	18.125	1.06	1		Lateral
466	M373	TWR_RED_SUBHOR_T...	18.125	18.125	18.125	18.125	18.125	18.125	1.06	1		Lateral
467	M387	TWR_RED_SUBHOR_T...	18.125	18.125	18.125	18.125	18.125	18.125	1.06	1		Lateral
468	M540	TWR_RED_VERT_T1	6.706	6.706	6.706	6.706	6.706	6.706	1	1		Lateral
469	M541	TWR_RED_VERT_T1	6.706	6.706	6.706	6.706	6.706	6.706	1	1		Lateral
470	M542	TWR_RED_VERT_T1	6.706	6.706	6.706	6.706	6.706	6.706	1	1		Lateral
471	M543	TWR_RED_VERT_T1	6.706	6.706	6.706	6.706	6.706	6.706	1	1		Lateral
472	M536	TWR_RED_VERT_T2	6.652	6.652	6.652	6.652	6.652	6.652	1	1		Lateral
473	M537	TWR_RED_VERT_T2	6.652	6.652	6.652	6.652	6.652	6.652	1	1		Lateral
474	M538	TWR_RED_VERT_T2	6.652	6.652	6.652	6.652	6.652	6.652	1	1		Lateral
475	M539	TWR_RED_VERT_T2	6.652	6.652	6.652	6.652	6.652	6.652	1	1		Lateral
476	M522	TWR_RED_VERT_T3	6.61	6.61	6.61	6.61	6.61	6.61	1	1		Lateral
477	M523	TWR_RED_VERT_T3	6.61	6.61	6.61	6.61	6.61	6.61	1	1		Lateral
478	M524	TWR_RED_VERT_T3	6.61	6.61	6.61	6.61	6.61	6.61	1	1		Lateral
479	M525	TWR_RED_VERT_T3	6.61	6.61	6.61	6.61	6.61	6.61	1	1		Lateral
480	M518	TWR_RED_VERT_T4	6.576	6.576	6.576	6.576	6.576	6.576	1	1		Lateral
481	M519	TWR_RED_VERT_T4	6.576	6.576	6.576	6.576	6.576	6.576	1	1		Lateral
482	M520	TWR_RED_VERT_T4	6.576	6.576	6.576	6.576	6.576	6.576	1	1		Lateral
483	M521	TWR_RED_VERT_T4	6.576	6.576	6.576	6.576	6.576	6.576	1	1		Lateral
484	M397	TWR_RED_VERT_T11	12.534	12.534	12.534	12.534	12.534	12.534	1	1		Lateral
485	M398	TWR_RED_VERT_T11	12.534	12.534	12.534	12.534	12.534	12.534	1	1		Lateral
486	M399	TWR_RED_VERT_T11	12.534	12.534	12.534	12.534	12.534	12.534	1	1		Lateral
487	M400	TWR_RED_VERT_T11	12.534	12.534	12.534	12.534	12.534	12.534	1	1		Lateral
488	M433	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
489	M434	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
490	M435	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
491	M436	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
492	M437	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
493	M438	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
494	M439	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
495	M440	TWR_RED_VERT_T11	8.615	8.615	8.615	8.615	8.615	8.615	1	1		Lateral
496	M17	TWR_STEP_T1	13.108	6.075	6.075	6.075	6.075	6.075	.85	.85		Lateral
497	M18	TWR_STEP_T1	13.108	6.075	6.075	6.075	6.075	6.075	.85	.85		Lateral
498	M19	TWR_STEP_T1	13.108	6.075	6.075	6.075	6.075	6.075	.85	.85		Lateral
499	M20	TWR_STEP_T1	13.108	6.075	6.075	6.075	6.075	6.075	.85	.85		Lateral
500	M37	TWR_STEP_T2	14.962	7.23	7.23	7.23	7.23	7.23	1	1		Lateral
501	M38	TWR_STEP_T2	14.962	7.23	7.23	7.23	7.23	7.23	1	1		Lateral
502	M39	TWR_STEP_T2	14.962	7.23	7.23	7.23	7.23	7.23	1	1		Lateral
503	M40	TWR_STEP_T2	14.962	7.23	7.23	7.23	7.23	7.23	1	1		Lateral
504	M62	TWR_STEP_T3	16.815	7.93	7.93	7.93	7.93	7.93	.8	.8		Lateral
505	M63	TWR_STEP_T3	16.815	7.93	7.93	7.93	7.93	7.93	.8	.8		Lateral
506	M64	TWR_STEP_T3	16.815	7.93	7.93	7.93	7.93	7.93	.8	.8		Lateral
507	M65	TWR_STEP_T3	16.815	7.93	7.93	7.93	7.93	7.93	.8	.8		Lateral
508	M82	TWR_STEP_T4	18.666	8.855	8.855	8.855	8.855	8.855	.78	.78		Lateral
509	M83	TWR_STEP_T4	18.666	8.855	8.855	8.855	8.855	8.855	.78	.78		Lateral
510	M84	TWR_STEP_T4	18.666	8.855	8.855	8.855	8.855	8.855	.78	.78		Lateral
511	M85	TWR_STEP_T4	18.666	8.855	8.855	8.855	8.855	8.855	.78	.78		Lateral
512	M5	TWR_TOP_GIRT_T1	12.25	11.75	11.75	11.75	11.75	11.75	1	1		Lateral
513	M6	TWR_TOP_GIRT_T1	12.25	11.75	11.75	11.75	11.75	11.75	1	1		Lateral
514	M7	TWR_TOP_GIRT_T1	12.25	11.75	11.75	11.75	11.75	11.75	1	1		Lateral
515	M8	TWR_TOP_GIRT_T1	12.25	11.75	11.75	11.75	11.75	11.75	1	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp bo...	L-tor...	Kyy	Kzz	Cb	Function
516	M25	TWR_TOP_GIRT_T2	14.096	13.14	6.57	6.57	6.57	6.57	1.05	1		Lateral
517	M26	TWR_TOP_GIRT_T2	14.096	13.14	6.57	6.57	6.57	6.57	1.05	1		Lateral
518	M27	TWR_TOP_GIRT_T2	14.096	13.14	6.57	6.57	6.57	6.57	1.05	1		Lateral
519	M28	TWR_TOP_GIRT_T2	14.096	13.14	6.57	6.57	6.57	6.57	1.05	1		Lateral
520	M45	TWR_TOP_GIRT_T3	15.942	7.49	7.49	7.49	7.49	7.49	1.15	1		Lateral
521	M46	TWR_TOP_GIRT_T3	15.942	7.49	7.49	7.49	7.49	7.49	1.15	1		Lateral
522	M47	TWR_TOP_GIRT_T3	15.942	7.49	7.49	7.49	7.49	7.49	1.15	1		Lateral
523	M48	TWR_TOP_GIRT_T3	15.942	7.49	7.49	7.49	7.49	7.49	1.15	1		Lateral
524	M70	TWR_TOP_GIRT_T4	17.788	16.83	8.415	8.415	8.415	8.415	1.03	1		Lateral
525	M71	TWR_TOP_GIRT_T4	17.788	16.83	8.415	8.415	8.415	8.415	1.03	1		Lateral
526	M72	TWR_TOP_GIRT_T4	17.788	16.83	8.415	8.415	8.415	8.415	1.03	1		Lateral
527	M73	TWR_TOP_GIRT_T4	17.788	16.83	8.415	8.415	8.415	8.415	1.03	1		Lateral
528	M53	TWR_INNER_SUPP_T3	15.942	15.942	15.942	15.942	15.942	15.942	1.04	1		Lateral
529	M122	TWR_INNER_SUPP_T5	19.635	19.635	19.635	19.635	19.635	19.635	1.01	1		Lateral
530	M159	TWR_INNER_SUPP_T6	21.481	21.481	21.481	21.481	21.481	21.481	1.01	1		Lateral
531	M196	TWR_INNER_SUPP_T7	23.327	23.327	23.327	23.327	23.327	23.327	1.01	1		Lateral
532	M233	TWR_INNER_SUPP_T8	25.173	25.173	25.173	25.173	25.173	25.173	1.01	1		Lateral
533	M270	TWR_INNER_SUPP_T9	27.019	27.019	27.019	27.019	27.019	27.019	1.01	1		Lateral
534	M331	TWR_INNER_SUPP_T10	28.865	28.865	28.865	28.865	28.865	28.865	1	1		Lateral
535	M396	TWR_INNER_SUPP_T11	32.558	32.558	32.558	32.558	32.558	32.558	1.01	1		Lateral

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Grav...	Joint	Point	Distrib...	Area(Member)	Surfac...
1	Dead	None		-1		60	414	44		
2	No Ice Wind 0 deg	None				60	992	132		
3	No Ice Wind 45 deg	None				120	972	176		
4	No Ice Wind 90 deg	None				60	992	132		
5	No Ice Wind 135 deg	None				120	978	176		
6	No Ice Wind 180 deg	None				60	992	132		
7	No Ice Wind 225 deg	None				120	972	176		
8	No Ice Wind 270 deg	None				60	992	132		
9	No Ice Wind 315 deg	None				120	978	176		
10	Ice	None				60	410	440		
11	Temperature Drop	None						535		
12	Ice Wind 0 deg	None				60	998	116		
13	Ice Wind 45 deg	None				120	920	176		
14	Ice Wind 90 deg	None				60	1002	132		
15	Ice Wind 135 deg	None				120	924	176		
16	Ice Wind 180 deg	None				60	998	124		
17	Ice Wind 225 deg	None				120	920	176		
18	Ice Wind 270 deg	None				60	1002	132		
19	Ice Wind 315 deg	None				120	924	176		
20	Service Wind 0 deg	None				60	806	132		
21	Service Wind 45 deg	None				120	788	176		
22	Service Wind 90 deg	None				60	812	132		
23	Service Wind 135 deg	None				120	788	168		
24	Service Wind 180 deg	None				60	806	132		
25	Service Wind 225 deg	None				120	788	176		
26	Service Wind 270 deg	None				60	812	132		
27	Service Wind 315 deg	None				120	788	168		

Load Combinations

	Description	So...	P...	S...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...	BLC	Fa...
1	Dead Only	Yes			1	1	28	1	29	1	0		0		0		0		0		0			
2	1.2 Dead+1.6 Wind 0 de...	Yes			1	1.2	2	1.6	28	1.2	29	1	0		0		0		0		0			
3	0.9 Dead+1.6 Wind 0 de...	Yes			1	.9	2	1.6	28	.9	29	1	0		0		0		0		0			
4	1.2 Dead+1.6 Wind 45 d...	Yes			1	1.2	3	1.6	28	1.2	29	1	0		0		0		0		0			
5	0.9 Dead+1.6 Wind 45 d...	Yes			1	.9	3	1.6	28	.9	29	1	0		0		0		0		0			
6	1.2 Dead+1.6 Wind 90 d...	Yes			1	1.2	4	1.6	28	1.2	29	1	0		0		0		0		0			
7	0.9 Dead+1.6 Wind 90 d...	Yes			1	.9	4	1.6	28	.9	29	1	0		0		0		0		0			
8	1.2 Dead+1.6 Wind 135 ...	Yes			1	1.2	5	1.6	28	1.2	29	1	0		0		0		0		0			
9	0.9 Dead+1.6 Wind 135 ...	Yes			1	.9	5	1.6	28	.9	29	1	0		0		0		0		0			
10	1.2 Dead+1.6 Wind 180 ...	Yes			1	1.2	6	1.6	28	1.2	29	1	0		0		0		0		0			
11	0.9 Dead+1.6 Wind 180 ...	Yes			1	.9	6	1.6	28	.9	29	1	0		0		0		0		0			
12	1.2 Dead+1.6 Wind 225 ...	Yes			1	1.2	7	1.6	28	1.2	29	1	0		0		0		0		0			
13	0.9 Dead+1.6 Wind 225 ...	Yes			1	.9	7	1.6	28	.9	29	1	0		0		0		0		0			
14	1.2 Dead+1.6 Wind 270 ...	Yes			1	1.2	8	1.6	28	1.2	29	1	0		0		0		0		0			
15	0.9 Dead+1.6 Wind 270 ...	Yes			1	.9	8	1.6	28	.9	29	1	0		0		0		0		0			
16	1.2 Dead+1.6 Wind 315 ...	Yes			1	1.2	9	1.6	28	1.2	29	1	0		0		0		0		0			
17	0.9 Dead+1.6 Wind 315 ...	Yes			1	.9	9	1.6	28	.9	29	1	0		0		0		0		0			
18	1.2 Dead+1.0 Ice+1.0 Te...	Yes			1	1.2	10	1	11	1	28	1.2	29	1	0		0		0		0			
19	1.2 Dead+1.0 Wind 0 de...	Yes			1	1.2	12	1	10	1	11	1	28	1.2	29	1	0		0		0			
20	1.2 Dead+1.0 Wind 45 d...	Yes			1	1.2	13	1	10	1	11	1	28	1.2	29	1	0		0		0			
21	1.2 Dead+1.0 Wind 90 d...	Yes			1	1.2	14	1	10	1	11	1	28	1.2	29	1	0		0		0			
22	1.2 Dead+1.0 Wind 135 ...	Yes			1	1.2	15	1	10	1	11	1	28	1.2	29	1	0		0		0			
23	1.2 Dead+1.0 Wind 180 ...	Yes			1	1.2	16	1	10	1	11	1	28	1.2	29	1	0		0		0			
24	1.2 Dead+1.0 Wind 225 ...	Yes			1	1.2	17	1	10	1	11	1	28	1.2	29	1	0		0		0			
25	1.2 Dead+1.0 Wind 270 ...	Yes			1	1.2	18	1	10	1	11	1	28	1.2	29	1	0		0		0			
26	1.2 Dead+1.0 Wind 315 ...	Yes			1	1.2	19	1	10	1	11	1	28	1.2	29	1	0		0		0			
27	Dead+Wind 0 deg - Servi...	Yes			1	1	20	1	28	1	29	1	0		0		0		0		0			
28	Dead+Wind 45 deg - Ser...	Yes			1	1	21	1	28	1	29	1	0		0		0		0		0			
29	Dead+Wind 90 deg - Ser...	Yes			1	1	22	1	28	1	29	1	0		0		0		0		0			
30	Dead+Wind 135 deg - S...	Yes			1	1	23	1	28	1	29	1	0		0		0		0		0			
31	Dead+Wind 180 deg - S...	Yes			1	1	24	1	28	1	29	1	0		0		0		0		0			
32	Dead+Wind 225 deg - S...	Yes			1	1	25	1	28	1	29	1	0		0		0		0		0			
33	Dead+Wind 270 deg - S...	Yes			1	1	26	1	28	1	29	1	0		0		0		0		0			
34	Dead+Wind 315 deg - S...	Yes			1	1	27	1	28	1	29	1	0		0		0		0		0			

