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October 9, 2017

<u>OVERNIGHT DELIVERY</u>
Hon. Robert Stein, Chairman
and Members of the Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: MCM Communications, LLC
Petition for Declaratory Ruling
1542 Boston Post Road, Westbrook, Connecticut

Dear Chairman Stein and Members of the Connecticut Siting Council:

On behalf of MCM Communications, LLC ("MCM") we submit here a Petition for a Declaratory Ruling to install a temporary tower facility at the captioned premises. Enclosed please find an original and fifteen (15) copies of the Petition and Attachments as well as four (4) copies of a structural analysis and a check in the amount of $625 representing the application fee. An electronic version of this submission is included on the enclosed CD.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Daniel M. Laub
Enclosures

cc: First Selectman Noel Bishop, Town of Westbrook
MCM

CONNECTICUT SITING COUNCIL

PETITION OF MCM	**)**	
COMMUNICATIONS, LLC ("MCM") TO	**)**	
THE CONNECTICUT SITING COUNCIL	**)**	**PETITION NO. ___**
FOR A DECLARATORY RULING THAT A	**)**	
CERTIFICATE OF ENVIRONMENTAL	**)**	**OCTOBER 9, 2017**
COMPATIBILITY AND PUBLIC NEED IS	**)**	
NOT REQUIRED FOR A PROPOSED	**)**	
TEMPORARY TOWER TO BE LOCATED	**)**	
AT 1542 BOSTON POST ROAD,	**)**	
WESTBROOK, CONNECTICUT	**)**	

PETITION FOR DECLARATORY RULING

PROPOSED TEMPORARY TOWER

1542 BOSTON POST ROAD, WESTBROOK, CONNECTICUT

I. Introduction

MCM Communications, LLC ("MCM") (the "Petitioner") hereby petitions the Connecticut Siting Council ("Council") pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a declaratory ruling finding that there are no permanent environmental impacts associated with the installation of a temporary tower facility ("Temporary Facility") at 1542 Boston Post

Road in Westbrook, Connecticut (the "Site") and that therefore a Certificate of Environmental Compatibility and Public Need ("Certificate") is not required for installation of the Temporary Facility. MCM seeks to deploy the Temporary Facility for continuity of service to the surrounding community for municipal emergency first responders and several wireless carriers with facilities currently located on a 121' tall water tank on the same Site ("Water Tank"). Connecticut Water Company ("Connecticut Water") which owns the Site will be demolishing the existing Water Tank, a tank which is being taken out of service permanently as part of the Connecticut Water's construction of a water tank in another location of the community.

II. Need For The Temporary Tower at the Site

Connecticut Water has entered into an agreement with MCM to relocate existing communications antennas onto the Temporary Facility in order to facilitate demolition of the Water Tank in early 2018. The Temporary Facility will allow for continuity of emergency and wireless communications services while MCM concurrently proceeds with finalizing plans for a permanent tower site relocation and commences the local and state regulatory review process. Future consultations with Westbrook pursuant to Section 16-50l of the Connecticut General Statutes will include at least two alternatives: 1) a proposed permanent tower at this Site owned by Connecticut Water; or 2) a tower on a nearby alternative site leased from Dattilo Family Holdings LLC (the "Proposed Tower Sites"). The Proposed Tower Sites and any other alternatives considered will ultimately be presented to the Siting Council in an application for its full consideration in a Docket sometime in 2018.

In the interim, the Temporary Facility is required at this Site for continued services in the community. The Old Saybrook Police Department, AT&T, T-Mobile and Verizon all maintain communications facilities at the Site which includes ground equipment and antennas mounted to the Water Tank. These facilities are relied on by the surrounding community in Westbrook for both emergency communications and wireless services. Existing coverage areas include Route 1, Water's Edge Resort and Spa, numerous residences and coastal portions of Long Island Sound.

Connecticut Water, MCM and the current communications tenants at the Site have all been working on a plan that would allow Connecticut Water to demolish the existing Water Tank pursuant to its timeline and also maintain continuity of service during the consultation and regulatory process associated with a permanent tower relocation to serve this area of Westbrook. The plans for the Temporary Facility include maintaining existing shelters and communications equipment at grade in their current locations and installing a temporary ballast mounted tower with antennas, cabling and ancillary equipment. The location, height and construction of the Temporary Facility are all needed as part of a closely coordinated plan to allow the vertical and horizontal space required for Connecticut Water's phased demolition of the Water Tank and communications services to be uninterrupted from the Site.

III. <u>Existing Water Tank & Site Location</u>

The Site has an address of 1542 Boston Post Road and is identified by the Westbrook Tax Assessor as ID C0071600. The property is approximately .24 acres in size and includes the existing Water Tank that is being demolished. The Site has frontage on and access directly from Route 1/Boston Post Road.

The Site is situated across the street from the Water's Edge Resort & Spa which is owned by the Datilo family. Long Island Sound is approximately 1,300 feet to the south. Existing communications facilities located on the Water Tank were issued permits by the Town of Westbrook. Satellite imagery and street views are included below for reference to existing conditions at the Site.

Figure 1 Satellite photo of 1542 Boston Post Road and surrounding area

Figure 2 Street view of existing Water Tank

IV. Temporary Facility Specifications

A temporary monopole tower would be affixed to a ballast-weighted foundation above grade. The temporary tower itself would be 163’ tall and located within a 27’ x 27’ fenced compound approximately 36’ southeast of the existing Water Tower between it and the street. Portions of the fenced tower compound are currently used as part of the gravel access drive that serves the existing Water Tank.

Temporary antennas, diplexers and amplifiers would be affixed to the tower including 3 panel antennas for Verizon, 3 panel antennas for AT&T, 6 panel antennas for T-Mobile and 1 whip antenna for the Old Saybrook Police Department.

Communications equipment at grade will remain and be reconnected to the temporary tower. Access and utilities will remain unchanged.

Detailed drawings for the Temporary Facility prepared by All Points Technology Corporation, last revised September 2017, including a survey, abutters map, site plan, elevation and construction plan are included in Exhibit A. A full structural analysis and report for the temporary tower, dated September 28, 2017, prepared by Dewberry Engineers, Inc., is being bulk filed with the Petition.

V. The Temporary Tower Facility Will Not Have Permanent Substantial Adverse Environmental Effects

The Temporary Facility will not create permanent substantial adverse environmental effects as more fully set forth herein.

A. Temporary Tower Height & Location

The proposed height of the temporary tower above that of the existing Water Tank is a function of: 1) ensuring communications are not interfered with during that period of time between relocation of antennas to the temporary tower and demolition of the existing Water Tank (a time period during which the tank itself would be an obstruction at lower heights); and 2) providing appropriate vertical separation between the temporary tower and Water Tank for construction and demolition purposes. The location of the Temporary Facility towards the frontage of the Site is required due to the parcel's size and inability to site a crane for construction purposes to the rear of the existing Water Tank. The southeast portion of the Site was chosen because the immediately adjacent parcel to the east of the Site is an unimproved lot.

B. Visibility

A visibility assessment report, including photosimulations, prepared by All Points Technology and dated September 2017 is included in Exhibit B. There will be a change in visibility associated with the plans by Connecticut Water to demolish the existing Water Tank and the need for the Temporary Facility. The Petitioner submits that the change in visibility will be limited in duration until a permanent tower site is developed at one of the Proposed Tower Sites. Because the change in visibility associated with demolition of the Water Tank and installation of the Temporary Facility are reversible, there is no permanent adverse visual effect being proposed for purposes of the Council's regulatory considerations in ruling on this Petition.

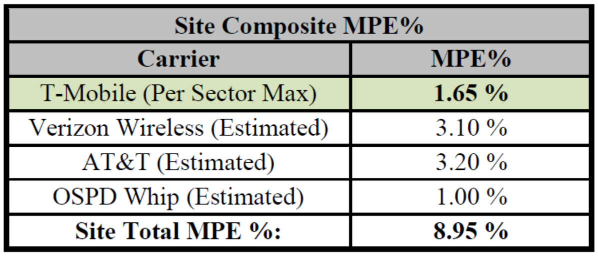
C. Physical Impacts

Some minor grading and use of gravel is required for installation of the Temporary Facility. Three trees will be removed for construction access for a crane to install the temporary tower and as a future staging area for demolition of the Water Tank. An analysis of short-term potential impacts to any environmental resources, including wetlands, was assessed by a September 22, 2017 report included in Exhibit C. All Points Technology concluded that there were no significant adverse impacts associated with the Temporary Facility.

D. Compliance with MPE Limits

The operation of all antennas at the Site will remain well below standards adopted by the Connecticut Department of Environmental Protection as set forth in

Section 22a-162 of the Connecticut General Statutes and the MPE limits established by the FCC as follows[1]:



Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.65 %**
Verizon Wireless (Estimated)	3.10 %
AT&T (Estimated)	3.20 %
OSPD Whip (Estimated)	1.00 %
Site Total MPE %:	**8.95 %**

VI. Notice

Pursuant to Section 16-50j-40(a) of the Council's regulations, notice of AT&T's intent to file this petition was sent to each person appearing of record as an owner of property that abuts the Site, as well as municipal officials and government agencies as listed in Section 16-50e of the General Statutes. Certification of such notice, a copy of the notice and the list of property owners, municipal officials, and government agencies to whom MCM sent notice are included in Exhibit D and E. Of note, MCM has had extensive discussions with the representatives of the Water's Edge and Datilo family as part of the need for the Temporary Facility and leasing of one of their properties in this area of Westbrook for purposes of a potential permanent tower relocation.

VII. Council Regulation of Temporary Towers and Declaratory Ruling Sought by MCM

The Public Utility Environmental Standards Act ("PUESA") provides the Siting Council with jurisdiction over telecommunications towers and several other types of utility infrastructure defined as "facilities". See C.G.S. § 16-50i(a). Not every "facility" requires a Certificate of Environmental Compatibility and Public Need. Indeed, state

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[1] Cumulative analysis provided by EBI Consulting for T-Mobile.

law specifically provides that only a facility that “may have a substantial adverse environmental effect” requires a Certificate. C.G.S. § 16-50k.

The Siting Council’s regulations contain several exemptions for certain types of tower facilities including temporary towers. For example, Section 16-50j-72(a)(2) of the Council’s regulations includes an exemption for installation of a tower next to an existing tower that is damaged or inoperable and required in order to maintain continuity of services. Section 16-50j-72(d) of the Council’s regulations also incorporate an exemption for temporary towers provided that the temporary use is “necessary to provide emergency or essential telecommunications services to ....events of statewide significance”. Historically, wireless carriers have filed and received acknowledgment of notices for cell on wheels, temporary distribution pole sets and other types of temporary facilities needed during construction of new wireless facilities or for special events. See e.g. EM-CING-052-131023, EM-CING-038-120816.