Envelope AISC 13th(360-05): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
1	M9	L 3-1/2x3...	.228	7.0...	14	.005	9.66	z	24	17.938	54.675	.918	3.864	1	H2-1
2	M10	L 3-1/2x3...	.230	7.5...	6	.006	9.66	z	22	17.938	54.675	.918	3.864	1	H2-1
3	M11	L 3-1/2x3...	.220	7.0...	10	.005	9.66	z	22	17.938	54.675	.918	3.864	1	H2-1
4	M12	L 3-1/2x3...	.220	7.5...	2	.006	9.66	z	20	17.938	54.675	.918	3.864	1	H2-1
5	M13	L 3-1/2x3...	.228	7.0...	6	.005	9.66	z	20	17.938	54.675	.918	3.864	1	H2-1
6	M14	L 3-1/2x3...	.226	7.5...	14	.006	9.66	z	19	17.938	54.675	.918	3.864	1	H2-1
7	M15	L 3-1/2x3...	.253	6.8...	2	.005	9.66	z	25	17.938	54.675	.918	3.864	1	H2-1
8	M16	L 3-1/2x3...	.252	7.5...	10	.006	9.66	z	25	17.938	54.675	.918	3.864	1	H2-1
9	M29	L3-1/2x3...	.546	7.3...	14	.005	10....	z	24	12.408	50.625	.764	3.012	1	H2-1
10	M30	L3-1/2x3...	.537	0	6	.006	10....	z	23	12.408	50.625	.764	3.069	1	H2-1
11	M31	L3-1/2x3...	.572	7.3...	10	.005	10....	z	22	12.408	50.625	.764	3.012	1	H2-1
12	M32	L3-1/2x3...	.563	0	2	.006	10....	z	21	12.408	50.625	.764	3.069	1	H2-1
13	M33	L3-1/2x3...	.571	7.3...	6	.005	10....	z	20	12.408	50.625	.764	3.012	1	H2-1
14	M34	L3-1/2x3...	.566	0	14	.006	10....	z	19	12.408	50.625	.764	3.069	1	H2-1
15	M35	L3-1/2x3...	.564	7.3...	2	.005	10....	z	26	12.408	50.625	.764	3.012	1	H2-1
16	M36	L3-1/2x3...	.558	0	10	.006	10....	z	25	12.408	50.625	.764	3.069	1	H2-1
17	M54	L4x3x1/4	.641	10....	14	.006	10....	z	19	12.882	54.675	.824	3.521	1	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
18	M55	L4x3x1/4	.656	10....	6	.006	10....	z	19	12.882	54.675	.824	3.521	1	H2-1
19	M56	L4x3x1/4	.667	10....	10	.006	10....	z	26	12.882	54.675	.824	3.521	1	H2-1
20	M57	L4x3x1/4	.680	10....	2	.006	10....	z	24	12.882	54.675	.824	3.521	1	H2-1
21	M58	L4x3x1/4	.676	10....	6	.006	10....	z	20	12.882	54.675	.824	3.521	1	H2-1
22	M59	L4x3x1/4	.692	10....	14	.006	10....	z	22	12.882	54.675	.824	3.521	1	H2-1
23	M60	L4x3x1/4	.663	10....	2	.006	10....	z	22	12.882	54.675	.824	3.521	1	H2-1
24	M61	L4x3x1/4	.682	10....	10	.006	10....	z	21	12.882	54.675	.824	3.521	1	H2-1
25	M91	2L2-1/2x...	.667	8.2...	14	.003	8.2...	y	26	20.24	77.112	5.381	2.133	1	H1-1a
26	M94	2L2-1/2x...	.670	8.2...	6	.003	8.2...	y	21	20.24	77.112	5.381	2.133	1	H1-1a
27	M98	2L2-1/2x...	.660	8.2...	10	.003	8.2...	y	24	20.24	77.112	5.381	2.133	1	H1-1a
28	M101	2L2-1/2x...	.659	8.2...	2	.003	8.2...	y	20	20.24	77.112	5.381	2.133	1	H1-1a
29	M105	2L2-1/2x...	.658	8.2...	6	.003	8.2...	y	20	20.24	77.112	5.381	2.133	1	H1-1a
30	M108	2L2-1/2x...	.657	8.2...	14	.003	8.2...	y	24	20.24	77.112	5.381	2.133	1	H1-1a
31	M112	2L2-1/2x...	.686	8.2...	2	.003	8.2...	y	19	20.24	77.112	5.381	2.133	1	H1-1a
32	M115	2L2-1/2x...	.686	8.2...	10	.003	8.2...	y	23	20.24	77.112	5.381	2.133	1	H1-1a
33	M128	2L2-1/2x...	.684	8.5...	14	.004	8.5...	y	26	18.729	77.112	5.381	2.133	1	H1-1a
34	M131	2L2-1/2x...	.687	8.5...	6	.004	8.5...	y	20	18.729	77.112	5.381	2.133	1	H1-1a
35	M135	2L2-1/2x...	.674	8.5...	10	.004	8.5...	y	24	18.729	77.112	5.381	2.133	1	H1-1a
36	M138	2L2-1/2x...	.676	8.5...	2	.004	8.5...	y	26	18.729	77.112	5.381	2.133	1	H1-1a
37	M142	2L2-1/2x...	.669	8.5...	6	.004	8.5...	y	22	18.729	77.112	5.381	2.133	1	H1-1a
38	M145	2L2-1/2x...	.668	8.5...	14	.004	8.5...	y	24	18.729	77.112	5.381	2.133	1	H1-1a
39	M149	2L2-1/2x...	.698	8.5...	2	.004	8.5...	y	20	18.729	77.112	5.381	2.133	1	H1-1a
40	M152	2L2-1/2x...	.696	8.5...	10	.004	8.5...	y	22	18.729	77.112	5.381	2.133	1	H1-1a
41	M165	2L2-1/2x...	.773	8.8...	14	.004	8.8...	y	26	17.34	77.112	5.381	2.133	1	H1-1a
42	M168	2L2-1/2x...	.782	8.8...	6	.004	8.8...	y	20	17.34	77.112	5.381	2.133	1	H1-1a
43	M172	2L2-1/2x...	.766	8.8...	10	.004	8.8...	y	24	17.34	77.112	5.381	2.133	1	H1-1a
44	M175	2L2-1/2x...	.762	8.8...	2	.004	8.8...	y	25	17.34	77.112	5.381	2.133	1	H1-1a
45	M179	2L2-1/2x...	.766	8.8...	6	.004	8.8...	y	22	17.34	77.112	5.381	2.133	1	H1-1a
46	M182	2L2-1/2x...	.758	8.8...	14	.004	8.8...	y	24	17.34	77.112	5.381	2.133	1	H1-1a
47	M186	2L2-1/2x...	.792	8.8...	2	.004	8.8...	y	21	17.34	77.112	5.381	2.133	1	H1-1a
48	M189	2L2-1/2x...	.795	8.8...	10	.004	8.8...	y	23	17.34	77.112	5.381	2.133	1	H1-1a
49	M202	2L2-1/2x...	.850	9.2...	14	.004	9.2...	y	26	16.045	77.112	5.381	2.133	1	H1-1a
50	M205	2L2-1/2x...	.859	9.2...	6	.004	9.2...	y	20	16.045	77.112	5.381	2.133	1	H1-1a
51	M209	2L2-1/2x...	.839	9.2...	10	.004	9.2...	y	24	16.045	77.112	5.381	2.133	1	H1-1a
52	M212	2L2-1/2x...	.836	9.2...	2	.004	9.2...	y	25	16.045	77.112	5.381	2.133	1	H1-1a
53	M216	2L2-1/2x...	.835	9.2...	6	.004	9.2...	y	23	16.045	77.112	5.381	2.133	1	H1-1a
54	M219	2L2-1/2x...	.828	9.2...	14	.004	9.2...	y	24	16.045	77.112	5.381	2.133	1	H1-1a
55	M223	2L2-1/2x...	.864	9.2...	2	.004	9.2...	y	20	16.045	77.112	5.381	2.133	1	H1-1a
56	M226	2L2-1/2x...	.865	9.2...	10	.004	9.2...	y	22	16.045	77.112	5.381	2.133	1	H1-1a
57	M239	2L2-1/2x...	.894	9.5...	14	.004	9.5...	y	26	15.651	77.112	5.381	2.133	1	H1-1a
58	M242	2L2-1/2x...	.902	9.5...	6	.004	9.5...	y	20	15.651	77.112	5.381	2.133	1	H1-1a
59	M246	2L2-1/2x...	.891	9.5...	10	.004	9.5...	y	24	15.651	77.112	5.381	2.133	1	H1-1a
60	M249	2L2-1/2x...	.885	9.5...	2	.004	9.5...	y	25	15.651	77.112	5.381	2.133	1	H1-1a
61	M253	2L2-1/2x...	.877	9.5...	6	.004	9.5...	y	23	15.651	77.112	5.381	2.133	1	H1-1a
62	M256	2L2-1/2x...	.871	9.5...	14	.004	9.5...	y	24	15.651	77.112	5.381	2.133	1	H1-1a
63	M260	2L2-1/2x...	.909	9.5...	2	.004	9.5...	y	20	15.651	77.112	5.381	2.133	1	H1-1a
64	M263	2L2-1/2x...	.913	9.5...	10	.004	9.5...	y	22	15.651	77.112	5.381	2.133	1	H1-1a
65	M276	2L3x3x3/...	.584	19....	14	.003	19....	y	24	35.431	136.728	11.376	4.498	1	H1-1a
66	M281	2L3x3x3/...	.587	19....	6	.003	19....	y	22	35.431	136.728	11.376	4.498	1	H1-1a
67	M287	2L3x3x3/...	.578	19....	10	.003	19....	y	22	35.431	136.728	11.376	4.498	1	H1-1a
68	M292	2L3x3x3/...	.577	19....	2	.003	19....	y	19	35.431	136.728	11.376	4.498	1	H1-1a
69	M300	2L3x3x3/...	.566	19....	6	.003	19....	y	21	35.431	136.728	11.376	4.498	1	H1-1a
70	M305	2L3x3x3/...	.563	19....	14	.003	19....	y	26	35.431	136.728	11.376	4.498	1	H1-1a
71	M313	2L3x3x3/...	.589	19....	2	.003	19....	y	26	35.431	136.728	11.376	4.498	1	H1-1a
72	M318	2L3x3x3/...	.590	19....	10	.003	19....	y	24	35.431	136.728	11.376	4.498	1	H1-1a
73	M337	2L3x3-1/...	.473	0	14	.005	15....	y	10	48.209	148.716	15.04	4.593	1	H1-1a
74	M342	2L3x3-1/...	.475	0	6	.005	15....	y	10	48.209	148.716	15.04	4.593	1	H1-1a

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
75	M349	2L3x3-1/...	.473	0	10	.005	15....	y	6	48.209	148.716	15.04	4.593	1	H1-1a
76	M354	2L3x3-1/...	.471	0	2	.005	15....	y	6	48.209	148.716	15.04	4.593	1	H1-1a
77	M363	2L3x3-1/...	.459	0	6	.005	15....	y	2	48.209	148.716	15.04	4.593	1	H1-1a
78	M368	2L3x3-1/...	.457	0	14	.005	15....	y	2	48.209	148.716	15.04	4.593	1	H1-1a
79	M377	2L3x3-1/...	.479	0	2	.005	15....	y	14	48.209	148.716	15.04	4.593	1	H1-1a
80	M382	2L3x3-1/...	.480	0	10	.005	15....	y	14	48.209	148.716	15.04	4.593	1	H1-1a
81	M90	2L3x2-1/...	.171	9.8...	21	.006	9.8...	y	25	40.651	85.212	5.423	3.034	1	H1-1b
82	M97	2L3x2-1/...	.182	9.8...	19	.006	9.8...	y	23	40.651	85.212	5.423	3.034	1	H1-1b
83	M104	2L3x2-1/...	.182	9.8...	21	.006	9.8...	y	25	40.651	85.212	5.423	3.034	1	H1-1b
84	M111	2L3x2-1/...	.172	9.8...	19	.006	9.8...	y	23	40.651	85.212	5.423	3.034	1	H1-1b
85	M127	2L2-1/2x...	.414	10....	6	.007	10....	y	23	21.014	77.112	5.381	2.133	1	H1-1a
86	M134	2L2-1/2x...	.418	10....	2	.007	10....	y	23	21.014	77.112	5.381	2.133	1	H1-1a
87	M141	2L2-1/2x...	.413	10....	6	.007	10....	y	22	21.014	77.112	5.381	2.133	1	H1-1a
88	M148	2L2-1/2x...	.420	10....	2	.007	10....	y	25	21.014	77.112	5.381	2.133	1	H1-1a
89	M164	2L2-1/2x...	.575	11....	6	.007	11....	y	26	17.698	77.112	5.381	2.133	1	H1-1a
90	M171	2L2-1/2x...	.572	11....	2	.008	11....	y	26	17.698	77.112	5.381	2.133	1	H1-1a
91	M178	2L2-1/2x...	.582	11....	6	.008	11....	y	22	17.698	77.112	5.381	2.133	1	H1-1a
92	M185	2L2-1/2x...	.597	11....	10	.007	11....	y	21	17.698	77.112	5.381	2.133	1	H1-1a
93	M201	2L2-1/2x...	.698	12....	6	.008	12....	y	23	15.084	77.112	5.381	2.133	1	H1-1a
94	M208	2L2-1/2x...	.692	12....	2	.008	12....	y	25	15.084	77.112	5.381	2.133	1	H1-1a
95	M215	2L2-1/2x...	.689	12....	6	.008	12....	y	23	15.084	77.112	5.381	2.133	1	H1-1a
96	M222	2L2-1/2x...	.702	12....	10	.008	12....	y	25	15.084	77.112	5.381	2.133	1	H1-1a
97	M238	2L3x2-1/...	.522	13....	6	.008	13....	y	23	21.715	85.212	5.423	3.034	1	H1-1a
98	M245	2L3x2-1/...	.529	13....	2	.008	13....	y	22	21.715	85.212	5.423	3.034	1	H1-1a
99	M252	2L3x2-1/...	.525	13....	6	.008	13....	y	26	21.715	85.212	5.423	3.034	1	H1-1a
100	M259	2L3x2-1/...	.529	13....	10	.007	13....	y	25	21.715	85.212	5.423	3.034	1	H1-1a
101	M275	2L3x2-1/...	.633	14....	6	.008	14....	y	23	19.415	85.212	5.423	3.034	1	H1-1a
102	M286	2L3x2-1/...	.642	14....	2	.009	14....	y	21	19.415	85.212	5.423	3.034	1	H1-1a
103	M299	2L3x2-1/...	.632	14....	6	.009	14....	y	19	19.415	85.212	5.423	3.034	1	H1-1a
104	M312	2L3x2-1/...	.636	14....	10	.008	14....	y	25	19.415	85.212	5.423	3.034	1	H1-1a
105	M336	2L3x3x3/...	.261	16....	6	.004	24....	y	22	51.173	136.728	11.376	4.498	1...	H1-1a
106	M348	2L3x3x3/...	.256	16....	2	.004	24....	y	20	51.173	136.728	11.376	4.498	2...	H1-1a
107	M362	2L3x3x3/...	.251	16....	6	.004	8.1...	y	20	51.173	136.728	11.376	4.498	1...	H1-1a
108	M376	2L3x3x3/...	.263	16....	10	.004	24....	y	24	51.173	136.728	11.376	4.498	1...	H1-1a
109	M490	L2.5x2.5x4	.020	2.9...	2	.003	0	y	6	12.752	38.556	1.114	2.159	1	H2-1
110	M491	L2.5x2.5x4	.020	2.9...	14	.002	0	y	10	12.752	38.556	1.114	2.159	1	H2-1
111	M466	L2.5x2.5x4	.027	3.3...	10	.002	0	y	14	9.505	38.556	1.114	2.076	1	H2-1
112	M467	L2.5x2.5x4	.027	3.3...	14	.002	0	y	10	9.505	38.556	1.114	2.076	1	H2-1
113	M468	L2.5x2.5x4	.027	3.3...	6	.002	0	y	2	9.505	38.556	1.114	2.076	1	H2-1
114	M469	L2.5x2.5x4	.027	3.3...	2	.002	0	y	6	9.505	38.556	1.114	2.076	1	H2-1
115	M452	L2.5x2.5x3	.032	3.6...	10	.002	7.2...	y	6	6.307	29.192	.873	1.417	1	H2-1
116	M453	L2.5x2.5x3	.032	3.6...	6	.003	7.2...	y	2	6.307	29.192	.873	1.417	1	H2-1
117	M454	L2.5x2.5x3	.032	3.6...	2	.003	7.2...	y	6	6.307	29.192	.873	1.417	1	H2-1
118	M455	L2.5x2.5x3	.032	3.6...	14	.002	7.2...	y	2	6.307	29.192	.873	1.417	1	H2-1
119	M420	L2.5x2.5x3	.041	4.07	10	.002	8.1...	y	6	4.957	29.192	.873	1.349	1	H2-1
120	M421	L2.5x2.5x3	.041	4.07	6	.002	8.1...	y	10	4.957	29.192	.873	1.349	1	H2-1
121	M422	L2.5x2.5x3	.041	4.07	2	.002	8.1...	y	14	4.957	29.192	.873	1.349	1	H2-1
122	M423	L2.5x2.5x3	.041	4.07	14	.002	8.1...	y	2	4.957	29.192	.873	1.349	1	H2-1
123	M530	L2.5x2.5x3	.012	0	8	.001	0	y	12	10.337	29.192	.873	1.606	1...	H2-1
124	M531	L2.5x2.5x3	.016	0	12	.001	0	y	8	10.337	29.192	.873	1.606	1...	H2-1
125	M532	L2.5x2.5x3	.012	0	16	.001	0	y	12	10.337	29.192	.873	1.606	1...	H2-1
126	M512	L2X2.5X3	.116	0	22	.002	0	y	4	4.806	26.198	1.609	.704	1...	H2-1
127	M513	L2X2.5X3	.157	0	24	.002	0	y	8	4.806	26.198	1.609	.704	1...	H2-1
128	M514	L2X2.5X3	.116	0	26	.002	0	y	4	4.806	26.198	1.609	.704	1...	H2-1
129	M502	L2X2.5X3	.064	0	8	.002	0	y	12	4.016	26.198	1.609	.704	1...	H2-1
130	M503	L2X2.5X3	.072	0	12	.002	0	y	8	4.016	26.198	1.609	.704	1...	H2-1
131	M504	L2X2.5X3	.063	0	16	.002	0	y	12	4.016	26.198	1.609	.704	1...	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
132	M487	L2X2.5X3	.054	0	8	.002	0	y	12	3.405	26.198	1.609	.704	1...	H2-1
133	M488	L2X2.5X3	.059	0	13	.002	0	y	8	3.405	26.198	1.609	.704	1...	H2-1
134	M489	L2X2.5X3	.052	0	17	.002	0	y	12	3.405	26.198	1.609	.704	1...	H2-1
135	M477	L2X2.5X3	.058	0	8	.003	0	y	4	2.924	26.198	1.609	.704	1...	H2-1
136	M478	L2X2.5X3	.065	0	12	.003	0	y	8	2.924	26.198	1.609	.704	1...	H2-1
137	M479	L2X2.5X3	.058	0	16	.003	0	y	4	2.924	26.198	1.609	.704	1...	H2-1
138	M463	L3x3x4	.044	0	12	.003	0	y	8	8.472	46.656	1.688	2.845	1...	H2-1
139	M464	L3x3x4	.041	0	8	.003	0	y	4	8.472	46.656	1.688	2.845	1...	H2-1
140	M465	L3x3x4	.041	0	16	.003	0	y	4	8.472	46.656	1.688	2.845	1...	H2-1
141	M449	L3x3x1/4	.048	0	8	.003	0	y	4	7.602	46.656	.673	2.786	1...	H2-1
142	M450	L3x3x1/4	.050	0	12	.003	0	y	8	7.602	46.656	.673	2.786	1...	H2-1
143	M451	L3x3x1/4	.048	0	16	.003	0	y	4	7.602	46.656	.673	2.786	1...	H2-1
144	M417	L3.5x3.5x5	.029	0	8	.003	11....	y	12	11.667	68.04	2.882	4.892	1...	H2-1
145	M418	L3.5x3.5x5	.032	0	13	.003	11....	y	8	11.667	68.04	2.882	4.892	1...	H2-1
146	M419	L3.5x3.5x5	.029	0	17	.003	11....	y	4	11.667	68.04	2.882	4.892	1...	H2-1
147	M492	L2X2.5X3	.017	2.9...	4	.002	5.8...	y	24	6.81	26.198	1.609	.644	1	H2-1
148	M493	L2X2.5X3	.018	2.9...	6	.002	0	y	26	6.81	26.198	1.609	.644	1	H2-1
149	M494	L2X2.5X3	.018	2.9...	8	.002	5.8...	y	26	6.81	26.198	1.609	.644	1	H2-1
150	M535	L2X2.5X3	.069	4	4	.002	0	y	16	3.619	26.198	1.609	.627	1	H2-1
151	M517	L2X2.5X3	.578	4	20	.002	8	y	16	3.619	26.198	1.609	.627	1	H2-1
152	M507	L2X2.5X3	.329	4	2	.002	8	y	8	3.619	26.198	1.609	.627	1	H2-1
153	M497	L2X2.5X3	.283	4	6	.002	0	y	16	3.619	26.198	1.609	.627	1	H2-1
154	M482	L2X2.5X3	.304	4	2	.002	0	y	8	3.619	26.198	1.609	.627	1	H2-1
155	M472	2L2-1/2x...	.046	4	2	.002	0	y	8	26.081	58.32	4.017	2.611	1	H1-1b
156	M458	L4x4x6	.056	4	2	.002	8	y	8	41.657	92.664	4.398	8.566	1	H2-1
157	M426	L2.5x2.5x4	.206	4	2	.002	8	y	16	6.777	38.556	1.114	1.972	1	H2-1
158	M526	L3x2.5x4	.044	3.9...	16	.002	7.9...	y	26	8.813	42.768	1.251	2.172	1	H2-1
159	M527	L3x2.5x4	.044	3.9...	8	.002	7.9...	y	22	8.813	42.768	1.251	2.172	1	H2-1
160	M528	L3x2.5x4	.044	3.9...	14	.001	7.9...	y	8	8.813	42.768	1.251	2.172	1	H2-1
161	M529	L3x2.5x4	.044	3.9...	10	.001	0	y	16	8.813	42.768	1.251	2.172	1	H2-1
162	M508	LL2.5x2x...	.043	4.9...	14	.002	0	z	2	16.604	53.136	2.725	2.524	1	H1-1b
163	M509	LL2.5x2x...	.043	4.9...	10	.002	0	z	6	16.604	53.136	2.725	2.524	1	H1-1b
164	M510	LL2.5x2x...	.058	4.9...	25	.002	0	z	10	16.604	53.136	2.725	2.524	1	H1-1b
165	M511	LL2.5x2x...	.058	4.9...	23	.002	0	z	14	16.604	53.136	2.725	2.524	1	H1-1b
166	M498	LL2.5x2x...	.058	5.37	14	.003	0	z	2	13.873	53.136	2.725	2.524	1	H1-1b
167	M499	LL2.5x2x...	.059	5.37	10	.003	0	z	6	13.873	53.136	2.725	2.524	1	H1-1b
168	M500	LL2.5x2x...	.052	5.37	14	.003	0	z	10	13.873	53.136	2.725	2.524	1	H1-1b
169	M501	LL2.5x2x...	.052	5.37	10	.003	0	z	14	13.873	53.136	2.725	2.524	1	H1-1b
170	M483	LL2.5x2x...	.085	5.8...	12	.003	0	z	6	11.764	53.136	2.725	1.577	1	H1-1b
171	M484	LL2.5x2x...	.072	5.8...	6	.003	11....	z	2	11.764	53.136	2.725	1.577	1	H1-1b
172	M485	LL2.5x2x...	.056	5.8...	2	.003	0	z	14	11.764	53.136	2.725	2.524	1	H1-1b
173	M486	LL2.5x2x...	.067	5.8...	12	.003	0	z	2	11.764	53.136	2.725	2.524	1	H1-1b
174	M473	LL2.5x2x...	.084	6.2...	12	.003	12....	z	2	10.1	53.136	2.725	2.524	1	H1-1b
175	M474	LL2.5x2x...	.085	6.2...	12	.003	12....	z	6	10.1	53.136	2.725	2.524	1	H1-1b
176	M475	LL2.5x2x...	.068	6.2...	6	.003	12....	z	10	10.1	53.136	2.725	2.524	1	H1-1b
177	M476	LL2.5x2x...	.068	6.2...	2	.003	12....	z	14	10.1	53.136	2.725	2.524	1	H1-1b
178	M459	LL2.5x2x...	.121	6.7...	12	.004	13....	z	2	10.465	53.136	2.725	1.577	1	H1-1b
179	M460	LL2.5x2x...	.123	6.7...	12	.004	0	z	6	10.465	53.136	2.725	1.577	1	H1-1b
180	M461	LL2.5x2x...	.101	6.7...	6	.004	13....	z	10	10.465	53.136	2.725	1.577	1	H1-1b
181	M462	LL2.5x2x...	.101	6.7...	2	.004	0	z	14	10.465	53.136	2.725	1.577	1	H1-1b
182	M441	2L3x2-1/...	.077	7.2...	2	.004	14....	z	14	22.832	85.212	5.423	4.855	1	H1-1b
183	M442	2L3x2-1/...	.077	7.2...	6	.004	0	z	10	22.832	85.212	5.423	4.855	1	H1-1b
184	M443	2L3x2-1/...	.089	7.2...	12	.004	14....	z	6	22.832	85.212	5.423	4.855	1	H1-1b
185	M444	2L3x2-1/...	.088	7.2...	12	.004	0	z	2	22.832	85.212	5.423	4.855	1	H1-1b
186	M409	LL2.5x2....	.091	8.1...	2	.004	0	z	6	18.589	77.112	5.321	3.332	1	H1-1b
187	M410	LL2.5x2....	.091	8.1...	6	.004	16....	z	2	18.589	77.112	5.321	3.332	1	H1-1b
188	M411	LL2.5x2....	.105	8.1...	12	.004	16....	z	6	18.589	77.112	5.321	3.332	1	H1-1b

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
189	M412	LL2.5x2....	.104	8.1...	12	.004	0	z	2	18.589	77.112	5.321	3.332	1	H1-1b
190	M49	2L2-1/2x...	.184	5.6...	25	.010	11....	z	24	14.189	53.136	2.713	1.572	1	H1-1b
191	M50	2L2-1/2x...	.188	5.6...	24	.010	0	z	26	14.189	53.136	2.713	2.516	1	H1-1b
192	M51	2L2-1/2x...	.184	5.6...	23	.010	0	z	24	14.189	53.136	2.713	1.572	1	H1-1b
193	M52	2L2-1/2x...	.184	5.6...	24	.010	11....	z	26	14.189	53.136	2.713	2.516	1	H1-1b
194	M118	2L2-1/2x...	.227	6.9...	25	.011	13....	z	24	18.665	58.32	4.017	1.632	1	H1-1b
195	M119	2L2-1/2x...	.229	6.9...	25	.011	0	z	26	18.665	58.32	4.017	2.611	1	H1-1b
196	M120	2L2-1/2x...	.227	6.9...	23	.011	0	z	24	18.665	58.32	4.017	1.632	1	H1-1b
197	M121	2L2-1/2x...	.208	6.9...	25	.011	0	z	26	18.665	58.32	4.017	1.632	1	H1-1b
198	M155	2L2-1/2x...	.245	7.5...	25	.011	15....	z	25	15.733	58.32	4.017	2.611	1	H1-1b
199	M156	2L2-1/2x...	.250	7.5...	25	.012	0	z	26	15.733	58.32	4.017	2.611	1	H1-1b
200	M157	2L2-1/2x...	.245	7.5...	23	.011	0	z	23	15.733	58.32	4.017	2.611	1	H1-1b
201	M158	2L2-1/2x...	.242	7.5...	19	.011	0	z	25	15.733	58.32	4.017	2.611	1	H1-1b
202	M192	2L2-1/2x...	.284	8.2...	25	.012	16....	z	25	13.428	58.32	4.017	1.632	1	H1-1b
203	M193	2L2-1/2x...	.298	8.2...	25	.013	16....	z	22	13.428	58.32	4.017	2.611	1	H1-1b
204	M194	2L2-1/2x...	.319	8.2...	23	.014	0	z	24	13.428	58.32	4.017	1.632	1	H1-1b
205	M195	2L2-1/2x...	.300	8.2...	19	.013	16....	z	26	13.428	58.32	4.017	2.611	1	H1-1b
206	M229	2L2-1/2x...	.332	8.9	25	.013	17.8	z	25	11.811	58.32	4.017	1.632	1	H1-1b
207	M230	2L2-1/2x...	.340	8.9	25	.013	17.8	z	26	11.811	58.32	4.017	2.611	1	H1-1b
208	M231	2L2-1/2x...	.332	8.9	23	.013	0	z	23	11.811	58.32	4.017	2.611	1	H1-1b
209	M232	2L2-1/2x...	.331	8.9	19	.013	0	z	25	11.811	58.32	4.017	2.611	1	H1-1b
210	M266	2L2-1/2x...	.408	9.5...	25	.015	19....	z	25	10.292	58.32	4.017	2.611	1	H1-1b
211	M267	2L2-1/2x...	.415	9.5...	23	.015	19....	z	26	10.292	58.32	4.017	2.611	1	H1-1b
212	M268	2L2-1/2x...	.408	9.5...	23	.015	0	z	23	10.292	58.32	4.017	2.611	1	H1-1b
213	M269	2L2-1/2x...	.406	9.5...	19	.014	0	z	25	10.292	58.32	4.017	2.611	1	H1-1b
214	M327	L3x3x1/4	.143	0	14	.008	10....	z	23	7.602	46.656	.673	2.651	1	H2-1
215	M328	L3x3x1/4	.146	0	10	.008	10....	z	20	7.602	46.656	.673	2.651	1	H2-1
216	M329	L3x3x1/4	.145	20....	10	.008	10....	z	25	7.602	46.656	.673	2.651	1	H2-1
217	M330	L3x3x1/4	.112	0	2	.007	10....	z	25	7.602	46.656	.673	2.651	1	H2-1
218	M392	2L3x2-1/...	.070	11....	24	.006	11....	z	21	27.824	85.212	5.423	4.855	1	H1-1b
219	M393	2L3x2-1/...	.069	11....	25	.007	11....	z	19	27.824	85.212	5.423	4.855	1	H1-1b
220	M394	2L3x2-1/...	.070	11....	24	.006	11....	z	19	27.824	85.212	5.423	4.855	1	H1-1b
221	M395	2L3x2-1/...	.068	11....	19	.006	11....	z	25	27.824	85.212	5.423	4.855	1	H1-1b
222	M533	L2X2.5X3	.013	2.1...	4	.001	0	y	23	12.015	26.198	1.609	.655	1	H2-1
223	M534	L2X2.5X3	.013	2.1...	4	.001	4.3...	y	25	12.015	26.198	1.609	.655	1	H2-1
224	M515	L2X2.5X3	.066	2.4...	20	.002	0	y	22	9.396	26.198	1.609	.651	1	H2-1
225	M516	L2X2.5X3	.066	2.4...	20	.002	4.9...	y	26	9.396	26.198	1.609	.651	1	H2-1
226	M505	L2X2.5X3	.075	2.6...	12	.002	0	y	20	8.008	26.198	1.609	.648	1	H2-1
227	M506	L2X2.5X3	.075	2.6...	12	.002	5.3...	y	20	8.008	26.198	1.609	.648	1	H2-1
228	M495	L2X2.5X3	.105	2.9...	12	.002	0	y	20	6.805	26.198	1.609	.644	1	H2-1
229	M496	L2X2.5X3	.105	2.9...	12	.002	5.8...	y	20	6.805	26.198	1.609	.644	1	H2-1
230	M480	L2X2.5X3	.132	3.1...	12	.002	0	y	20	5.79	26.198	1.609	.641	1	H2-1
231	M481	L2X2.5X3	.132	3.1...	12	.002	0	y	20	5.79	26.198	1.609	.641	1	H2-1
232	M470	L2.5x2.5x4	.115	3.4...	12	.002	6.8...	y	12	9.262	38.556	1.114	2.068	1	H2-1
233	M471	L2.5x2.5x4	.115	3.4...	12	.002	0	y	12	9.262	38.556	1.114	2.068	1	H2-1
234	M456	L2.5x2.5x3	.189	3.6...	12	.002	7.3...	y	12	6.025	29.192	.873	1.404	1	H2-1
235	M457	L2.5x2.5x3	.189	3.6...	12	.002	7.3...	y	12	6.025	29.192	.873	1.404	1	H2-1
236	M424	L2.5x2.5x4	.180	4.2...	12	.003	0	y	4	5.989	38.556	1.114	1.932	1	H2-1
237	M425	L2.5x2.5x4	.180	4.2...	12	.003	0	y	4	5.989	38.556	1.114	1.932	1	H2-1
238	M1	L6x6x1/2	.093	3.0...	24	.046	12....	z	2	145.646	186.3	5.312	28.768	1	H2-1
239	M2	L6x6x1/2	.093	.131	23	.039	12....	z	14	145.646	186.3	5.312	28.768	1	H2-1
240	M3	L6x6x1/2	.091	.131	20	.039	12....	y	14	145.646	186.3	5.312	28.768	1	H2-1
241	M4	L6x6x1/2	.090	4.9...	26	.046	12....	y	10	145.646	186.3	5.312	28.768	1	H2-1
242	M21	L6x6x1/2	.148	2.7...	24	.009	12....	y	6	146.222	186.3	5.312	28.808	1	H2-1
243	M22	L6x6x1/2	.156	1.5...	22	.013	12....	y	2	146.222	186.3	5.312	28.808	1	H2-1
244	M23	L6x6x1/2	.158	2.88	20	.013	12....	z	10	146.222	186.3	5.312	28.808	1	H2-1
245	M24	L6x6x1/2	.151	3.7...	26	.012	12....	z	6	146.222	186.3	5.312	28.808	1	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
246	M41	L6x6x5/8	.177	7.8...	12	.005	12....	z	2	181.223	230.344	6.62	36.329	1	H2-1
247	M42	L6x6x5/8	.175	3.9...	22	.004	12....	y	2	181.223	230.344	6.62	36.329	1	H2-1
248	M43	L6x6x5/8	.179	3.9...	20	.005	12....	y	14	181.223	230.344	6.62	36.329	1	H2-1
249	M44	L6x6x5/8	.178	7.8...	16	.005	12....	z	6	181.223	230.344	6.62	36.329	1	H2-1
250	M66	L6x6x5/8	.248	8.2...	12	.018	12....	z	2	181.667	230.344	6.62	36.356	1	H2-1
251	M67	L6x6x5/8	.246	3.0...	8	.016	12....	z	14	181.667	230.344	6.62	36.356	1	H2-1
252	M68	L6x6x5/8	.245	3.0...	4	.012	12....	z	10	181.667	230.344	6.62	36.356	1	H2-1
253	M69	L6x6x5/8	.248	3.0...	16	.017	12....	y	10	181.667	230.344	6.62	36.356	1	H2-1
254	M86	L6x6x3/4	.242	3.7...	12	.005	0	y	8	219.743	273.456	7.814	42.81	1	H2-1
255	M87	L6x6x3/4	.242	9.5...	8	.005	0	z	12	219.743	273.456	7.814	42.81	1	H2-1
256	M88	L6x6x3/4	.241	9.5...	4	.004	0	y	16	219.743	273.456	7.814	42.81	1	H2-1
257	M89	L6x6x3/4	.243	9.5...	16	.004	0	y	12	219.743	273.456	7.814	42.81	1	H2-1
258	M123	L6x6x3/4	.327	3.2...	12	.005	0	y	8	219.743	273.456	7.814	42.81	1	H2-1
259	M124	L6x6x3/4	.326	3.2...	8	.005	0	z	12	219.743	273.456	7.814	42.81	1	H2-1
260	M125	L6x6x3/4	.324	9.6...	4	.005	0	y	16	219.743	273.456	7.814	42.81	1	H2-1
261	M126	L6x6x3/4	.324	9.6...	16	.005	0	y	12	219.743	273.456	7.814	42.81	1	H2-1
262	M160	L6x6x7/8	.346	3.2...	12	.008	12....	y	8	253.44	315.394	9.128	48.216	1	H2-1
263	M161	L6x6x7/8	.341	3.2...	8	.006	12....	z	12	253.44	315.394	9.128	48.216	1	H2-1
264	M162	L6x6x7/8	.344	3.2...	4	.007	12....	z	8	253.44	315.394	9.128	48.216	1	H2-1
265	M163	L6x6x7/8	.350	3.2...	16	.009	12....	y	12	253.44	315.394	9.128	48.216	1	H2-1
266	M197	L6x6x7/8	.402	3.2...	12	.006	0	y	8	253.44	315.394	9.128	48.216	1	H2-1
267	M198	L6x6x7/8	.398	3.2...	8	.006	0	z	12	253.44	315.394	9.128	48.216	1	H2-1
268	M199	L6x6x7/8	.400	9.5...	4	.005	0	y	16	253.44	315.394	9.128	48.216	1	H2-1
269	M200	L6x6x7/8	.405	9.5...	16	.005	0	z	4	253.44	315.394	9.128	48.216	1	H2-1
270	M234	L8x8x3/4	.358	2.88	12	.009	0	y	8	327.621	369.36	14.265	79.428	1	H2-1
271	M235	L8x8x3/4	.355	2.88	8	.008	0	z	12	327.621	369.36	14.265	79.428	1	H2-1
272	M236	L8x8x3/4	.357	2.88	4	.008	0	z	8	327.621	369.36	14.265	79.428	1	H2-1
273	M237	L8x8x3/4	.361	2.88	16	.008	0	z	4	327.621	369.36	14.265	79.428	1	H2-1
274	M271	L8x8x7/8	.382	17....	12	.006	0	y	8	345.459	428.794	16.437	90.618	1	H2-1
275	M272	L8x8x7/8	.381	17....	8	.006	0	z	12	345.459	428.794	16.437	90.618	1	H2-1
276	M273	L8x8x7/8	.379	17....	4	.005	0	y	16	345.459	428.794	16.437	90.618	1	H2-1
277	M274	L8x8x7/8	.383	17....	16	.006	0	z	4	345.459	428.794	16.437	90.618	1	H2-1
278	M332	L8X8X1_...	.399	16....	12	.006	12....	y	12	390.538	486	18.559	101.303	1	H2-1
279	M333	L8X8X1_...	.400	16....	8	.006	12....	z	8	390.538	486	18.559	101.303	1	H2-1
280	M334	L8X8X1_...	.397	16....	4	.006	12....	y	4	390.538	486	18.559	101.303	1	H2-1
281	M335	L8X8X1_...	.400	16....	16	.006	12....	z	16	390.538	486	18.559	101.303	1	H2-1
282	M401	L2.5x2.5x4	.117	2.47	8	.001	0	y	22	16.194	38.556	1.114	2.224	1	H2-1
283	M402	L2.5x2.5x4	.051	1.3...	8	.001	0	y	16	30.324	38.556	1.114	2.505	1	H2-1
284	M403	L2.5x2.5x4	.117	2.47	12	.001	0	y	24	16.194	38.556	1.114	2.224	1	H2-1
285	M404	L2.5x2.5x4	.051	1.3...	12	.001	2.7...	y	4	30.324	38.556	1.114	2.505	1	H2-1
286	M405	L2.5x2.5x4	.116	2.47	4	.001	5.1...	y	21	16.194	38.556	1.114	2.224	1	H2-1
287	M406	L2.5x2.5x4	.051	1.3...	4	.001	2.7...	y	12	30.324	38.556	1.114	2.505	1	H2-1
288	M407	L2.5x2.5x4	.117	2.47	16	.001	5.1...	y	26	16.194	38.556	1.114	2.224	1	H2-1
289	M408	L2.5x2.5x4	.051	1.3...	16	.001	0	y	8	30.324	38.556	1.114	2.505	1	H2-1
290	M280	L3x3-1/2...	.038	0	11	.006	0	z	26	6.974	50.625	1.301	3.568	1	H2-1
291	M285	L3x3-1/2...	.034	1.1...	11	.006	12....	z	20	6.974	50.625	1.301	2.891	1	H2-1
292	M291	L3x3-1/2...	.032	0	7	.006	12....	z	24	6.974	50.625	1.301	3.568	1	H2-1
293	M296	L3x3-1/2...	.040	1.1...	7	.006	12....	z	25	6.974	50.625	1.301	2.891	1	H2-1
294	M304	L3x3-1/2...	.036	0	3	.006	0	z	23	6.974	50.625	1.301	3.568	1	H2-1
295	M309	L3x3-1/2...	.039	1.1...	3	.006	12....	z	24	6.974	50.625	1.301	2.891	1	H2-1
296	M317	L3x3-1/2...	.040	0	15	.006	12....	z	20	6.974	50.625	1.301	3.568	1	H2-1
297	M322	L3x3-1/2...	.032	1.1...	17	.006	12....	z	22	6.974	50.625	1.301	2.891	1	H2-1
298	M341	2L2-1/2x...	.118	6.6...	26	.004	13....	y	25	12.583	69.012	3.669	3.3	1	H1-1b
299	M346	2L2-1/2x...	.118	6.6...	20	.004	0	y	21	12.583	69.012	3.669	3.3	1	H1-1b
300	M353	2L2-1/2x...	.118	6.6...	25	.004	0	y	23	12.583	69.012	3.669	3.3	1	H1-1b
301	M358	2L2-1/2x...	.118	6.6...	25	.004	0	y	19	12.583	69.012	3.669	3.3	1	H1-1b
302	M367	2L2-1/2x...	.119	6.6...	22	.004	0	y	21	12.583	69.012	3.669	3.3	1	H1-1b