In cases where a tower facility is not otherwise exempt under Council regulations, the Council has discretion to determine that a proposed facility will not have a substantial adverse environmental effect and that no Certificate is required. See Section 4-176 of the Uniform Administrative Procedure Act and Sections 16-50j-38 and 39 of the Council’s own regulations specifically provide the Siting Council with the regulatory authority to render case-by-case declaratory rulings in a petition process. As relevant to this Petition, the Council has previously issued declaratory rulings that no Certificate was required for: a 85’ temporary tower needed to avoid service disruption during maintenance of a water tank site (Petition 1062) and more recently a 120’ ballast temporary monopole tower in Bridgeport (Petition 1169) as well as a 94’ ballast temporary monopole in Greenwich (Petition 443B).

MCM has filed this Petition with the Council to address the need for a temporary tower to be deployed at an existing communications site to address disruption to the services of three major wireless carriers and a municipal police department associated with Connecticut Water's decision to demolish the existing Water Tank at the Site which supports wireless facilities. MCM specifically seeks a ruling that the environmental effects associated with the construction of the Temporary Facility at 1542 Boston Post Road adjacent to the existing Water Tank are not permanent or substantial for purposes of Section 16-50k, reversible and temporary in duration. Of note, MCM will construct the Temporary Facility and maintain it only until such time as a permanent replacement tower site has been permitted and constructed.

VIII. Conclusion

MCM respectfully submits that the proposed Temporary Facility is in the public interest and does not present any substantial irreversible adverse environmental effects for purposes of Section 16-50p of the General Statutes. MCM petitions the Connecticut Siting Council for a determination that installation of the Temporary Facility does not require a Certificate of Environmental Compatibility and Public Need and that the Council issue an order approving effective only during the time that a permanent relocation facility is evaluated as part of the required regulatory review process, including a Certificate application to be presented for the Proposed Tower Sites, and until a new permanent facility constructed and operational.

Respectfully Submitted,

Christopher B. Fisher, Esq.
Daniel Laub, Esq.
On behalf of the Petitioner MCM
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

cc: Town of Westbrook
Robert Stanford, MCM

Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
Parsippany, NJ 07054

973.739.9400
973.739.9710 fax
www.dewberry.com

Structural Analysis Report and Design Calculations For a Wireless Telecommunications facility

Site: Westbrook CT Monopole Ballast Base
Site Address: 1542 Boston Post Road
Westbrook, CT 06498

Prepared for:
Telecom Tower Rentals, LLC.
7 Craig Road
Neshanic Station, NJ 08853

Revision 1

September 28, 2017

Prepared by:
Dewberry Engineers Inc.
600 Parsippany Road
Parsippany, NJ 07054
Dewberry Project Number: 50075968

Reviewed by: Jiang J. Yu

Matthew Sperling, E.I.T.

Jiang J. Yu, P.E.
Connecticut Professional Engineer
License No.: 23222

TABLE OF CONTENTS

1.0 INTRODUCTION AND PROJECT SUMMARY

The objective of this report is to assess the structural integrity of the proposed foundation system utilizing ballast blocks to support the temporary installation of a monopole at the above mentioned site. The proposed monopole is 160’-0” tall (above proposed mounting hardware) and is located in Westbrook, CT. Twelve (12) antennas are proposed to be mounted to the monopole using collar flush mounts. The following is included in this structural analysis.

- Proposed ballast block layout plan & transition base plate design.
- Calculation of required ballast weight.
- Analysis of monopole with proposed equipment.
- Analysis of base frame under max loading from monopole and ballast loading.
- Analysis of transition base plate under monopole loading.

Proposed monopole tower was analyzed using tnxTower, a commercially available tower engineering software, to calculate maximum base reactions for the proposed structure. Proposed steel base plate and frame were analyzed using STAAD.Pro to calculated expected loading in proposed structural members. Selected output from the analysis is included in Appendix C.

2.0 PROPOSED ANTENNAS & EQUIPMENT

The following antennas and equipment are to be mounted on the proposed tower. Additional information is found in Appendix E.

Verizon
Centerline elevation = 157’-0” above monopole base plate

- Three (3) Andrew SBNHH-1D65B antennas measuring 72.9”H x 11.9”W x 7.1”D and weighing 40.6lbs.
- Six (6) Kaelus QBC002F1V51-2 diplexers measuring 9.7”H x 8.7”W x 3.5”D and weighing 37.5lbs.
- One (1) 6CHMT sector collar mount weighing up to 270lbs.
- Twelve (12) 1-5/8” coax.

AT&T
Centerline elevation = 147’-0” above monopole base plate

- Three (3) AM-X-CD-14-65-00T-RET antennas measuring 48”H x 11.8”W x 5.9”D and weighing 36.4lbs.
- Six (6) Powerwave LGP 21401 TMAs.
- One (1) 6CHMT sector collar mount weighing up to 270lbs.
- Six (6) 1-5/8” coax.
- Three (3) 3/8” RET cables.

T-Mobile
Centerline elevation = 137'-0" above monopole base plate.

- Three (3) Ericsson AIR21 B4A/B2P antennas measuring 56"H x 12"W x 8"D and weighing 83lbs.
- Three (3) Ericsson AIR21 B2A/B4P antennas measuring 56"H x 12"W x 8"D and weighing 83lbs.
- One (1) 6CHMT sector collar mount weighing up to 270lbs.
- One (1) Fiber cable.

Old Saybrook Police Department
Centerline elevation = 164'-0" above monopole base plate.

- One (1) 8' whip antenna measuring up to 8'-0"H x 4"dia and weighing approximately 20lbs.

All proposed cable is to be routed inside monopole.

3.0 CODES, STANDARDS, AND REFERENCES

The structure was analyzed and the proposed installation designed per the provisions of the following Codes and standards:

- *2016 Connecticut State Building Code, Amendments to the 2012 International Building Code*
- American Society of Civil Engineers *ASCE 7-10 Minimum Design Loads for Buildings and Other Structure*
- American Institute of Steel Construction *AISC 360-10, Specifications for Structural Steel Buildings*
- *TIA-222-G-2005 Structural Standard for Antenna Supporting Structures and Antennas*

The following tower design documents were referenced in analysis.

- Monopole Design Drawings by Penn Summit Tubular, LLC (Drawing No. 27336-D1) dated October 19, 2007.

4.0 CALCULATIONS

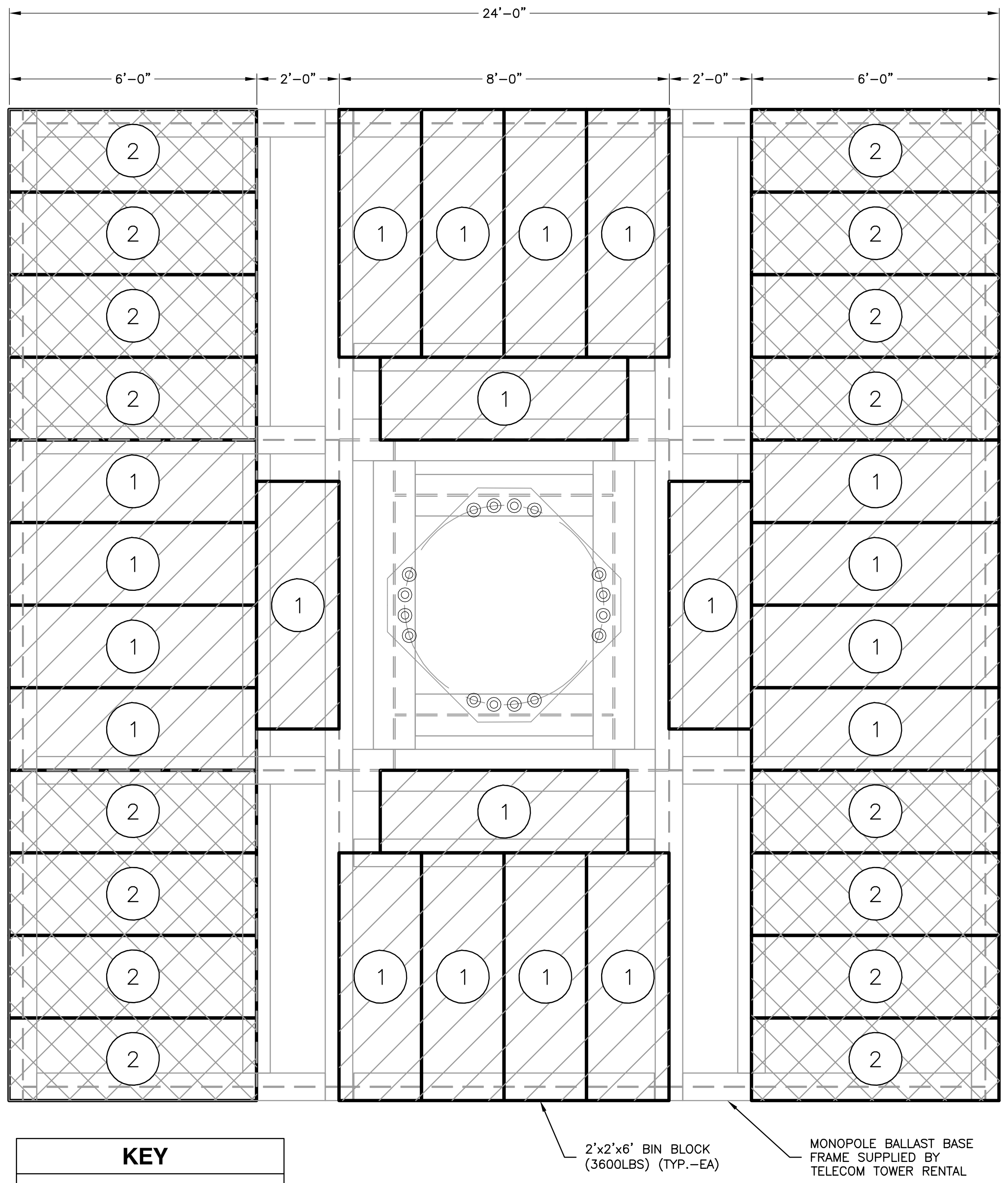
Calculations for this analysis and the design of the installation are included in Appendices of this report.

5.0 CONCLUSIONS, COMMENTARY, AND RECOMMENDATIONS

After evaluation and analysis, it was determined that the proposed structural members **are adequate** in regards of stresses and deflections with the most unfavorable loading effects.

Dewberry Engineers Inc. reserves the right to add to or modify this report if more information becomes available. The conclusions reached by Dewberry Engineers Inc. in this report are only applicable to the previously mentioned existing structural elements supporting the proposed wireless telecommunications installation. The results of this analysis are based on the assumption that the monopole structure has been fabricated per original design documents. Any deviation of the support condition, loading, location, placement, equipment configuration, etc., will require Dewberry Engineers Inc. to generate an additional structural analysis.

APPENDIX A – BALLAST PLAN & BASE PLATE DESIGN



KEY

1	**ONE BLOCK**
2	**TWO BLOCKS**

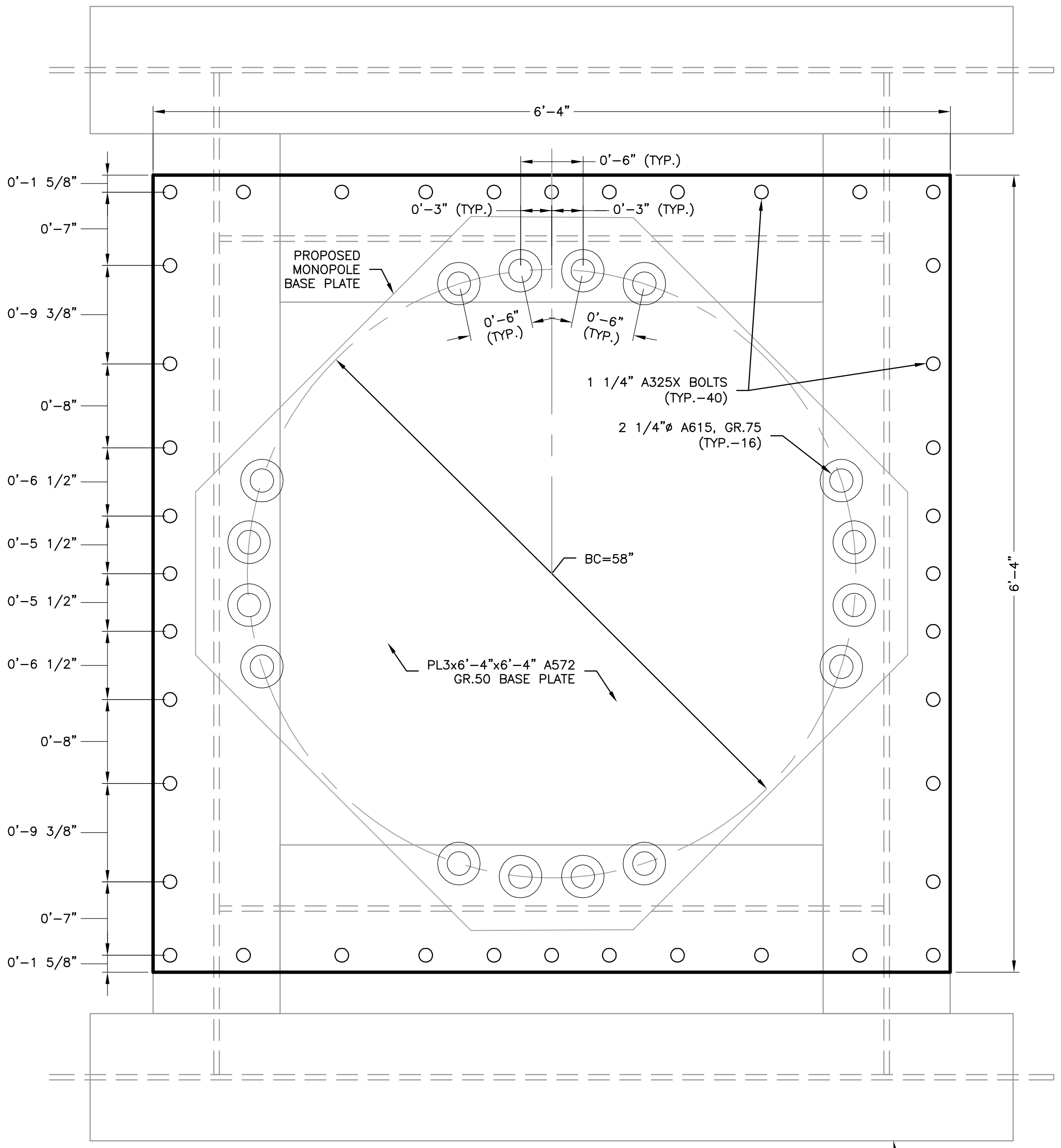
NOTES:

1. USE (52) 3600 LB BIN BLOCKS, OR THE EQUIVALENT OF 187,200 LBS BALLAST.

BALLAST PLAN ①

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"

0' 1' 2' 4'



NOTES:

1. BOLT SPACING TYP. PER BASE PLATE EDGE.

BASE PLATE DESIGN ②

SCALE: 3/4"=1' FOR 11"x17"
1 1/2"=1' FOR 22"x34"

0' 1/2' 1' 1 1/2'

NOTES:

1. BALLAST PLAN BASED ON STRUCTURAL ANALYSIS BY DEWBERRY ENGINEERS INC. DATED 3/31/17.
2. BASE PLATE DESIGN BASED ON MONOPOLE DESIGN DRAWINGS BY PENNSUMMIT TUBULAR, LLC (DRAWING NO. 27336–D1) DATED 10/19/2007.

TELECOM TOWER RENTALS
"Your Temporary Tower Rental Solution"

WESTBROOK CT

CONSTRUCTION DRAWINGS

1	04/19/16	ISSUED FOR CONSTRUCTION
0	03/31/16	ISSUED FOR CONSTRUCTION

Dewberry®
Dewberry Engineers Inc.
600 PARSIPPANY ROAD
SUITE 301
PARSIPPANY, NJ 07054
PHONE: 973.739.9400
FAX: 973.739.9710
COA 24GA28047600

JIANG YU, P.E.
CONNECTICUT LICENSE 23222

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER TO ALTER THIS DOCUMENT.

DRAWN BY:	MLS
REVIEWED BY:	JJY
CHECKED BY:	GHN
PROJECT NUMBER:	50075966
JOB NUMBER:	50075968

SITE ADDRESS:

1542 BOSTON POST ROAD
WESTBROOK, CT 06498

SHEET TITLE

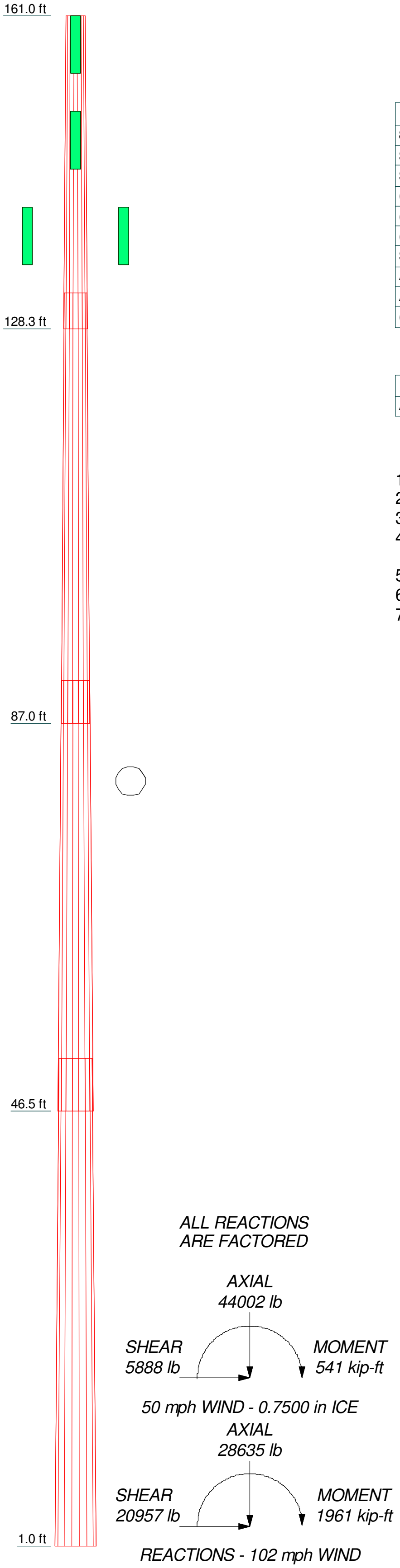
BALLAST PLAN &
BASE PLATE DESIGN

SHEET NUMBER

C–1

APPENDIX B – TOWER ANALYSIS

Section	1	2	3	4	
Length (ft)	32.75	45.00	45.00	51.00	
Number of Sides	18	18	18	18	
Thickness (in)	0.1875	0.2188	0.3125	0.3750	
Socket Length (ft)	3.75	4.50	5.50		
Top Dia (in)	23.0000	27.9893	35.0433	41.7249	
Bot Dia (in)	29.0580	36.3133	43.3673	51.1587	
Grade	A572-65				
Weight (lb)	1713.8	3395.7	5907.1	9515.5	20532.2



ALL REACTIONS ARE FACTORED

AXIAL 44002 lb

SHEAR 5888 lb

MOMENT 541 kip-ft

50 mph WIND - 0.7500 in ICE

AXIAL 28635 lb

SHEAR 20957 lb

MOMENT 1961 kip-ft

REACTIONS - 102 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8' Whip	165	(2) LGP21401	148
SBNHH-1D65B	158	(2) LGP21401	148
SBNHH-1D65B	158	AM-X-CD-14-65-00T-RET	148
(2) QBC002F1V51-1	158	AIR21 B2A/B4P	138
(2) QBC002F1V51-1	158	AIR21 B4A/B2P	138
(2) QBC002F1V51-1	158	AIR21 B2A/B4P	138
SBNHH-1D65B	158	AIR21 B4A/B2P	138
AM-X-CD-14-65-00T-RET	148	AIR21 B2A/B4P	138
AM-X-CD-14-65-00T-RET	148	AIR21 B4A/B2P	138
(2) LGP21401	148		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 102 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

Dewberry Engineers Inc.
600 Parsippany Road Suite 301
Parsippany, NJ 07054
Phone: (973) 739-9400
FAX: (973) 739-9710

Job: **50075968 Westbrook, CT**		
Project: **Monopole Ballast Base**		
Client: Telecom Tower Rentals	Drawn by: MLS	App'd:
Code: TIA-222-G	Date: 09/28/17	Scale: NTS
Path: Q:\50075966\50075968\Adm\Reports\SA\Rev. 1\tnxTower\Westbrook CT Monopole - ASCE 710.er		Dwg No. E-1

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 102 mph.
Structure Class II.
Exposure Category C.
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.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
√ Use Code Stress Ratios
√ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile
√ Include Bolts In Member Capacity
√ Leg Bolts Are At Top Of Section
√ Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
Add IBC .6D+W Combination

Distribute Leg Loads As Uniform
Assume Legs Pinned
√ Assume Rigid Index Plate
√ Use Clear Spans For Wind Area
√ Use Clear Spans For KL/r
√ Retension Guys To Initial Tension
Bypass Mast Stability Checks
√ Use Azimuth Dish Coefficients
√ Project Wind Area of Appurt.
√ Autocalc Torque Arm Areas
SR Members Have Cut Ends
Sort Capacity Reports By Component
√ Triangulate Diamond Inner Bracing
Use TIA-222-G Tension Splice Capacity Exemption

Treat Feedline Bundles As Cylinder
Use ASCE 10 X-Brace Ly Rules
√ Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
SR Leg Bolts Resist Compression
√ All Leg Panels Have Same Allowable
Offset Girt At Foundation
Consider Feedline Torque
Include Angle Block Shear Check

Poles

Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	161.00-128.25	32.75	3.75	18	23.0000	29.0580	0.1875	0.7500	A572-65 (65 ksi)
L2	128.25-87.00	45.00	4.50	18	27.9893	36.3133	0.2188	0.8752	A572-65