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
303	M372	2L2-1/2x...	.118	6.6...	24	.004	13....	y	25	12.583	69.012	3.669	3.3	1	H1-1b
304	M381	2L2-1/2x...	.118	6.6...	21	.004	13....	y	19	12.583	69.012	3.669	3.3	1	H1-1b
305	M386	2L2-1/2x...	.118	6.6...	21	.004	0	y	23	12.583	69.012	3.669	3.3	1	H1-1b
306	M93	L2-1/2x2-...	.038	0	11	.004	7.6...	z	26	6.596	29.236	.351	1.426	1	H2-1
307	M96	L2-1/2x2-...	.035	0	11	.004	7.6...	z	24	6.596	29.236	.351	1.426	1	H2-1
308	M100	L2-1/2x2-...	.033	0	7	.004	7.6...	z	24	6.596	29.236	.351	1.426	1	H2-1
309	M103	L2-1/2x2-...	.039	0	7	.004	7.6...	z	26	6.596	29.236	.351	1.426	1	H2-1
310	M107	L2-1/2x2-...	.037	0	17	.004	7.6...	z	22	6.596	29.236	.351	1.426	1	H2-1
311	M110	L2-1/2x2-...	.039	0	5	.004	0	z	24	6.596	29.236	.351	1.426	1	H2-1
312	M114	L2-1/2x2-...	.039	0	15	.004	7.6...	z	24	6.596	29.236	.351	1.426	1	H2-1
313	M117	L2-1/2x2-...	.035	0	17	.004	7.6...	z	22	6.596	29.236	.351	1.426	1	H2-1
314	M130	L2-1/2x2-...	.063	0	9	.004	0	z	24	6.066	29.236	.351	1.402	1	H2-1
315	M133	L2-1/2x2-...	.061	0	13	.004	7.9...	z	22	6.066	29.236	.351	1.402	1	H2-1
316	M137	L2-1/2x2-...	.060	0	5	.004	7.9...	z	22	6.066	29.236	.351	1.402	1	H2-1
317	M140	L2-1/2x2-...	.063	0	9	.004	0	z	20	6.066	29.236	.351	1.402	1	H2-1
318	M144	L2-1/2x2-...	.064	0	17	.004	7.9...	z	20	6.066	29.236	.351	1.402	1	H2-1
319	M147	L2-1/2x2-...	.065	0	5	.004	7.9...	z	26	6.066	29.236	.351	1.402	1	H2-1
320	M151	L2-1/2x2-...	.065	0	13	.004	0	z	26	6.066	29.236	.351	1.402	1	H2-1
321	M154	L2-1/2x2-...	.063	0	17	.004	7.9...	z	24	6.066	29.236	.351	1.402	1	H2-1
322	M167	L2-1/2x2-...	.075	0	9	.004	8.2...	z	20	5.598	29.236	.351	1.379	1	H2-1
323	M170	L2-1/2x2-...	.071	0	13	.004	8.2...	z	26	5.598	29.236	.351	1.379	1	H2-1
324	M174	L2-1/2x2-...	.071	0	5	.004	0	z	26	5.598	29.236	.351	1.379	1	H2-1
325	M177	L2-1/2x2-...	.074	0	9	.004	8.2...	z	24	5.598	29.236	.351	1.379	1	H2-1
326	M181	L2-1/2x2-...	.074	0	17	.004	0	z	20	5.598	29.236	.351	1.379	1	H2-1
327	M184	L2-1/2x2-...	.077	0	5	.004	8.2...	z	26	5.598	29.236	.351	1.379	1	H2-1
328	M188	L2-1/2x2-...	.076	0	13	.004	0	z	26	5.598	29.236	.351	1.379	1	H2-1
329	M191	L2-1/2x2-...	.074	0	17	.004	8.2...	z	24	5.598	29.236	.351	1.379	1	H2-1
330	M204	L2-1/2x2-...	.093	0	9	.004	0	z	19	5.169	29.236	.351	1.355	1	H2-1
331	M207	L2-1/2x2-...	.088	0	13	.004	0	z	23	5.169	29.236	.351	1.355	1	H2-1
332	M211	L2-1/2x2-...	.088	0	5	.004	0	z	25	5.169	29.236	.351	1.355	1	H2-1
333	M214	L2-1/2x2-...	.090	0	9	.004	0	z	24	5.169	29.236	.351	1.355	1	H2-1
334	M218	L2-1/2x2-...	.090	0	17	.004	0	z	24	5.169	29.236	.351	1.355	1	H2-1
335	M221	L2-1/2x2-...	.094	0	5	.004	0	z	23	5.169	29.236	.351	1.355	1	H2-1
336	M225	L2-1/2x2-...	.093	0	13	.004	8.5...	z	21	5.169	29.236	.351	1.355	1	H2-1
337	M228	L2-1/2x2-...	.092	0	17	.004	0	z	21	5.169	29.236	.351	1.355	1	H2-1
338	M241	L2-1/2x2-...	.169	0	9	.005	8.8...	z	24	4.765	29.236	.351	1.33	1	H2-1
339	M244	L2-1/2x2-...	.163	0	13	.005	0	z	22	4.765	29.236	.351	1.33	1	H2-1
340	M248	L2-1/2x2-...	.163	0	5	.005	8.8...	z	22	4.765	29.236	.351	1.33	1	H2-1
341	M251	L2-1/2x2-...	.163	0	9	.005	0	z	20	4.765	29.236	.351	1.33	1	H2-1
342	M255	L2-1/2x2-...	.163	0	17	.005	8.8...	z	20	4.765	29.236	.351	1.33	1	H2-1
343	M258	L2-1/2x2-...	.168	0	5	.005	8.8...	z	26	4.765	29.236	.351	1.33	1	H2-1
344	M262	L2-1/2x2-...	.167	0	13	.005	0	z	26	4.765	29.236	.351	1.33	1	H2-1
345	M265	L2-1/2x2-...	.168	0	17	.005	8.8...	z	24	4.765	29.236	.351	1.33	1	H2-1
346	M279	L2-1/2x2-...	.136	0	11	.003	0	z	25	4.666	29.236	.351	1.324	1	H2-1
347	M284	L2-1/2x2-...	.131	0	11	.003	9.35	z	21	4.666	29.236	.351	1.324	1	H2-1
348	M290	L2-1/2x2-...	.131	0	7	.003	0	z	23	4.666	29.236	.351	1.324	1	H2-1
349	M295	L2-1/2x2-...	.137	0	7	.003	0	z	19	4.666	29.236	.351	1.324	1	H2-1
350	M303	L2-1/2x2-...	.132	0	3	.003	0	z	21	4.666	29.236	.351	1.324	1	H2-1
351	M308	L2-1/2x2-...	.138	0	3	.003	9.35	z	25	4.666	29.236	.351	1.324	1	H2-1
352	M316	L2-1/2x2-...	.138	0	15	.003	0	z	19	4.666	29.236	.351	1.324	1	H2-1
353	M321	L2-1/2x2-...	.132	0	15	.003	9.35	z	23	4.666	29.236	.351	1.324	1	H2-1
354	M340	L2-1/2x2-...	.421	9.6...	12	.003	4.8...	y	24	4.299	29.236	.351	1.298	1	H2-1
355	M345	L2-1/2x2-...	.422	9.3...	8	.003	4.8...	y	22	4.299	29.236	.351	1.298	1	H2-1
356	M352	L2-1/2x2-...	.096	0	9	.004	9.6...	y	22	4.299	29.236	.351	1.298	1	H2-1
357	M357	L2-1/2x2-...	.101	0	5	.004	9.6...	y	20	4.299	29.236	.351	1.298	1	H2-1
358	M366	L2-1/2x2-...	.415	9.6...	4	.003	4.8...	y	20	4.299	29.236	.351	1.298	1	H2-1
359	M371	L2-1/2x2-...	.419	9.3...	16	.003	4.8...	y	26	4.299	29.236	.351	1.298	1	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
360	M380	L2-1/2x2-...	.102	0	17	.004	9.6...	y	26	4.299	29.236	.351	1.298	1	H2-1
361	M385	L2-1/2x2-...	.096	0	13	.004	9.6...	y	24	4.299	29.236	.351	1.298	1	H2-1
362	M427	L2x2x3	.092	3.8...	26	.002	7.6...	y	10	2.911	23.393	.558	.875	1	H2-1
363	M428	L2x2x3	.051	3.8...	24	.002	7.6...	y	10	2.911	23.393	.558	.875	1	H2-1
364	M429	L2x2x3	.092	3.8...	22	.002	7.6...	y	2	2.911	23.393	.558	.875	1	H2-1
365	M430	L2x2x3	.040	2.7...	26	.002	5.4...	y	4	5.811	23.393	.558	.988	1	H2-1
366	M431	L2x2x3	.040	2.7...	22	.002	5.4...	y	4	5.811	23.393	.558	.988	1	H2-1
367	M432	L2x2x3	.057	4	24	.002	8	y	8	2.678	23.393	.558	.861	1	H2-1
368	M298	2L2-1/2x...	.090	5.6...	21	.004	11....	y	22	16.51	77.112	5.381	3.414	1	H1-1b
369	M311	2L2-1/2x...	.090	5.6...	26	.004	11....	y	20	16.51	77.112	5.381	3.414	1	H1-1b
370	M324	2L2-1/2x...	.090	5.6...	24	.004	0	y	26	16.51	77.112	5.381	3.414	1	H1-1b
371	M326	2L2-1/2x...	.090	5.6...	22	.004	11....	y	24	16.51	77.112	5.381	3.414	1	H1-1b
372	M445	2L2-1/2x...	.034	5.6...	19	.002	11....	z	16	16.51	77.112	5.381	3.414	1	H1-1b
373	M446	2L2-1/2x...	.033	5.6...	22	.002	11....	z	12	16.51	77.112	5.381	3.414	1	H1-1b
374	M447	2L2-1/2x...	.034	5.6...	26	.002	0	z	12	16.51	77.112	5.381	3.414	1	H1-1b
375	M448	2L2-1/2x...	.034	5.6...	24	.002	11....	z	8	16.51	77.112	5.381	3.414	1	H1-1b
376	M361	2L2-1/2x...	.102	6.0...	20	.004	12....	y	20	14.698	77.112	5.381	3.414	1	H1-1b
377	M375	2L2-1/2x...	.102	6.0...	26	.004	12....	y	26	14.698	77.112	5.381	3.414	1	H1-1b
378	M389	2L2-1/2x...	.102	6.0...	24	.004	12....	y	24	14.698	77.112	5.381	3.414	1	H1-1b
379	M391	2L2-1/2x...	.102	6.0...	23	.004	0	y	22	14.698	77.112	5.381	3.414	1	H1-1b
380	M413	2L2-1/2x...	.057	6.2...	22	.002	12....	y	8	14.698	77.112	5.381	3.414	1	H1-1b
381	M414	2L2-1/2x...	.057	6.0...	20	.002	12....	y	4	14.698	77.112	5.381	3.414	1	H1-1b
382	M415	2L2-1/2x...	.057	6.0...	26	.002	12....	y	16	14.698	77.112	5.381	3.414	1	H1-1b
383	M416	2L2-1/2x...	.057	6.0...	23	.002	0	y	12	14.698	77.112	5.381	3.414	1	H1-1b
384	M297	L4x4x3/8	.003	0	22	.006	0	z	20	15.047	92.664	1.773	7.349	1	H2-1
385	M310	L4x4x3/8	.003	0	20	.006	0	z	26	15.047	92.664	1.773	7.349	1	H2-1
386	M323	L4x4x3/8	.003	0	26	.006	0	z	20	15.047	92.664	1.773	7.349	1	H2-1
387	M325	L4x4x3/8	.003	0	24	.006	0	z	22	15.047	92.664	1.773	7.349	1	H2-1
388	M360	L4x4x3/8	.003	15....	22	.007	15....	z	24	11.828	92.664	1.773	7.016	1	H2-1
389	M374	L4x4x3/8	.003	0	20	.007	0	z	22	11.828	92.664	1.773	7.016	1	H2-1
390	M388	L4x4x3/8	.003	0	26	.007	15....	z	24	11.828	92.664	1.773	7.016	1	H2-1
391	M390	L4x4x3/8	.005	0	24	.007	15....	z	22	11.828	92.664	1.773	7.016	1	H2-1
392	M278	2L2-1/2x...	.087	4.8...	26	.005	9.6...	y	24	25.631	77.112	5.381	3.414	1	H1-1b
393	M283	2L2-1/2x...	.087	4.8...	20	.005	9.6...	y	22	25.631	77.112	5.381	3.414	1	H1-1b
394	M289	2L2-1/2x...	.087	4.8...	24	.005	9.6...	y	22	25.631	77.112	5.381	3.414	1	H1-1b
395	M294	2L2-1/2x...	.086	4.8...	26	.005	9.6...	y	20	25.631	77.112	5.381	3.414	1	H1-1b
396	M302	2L2-1/2x...	.086	4.8...	22	.005	9.6...	y	20	25.631	77.112	5.381	3.414	1	H1-1b
397	M307	2L2-1/2x...	.086	4.8...	24	.005	9.6...	y	26	25.631	77.112	5.381	3.414	1	H1-1b
398	M315	2L2-1/2x...	.086	4.8...	20	.005	9.6...	y	26	25.631	77.112	5.381	3.414	1	H1-1b
399	M320	2L2-1/2x...	.087	4.8...	22	.005	9.6...	y	24	25.631	77.112	5.381	3.414	1	H1-1b
400	M339	2L2-1/2x...	.107	5.4...	26	.005	0	y	24	19.988	77.112	5.381	3.414	1	H1-1b
401	M344	2L2-1/2x...	.102	5.4...	20	.005	0	y	22	19.988	77.112	5.381	3.414	1	H1-1b
402	M351	2L2-1/2x...	.100	5.4...	25	.005	0	y	22	19.988	77.112	5.381	3.414	1	H1-1b
403	M356	2L2-1/2x...	.129	5.2	25	.005	0	y	20	19.988	77.112	5.381	3.414	1	H1-1b
404	M365	2L2-1/2x...	.131	5.6...	22	.005	10....	y	20	19.988	77.112	5.381	3.414	1	H1-1b
405	M370	2L2-1/2x...	.102	5.4...	24	.005	0	y	25	19.988	77.112	5.381	3.414	1	H1-1b
406	M379	2L2-1/2x...	.099	5.4...	21	.005	0	y	26	19.988	77.112	5.381	3.414	1	H1-1b
407	M384	2L2-1/2x...	.104	5.4...	21	.005	0	y	24	19.988	77.112	5.381	3.414	1	H1-1b
408	M92	L2-1/2x2...	.031	0	3	.004	0	z	22	10.615	26.198	.264	1.286	1	H2-1
409	M95	L2-1/2x2...	.029	0	3	.004	0	z	24	10.615	26.198	.264	1.286	1	H2-1
410	M99	L2-1/2x2...	.027	0	15	.004	0	z	20	10.615	26.198	.264	1.286	1	H2-1
411	M102	L2-1/2x2...	.031	0	15	.004	0	z	22	10.615	26.198	.264	1.286	1	H2-1
412	M106	L2-1/2x2...	.029	0	9	.004	0	z	26	10.615	26.198	.264	1.286	1	H2-1
413	M109	L2-1/2x2...	.030	0	11	.004	0	z	20	10.615	26.198	.264	1.286	1	H2-1
414	M113	L2-1/2x2...	.031	0	7	.004	0	z	24	10.615	26.198	.264	1.286	1	H2-1
415	M116	L2-1/2x2...	.028	0	9	.004	0	z	26	10.615	26.198	.264	1.286	1	H2-1
416	M129	L2-1/2x2...	.055	0	17	.004	5.37	z	26	8.835	26.198	.264	1.249	1	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
417	M132	L2-1/2x2...	.053	0	5	.004	5.37	z	20	8.835	26.198	.264	1.249	1	H2-1
418	M136	L2-1/2x2...	.053	0	13	.004	5.37	z	24	8.835	26.198	.264	1.249	1	H2-1
419	M139	L2-1/2x2...	.055	0	17	.004	5.37	z	25	8.835	26.198	.264	1.249	1	H2-1
420	M143	L2-1/2x2...	.055	0	9	.004	5.37	z	23	8.835	26.198	.264	1.249	1	H2-1
421	M146	L2-1/2x2...	.056	0	13	.004	5.37	z	24	8.835	26.198	.264	1.249	1	H2-1
422	M150	L2-1/2x2...	.055	0	5	.004	5.37	z	20	8.835	26.198	.264	1.249	1	H2-1
423	M153	L2-1/2x2...	.054	0	9	.004	5.37	z	22	8.835	26.198	.264	1.249	1	H2-1
424	M166	L2-1/2x2...	.075	0	17	.004	5.8...	z	19	7.439	26.198	.264	1.213	1	H2-1
425	M169	L2-1/2x2...	.073	0	5	.004	5.8...	z	19	7.439	26.198	.264	1.213	1	H2-1
426	M173	L2-1/2x2...	.072	0	13	.004	5.8...	z	25	7.439	26.198	.264	1.213	1	H2-1
427	M176	L2-1/2x2...	.073	0	17	.004	5.8...	z	21	7.439	26.198	.264	1.213	1	H2-1
428	M180	L2-1/2x2...	.074	0	9	.004	5.8...	z	23	7.439	26.198	.264	1.213	1	H2-1
429	M183	L2-1/2x2...	.075	0	13	.004	5.8...	z	23	7.439	26.198	.264	1.213	1	H2-1
430	M187	L2-1/2x2...	.075	0	5	.004	5.8...	z	21	7.439	26.198	.264	1.213	1	H2-1
431	M190	L2-1/2x2...	.074	0	9	.004	5.8...	z	21	7.439	26.198	.264	1.213	1	H2-1
432	M203	L2-1/2x2...	.104	0	17	.004	6.2...	z	26	6.349	26.198	.264	1.179	1	H2-1
433	M206	L2-1/2x2...	.101	0	5	.004	6.2...	z	20	6.349	26.198	.264	1.179	1	H2-1
434	M210	L2-1/2x2...	.101	0	13	.004	6.2...	z	24	6.349	26.198	.264	1.179	1	H2-1
435	M213	L2-1/2x2...	.101	0	17	.004	6.2...	z	22	6.349	26.198	.264	1.179	1	H2-1
436	M217	L2-1/2x2...	.102	0	9	.004	6.2...	z	26	6.349	26.198	.264	1.179	1	H2-1
437	M220	L2-1/2x2...	.103	0	13	.004	6.2...	z	24	6.349	26.198	.264	1.179	1	H2-1
438	M224	L2-1/2x2...	.103	0	5	.004	6.2...	z	20	6.349	26.198	.264	1.179	1	H2-1
439	M227	L2-1/2x2...	.103	0	9	.004	6.2...	z	22	6.349	26.198	.264	1.179	1	H2-1
440	M240	L2-1/2x2-...	.104	0	17	.004	0	z	19	10.917	38.475	.461	2.121	1	H2-1
441	M243	L2-1/2x2-...	.102	0	5	.004	0	z	20	10.917	38.475	.461	2.121	1	H2-1
442	M247	L2-1/2x2-...	.101	0	13	.004	0	z	25	10.917	38.475	.461	2.121	1	H2-1
443	M250	L2-1/2x2-...	.099	0	17	.004	0	z	25	10.917	38.475	.461	2.121	1	H2-1
444	M254	L2-1/2x2-...	.100	0	9	.004	0	z	23	10.917	38.475	.461	2.121	1	H2-1
445	M257	L2-1/2x2-...	.101	0	13	.004	0	z	23	10.917	38.475	.461	2.121	1	H2-1
446	M261	L2-1/2x2-...	.101	0	5	.004	0	z	21	10.917	38.475	.461	2.121	1	H2-1
447	M264	L2-1/2x2-...	.104	0	9	.004	0	z	21	10.917	38.475	.461	2.121	1	H2-1
448	M277	L2-1/2x2...	.053	0	3	.005	0	y	26	11.352	26.198	.264	1.301	1	H2-1
449	M282	L2-1/2x2...	.052	0	3	.005	0	y	20	11.352	26.198	.264	1.301	1	H2-1
450	M288	L2-1/2x2...	.052	0	15	.005	0	y	24	11.352	26.198	.264	1.301	1	H2-1
451	M293	L2-1/2x2...	.053	0	15	.005	0	y	26	11.352	26.198	.264	1.301	1	H2-1
452	M301	L2-1/2x2...	.051	0	11	.005	0	y	22	11.352	26.198	.264	1.301	1	H2-1
453	M306	L2-1/2x2...	.052	0	11	.005	0	y	24	11.352	26.198	.264	1.301	1	H2-1
454	M314	L2-1/2x2...	.052	0	7	.005	0	y	20	11.352	26.198	.264	1.301	1	H2-1
455	M319	L2-1/2x2...	.051	0	7	.005	0	y	22	11.352	26.198	.264	1.301	1	H2-1
456	M338	L2-1/2x2-...	.019	0	4	.004	5.4...	y	24	13.065	29.236	.351	1.609	1	H2-1
457	M343	L2-1/2x2-...	.018	0	16	.004	5.4...	y	22	13.065	29.236	.351	1.609	1	H2-1
458	M350	L2-1/2x2-...	.029	0	16	.005	5.4...	y	22	13.065	29.236	.351	1.609	1	H2-1
459	M355	L2-1/2x2-...	.029	0	12	.005	5.4...	y	20	13.065	29.236	.351	1.609	1	H2-1
460	M364	L2-1/2x2-...	.017	0	12	.004	5.4...	y	20	13.065	29.236	.351	1.609	1	H2-1
461	M369	L2-1/2x2-...	.017	0	8	.004	5.4...	y	26	13.065	29.236	.351	1.609	1	H2-1
462	M378	L2-1/2x2-...	.029	0	8	.005	5.4...	y	26	13.065	29.236	.351	1.609	1	H2-1
463	M383	L2-1/2x2-...	.028	0	4	.005	5.4...	y	24	13.065	29.236	.351	1.609	1	H2-1
464	M347	2L2-1/2x...	.119	9.0...	23	.005	9.0...	y	25	7.402	93.312	9.918	2.218	1	H1-1b
465	M359	2L2-1/2x...	.118	9.0...	21	.005	9.0...	y	23	7.402	93.312	9.918	2.218	1	H1-1b
466	M373	2L2-1/2x...	.118	9.0...	19	.005	9.0...	y	25	7.402	93.312	9.918	2.218	1	H1-1b
467	M387	2L2-1/2x...	.118	9.0...	25	.005	9.0...	y	23	7.402	93.312	9.918	2.218	1	H1-1b
468	M540	L2.5x2.5x3	.013	3.7...	19	.000	6.7...	y	24	7.302	29.192	.873	1.457	1	H2-1
469	M541	L2.5x2.5x3	.013	3.7...	25	.000	0	y	23	7.302	29.192	.873	1.457	1	H2-1
470	M542	L2.5x2.5x3	.013	3.7...	23	.000	6.7...	y	22	7.302	29.192	.873	1.457	1	H2-1
471	M543	L2.5x2.5x3	.013	3.7...	21	.000	6.7...	y	25	7.302	29.192	.873	1.457	1	H2-1
472	M536	L2.5x2.5x3	.022	3.6...	19	.000	0	y	23	7.422	29.192	.873	1.461	1	H2-1
473	M537	L2.5x2.5x3	.023	3.6...	25	.000	6.6...	y	20	7.422	29.192	.873	1.461	1	H2-1