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
									(65 ksi)
L3	87.00-46.50	45.00	5.50	18	35.0433	43.3673	0.3125	1.2500	A572-65 (65 ksi)
L4	46.50-1.00	51.00		18	41.7249	51.1587	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	*Tip Dia.* *in*	*Area* in^2	*I* in^4	*r* *in*	*C* *in*	*I/C* in^3	*J* in^4	*It/Q* in^2	*w* *in*	*w/t*
L1	23.3548	13.5763	892.6152	8.0984	11.6840	76.3964	1786.4050	6.7894	3.7180	19.829
	29.5063	17.1816	1809.2916	10.2490	14.7615	122.5686	3620.9639	8.5924	4.7842	25.516
L2	29.1255	19.2858	1879.0766	9.8585	14.2186	132.1564	3760.6257	9.6448	4.5410	20.754
	36.8735	25.0666	4125.8645	12.8135	18.4472	223.6585	8257.1579	12.5357	6.0061	27.45
L3	36.4291	34.4486	5249.7552	12.3294	17.8020	294.8969	10506.4182	17.2276	5.6176	17.976
	44.0363	42.7050	10001.3461	15.2844	22.0306	453.9757	20015.8523	21.3565	7.0826	22.664
L4	43.4016	49.2167	10631.6129	14.6792	21.1963	501.5799	21277.2152	24.6130	6.6836	17.823
	51.9479	60.4453	19694.7096	18.0282	25.9886	757.8200	39415.3341	30.2284	8.3439	22.251

Tower Elevation *ft*	*Gusset Area (per face)* ft^2	*Gusset Thickness* *in*	*Gusset Grade*	*Adjust. Factor* A_f	*Adjust. Factor* A_r	*Weight Mult.*	*Double Angle Stitch Bolt Spacing Diagonals* *in*	*Double Angle Stitch Bolt Spacing Horizontals* *in*
L1 161.00-128.25				1	1	1		
L2 128.25-87.00				1	1	1		
L3 87.00-46.50				1	1	1		
L4 46.50-1.00				1	1	1		

Monopole Base Plate Data

Base Plate Data

Base plate is square	√
Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.6250 in
Number of bolts	16
Embedment length	0.0000 in
f'_c	3 ksi
Grout space	0.0000 in
Base plate grade	A572-50
Base plate thickness	3.0000 in
Bolt circle diameter	58.2500 in
Outer diameter	57.0000 in
Inner diameter	42.0000 in
Corner clippled	11.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement* *ft*	*Total Number*		*C_AA_A* *ft^2/ft*	*Weight* *plf*
LDF7-50A (1-5/8 FOAM) (Verizon)	C	No	Inside Pole	158.00 - 1.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (AT&T)	C	No	Inside Pole	148.00 - 1.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF2-50A (3/8 FOAM) (AT&T)	C	No	Inside Pole	148.00 - 1.00	3	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF5-50A (7/8 FOAM) (T-Mobile)	C	No	Inside Pole	138.00 - 1.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33

Feed Line/Linear Appurtenances Section Areas

Tower Section	*Tower Elevation* *ft*	*Face*	*A_R* *ft^2*	*A_F* *ft^2*	*C_AA_A In Face* *ft^2*	*C_AA_A Out Face* *ft^2*	*Weight* *lb*
L1	161.00-128.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	397.87
L2	128.25-87.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	632.36
L3	87.00-46.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	620.87
L4	46.50-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	697.51

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	*Tower Elevation* *ft*	*Face or Leg*	*Ice Thickness* *in*	*A_R* *ft^2*	*A_F* *ft^2*	*C_AA_A In Face* *ft^2*	*C_AA_A Out Face* *ft^2*	*Weight* *lb*
L1	161.00-128.25	A	1.738	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	397.87
L2	128.25-87.00	A	1.687	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	632.36
L3	87.00-46.50	A	1.609	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	620.87
L4	46.50-1.00	A	1.453	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	697.51

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Verizon									
SBNHH-1D65B	A	None		0.0000	158.00	No Ice	8.20	5.42	40.60
						1/2" Ice	8.89	6.11	91.24
						1" Ice	9.59	6.80	141.87
SBNHH-1D65B	B	None		0.0000	158.00	No Ice	8.20	5.42	40.60
						1/2" Ice	8.89	6.11	91.24
						1" Ice	9.59	6.80	141.87
SBNHH-1D65B	C	None		0.0000	158.00	No Ice	8.20	5.42	40.60
						1/2" Ice	8.89	6.11	91.24
						1" Ice	9.59	6.80	141.87
(2) QBC002F1V51-1	A	None		0.0000	158.00	No Ice	0.70	0.29	18.75
						1/2" Ice	0.86	0.40	24.30
						1" Ice	1.03	0.52	29.85
(2) QBC002F1V51-1	B	None		0.0000	158.00	No Ice	0.70	0.29	18.75
						1/2" Ice	0.86	0.40	24.30
						1" Ice	1.03	0.52	29.85
(2) QBC002F1V51-1	C	None		0.0000	158.00	No Ice	0.70	0.29	18.75
						1/2" Ice	0.86	0.40	24.30
						1" Ice	1.03	0.52	29.85
AT&T									
AM-X-CD-14-65-00T-RET	A	None		0.0000	148.00	No Ice	4.99	2.83	36.40
						1/2" Ice	5.48	3.29	68.40
						1" Ice	5.97	3.76	100.40
AM-X-CD-14-65-00T-RET	B	None		0.0000	148.00	No Ice	4.99	2.83	36.40
						1/2" Ice	5.48	3.29	68.40
						1" Ice	5.97	3.76	100.40
AM-X-CD-14-65-00T-RET	C	None		0.0000	148.00	No Ice	4.99	2.83	36.40
						1/2" Ice	5.48	3.29	68.40
						1" Ice	5.97	3.76	100.40
(2) LGP21401	A	None		0.0000	148.00	No Ice	0.93	0.47	20.00
						1/2" Ice	1.07	0.56	30.00
						1" Ice	1.21	0.65	40.00
(2) LGP21401	B	None		0.0000	148.00	No Ice	0.93	0.47	20.00
						1/2" Ice	1.07	0.56	30.00
						1" Ice	1.21	0.65	40.00
(2) LGP21401	C	None		0.0000	148.00	No Ice	0.93	0.47	20.00
						1/2" Ice	1.07	0.56	30.00
						1" Ice	1.21	0.65	40.00
T-Mobile									
AIR21 B4A/B2P	A	None		0.0000	138.00	No Ice	6.05	4.36	83.00
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
AIR21 B2A/B4P	A	None		0.0000	138.00	No Ice	6.05	4.36	83.00
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
AIR21 B4A/B2P	B	None		0.0000	138.00	No Ice	6.05	4.36	83.00

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
AIR21 B2A/B4P	B	None		0.0000	138.00	No Ice	6.05	4.36	83.00
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
AIR21 B4A/B2P	C	None		0.0000	138.00	No Ice	6.05	4.36	83.00
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
AIR21 B2A/B4P	C	None		0.0000	138.00	No Ice	6.05	4.36	83.00
						1/2" Ice	6.61	4.88	124.90
						1" Ice	7.16	5.41	166.81
Old Saybrook Police Dept									
8' Whip	C	None		0.0000	165.00	No Ice	3.14	3.14	20.00
						1/2" Ice	3.62	3.62	30.00
						1" Ice	4.11	4.11	40.00

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	*z* ft	K_Z	q_z psf	A_G ft^2	*Face*	A_F ft^2	A_R ft^2	A_{leg} ft^2	*Leg* %	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2
L1 161.00-128.25	144.09	1.367	35	72.133	A	0.000	72.133	72.133	100.00	0.000	0.000
					B	0.000	72.133		100.00	0.000	0.000
					C	0.000	72.133		100.00	0.000	0.000
L2 128.25-87.00	107.03	1.284	33	113.436	A	0.000	113.436	113.436	100.00	0.000	0.000
					B	0.000	113.436		100.00	0.000	0.000
					C	0.000	113.436		100.00	0.000	0.000
L3 87.00-46.50	66.44	1.161	29	135.785	A	0.000	135.785	135.785	100.00	0.000	0.000
					B	0.000	135.785		100.00	0.000	0.000
					C	0.000	135.785		100.00	0.000	0.000
L4 46.50-1.00	24.07	0.938	24	180.767	A	0.000	180.767	180.767	100.00	0.000	0.000
					B	0.000	180.767		100.00	0.000	0.000
					C	0.000	180.767		100.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	*z* ft	K_Z	q_z psf	t_Z in	A_G ft^2	*Face*	A_F ft^2	A_R ft^2	A_{leg} ft^2	*Leg* %	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2
L1	144.09	1.367	8	1.7382	81.621	A	0.000	81.621	81.621	100.00	0.000	0.000

Section Elevation *ft*	*z* *ft*	K_Z	q_z *psf*	t_Z *in*	A_G ft^2	*Face*	A_F ft^2	A_R ft^2	A_{leg} ft^2	*Leg %*	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2
161.00-128.25						B	0.000	81.621		100.00	0.000	0.000
						C	0.000	81.621		100.00	0.000	0.000
L2 128.25-87.00	107.03	1.284	8	1.6873	125.386	A	0.000	125.386	125.386	100.00	0.000	0.000
						B	0.000	125.386		100.00	0.000	0.000
						C	0.000	125.386		100.00	0.000	0.000
L3 87.00-46.50	66.44	1.161	7	1.6087	147.175	A	0.000	147.175	147.175	100.00	0.000	0.000
						B	0.000	147.175		100.00	0.000	0.000
						C	0.000	147.175		100.00	0.000	0.000
L4 46.50-1.00	24.07	0.938	6	1.4534	192.966	A	0.000	192.966	192.966	100.00	0.000	0.000
						B	0.000	192.966		100.00	0.000	0.000
						C	0.000	192.966		100.00	0.000	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation *ft*	*z* *ft*	K_Z	q_z *psf*	A_G ft^2	*Face*	A_F ft^2	A_R ft^2	A_{leg} ft^2	*Leg %*	C_AA_A *In Face* ft^2	C_AA_A *Out Face* ft^2
L1 161.00-128.25	144.09	1.367	11	72.133	A	0.000	72.133	72.133	100.00	0.000	0.000
					B	0.000	72.133		100.00	0.000	0.000
					C	0.000	72.133		100.00	0.000	0.000
L2 128.25-87.00	107.03	1.284	10	113.436	A	0.000	113.436	113.436	100.00	0.000	0.000
					B	0.000	113.436		100.00	0.000	0.000
					C	0.000	113.436		100.00	0.000	0.000
L3 87.00-46.50	66.44	1.161	9	135.785	A	0.000	135.785	135.785	100.00	0.000	0.000
					B	0.000	135.785		100.00	0.000	0.000
					C	0.000	135.785		100.00	0.000	0.000
L4 46.50-1.00	24.07	0.938	7	180.767	A	0.000	180.767	180.767	100.00	0.000	0.000
					B	0.000	180.767		100.00	0.000	0.000
					C	0.000	180.767		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1 161.00-128.25	397.87	1713.85	A	1	0.65	35	1	1	72.133	1791.54	54.70	C
			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2 128.25-87.00	632.36	3395.75	A	1	0.65	33	1	1	113.436	2644.35	64.11	C
			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3 87.00-46.50	620.87	5907.10	A	1	0.65	29	1	1	135.785	2857.88	70.56	C
			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	24	1	1	180.767	3051.14	67.06	C
			B	1	0.65		1	1	180.767			
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	794.13	10344.90		

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
									kip-ft			

Tower Forces - No Ice - Wind 60 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1 161.00-128.25	397.87	1713.85	A	1	0.65	35	1	1	72.133	1791.54	54.70	C
			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2 128.25-87.00	632.36	3395.75	A	1	0.65	33	1	1	113.436	2644.35	64.11	C
			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3 87.00-46.50	620.87	5907.10	A	1	0.65	29	1	1	135.785	2857.88	70.56	C
			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	24	1	1	180.767	3051.14	67.06	C
			B	1	0.65		1	1	180.767			
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	794.13 kip-ft	10344.90		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1 161.00-128.25	397.87	1713.85	A	1	0.65	35	1	1	72.133	1791.54	54.70	C
			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2 128.25-87.00	632.36	3395.75	A	1	0.65	33	1	1	113.436	2644.35	64.11	C
			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3 87.00-46.50	620.87	5907.10	A	1	0.65	29	1	1	135.785	2857.88	70.56	C
			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	24	1	1	180.767	3051.14	67.06	C
			B	1	0.65		1	1	180.767			
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	794.13 kip-ft	10344.90		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E *ft²*	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1	397.87	3664.94	A	1	1.2	8	1	1	81.621	894.95	27.33	C
161.00-128.25			B	1	1.2		1	1	81.621			
			C	1	1.2		1	1	81.621			
L2	632.36	6332.63	A	1	1.2	8	1	1	125.386	1290.40	31.28	C
128.25-87.00			B	1	1.2		1	1	125.386			
			C	1	1.2		1	1	125.386			
L3	620.87	9222.87	A	1	1.2	7	1	1	147.175	1367.52	33.77	C
87.00-46.50			B	1	1.2		1	1	147.175			
			C	1	1.2		1	1	147.175			
L4 46.50-1.00	697.51	13466.62	A	1	1.2	6	1	1	192.966	1437.91	31.60	C
			B	1	1.2		1	1	192.966			
			C	1	1.2		1	1	192.966			
Sum Weight:	2348.61	32687.06						OTM	387.54 kip-ft	4990.79		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E *ft²*	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1	397.87	3664.94	A	1	1.2	8	1	1	81.621	894.95	27.33	C
161.00-128.25			B	1	1.2		1	1	81.621			
			C	1	1.2		1	1	81.621			
L2	632.36	6332.63	A	1	1.2	8	1	1	125.386	1290.40	31.28	C
128.25-87.00			B	1	1.2		1	1	125.386			
			C	1	1.2		1	1	125.386			
L3	620.87	9222.87	A	1	1.2	7	1	1	147.175	1367.52	33.77	C
87.00-46.50			B	1	1.2		1	1	147.175			
			C	1	1.2		1	1	147.175			
L4 46.50-1.00	697.51	13466.62	A	1	1.2	6	1	1	192.966	1437.91	31.60	C
			B	1	1.2		1	1	192.966			
			C	1	1.2		1	1	192.966			
Sum Weight:	2348.61	32687.06						OTM	387.54 kip-ft	4990.79		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E *ft²*	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1	397.87	3664.94	A	1	1.2	8	1	1	81.621	894.95	27.33	C
161.00-128.25			B	1	1.2		1	1	81.621			
			C	1	1.2		1	1	81.621			
L2	632.36	6332.63	A	1	1.2	8	1	1	125.386	1290.40	31.28	C

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
128.25-87.00			B	1	1.2		1	1	125.386			
			C	1	1.2		1	1	125.386			
L3	620.87	9222.87	A	1	1.2	7	1	1	147.175	1367.52	33.77	C
87.00-46.50			B	1	1.2		1	1	147.175			
			C	1	1.2		1	1	147.175			
L4 46.50-1.00	697.51	13466.62	A	1	1.2	6	1	1	192.966	1437.91	31.60	C
			B	1	1.2		1	1	192.966			
			C	1	1.2		1	1	192.966			
Sum Weight:	2348.61	32687.06						OTM	387.54 kip-ft	4990.79		

Tower Forces - Service - Wind Normal To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1	397.87	1713.85	A	1	0.65	11	1	1	72.133	551.98	16.85	C
161.00-128.25			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2	632.36	3395.75	A	1	0.65	10	1	1	113.436	814.74	19.75	C
128.25-87.00			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3	620.87	5907.10	A	1	0.65	9	1	1	135.785	880.53	21.74	C
87.00-46.50			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	7	1	1	180.767	940.07	20.66	C
			B	1	0.65		1	1	180.767			
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	244.68 kip-ft	3187.31		

Tower Forces - Service - Wind 60 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	C_F	q_z *psf*	D_F	D_R	A_E ft^2	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1	397.87	1713.85	A	1	0.65	11	1	1	72.133	551.98	16.85	C
161.00-128.25			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2	632.36	3395.75	A	1	0.65	10	1	1	113.436	814.74	19.75	C
128.25-87.00			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3	620.87	5907.10	A	1	0.65	9	1	1	135.785	880.53	21.74	C
87.00-46.50			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	7	1	1	180.767	940.07	20.66	C
			B	1	0.65		1	1	180.767			

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	*C_F*	*q_z* *psf*	*D_F*	*D_R*	*A_E* *ft^2*	*F* *lb*	*w* *plf*	*Ctrl. Face*
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	244.68 kip-ft	3187.31		

Tower Forces - Service - Wind 90 To Face

Section Elevation *ft*	*Add Weight* *lb*	*Self Weight* *lb*	*Face*	*e*	*C_F*	*q_z* *psf*	*D_F*	*D_R*	*A_E* *ft^2*	*F* *lb*	*w* *plf*	*Ctrl. Face*
L1 161.00-128.25	397.87	1713.85	A	1	0.65	11	1	1	72.133	551.98	16.85	C
			B	1	0.65		1	1	72.133			
			C	1	0.65		1	1	72.133			
L2 128.25-87.00	632.36	3395.75	A	1	0.65	10	1	1	113.436	814.74	19.75	C
			B	1	0.65		1	1	113.436			
			C	1	0.65		1	1	113.436			
L3 87.00-46.50	620.87	5907.10	A	1	0.65	9	1	1	135.785	880.53	21.74	C
			B	1	0.65		1	1	135.785			
			C	1	0.65		1	1	135.785			
L4 46.50-1.00	697.51	9515.51	A	1	0.65	7	1	1	180.767	940.07	20.66	C
			B	1	0.65		1	1	180.767			
			C	1	0.65		1	1	180.767			
Sum Weight:	2348.61	20532.20						OTM	244.68 kip-ft	3187.31		

Force Totals

Load Case	*Vertical Forces* *lb*	*Sum of Forces X* *lb*	*Sum of Forces Z* *lb*	*Sum of Overturning Moments, M_x* *kip-ft*	*Sum of Overturning Moments, M_z* *kip-ft*	*Sum of Torques* *kip-ft*
Leg Weight	20532.20					
Bracing Weight	0.00					
Total Member Self-Weight	20532.20			0.00	0.00	
Total Weight	23862.31			0.00	0.00	
Wind 0 deg - No Ice		0.00	-13099.08	-1199.08	0.00	0.00
Wind 90 deg - No Ice		13099.08	0.00	0.00	-1199.08	0.00
Wind 180 deg - No Ice		0.00	13099.08	1199.08	0.00	0.00
Member Ice	12154.86					
Total Weight Ice	38116.28			0.00	0.00	
Wind 0 deg - Ice		0.00	-5888.32	-519.73	0.00	0.00
Wind 90 deg - Ice		5888.32	0.00	0.00	-519.73	0.00
Wind 180 deg - Ice		0.00	5888.32	519.73	0.00	0.00
Total Weight	23862.31			0.00	0.00	
Wind 0 deg - Service		0.00	-4035.89	-369.44	0.00	0.00
Wind 90 deg - Service		4035.89	0.00	0.00	-369.44	0.00
Wind 180 deg - Service		0.00	4035.89	369.44	0.00	0.00

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial lb*	*Major Axis Moment kip-ft*	*Minor Axis Moment kip-ft*
L1	161 - 128.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-7224.05	0.00	0.00
			Max. Mx	4	-2962.09	-108.75	0.00
			Max. My	2	-2962.09	0.00	108.75
			Max. Vy	4	7112.54	-108.75	0.00
			Max. Vx	2	-7112.54	0.00	108.75
L2	128.25 - 87	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-14941.21	0.00	0.00
			Max. Mx	4	-7521.64	-481.06	0.00
			Max. My	2	-7521.64	0.00	481.06
			Max. Vy	4	11342.71	-481.06	0.00
			Max. Vx	2	-11342.71	0.00	481.06
L3	87 - 46.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-25818.18	0.00	0.00
			Max. Mx	4	-14951.33	-1017.11	0.00
			Max. My	2	-14951.33	0.00	1017.11
			Max. Vy	4	15796.53	-1017.11	0.00
			Max. Vx	2	-15796.53	0.00	1017.11
L4	46.5 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-44001.76	0.00	0.00
			Max. Mx	4	-28622.23	-1960.53	0.00
			Max. My	2	-28622.23	0.00	1960.53
			Max. Vy	4	20973.54	-1960.53	0.00
			Max. Vx	2	-20973.54	0.00	1960.53

Maximum Reactions

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Pole	Max. Vert	8	44001.76	0.00	0.00
	Max. H_x	14	23862.31	0.00	-4035.24
	Max. H_z	2	28634.69	0.00	20956.52
	Max. M_x	2	1960.53	0.00	20956.52
	Max. M_z	4	1960.53	-20956.52	0.00
	Max. Torsion	1	0.00	0.00	0.00
	Min. Vert	5	21475.97	-20955.62	0.00
	Min. H_x	4	28634.69	-20956.52	0.00
	Min. H_z	6	28634.69	0.00	-20956.52
	Min. M_x	6	-1960.53	0.00	-20956.52
	Min. M_z	1	0.00	0.00	0.00
	Min. Torsion	1	0.00	0.00	0.00

Tower Mast Reaction Summary

Load Combination	*Vertical* *lb*	*Shear*$_x$ *lb*	*Shear*$_z$ *lb*	*Overturning Moment,* M_x *kip-ft*	*Overturning Moment,* M_z *kip-ft*	*Torque* *kip-ft*
Dead Only	23862.31	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	28634.69	0.00	-20956.52	-1960.53	0.00	0.00
0.9 Dead+1.6 Wind 0 deg - No Ice	21475.97	0.00	-20955.62	-1949.36	0.00	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice	28634.69	20956.52	0.00	0.00	-1960.53	0.00
0.9 Dead+1.6 Wind 90 deg - No Ice	21475.97	20955.62	0.00	0.00	-1949.36	0.00
1.2 Dead+1.6 Wind 180 deg - No Ice	28634.69	0.00	20956.52	1960.53	0.00	0.00
0.9 Dead+1.6 Wind 180 deg - No Ice	21475.97	0.00	20955.62	1949.36	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp	44001.76	0.00	0.00	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	44001.75	0.00	-5887.79	-540.89	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	44001.75	5887.79	0.00	0.00	-540.89	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	44001.75	0.00	5887.79	540.89	0.00	0.00
Dead+Wind 0 deg - Service	23862.31	0.00	-4035.24	-376.29	0.00	0.00
Dead+Wind 90 deg - Service	23862.31	4035.24	0.00	0.00	-376.29	0.00
Dead+Wind 180 deg - Service	23862.31	0.00	4035.24	376.29	0.00	0.00