Envelope AISC 13th(360-05): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc...	LC	Shea...	Loc...	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z-z.....		Eqn
474	M538	L2.5x2.5x3	.023	3.6...	23	.000	6.6...	y	26	7.422	29.192	.873	1.461	1	H2-1
475	M539	L2.5x2.5x3	.022	3.6...	21	.000	0	y	25	7.422	29.192	.873	1.461	1	H2-1
476	M522	L2.5x2.5x3	.013	3.6...	19	.000	0	y	23	7.516	29.192	.873	1.465	1	H2-1
477	M523	L2.5x2.5x3	.013	3.6...	25	.000	0	y	20	7.516	29.192	.873	1.465	1	H2-1
478	M524	L2.5x2.5x3	.013	3.6...	23	.000	6.61	y	26	7.516	29.192	.873	1.465	1	H2-1
479	M525	L2.5x2.5x3	.013	3.6...	21	.000	0	y	25	7.516	29.192	.873	1.465	1	H2-1
480	M518	L2.5x2.5x3	.628	1.9...	10	.000	6.5...	y	14	7.594	29.192	.873	1.467	1	H2-1
481	M519	L2.5x2.5x3	.610	1.9...	6	.000	6.5...	y	20	7.594	29.192	.873	1.467	1	H2-1
482	M520	L2.5x2.5x3	.620	1.9...	2	.000	0	y	20	7.594	29.192	.873	1.467	1	H2-1
483	M521	L2.5x2.5x3	.622	1.9...	14	.000	6.5...	y	10	7.594	29.192	.873	1.467	1	H2-1
484	M397	L3x3x1/4	.007	12....	23	.000	0	y	6	5.04	46.656	.673	2.416	1	H2-1
485	M398	L3x3x1/4	.007	12....	25	.000	0	y	2	5.04	46.656	.673	2.416	1	H2-1
486	M399	L3x3x1/4	.007	12....	21	.000	0	y	2	5.04	46.656	.673	2.416	1	H2-1
487	M400	L3x3x1/4	.007	12....	22	.000	12....	y	6	5.04	46.656	.673	2.416	1	H2-1
488	M433	L3x3x1/4	.033	0	22	.001	0	y	6	10.668	46.656	.673	2.828	1	H2-1
489	M434	L3x3x1/4	.033	0	22	.001	8.6...	y	10	10.668	46.656	.673	2.828	1	H2-1
490	M435	L3x3x1/4	.033	0	24	.001	8.6...	y	14	10.668	46.656	.673	2.828	1	H2-1
491	M436	L3x3x1/4	.033	0	24	.001	0	y	10	10.668	46.656	.673	2.828	1	H2-1
492	M437	L3x3x1/4	.033	0	26	.001	8.6...	y	2	10.668	46.656	.673	2.828	1	H2-1
493	M438	L3x3x1/4	.033	0	26	.001	0	y	14	10.668	46.656	.673	2.828	1	H2-1
494	M439	L3x3x1/4	.036	0	20	.001	0	y	6	10.668	46.656	.673	2.828	1	H2-1
495	M440	L3x3x1/4	.036	0	20	.001	8.6...	y	2	10.668	46.656	.673	2.828	1	H2-1
496	M17	L3x2-1/2...	.028	8.4...	25	.005	6.5...	z	20	20.579	42.525	.536	2.498	1	H2-1
497	M18	L3x2-1/2...	.029	8.4...	23	.005	6.5...	z	26	20.579	42.525	.536	2.498	1	H2-1
498	M19	L3x2-1/2...	.026	8.4...	21	.005	6.5...	z	22	20.579	42.525	.536	2.498	1	H2-1
499	M20	L3x2-1/2...	.027	8.4...	19	.005	6.5...	z	20	20.579	42.525	.536	2.498	1	H2-1
500	M37	C6x8.2	.053	7.4...	25	.006	7.4...	y	26	20.619	77.436	2.108	10.347	1	H1-1b
501	M38	C6x8.2	.054	7.4...	19	.006	7.4...	y	24	20.619	77.436	2.108	10.347	1	H1-1b
502	M39	C6x8.2	.054	7.4...	25	.006	7.4...	y	23	20.619	77.436	2.108	10.347	1	H1-1b
503	M40	C6x8.2	.052	7.4...	23	.006	7.4...	y	21	20.619	77.436	2.108	10.347	1	H1-1b
504	M62	L3x2-1/2...	.025	10....	25	.006	8.4...	z	19	14.249	42.525	.536	2.295	1	H2-1
505	M63	L3x2-1/2...	.028	10....	23	.006	8.4...	z	25	14.249	42.525	.536	2.295	1	H2-1
506	M64	L3x2-1/2...	.027	10....	21	.006	8.4...	z	23	14.249	42.525	.536	2.295	1	H2-1
507	M65	L3x2-1/2...	.024	10....	19	.006	8.4...	z	21	14.249	42.525	.536	2.295	1	H2-1
508	M82	L3x2-1/2...	.035	6.6...	7	.007	9.3...	z	19	12.021	42.525	.536	2.202	1	H2-1
509	M83	L3x2-1/2...	.028	6.6...	3	.007	9.3...	z	26	12.021	42.525	.536	2.202	1	H2-1
510	M84	L3x2-1/2...	.025	6.6...	15	.007	9.3...	z	22	12.021	42.525	.536	2.202	1	H2-1
511	M85	L3x2-1/2...	.032	12....	3	.007	9.3...	z	20	12.021	42.525	.536	2.202	1	H2-1
512	M5	MC18x58...	.021	6.1...	19	.003	0	y	26	202.265	554.04	23.037	198.366	1	H1-1b
513	M6	MC18x58...	.021	6.1...	25	.003	12....	y	20	202.265	554.04	23.037	198.366	1	H1-1b
514	M7	MC18x58...	.021	6.1...	23	.003	12....	y	24	202.265	554.04	23.037	198.366	1	H1-1b
515	M8	MC18x58...	.021	6.1...	21	.003	0	y	19	202.265	554.04	23.037	198.366	1	H1-1b
516	M25	2L3-1/2x...	.041	7.0...	19	.004	7.0...	y	25	54.189	125.388	9.481	5.15	1	H1-1b
517	M26	2L3-1/2x...	.042	7.0...	25	.004	7.0...	y	23	54.189	125.388	9.481	5.15	1	H1-1b
518	M27	2L3-1/2x...	.042	7.0...	23	.004	7.0...	y	25	54.189	125.388	9.481	5.15	1	H1-1b
519	M28	2L3-1/2x...	.041	7.0...	21	.004	7.0...	y	23	54.189	125.388	9.481	5.15	1	H1-1b
520	M45	2L3x2-1/...	.081	7.9...	19	.005	7.9...	y	20	51.046	85.212	5.423	3.034	1	H1-1b
521	M46	2L3x2-1/...	.086	7.9...	25	.005	7.9...	y	23	51.046	85.212	5.423	3.034	1	H1-1b
522	M47	2L3x2-1/...	.086	7.9...	23	.005	7.9...	y	22	51.046	85.212	5.423	3.034	1	H1-1b
523	M48	2L3x2-1/...	.082	7.9...	21	.005	7.9...	y	23	51.046	85.212	5.423	3.034	1	H1-1b
524	M70	2L3x2-1/...	.163	8.8...	23	.005	8.8...	y	20	17.249	85.212	5.423	3.034	1	H1-1b
525	M71	2L3x2-1/...	.163	8.8...	21	.005	8.8...	y	19	17.249	85.212	5.423	3.034	1	H1-1b
526	M72	2L3x2-1/...	.162	8.8...	19	.005	8.8...	y	21	17.249	85.212	5.423	3.034	1	H1-1b
527	M73	2L3x2-1/...	.163	8.8...	25	.005	8.8...	y	19	17.249	85.212	5.423	3.034	1	H1-1b

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N189	max	23.34	12	188.289	12	17.653	5	0	1	.063	16	0	1
2		min	-17.862	5	-129.214	5	-23.225	12	0	1	-.062	9	0	1
3	N190	max	18.014	17	187.946	8	17.614	17	0	1	.056	13	0	1
4		min	-23.495	8	-130.018	17	-23.104	8	0	1	-.062	4	0	1
5	N191	max	17.517	13	188.1	4	23.455	4	0	1	.052	8	0	1
6		min	-23.099	4	-129.154	13	-17.969	13	0	1	-.05	17	0	1
7	N192	max	23.037	16	189.22	16	23.671	16	0	1	.053	5	0	1
8		min	-17.45	9	-129.059	9	-18.095	9	0	1	-.05	12	0	1
9	Totals:	max	75.555	15	307.027	21	76.752	3						
10		min	-75.555	6	101.108	11	-76.752	10						

Project #: 2016713.69

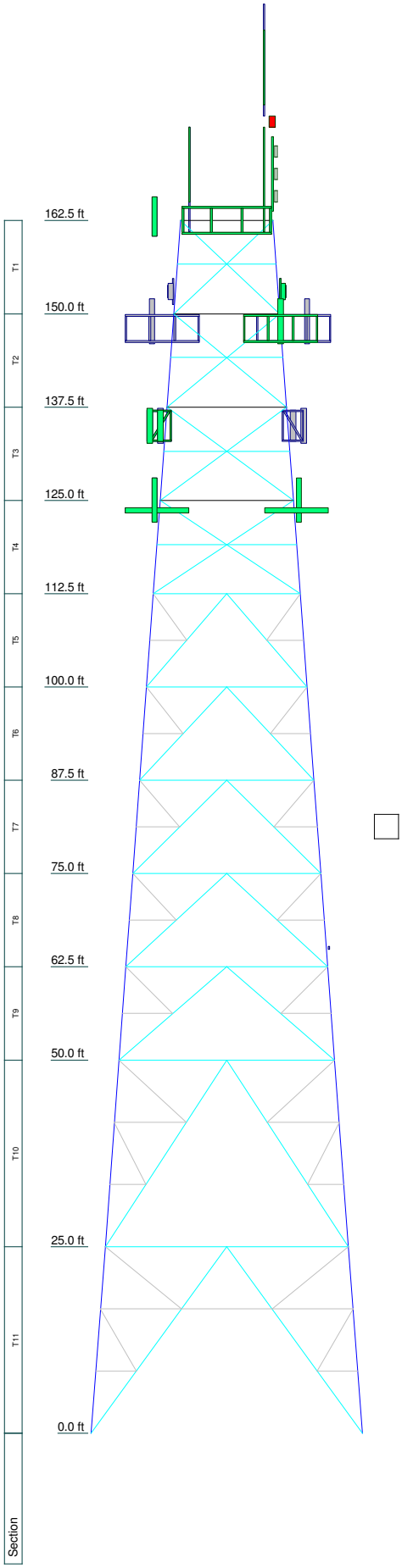
Bolt Checks

Date: 10/13/2016

Section #	Elevation	Component Type	Bolt Grade	Bolt Size (in)	# of Bolts	Maximum Load (k)	Maximum Load per Bolt (k)	Allowable Load per Bolt (k)	Ratio	Allowable Ratio	% Capacity	Criteria
T1	162.5	Diagonal	A307	0.75	5	4.519	0.904	8.946	0.101	1.000	10.1%	Bolt Shear
		Secondary Horizontal	A307	0.75	2	0.191	0.096	8.946	0.011	1.000	1.1%	Bolt Shear
T2	150	Leg	A307	0.75	16	23.253	2.907	17.892	0.162	1.000	16.2%	Bolt DS
		Diagonal	A307	0.75	4	7.019	1.755	8.946	0.196	1.000	19.6%	Bolt Shear
		Secondary Horizontal	A307	0.75	3	1.175	0.392	8.946	0.044	1.000	4.4%	Bolt Shear
T3	137.5	Diagonal	A307	0.75	5	7.666	1.533	8.946	0.171	1.000	17.1%	Bolt Shear
		Secondary Horizontal	A307	0.75	2	0.295	0.148	8.946	0.016	1.000	1.6%	Bolt Shear
T4	125	Leg	A307	0.75	16	45.546	5.693	17.892	0.318	1.000	31.8%	Bolt DS
		Top Girt	A307	0.75	2	12.227	6.114	17.892	0.342	1.000	34.2%	Bolt Shear
		Redundant Vertical	A307	0.75	1	4.766	4.766	8.946	0.533	1.000	53.3%	Bolt Shear
		Secondary Horizontal	A307	0.75	2	0.353	0.176	8.946	0.020	1.000	2.0%	Bolt Shear
		Diagonal	A307	0.75	4	16.948	4.237	8.946	0.474	1.000	47.4%	Bolt Shear
T5	112.5	Horizontal	A307	0.75	2	11.95	5.975	17.892	0.334	1.000	33.4%	Bolt Shear
		Diagonal	A307	0.75	2	13.276	6.638	17.892	0.371	1.000	37.1%	Bolt Shear
		Inner Corner	A307	0.75	2	4.121	2.06	8.057	0.256	1.000	25.6%	Member Block Shear
		Inner Ladder	A307	0.75	2	1.977	0.988	8.057	0.123	1.000	12.3%	Member Block Shear
T6	100	Leg	A307	0.75	20	72.484	7.248	17.892	0.405	1.000	40.5%	Bolt DS
		Horizontal	A307	0.75	2	8.625	4.312	17.892	0.241	1.000	24.1%	Bolt Shear
		Diagonal	A307	0.75	2	12.494	6.247	17.892	0.349	1.000	34.9%	Bolt Shear
		Inner Corner	A307	0.75	2	1.877	0.938	8.057	0.116	1.000	11.6%	Member Block Shear
T7	87.5	Horizontal	A307	0.75	2	9.104	4.552	17.892	0.254	1.000	25.4%	Bolt Shear
		Diagonal	A307	0.75	2	13.174	6.587	17.892	0.368	1.000	36.8%	Bolt Shear
T8	75	Leg	A307	0.75	28	103.508	7.393	17.892	0.413	1.000	41.3%	Bolt DS
		Horizontal	A307	0.75	2	9.342	4.671	17.892	0.261	1.000	26.1%	Bolt Shear
		Diagonal	A307	0.75	2	13.256	6.628	17.892	0.370	1.000	37.0%	Bolt Shear
		Inner Corner	A307	0.75	2	1.7	0.85	8.057	0.105	1.000	10.5%	Member Block Shear
T9	62.5	Leg	A307	0.75	28	118.697	8.478	17.892	0.474	1.000	47.4%	Bolt DS
		Horizontal	A307	0.75	2	9.846	4.923	17.892	0.275	1.000	27.5%	Bolt Shear
		Diagonal	A307	0.75	3	13.609	4.536	17.892	0.254	1.000	25.4%	Bolt Shear
		Inner Corner	A307	0.75	2	2.047	1.024	8.946	0.114	1.000	11.4%	Bolt Shear
T10	50	Leg	A307	0.75	32	133.446	8.34	17.892	0.466	1.000	46.6%	Bolt DS
		Horizontal	A307	0.75	3	10.623	3.541	17.892	0.198	1.000	19.8%	Bolt Shear
		Diagonal	A325N	0.75	3	20.327	6.776	31.266	0.217	1.000	21.7%	Member Block Shear
		Inner Corner	A307	0.75	2	2.335	1.168	8.946	0.131	1.000	13.1%	Bolt Shear
T11	25	Leg	A307	0.75	36	162.957	9.053	17.892	0.506	1.000	50.6%	Bolt DS
		Horizontal	A307	0.75	3	11.653	3.884	17.892	0.217	1.000	21.7%	Bolt Shear
		Diagonal	A307	0.75	5	21.291	4.258	17.892	0.238	1.000	23.8%	Bolt Shear
		Redundant Diagonal	A307	0.75	2	1.827	0.914	8.057	0.113	1.000	11.3%	Member Block Shear
		Redundant Brace	A307	0.75	2	1.812	0.906	8.946	0.101	1.000	10.1%	Bolt Shear
		Inner Corner	A307	0.75	2	2.157	1.078	8.946	0.121	1.000	12.1%	Bolt Shear
										Maximum Capacity	53.3%	

APPENDIX C

Tower Elevation Drawings



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) DC6-48-60-18-8F Surge Suppression Unit	167	APXVSPP18-C-A20 w/ Mount Pipe	148
(3) RRUS 32 WCS	165	APXVSPP18-C-A20 w/ Mount Pipe	148
(3) RRUS 11	165	30' x 30' Cross Catwalk w/ Handrails	144
(3) RRUS 32 B2	165	2' Standoff - Round (GPD)	135
10' Dipole	162.5	2' Standoff - Round (GPD)	135
Pipe Mount 14'x2.875"	162.5	2' Standoff - Round (GPD)	135
2' Standoff - Round (GPD)	162.5	AIR21 B4A/B2P w/ mount pipe	135
2' Standoff - Round (GPD)	162.5	AIR21 B4A/B2P w/ mount pipe	135
15' Dipole	162.5	AIR21 B4A/B2P w/ mount pipe	135
Pipe Mount 14'x2.875"	162.5	DBXNH-6565A-A2M w/ mount pipe	135
2' Standoff - Round (GPD)	162.5	DBXNH-6565A-A2M w/ mount pipe	135
2' Standoff - Round (GPD)	162.5	DBXNH-6565A-A2M w/ mount pipe	135
10' Omni	162.5	RRUS 11 B2	135
W8 x 19' Beams	162.5	RRUS 11 B2	135
W8 x 19' Beams	162.5	RRUS 11 B2	135
RA21.7770.00 w/Mount Pipe	162.5	RRUS 11 B12	135
RA21.7770.00 w/Mount Pipe	162.5	RRUS 11 B12	135
RA21.7770.00 w/Mount Pipe	162.5	RRUS 11 B12	135
HPA-65R-BUU-H6 w/ Mount Pipe	162.5	KRY 112 144/1	135
HPA-65R-BUU-H6 w/ Mount Pipe	162.5	KRY 112 144/1	135
HPA-65R-BUU-H6 w/ Mount Pipe	162.5	KRY 112 144/1	135
QS66512-2 w/ Mount Pipe	162.5	Sabre 12' T-Boom (1)	124
QS66512-2 w/ Mount Pipe	162.5	Sabre 12' T-Boom (1)	124
QS66512-2 w/ Mount Pipe	162.5	Sabre 12' T-Boom (1)	124
Flash Beacon Lighting	162.5	(2) DB846F65ZAXY w/Mount Pipe	124
W5 x 13' Mount	162.5	(2) DB846F65ZAXY w/Mount Pipe	124
15' Dipole	162.5	(2) DB846F65ZAXY w/Mount Pipe	124
(2) LGP21401	162.5	BXA-70063-6CF-EDIN-4 w/ Mount Pipe	124
(2) LGP21401	162.5	BXA-70063-6CF-EDIN-4 w/ Mount Pipe	124
(2) LGP21401	162.5	BXA-70063-6CF-EDIN-4 w/ Mount Pipe	124
(2) TPC-070821	162.5	BXA-171063/8CF w/Mount Pipe	124
(2) TPC-070821	162.5	BXA-171063/8CF w/Mount Pipe	124
(2) TPC-070821	162.5	BXA-171063/8CF w/Mount Pipe	124
Smart Bias Tee	162.5	BXA-185085/12CF w/ Mount Pipe	124
Smart Bias Tee	162.5	BXA-185063/12CF w/ mount pipe	124
Smart Bias Tee	162.5	BXA-185063/12CF w/ mount pipe	124
Top Platform w/ Hand Rail	162.5	RRH2x40-AWS	124
800MHZ 2X50W RRH	153	RRH2x40-AWS	124
800MHZ 2X50W RRH	153	RRH2x40-AWS	124
800MHZ 2X50W RRH	153	RRFDC-1064-PF-48	124
800 External Notch Filter	153	RRFDC-1064-PF-48	124
800 External Notch Filter	153	RRFDC-1064-PF-48	124
800 External Notch Filter	153	RRFDC-3315-PF-48	124
1900MHz 4X40W RRH	153	4.25' x 7' Catwalk	112.5
1900MHz 4X40W RRH	153	Side Light	92
1900MHz 4X40W RRH	153	Side Light	92
(2) 2.5" x 3.5' Mount Pipe	153	23' x 3' Catwalk	87.5
(2) 2.5" x 3.5' Mount Pipe	153	23' x 3' Catwalk	87.5
(2) 2.5" x 3.5' Mount Pipe	153	GPS-TMG-HR-26N	65
Sabre 14' T-Boom (1)	148	13' x 4.25' Catwalk	62.5
Sabre 14' T-Boom (1)	148	13' x 4.25' Catwalk	25
Sabre 14' T-Boom (1)	148		
APXVSPP18-C-A20 w/ Mount Pipe	148		

MATERIAL STRENGTH

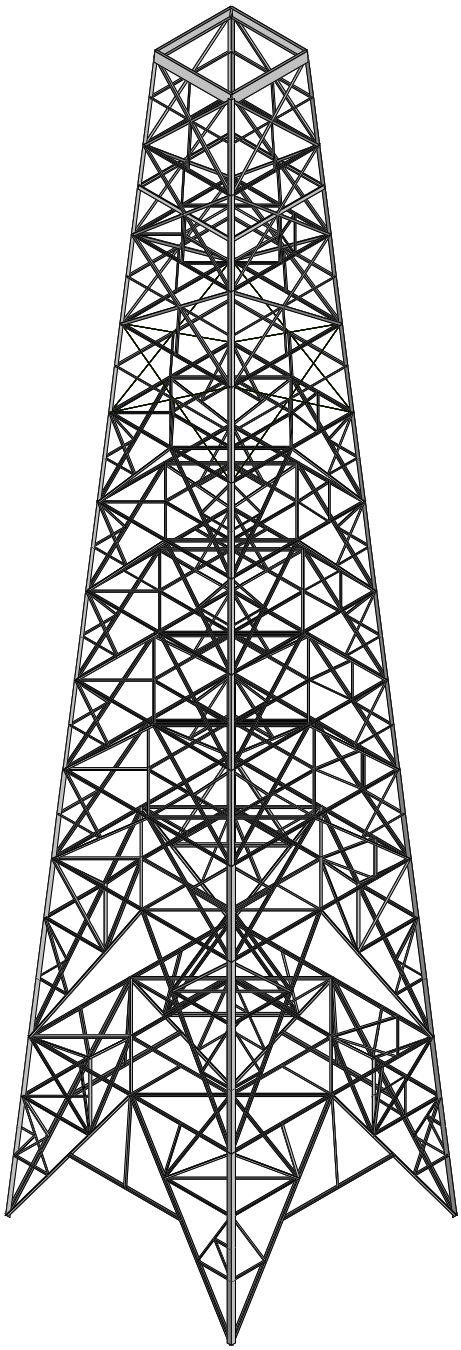
GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

GPD Group
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: SNET025 SHELTON			
Project: 2016713.69			
Client: Empire Telecom	Drawn by: tclark		App'd:
Code: TIA-222-G	Date: 10/13/16		Scale: NTS
Path: T:\ATandT-SNET025\15.2016713.69 Empire SA Map Instl gpo\Software Analysis Files\TNX\SNET025 Modified.eri			Dwg No. E-1



Envelope Only Solution

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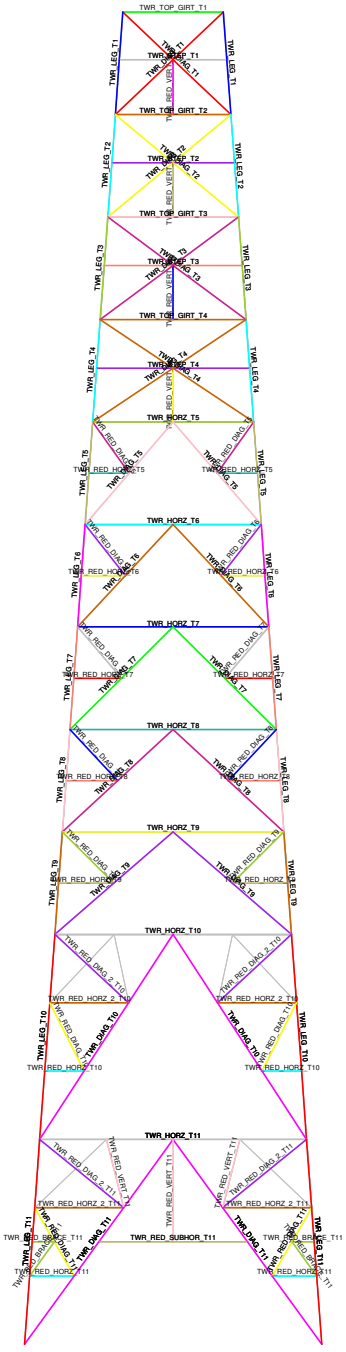
tclark		Oct 13, 2016 at 4:15 PM
2016713.69		SNET025 Updated.rt3



Envelope Only Solution

GPD	SNET025 SHELTON	SK - 2
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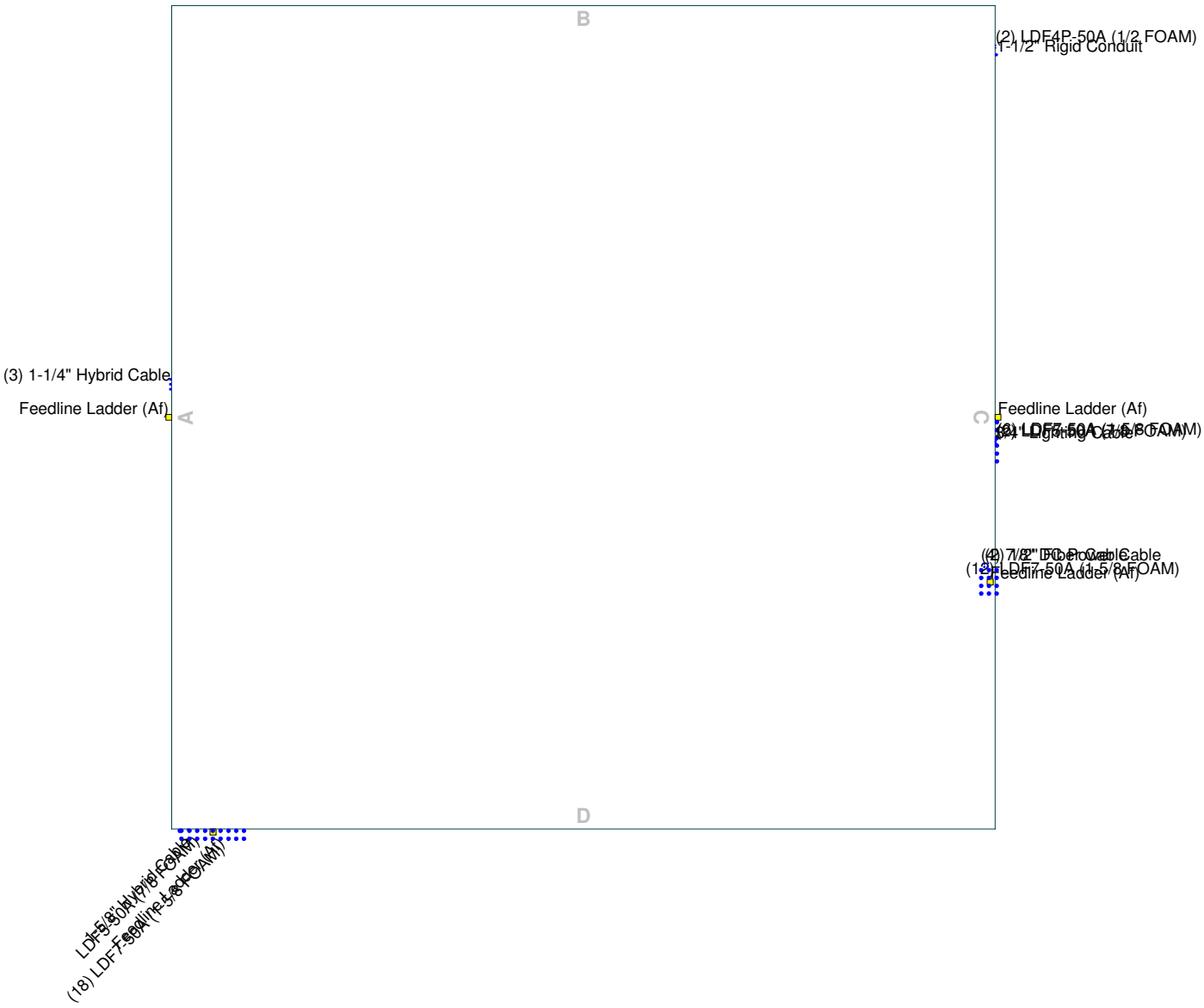
2016713.69		SNET025 Updated.rt3

Feed Line Plan

Round Flat App In Face App Out Face



GPD Group

GPD
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***SNET025 SHELTON***			
Project: ***2016713.69***			
Client: Empire Telecom	Drawn by: tclark		App'd:
Code: TIA-222-G	Date: 10/13/16		Scale: NTS
Path: T:\ATandT\SNET025\15.2016713.69 Empire SA Map Instl.gpo\Software Analysis Files\TNX\SNET025 Modified.eri			Dwg No. E-7

APPENDIX D

Anchor Rod Analysis

Self-Support Anchor Rod Analysis
SNET025 SHELTON
2016713.69

General Info	
Code	TIA-222-G
Modified Anchor Rods	No
Clear Distance > d_b	No
Leg Eccentricity	No
Max Capacity	1.05

Anchor Rod Results		
$(P_u + V_u/\eta)$	63.8	kips
$\phi*R_{nt} = \phi*F_{ub}*A_n$ =	145.6	kips
Anchor Rod Stress Ratio =	43.8%	OK

Tower Reactions		
Detail Type =	d	
Eta Factor, η =	0.50	
Down Load, P_u =	189.22	kips
Down Load Shear, V_u =	33.03	kips
Uplift, P_u =	130.02	kips
Uplift Shear, V_u =	25.19	kips

Anchor Rods		
Number of Anchor Rods, N =	4	
Anchor Rod Grade =	C-1015	
Anchor Rod Diameter, d_d =	2.25	in
Bolt Circle, BC =	8	in
Yield, F_y =	0	ksi
Tensile, F_{ub} =	56	ksi

APPENDIX E

Foundation Analysis

Mat Foundation Analysis
SNET025 SHELTON
2016713.69

General Info	
TIA Code	TIA-222-G
Soil Code	AASHTO 2010
Concrete Code	ACI 318-11
Seismic Design Category	B
Bearing On	Soil
Foundation Type	SS Individual Pad
Pier Type	Square
Reinforcing Known	No
Max Bearing Capacity	100%
Max Overturning Capacity	100%

Tower Reactions		
Moment, M		k-ft
Axial, P	189.22	k
Shear, V	33.031	k

Pad & Pier Geometry		
Pier Width, ø	5.62	ft
Pad Length, L [y]	15	ft
Pad Width, W [x]	15	ft
Pad Thickness, t	2	ft
Depth, D	8	ft
Height Above Grade, HG	1	ft
Tower Centroid, X	7.5	ft
Tower Centroid, Y	7.5	ft
Tower Eccentricity	0.0000	ft

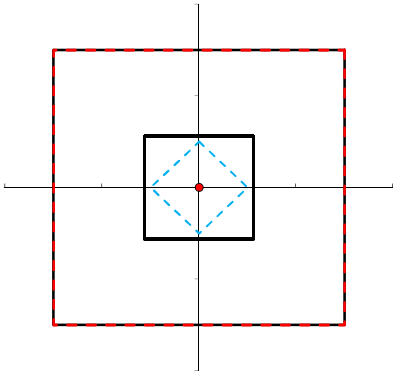
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete F'c	3	ksi
Clear Cover	3	in
Pier Tie Size	# 4	
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 6	
Pad Quantity Per Layer	9	
Pier Rebar Size	# 9	
Pier Quantity of Rebar	16	

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	125	pcf
Angle of Friction, ø	38	°
Bearing Type	Net	
Ultimate Bearing	18	ksf
Water Table Depth	999	ft
Frost Depth	3.5	ft

Bearing Summary			Load Case
Qxmax	2.15	ksf	1.2D+1.6W
Qymax	2.15	ksf	1.2D+1.6W
Qmax @ 45°	2.15	ksf	1.2D+1.6W
Q(all) Net	14.25	ksf	
Controlling Capacity	**15.1%**	**Pass**	

Overturning Summary			Load Case
Ovtx	0.0%	OK	0.9D+1.6W
Ovty	0.0%	OK	0.9D+1.6W
Ovtxy	0.0%	OK	0.9D+1.6W
Controlling Capacity	**0.0%**	**Pass**	

Reinforcement Summary			Load Case
Moment in Pad	56.6%	OK	1.2D+1.6W
Shear in Pad	18.6%	OK	1.2D+1.6W
Compression on Pier	4.7%	OK	1.2D+1.6W
Moment on Pier	9.6%	OK	1.2D+1.6W
As Min Met?	No		*<-- Minimum reinforcement assumed*
Controlling Capacity	**56.6%**	**Pass**	



Self Support Unit Base Pier Analysis
SNET025 SHELTON
2016713.69

Tower Data		
TIA Code	TIA-222-G	
Seismic Design Category	B	
Uplift		
Axial, P	189.2	kips
Shear, V	33.0	kips
Compression		
Axial, P	130.0	kips
Shear, V	25.2	kips

Pier Details		
Pier Type	Square	
Pier Width, w	5.62	ft
Pad Length, L	15	ft
Pad Width, W	15	ft
Pad Thickness, t	2	ft
Depth Below Grade	8	ft
Height Above Grade	1	ft
Pier Length	7	ft
Pier Crossectional Area	31.6	ft^2
Anchor Rod Embedment	60	in
Anchor Rod Circle	12	in

Reinforcement Properties		
As,min Assumed?	Yes	
Pier Rebar Size	9	
Pier Quantity of Rebar	16	
Pier Tie Size	4	
Pier Tie Spacing, s	18	in o/c
Pad Reinforcement Size	6	
Min. Concrete Cover	3	in
f_c'	3000	psi
F_y	60	ksi

Overall Capacities		
Pier Bending + Comp.	7.7%	**OK**
Pier Bending + Ten.	14.2%	**OK**
Pier Compression	3.5%	**OK**
Pier Tension	24.3%	**OK**
Pier Punching	28.4%	**OK**
Shear	9.0%	**OK**
As,min Met	No	**NG**
Controlling Capacity	**28.4%**	**OK**

As,min has been assumed for analysis purposes.

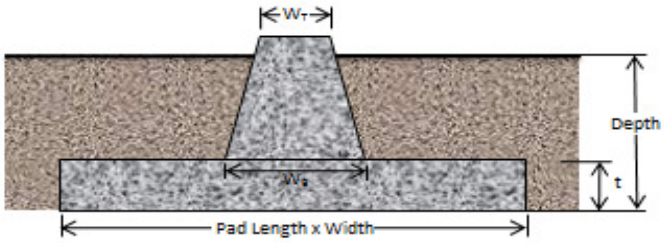
Individual Pad and Frustum Uplift Check
SNET025 SHELTON
2016713.69

Tower Reactions		
Uplift	130.018	k

Uplift Summary		
Capacity	**44.9%**	**OK**

General Info	
Code	TIA-222-G
Max Capacity	1.05

Pad & Pier Geometry		
Pier Top Width W_T	3.5	ft
Pier Bottom Widthm W_B	7.5	ft
Pad Length, L	15	ft
Pad Width, W	15	ft
Pad Thickness, t	2	ft
Depth, D	8	ft
Height Above Grade, HG	1	ft



Soil Capacity Calculations		
W_s	220.76	k
W_c	100.66	k
Uplift Resistance	289.28	k

Soil Properties					
Ignored Depth	3.5	ft	Water Table	8	ft
Layer	C, psf	ϕ, degrees	γ_{soil}, pcf	$\gamma_{concrete}$, pcf	d, ft
1	0	0	125	150	3.5
2	0	38	125	150	4.5
3	0	42	145	150	1
4	12000	0	155	150	5

WIRELESS COMMUNICATIONS FACILITY
CT2113 - LTE BWE/3C
SHELTON
219 NELL ROCK ROAD
SHELTON, CT 06484

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

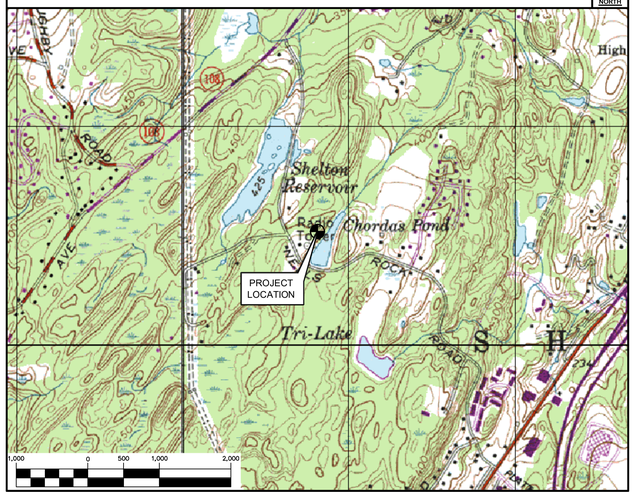
SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT
TO: 219 NELLS ROCK ROAD, SHELTON, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5.	TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY	21.86 MI
6.	MERGE ONTO CT-34 W VIA EXIT 58	3.17 MI
7.	TURN LEFT ONTO MAIN ST	0.20 MI
8.	MERGE ONTO CT-8	1.37 MI
9.	TAKE EXIT 13	0.22 MI
10.	KEEP LEFT TO TAKE THE BRIDGEPORT AVE RAMP	0.03 MI
11.	TURN LEFT ONTO BRIDGEPORT AVE	0.59 MI
12.	TURN RIGHT ONTO NELLS ROCK RD. DESTINATION IS ON THE RIGHT	1.04 MI

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE EXISTING POSITION 1 & 3 LTE ANTENNA FOR PROPOSED LTE ANTENNA, (2) PER SECTOR.
   B. REMOVE AND REPLACE EXISTING RRUS-11 FOR PROPOSED RRUS-32, (1) PER SECTOR.
   C. INSTALL (3) NEW RRUS-32 ON PROPOSED AT&T FRAME.
   D. INSTALL (2) NEW COMMSCOPE WCS-IMFQ-AMT'S FILTERS ON PROPOSED AT&T FRAME.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2113
AT&T SITE NAME:	SHELTON
SITE ADDRESS:	219 NELLS ROCK ROAD SHELTON, CT 06484
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-18'-15.069" N LONGITUDE: 73°-07'-05.898" W GROUND ELEVATION: ±461' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES AND SPECIFICATIONS	0
C-1	PLANS, ELEVATION AND DETAILS	0
C-2	LTE BWE/3C EQUIPMENT DETAILS	0
C-3	LTE FRAME AND FILTER DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	08/19/16	JTD	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

EMPIRE telecom

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Centered on Solutions℠
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(203) 488-8587 Fax
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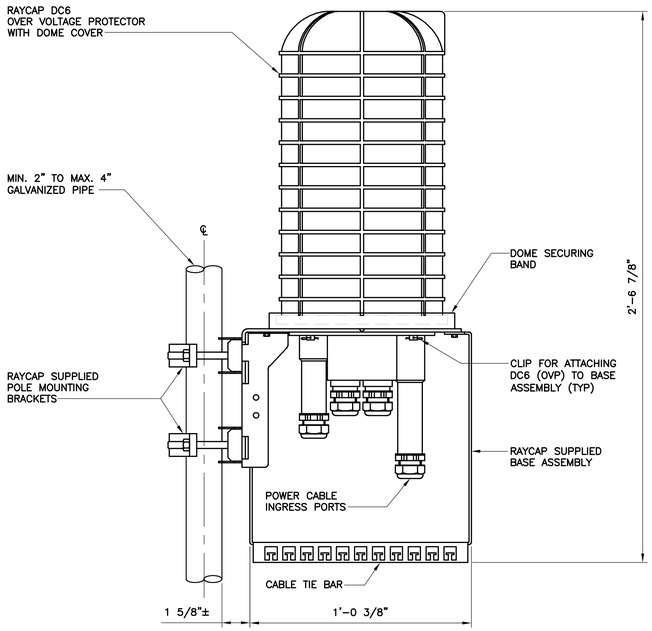
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SHELTON
CT2113 - LTE BWE/3C
219 NELLS ROCK ROAD
SHELTON, CT 06484

DATE: 08/16/16
SCALE: AS NOTED
JOB NO. 16071.28

TITLE SHEET

T-1



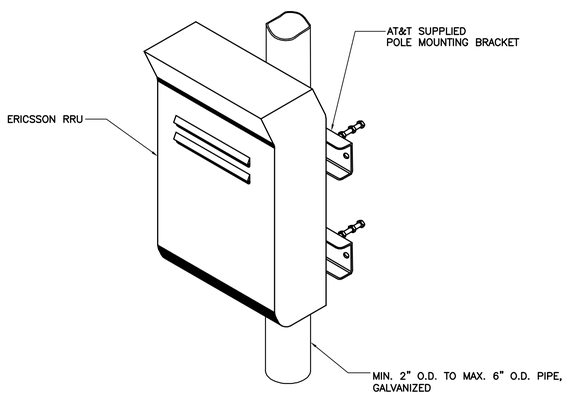
ELEVATION

NOTES:

1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

1 / N-1 RAYCAP DC6 MOUNTING DETAIL

SCALE: 3" = 1'-0"



ISOMETRIC VIEW

NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

2 / N-1 TYPICAL RRUS MOUNTING DETAILS

SCALE: NTS

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2003 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2005 CT STATE BUILDING CODE AND 2009 AMENDMENTS.