Solution Summary

	Sum of Applied Forces			*Sum of Reactions*			
Load Comb.	*PX lb*	*PY lb*	*PZ lb*	*PX lb*	*PY lb*	*PZ lb*	*% Error*
1	0.00	-23862.31	0.00	0.00	23862.31	0.00	0.000%
2	0.00	-28634.77	-20958.53	0.00	28634.69	20956.52	0.006%
3	0.00	-21476.08	-20958.53	0.00	21475.97	20955.62	0.010%
4	20958.53	-28634.77	0.00	-20956.52	28634.69	0.00	0.006%
5	20958.53	-21476.08	0.00	-20955.62	21475.97	0.00	0.010%
6	0.00	-28634.77	20958.53	0.00	28634.69	-20956.52	0.006%
7	0.00	-21476.08	20958.53	0.00	21475.97	-20955.62	0.010%

	Sum of Applied Forces			*Sum of Reactions*			
Load Comb.	*PX lb*	*PY lb*	*PZ lb*	*PX lb*	*PY lb*	*PZ lb*	*% Error*
8	0.00	-44001.76	0.00	0.00	44001.76	0.00	0.000%
9	0.00	-44001.76	-5888.32	0.00	44001.75	5887.79	0.001%
10	5888.32	-44001.76	0.00	-5887.79	44001.75	0.00	0.001%
11	0.00	-44001.76	5888.32	0.00	44001.75	-5887.79	0.001%
12	0.00	-23862.31	-4035.89	0.00	23862.31	4035.24	0.003%
13	4035.89	-23862.31	0.00	-4035.24	23862.31	0.00	0.003%
14	0.00	-23862.31	4035.89	0.00	23862.31	-4035.24	0.003%

Non-Linear Convergence Results

Load Combination	*Converged?*	*Number of Cycles*	*Displacement Tolerance*	*Force Tolerance*
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00007751	0.00008463
3	Yes	14	0.00011003	0.00013735
4	Yes	15	0.00007751	0.00008463
5	Yes	14	0.00011003	0.00013735
6	Yes	15	0.00007751	0.00008463
7	Yes	14	0.00011003	0.00013735
8	Yes	6	0.00000001	0.00000001
9	Yes	16	0.00000001	0.00004724
10	Yes	16	0.00000001	0.00004724
11	Yes	16	0.00000001	0.00004724
12	Yes	14	0.00000001	0.00004234
13	Yes	14	0.00000001	0.00004234
14	Yes	14	0.00000001	0.00004234

Maximum Tower Deflections - Service Wind

Section No.	*Elevation ft*	*Horz. Deflection in*	*Gov. Load Comb.*	*Tilt °*	*Twist °*
L1	161 - 128.25	13.867	13	0.7220	0.0000
L2	132 - 87	9.559	13	0.6791	0.0000
L3	91.5 - 46.5	4.556	13	0.4708	0.0000
L4	52 - 1	1.467	13	0.2609	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	*Appurtenance*	*Gov. Load Comb.*	*Deflection in*	*Tilt °*	*Twist °*	*Radius of Curvature ft*
165.00	8' Whip	13	13.867	0.7220	0.0000	94385
158.00	SBNHH-1D65B	13	13.411	0.7200	0.0000	94385
148.00	AM-X-CD-14-65-00T-RET	13	11.899	0.7113	0.0000	36302
138.00	AIR21 B4A/B2P	13	10.420	0.6949	0.0000	20518

Maximum Tower Deflections - Design Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* °	*Twist* °
L1	161 - 128.25	72.259	4	3.7638	0.0000
L2	132 - 87	49.818	4	3.5402	0.0000
L3	91.5 - 46.5	23.745	4	2.4548	0.0000
L4	52 - 1	7.648	4	1.3600	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection* *in*	*Tilt* °	*Twist* °	*Radius of Curvature* *ft*
165.00	8' Whip	4	72.259	3.7638	0.0000	18272
158.00	SBNHH-1D65B	4	69.883	3.7533	0.0000	18272
148.00	AM-X-CD-14-65-00T-RET	4	62.007	3.7077	0.0000	7026
138.00	AIR21 B4A/B2P	4	54.303	3.6228	0.0000	3970

Base Plate Design Data

Plate Thickness *in*	*Number of Anchor Bolts*	*Anchor Bolt Size* *in*	*Actual* / *Allowable* / *Ratio* *Bolt Tension* *lb*	*Actual* / *Allowable* / *Ratio* *Concrete Stress* *ksi*	*Actual* / *Allowable* / *Ratio* *Plate Stress* *ksi*	*Actual* / *Allowable* / *Ratio* *Stiffener Stress* *ksi*	*Controlling Condition*	*Critical Ratio*
3.0000	16	2.6250	81880.00	1.057	12.845		Conc fc	0.35
			304418.49	3.060	45.000			✓
			0.27	0.35	0.29			

Compression Checks

Pole Design Data

Section No.	*Elevation* *ft*	*Size*	*L* *ft*	L_u *ft*	*Kl/r*	*A* in^2	P_u *lb*	ϕP_n *lb*	*Ratio* $\frac{P_u}{\phi P_n}$
L1	161 - 128.25 (1)	TP29.058x23x0.1875	32.75	160.00	191.9	16.7687	-2962.09	102820.00	0.029
L2	128.25 - 87 (2)	TP36.3133x27.9893x0.2188	45.00	160.00	153.4	24.4885	-7521.64	235165.00	0.032
L3	87 - 46.5 (3)	TP43.3673x35.0433x0.3125	45.00	160.00	128.7	41.6959	-14951.30	569061.00	0.026
L4	46.5 - 1 (4)	TP51.1587x41.7249x0.375	51.00	160.00	106.5	60.4453	-28622.20	1203940.00	0.024

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	161 - 128.25 (1)	TP29.058x23x0.1875	108.75	631.71	0.172	0.00	631.71	0.000
L2	128.25 - 87 (2)	TP36.3133x27.9893x0.2188	481.06	1118.95	0.430	0.00	1118.95	0.000
L3	87 - 46.5 (3)	TP43.3673x35.0433x0.3125	1017.11	2447.47	0.416	0.00	2447.47	0.000
L4	46.5 - 1 (4)	TP51.1587x41.7249x0.375	1960.53	4275.82	0.459	0.00	4275.82	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u lb	ϕV_n lb	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	161 - 128.25 (1)	TP29.058x23x0.1875	7112.54	544481.00	0.013	0.00	1264.96	0.000
L2	128.25 - 87 (2)	TP36.3133x27.9893x0.2188	11342.70	770312.00	0.015	0.00	2240.64	0.000
L3	87 - 46.5 (3)	TP43.3673x35.0433x0.3125	15796.50	1415060.00	0.011	0.00	4900.93	0.000
L4	46.5 - 1 (4)	TP51.1587x41.7249x0.375	20973.50	2046290.00	0.010	0.00	8562.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	161 - 128.25 (1)	0.029	0.172	0.000	0.013	0.000	0.201 ✓	1.000	4.8.2 ✓
L2	128.25 - 87 (2)	0.032	0.430	0.000	0.015	0.000	0.462 ✓	1.000	4.8.2 ✓
L3	87 - 46.5 (3)	0.026	0.416	0.000	0.011	0.000	0.442 ✓	1.000	4.8.2 ✓
L4	46.5 - 1 (4)	0.024	0.459	0.000	0.010	0.000	0.482 ✓	1.000	4.8.2 ✓

Section Capacity Table

Section No.	*Elevation ft*	*Component Type*	*Size*	*Critical Element*	*P lb*	*ϕP_{allow} lb*	*% Capacity*	*Pass Fail*
L1	161 - 128.25	Pole	TP29.058x23x0.1875	1	-2962.09	102820.00	20.1	Pass
L2	128.25 - 87	Pole	TP36.3133x27.9893x0.2188	2	-7521.64	235165.00	46.2	Pass
L3	87 - 46.5	Pole	TP43.3673x35.0433x0.3125	3	-14951.30	569061.00	44.2	Pass
L4	46.5 - 1	Pole	TP51.1587x41.7249x0.375	4	-28622.20	1203940.00	48.2	Pass
							Summary	
						Pole (L4)	48.2	Pass
						Base Plate	34.5	Pass
						RATING =	**48.2**	**Pass**

APPENDIX C – BALLAST CALCULATION

Dewberry®

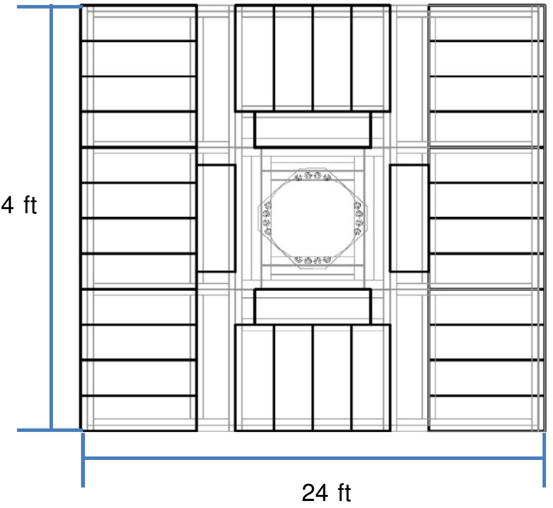
600 Parsippany Road 973.576.9600
Suite 301 973.739.9710 fax
Parsippany, NJ 07054 www.dewberry.com

Designer: MLS **Date:** 9/28/2017 **Checker** JY **Date:** 9/28/2017
Title: Westbrook CT Monopole Ballast Base **Job No.** 50075968
Subject: Required Ballast Calculation **Sheet No.**

Overturning Moment Calculation

tnxTower Output		
Reaction	Factored	Unfactored
Axial (kip)	28.635	21.21
Shear (kip)	20.957	15.52
Moment (kip-ft)	1961	1452.59

Tower Component Weight Summary		
Tower	20.532	kip
Appurtenances & Feedline	3.331	kip
Baseplate	2.94	kip
Steel Framing	13.04	kip



Resisting Moment Calculation

Member ID	Factor	QTY	Weight (kip)	Arm (x) (front) (ft)	M_R(front) (kip-ft)
Tower	0.9	1	20.53	12	221.75
Appurtenances & Feedline	0	1	3.33	12	0.00
Base Plate	0.9	1	2.94	12	31.75
Frame Weight	0.9	1	13.04	12	140.83
TOTAL			**39.84**		**394.33**