1. DESIGN CRITERIA:
   - WIND LOAD: PER EIA/TIA 222 F-96 (ANTENNA MOUNTS): 85 MPH (FASTEST MILE), EQUIVALENT TO 105 MPH (3 SECOND GUST)
   - BUILDING CLASSIFICATION: II (BASED ON IBC TABLE 1604.5)
   - BASIC WIND SPEED (OTHER STRUCTURE): 105 MPH (3 SECOND GUST) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-02) PER 2003 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENT.
   - SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)
   - A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   - B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   - C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   - D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   - E. PIPE---ASTM A53 (FY = 35 KSI)
   - F. CONNECTION BOLTS---ASTM A325-N
   - G. U-BOLTS---ASTM A36
   - H. ANCHOR RODS---ASTM F 1554
   - I. WELDING ELECTRODE---ASTM E 70XX
2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   - A. SHERWIN WILLIAMS POLANE-B
   - B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   - A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
   - B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
   - C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

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NOTES AND SPECIFICATIONS

N-1

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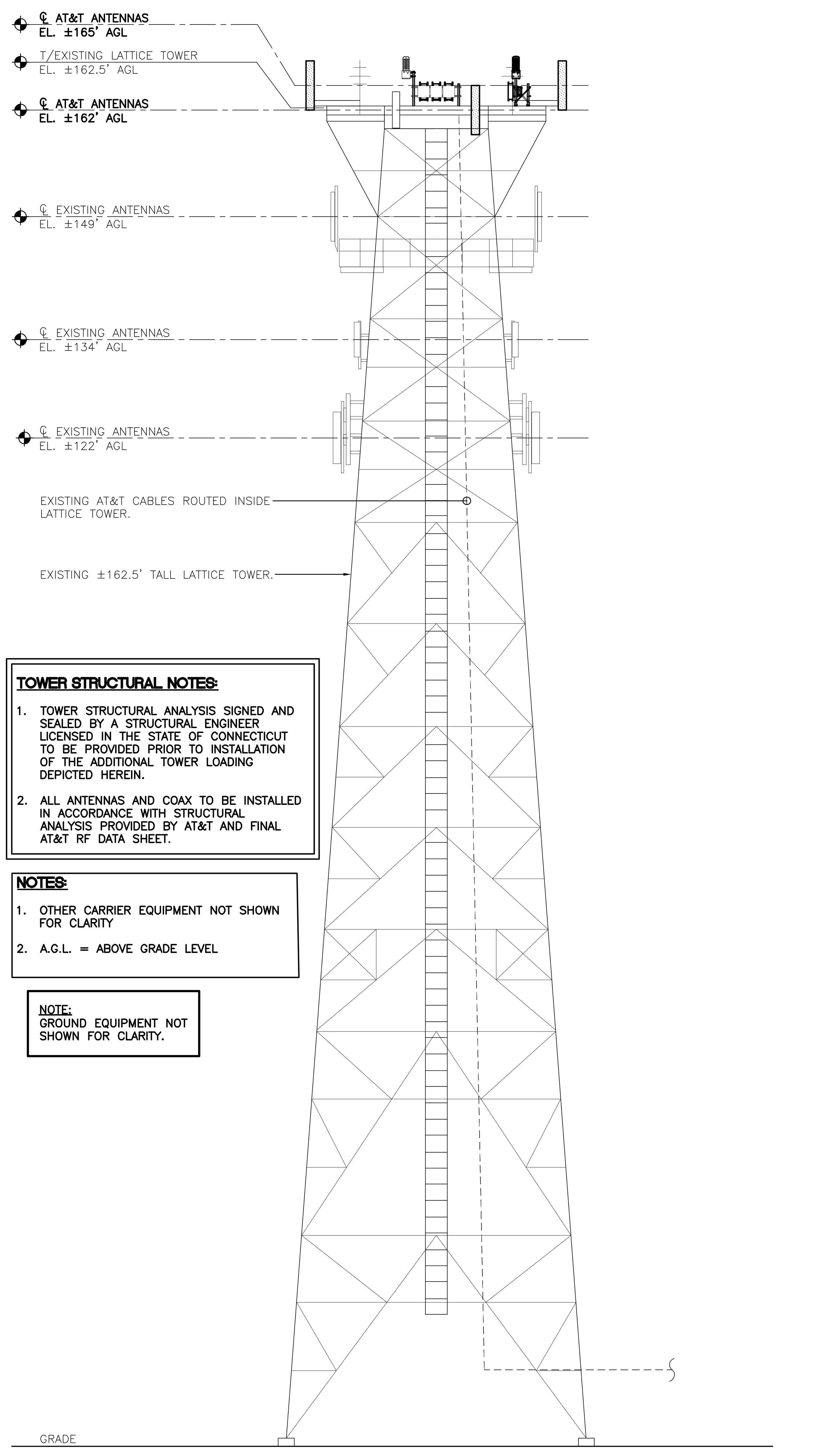


TOWER STRUCTURAL NOTES:

1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY AT&T AND FINAL AT&T RF DATA SHEET.

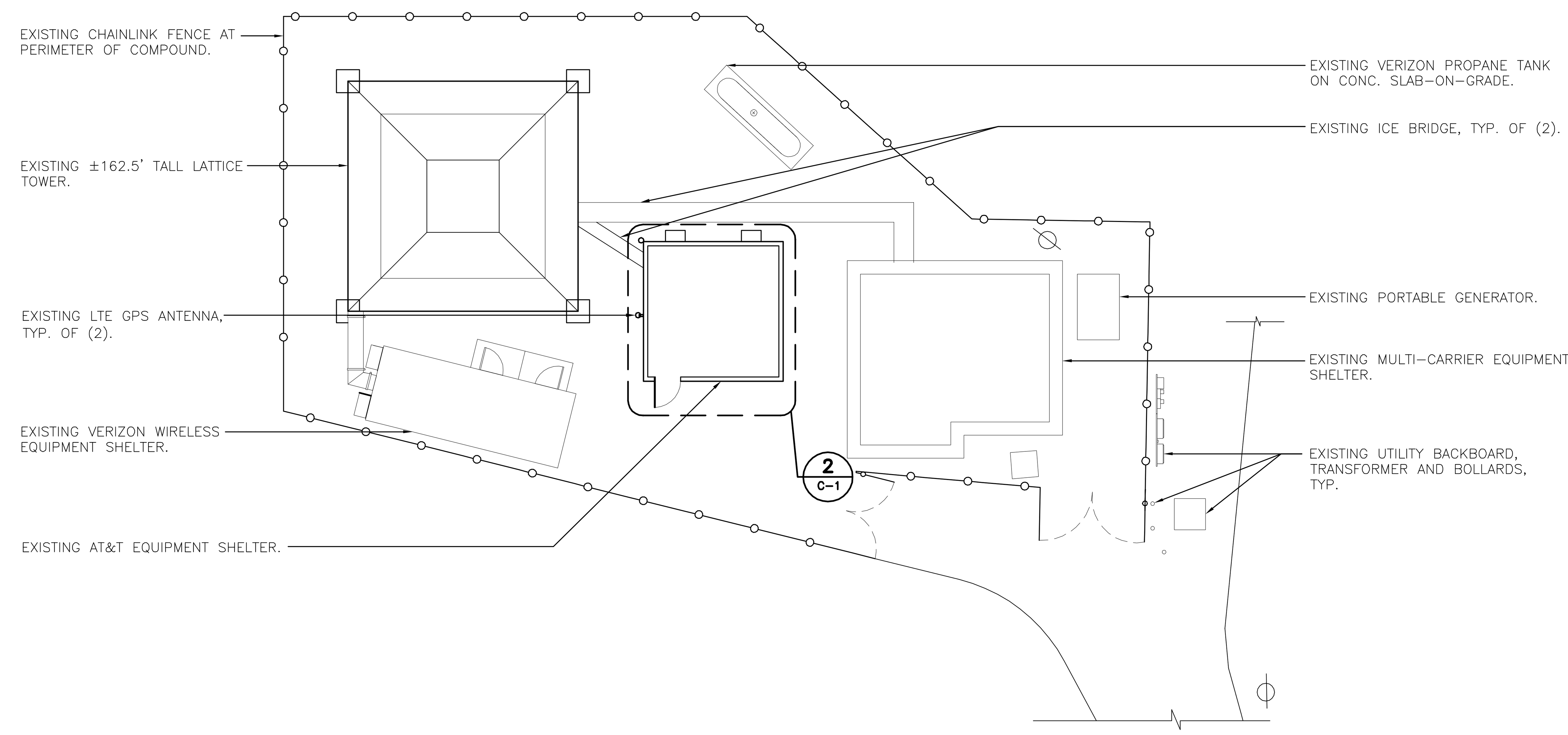
NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

3 / C-1 **TOWER ELEVATION**
SCALE: 1" = 10'

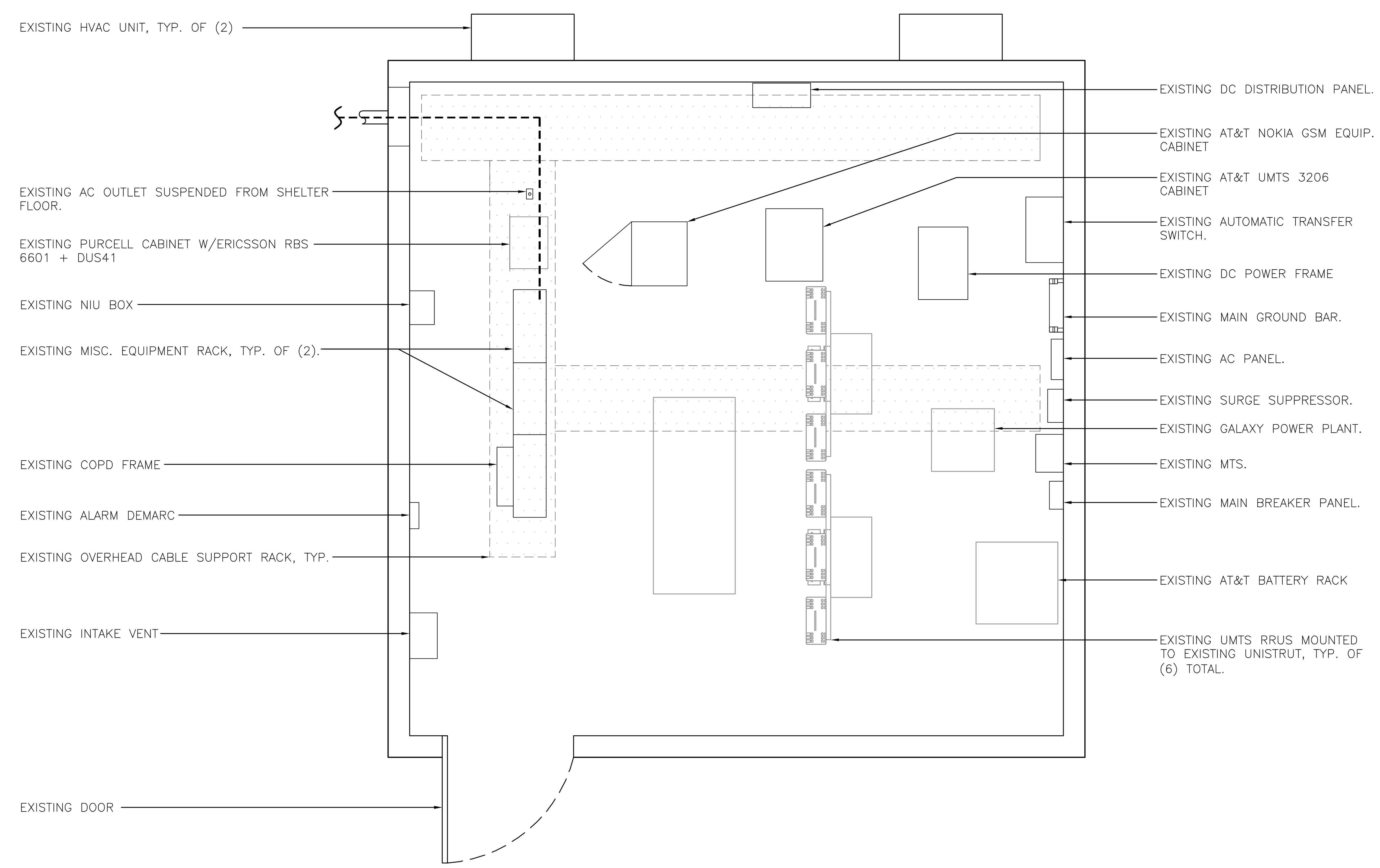
GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



1 / C-1 **COMPOUND PLAN**
SCALE: 1" = 15'

TRUE NORTH

GRAPHIC SCALE
15 0 7.5 15 30 60
(IN FEET)
1 inch = 15 ft.



2 / C-1 **EQUIPMENT SHELTER PLAN**
SCALE: 3/8" = 1'-0"

TRUE NORTH

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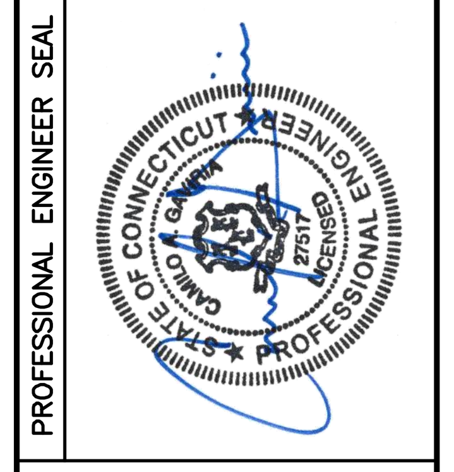

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PLANS, ELEVATION AND DETAILS

C-1

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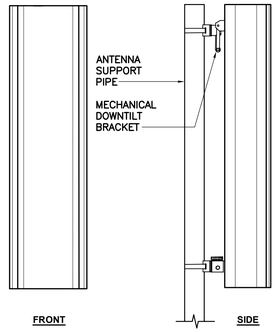
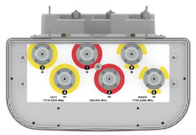
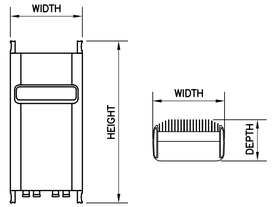




ALPHA/BETA/GAMMA ANTENNA			
EQUIPMENT		DIMENSIONS	WEIGHT
MAKE: CCI MODEL: HPA-65R-BUU-H6		72.3"L x 14.4"W x 7.3"D	42.9 LBS.
MAKE: QUINTEL MODEL: QS66512-2		72.0"H x 12.0"W x 9.6"D	112.0-LBS

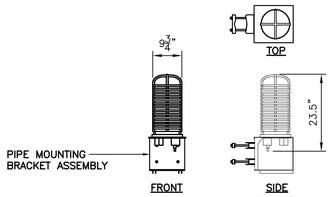
5 C-2 PROPOSED ANTENNA DETAIL
SCALE: 1/2" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 32	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

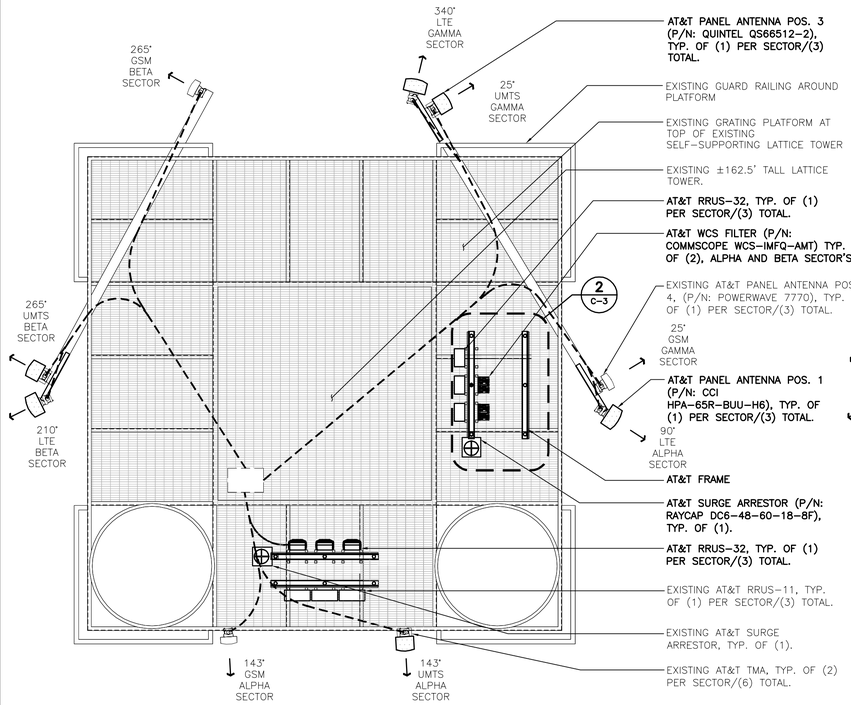
6 C-2 ERICSSON RRUS 32 DETAIL
SCALE: 1" = 1'-0"



SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.	20 LBS. (WITHOUT MOUNT)

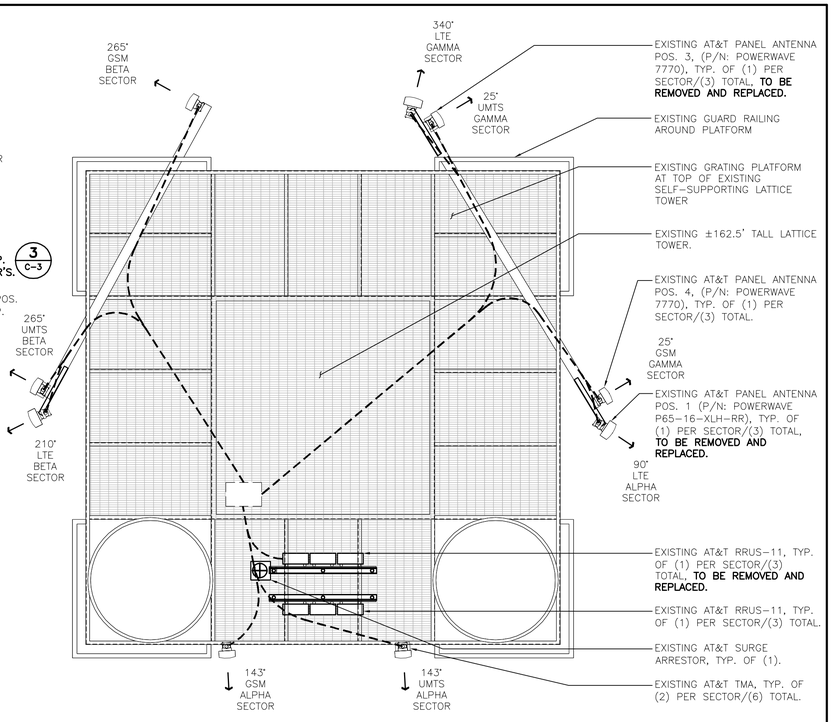
NOTES:
1. CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.