Ballast Weight Calculation		
Ballast Type	2'x2'x6' Bin Block	
Factor	0.9	
Weight	3600	lbs ea.
Arm	12	ft
Required Block Quantity:	48	minimum
Required Ballast Weight:	172800	lbs

CHECK:

$$\frac{M_{RESISTING}}{M_{OVERTURNING}} = \frac{2467.93}{1452.59} = 1.70 > 1.5$$

OK

Designer:	MLS	**Date:**	9/25/2017	**Checker**	
				Date:	9/27/2017
Title:	West Brook Monopole_West Brook, CT 06498			**Job No.**	50075968
Subject:	Anchor Bolt Load Calculation				

Calculate Anchor Bolt Loading

Max Reactions (From tnxTower)

Force	Factored		Unfactored*	
Axial	28.635	k	21.21	k
Shear	20.957	k	15.52	k
Moment	1961	kip-ft	1452.59	kip-ft

*Forces unfactored for ASD by dividing by 1.35
per TIA-222-G

Calculate Vertical Forces due to Moment

Anchor Bolt Diameter =	2.25	in
F_{ub} =	100	ksi
n =	5.00	(thread length per unit)
An =	3.32	in^2
Number of Connections =	16	bolts

Distance of Anchor Bolt AB_1 from center of pole d_1 =	28.85	in
Distance of Anchor Bolt AB_2 from center of pole d_2 =	27.61	in
Distance of Anchor Bolt AB_2 from center of pole d_3 =	8.84	in
Distance of Anchor Bolt AB_2 from center of pole d_4 =	3.00	in

Combined Moment of Inertia = $I_c + Ad^2$ = 11158.07 in^4

$$F = \frac{M_{MAX} * 12 * d}{(I_C + Ad^2)} * A + \frac{P}{n}$$

F_1=	75.41	k
F_2=	72.21	k
F_3=	23.58	k
F_4=	8.44	k

APPENDIX D – STEEL FRAMING & BASE PLATE ANALYSIS

Software licensed to Dewberry	Job No 50075968	Sheet No 1	Rev 1
	Part		
Job Title Westbrook	Ref		
	By MLS	Date 9/28/17	Chd JY
Client Telecom Tower Rentals, LLC	File 50075968 - Westbrook - F	Date/Time 28-Sep-2017 16:40	

Job Information

	Engineer	Checked	Approved
Name:	MLS	JY	
Date:	9/28/17	9/28/17	

Project ID	
Project Name	

Structure Type	SPACE FRAME

Number of Nodes	293	Highest Node	298
Number of Elements	288	Highest Beam	374
Number of Plates	36	Highest Plate	370

Number of Basic Load Cases	7
Number of Combination Load Cases	2

Included in this printout are data for:

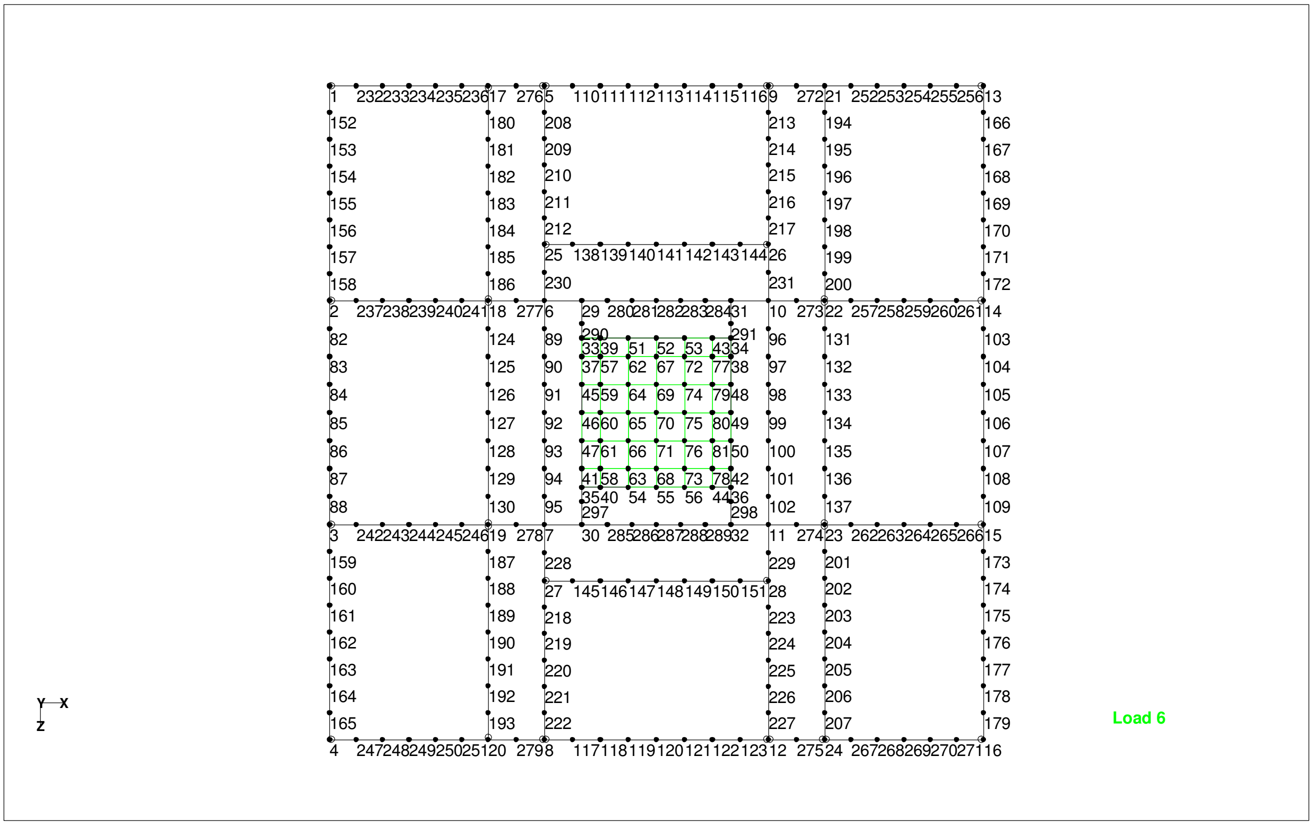
All	The Whole Structure

Included in this printout are results for load cases:

Type	L/C	Name
Combination	8	P+V(Z)+M(Z)+B
Combination	9	P+V(X)+M(X)+B

Software licensed to Dewberry

Job No **50075968**	Sheet No **2**	Rev 1	
Part			
Job Title Westbrook	Ref		
	By MLS	Date 9/28/17	Chd JY
Client Telecom Tower Rentals, LLC	File 50075968 - Westbrook - F	Date/Time 28-Sep-2017 16:40	



Node Layout

Nodes

Node	X (ft)	Y (ft)	Z (ft)
1	0.000	0.000	0.000
2	0.000	0.000	7.667
3	0.000	0.000	15.667
4	0.000	0.000	23.333
5	7.667	0.000	0.000
6	7.667	0.000	7.667
7	7.667	0.000	15.667
8	7.667	0.000	23.333
9	15.667	0.000	0.000
10	15.667	0.000	7.667
11	15.667	0.000	15.667
12	15.667	0.000	23.333
13	23.334	0.000	0.000
14	23.334	0.000	7.667
15	23.334	0.000	15.667
16	23.334	0.000	23.333
17	5.667	0.000	0.000
18	5.667	0.000	7.667
19	5.667	0.000	15.667
20	5.667	0.000	23.333
21	17.667	0.000	0.000
22	17.667	0.000	7.667
23	17.667	0.000	15.667
24	17.667	0.000	23.333
25	7.667	0.000	5.667
26	15.667	0.000	5.667
27	7.667	0.000	17.667
28	15.667	0.000	17.667
29	9.005	0.000	7.667
30	9.005	0.000	15.667
31	14.328	0.000	7.667
32	14.328	0.000	15.667
33	9.005	0.000	9.006
34	14.328	0.000	9.006
35	9.005	0.000	14.329
36	14.328	0.000	14.329
37	9.005	0.000	9.667
38	14.328	0.000	9.667
39	9.667	0.000	9.006
40	9.667	0.000	14.329
41	9.005	0.000	13.667
42	14.328	0.000	13.667
43	13.667	0.000	9.006
44	13.667	0.000	14.329
45	9.005	0.000	10.667

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
46	9.005	0.000	11.667
47	9.005	0.000	12.667
48	14.328	0.000	10.667
49	14.328	0.000	11.667
50	14.328	0.000	12.667
51	10.667	0.000	9.006
52	11.667	0.000	9.006
53	12.667	0.000	9.006
54	10.667	0.000	14.329
55	11.667	0.000	14.329
56	12.667	0.000	14.329
57	9.667	0.000	9.667
58	9.667	0.000	13.667
59	9.667	0.000	10.667
60	9.667	0.000	11.667
61	9.667	0.000	12.667
62	10.667	0.000	9.667
63	10.667	0.000	13.667
64	10.667	0.000	10.667
65	10.667	0.000	11.667
66	10.667	0.000	12.667
67	11.667	0.000	9.667
68	11.667	0.000	13.667
69	11.667	0.000	10.667
70	11.667	0.000	11.667
71	11.667	0.000	12.667
72	12.667	0.000	9.667
73	12.667	0.000	13.667
74	12.667	0.000	10.667
75	12.667	0.000	11.667
76	12.667	0.000	12.667
77	13.667	0.000	9.667
78	13.667	0.000	13.667
79	13.667	0.000	10.667
80	13.667	0.000	11.667
81	13.667	0.000	12.667
82	0.000	0.000	8.667
83	0.000	0.000	9.667
84	0.000	0.000	10.667
85	0.000	0.000	11.667
86	0.000	0.000	12.667
87	0.000	0.000	13.667
88	0.000	0.000	14.667
89	7.667	0.000	8.667
90	7.667	0.000	9.667

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
91	7.667	0.000	10.667
92	7.667	0.000	11.667
93	7.667	0.000	12.667
94	7.667	0.000	13.667
95	7.667	0.000	14.667
96	15.667	0.000	8.667
97	15.667	0.000	9.667
98	15.667	0.000	10.667
99	15.667	0.000	11.667
100	15.667	0.000	12.667
101	15.667	0.000	13.667
102	15.667	0.000	14.667
103	23.334	0.000	8.667
104	23.334	0.000	9.667
105	23.334	0.000	10.667
106	23.334	0.000	11.667
107	23.334	0.000	12.667
108	23.334	0.000	13.667
109	23.334	0.000	14.667
110	8.667	0.000	0.000
111	9.667	0.000	0.000
112	10.667	0.000	0.000
113	11.667	0.000	0.000
114	12.667	0.000	0.000
115	13.667	0.000	0.000
116	14.667	0.000	0.000
117	8.667	0.000	23.333
118	9.667	0.000	23.333
119	10.667	0.000	23.333
120	11.667	0.000	23.333
121	12.667	0.000	23.333
122	13.667	0.000	23.333
123	14.667	0.000	23.333
124	5.667	0.000	8.667
125	5.667	0.000	9.667
126	5.667	0.000	10.667
127	5.667	0.000	11.667
128	5.667	0.000	12.667
129	5.667	0.000	13.667
130	5.667	0.000	14.667
131	17.667	0.000	8.667
132	17.667	0.000	9.667
133	17.667	0.000	10.667
134	17.667	0.000	11.667
135	17.667	0.000	12.667