7 C-2 SURGE ARRESTOR DETAIL
SCALE: NTS



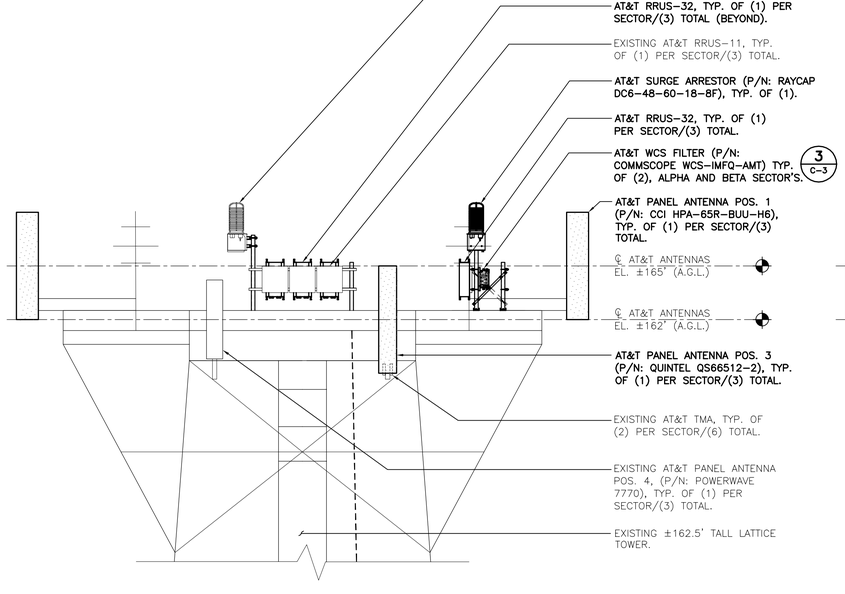
2 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH

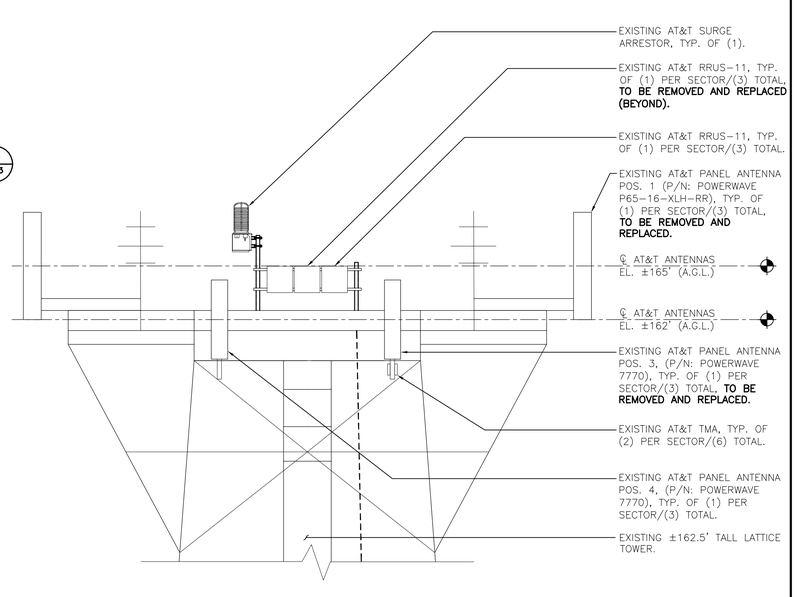


1 C-2 EXISTING ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH



4 C-2 PROPOSED ANTENNA ELEVATION
SCALE: 1/4" = 1'-0"



3 C-2 EXISTING ANTENNA ELEVATION
SCALE: 1/4" = 1'-0"

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LTE BWE/3C EQUIPMENT DETAILS

C-2

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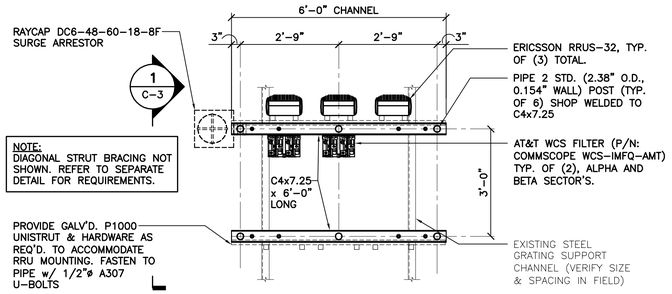


NOTE:

FRAME MAY BE RELOCATED TO AVOID EXISTING EQUIPMENT, COAX AND OTHER INTERFERING FEATURES PROVIDED THAT PROPOSED CHANNEL SUPPORTS BEAR OVER (2 MIN.) EXISTING CHANNELS.

2 C-3 RRU/SQUID FRAME DETAIL

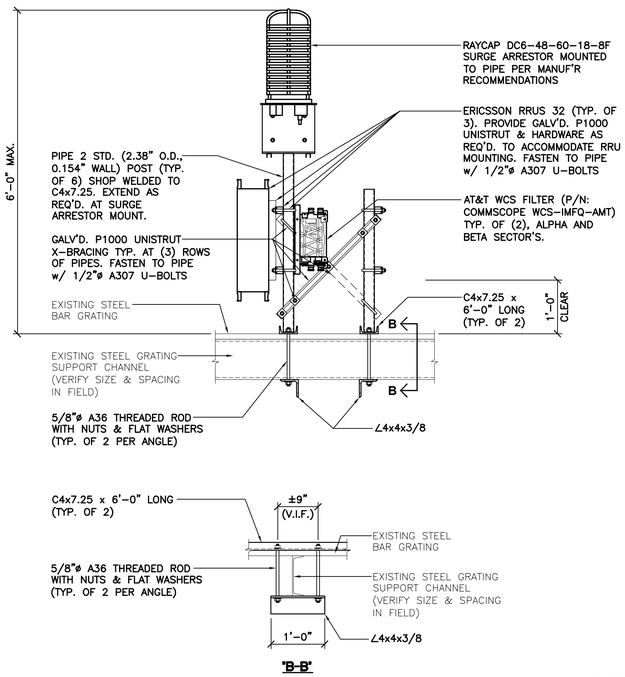
SCALE: 1/2" = 1'-0"

GRAPHIC SCALE

24 0 12 24 48 96

(IN FEET)

1/2 inch = 1 ft.



"B-B"

1 C-3 RRU/SQUID FRAME SECTION + DETAIL

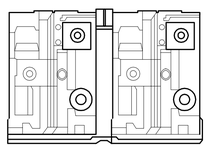
SCALE: 3/4" = 1'-0"

GRAPHIC SCALE

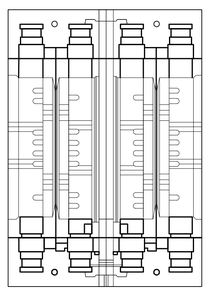
16 0 8 16 32 64

(IN FEET)

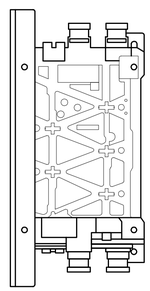
3/4 inch = 1 ft.



TOP



FRONT



SIDE

FILTER		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: COMMSCOPE MODEL: WCS-IMFQ-AMT	11.2"H x 10.6"W x 6.9"D	34.5 LBS.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 C-3 COMMSCOPE WCS FILTER DETAIL

SCALE: NTS

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LTE FRAME AND FILTER DETAILS

C-3

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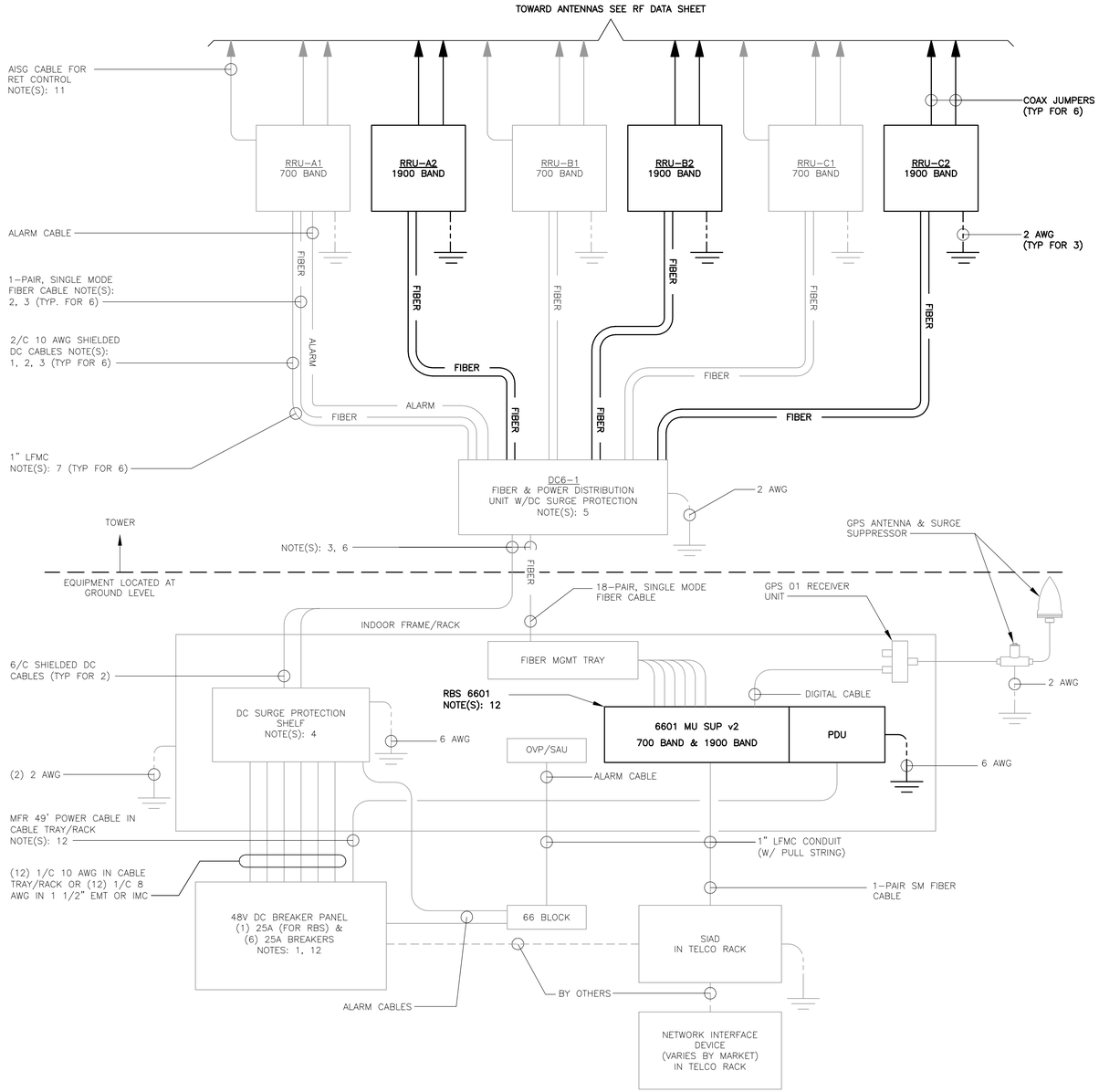

1 E-1 LTE SCHEMATIC DIAGRAM

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

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SHELTON, CT 06484

DATE: 08/16/16

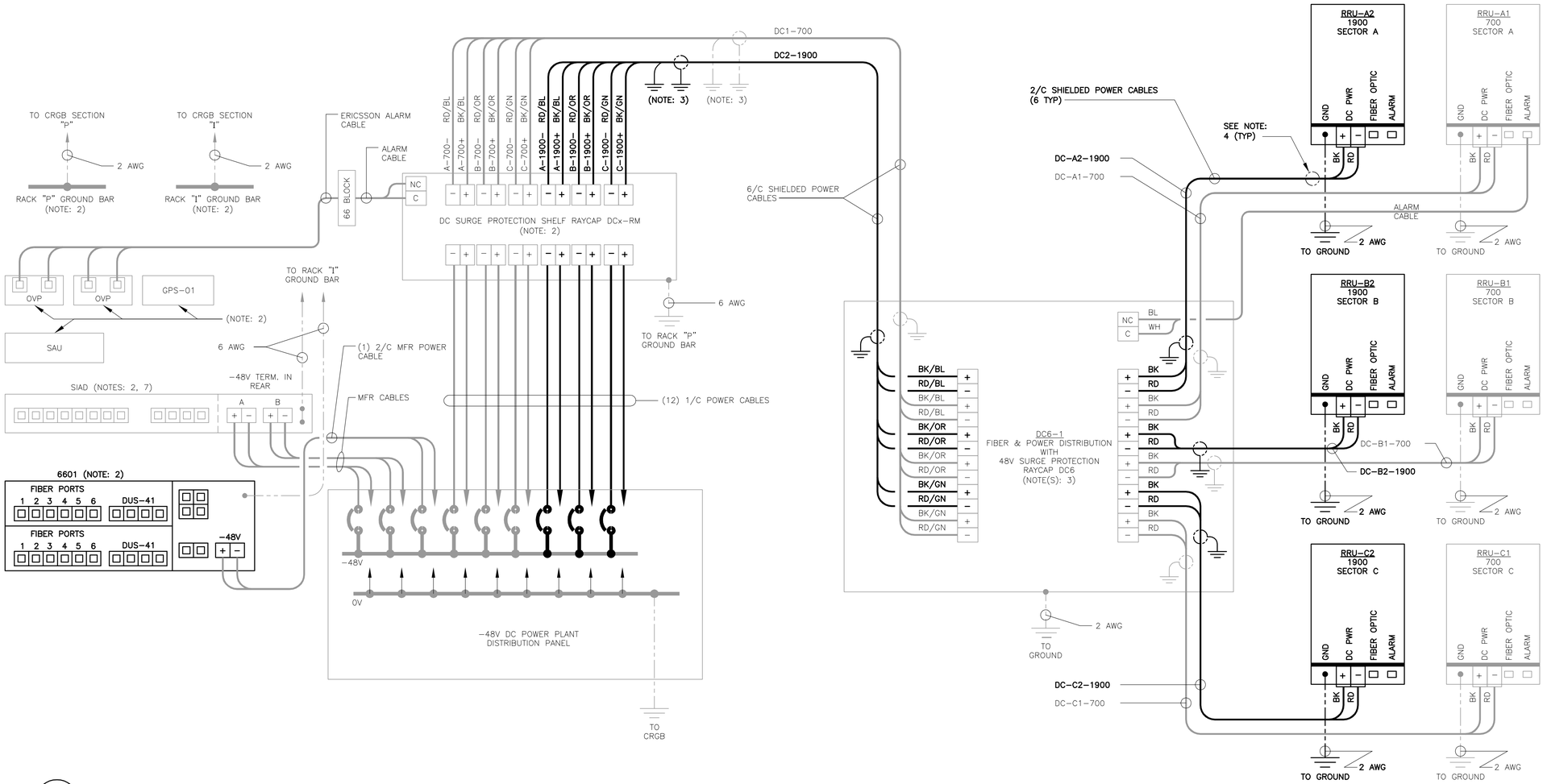
SCALE: AS NOTED

JOB NO. 16071.28

LTE SCHEMATIC DIAGRAM AND NOTES

E-1

Sheet No. 6 of 8



1/E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

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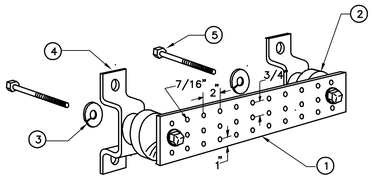
LTE WIRING DIAGRAM

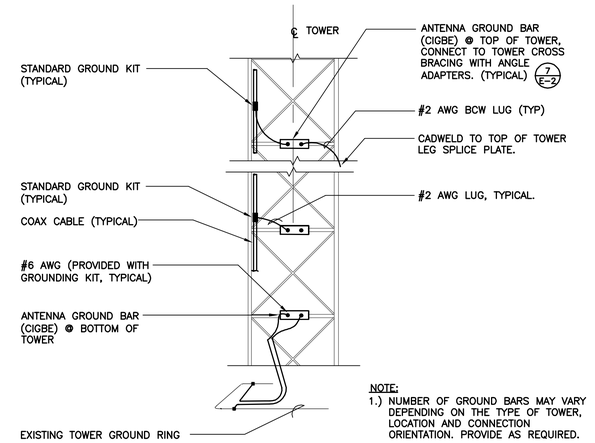
E-2



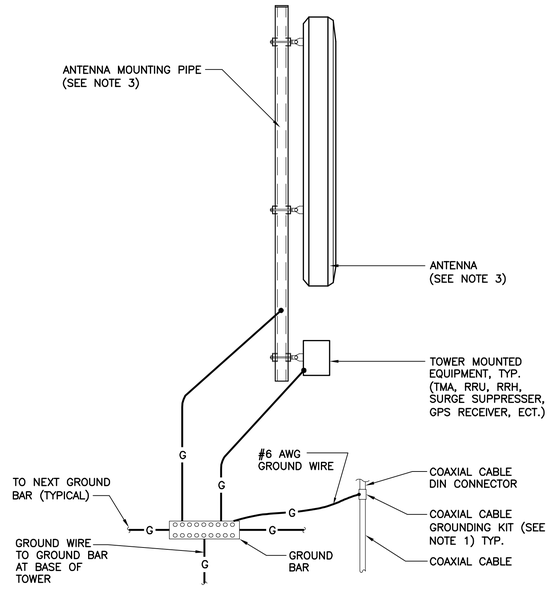
LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

3 E-3 GROUND BAR DETAIL
NOT TO SCALE



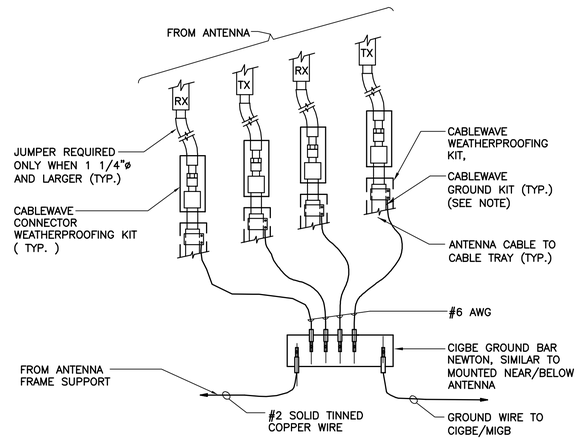
2 E-3 ANTENNA CABLE GROUNDING - LATTICE
NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

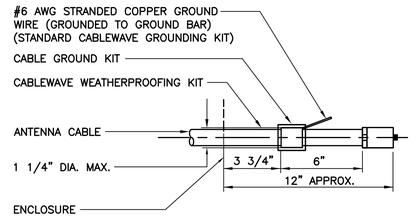
1 E-3 TYPICAL ANTENNA GROUNDING DETAIL
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

5 E-3 CONNECTION OF GROUND WIRES TO GROUND BAR
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

4 E-3 ANTENNA CABLE GROUNDING DETAIL
NOT TO SCALE

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TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 8 of 8