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
136	17.667	0.000	13.667
137	17.667	0.000	14.667
138	8.667	0.000	5.667
139	9.667	0.000	5.667
140	10.667	0.000	5.667
141	11.667	0.000	5.667
142	12.667	0.000	5.667
143	13.667	0.000	5.667
144	14.667	0.000	5.667
145	8.667	0.000	17.667
146	9.667	0.000	17.667
147	10.667	0.000	17.667
148	11.667	0.000	17.667
149	12.667	0.000	17.667
150	13.667	0.000	17.667
151	14.667	0.000	17.667
152	0.000	0.000	0.958
153	0.000	0.000	1.917
154	0.000	0.000	2.875
155	0.000	0.000	3.833
156	0.000	0.000	4.792
157	0.000	0.000	5.750
158	0.000	0.000	6.709
159	0.000	0.000	16.625
160	0.000	0.000	17.583
161	0.000	0.000	18.542
162	0.000	0.000	19.500
163	0.000	0.000	20.458
164	0.000	0.000	21.416
165	0.000	0.000	22.375
166	23.334	0.000	0.958
167	23.334	0.000	1.917
168	23.334	0.000	2.875
169	23.334	0.000	3.833
170	23.334	0.000	4.792
171	23.334	0.000	5.750
172	23.334	0.000	6.709
173	23.334	0.000	16.625
174	23.334	0.000	17.583
175	23.334	0.000	18.542
176	23.334	0.000	19.500
177	23.334	0.000	20.458
178	23.334	0.000	21.416
179	23.334	0.000	22.375
180	5.667	0.000	0.958

Nodes Cont...

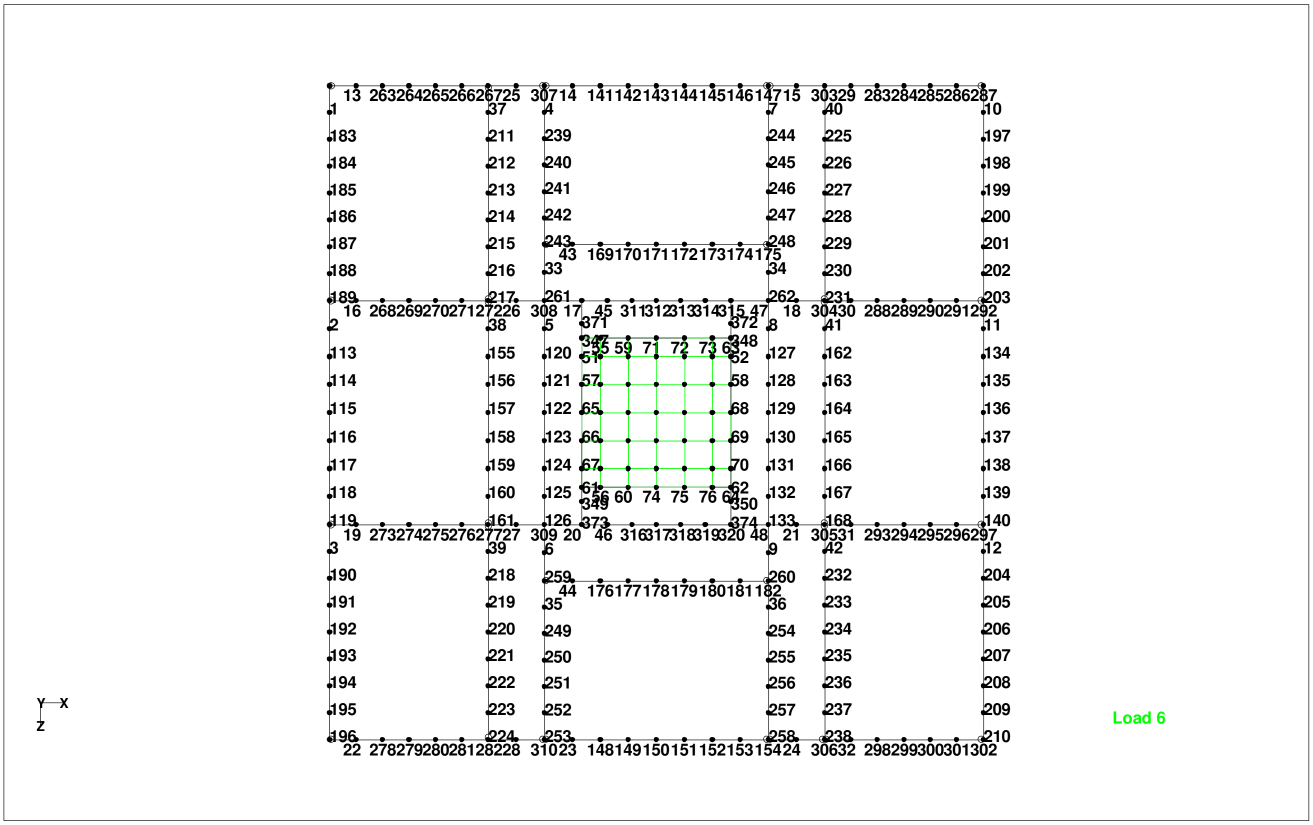
Node	X (ft)	Y (ft)	Z (ft)
181	5.667	0.000	1.917
182	5.667	0.000	2.875
183	5.667	0.000	3.833
184	5.667	0.000	4.792
185	5.667	0.000	5.750
186	5.667	0.000	6.709
187	5.667	0.000	16.625
188	5.667	0.000	17.583
189	5.667	0.000	18.542
190	5.667	0.000	19.500
191	5.667	0.000	20.458
192	5.667	0.000	21.416
193	5.667	0.000	22.375
194	17.667	0.000	0.958
195	17.667	0.000	1.917
196	17.667	0.000	2.875
197	17.667	0.000	3.833
198	17.667	0.000	4.792
199	17.667	0.000	5.750
200	17.667	0.000	6.709
201	17.667	0.000	16.625
202	17.667	0.000	17.583
203	17.667	0.000	18.542
204	17.667	0.000	19.500
205	17.667	0.000	20.458
206	17.667	0.000	21.416
207	17.667	0.000	22.375
208	7.667	0.000	0.945
209	7.667	0.000	1.889
210	7.667	0.000	2.833
211	7.667	0.000	3.778
212	7.667	0.000	4.722
213	15.667	0.000	0.945
214	15.667	0.000	1.889
215	15.667	0.000	2.833
216	15.667	0.000	3.778
217	15.667	0.000	4.722
218	7.667	0.000	18.611
219	7.667	0.000	19.556
220	7.667	0.000	20.500
221	7.667	0.000	21.444
222	7.667	0.000	22.389
223	15.667	0.000	18.611
224	15.667	0.000	19.556
225	15.667	0.000	20.500

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
226	15.667	0.000	21.444
227	15.667	0.000	22.389
228	7.667	0.000	16.667
229	15.667	0.000	16.667
230	7.667	0.000	6.667
231	15.667	0.000	6.667
232	0.945	0.000	0.000
233	1.889	0.000	0.000
234	2.833	0.000	0.000
235	3.778	0.000	0.000
236	4.722	0.000	0.000
237	0.945	0.000	7.667
238	1.889	0.000	7.667
239	2.833	0.000	7.667
240	3.778	0.000	7.667
241	4.722	0.000	7.667
242	0.945	0.000	15.667
243	1.889	0.000	15.667
244	2.833	0.000	15.667
245	3.778	0.000	15.667
246	4.722	0.000	15.667
247	0.945	0.000	23.333
248	1.889	0.000	23.333
249	2.833	0.000	23.333
250	3.778	0.000	23.333
251	4.722	0.000	23.333
252	18.611	0.000	0.000
253	19.556	0.000	0.000
254	20.500	0.000	0.000
255	21.445	0.000	0.000
256	22.390	0.000	0.000
257	18.611	0.000	7.667
258	19.556	0.000	7.667
259	20.500	0.000	7.667
260	21.445	0.000	7.667
261	22.390	0.000	7.667
262	18.611	0.000	15.667
263	19.556	0.000	15.667
264	20.500	0.000	15.667
265	21.445	0.000	15.667
266	22.390	0.000	15.667
267	18.611	0.000	23.333
268	19.556	0.000	23.333
269	20.500	0.000	23.333
270	21.445	0.000	23.333

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
271	22.390	0.000	23.333
272	16.667	0.000	0.000
273	16.667	0.000	7.667
274	16.667	0.000	15.667
275	16.667	0.000	23.333
276	6.667	0.000	0.000
277	6.667	0.000	7.667
278	6.667	0.000	15.667
279	6.667	0.000	23.333
280	9.917	0.000	7.667
281	10.792	0.000	7.667
282	11.667	0.000	7.667
283	12.542	0.000	7.667
284	13.417	0.000	7.667
285	9.917	0.000	15.667
286	10.792	0.000	15.667
287	11.667	0.000	15.667
288	12.542	0.000	15.667
289	13.417	0.000	15.667
290	9.005	0.000	8.501
291	14.328	0.000	8.501
297	9.005	0.000	14.833
298	14.328	0.000	14.833



Beam Layout

Beams

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
1	1	152	0.958	2	0
2	2	82	1.000	2	0
3	3	159	0.958	2	0
4	5	208	0.945	2	0
5	6	89	1.000	2	0
6	7	228	1.000	2	0
7	9	213	0.945	2	0
8	10	96	1.000	2	0
9	11	229	1.000	2	0
10	13	166	0.958	2	0
11	14	103	1.000	2	0
12	15	173	0.958	2	0
13	1	232	0.945	2	0
14	5	110	1.000	2	0
15	9	272	1.000	2	0
16	2	237	0.945	2	0
17	6	29	1.338	3	0
18	10	273	1.000	2	0
19	3	242	0.945	2	0
20	7	30	1.338	3	0
21	11	274	1.000	2	0
22	4	247	0.945	2	0
23	8	117	1.000	2	0
24	12	275	1.000	2	0
25	17	276	1.000	2	0
26	18	277	1.000	2	0
27	19	278	1.000	2	0
28	20	279	1.000	2	0
29	21	252	0.944	2	0
30	22	257	0.944	2	0
31	23	262	0.944	2	0
32	24	267	0.944	2	0
33	25	230	1.000	2	0
34	26	231	1.000	2	0
35	27	218	0.944	2	0
36	28	223	0.944	2	0
37	17	180	0.958	2	0
38	18	124	1.000	2	0
39	19	187	0.958	2	0
40	21	194	0.958	2	0
41	22	131	1.000	2	0
42	23	201	0.958	2	0
43	25	138	1.000	2	0
44	27	145	1.000	2	0
45	29	280	0.912	3	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
46	30	285	0.912	3	0
47	31	10	1.339	3	0
48	32	11	1.339	3	0
51	33	37	0.661	3	0
52	34	38	0.661	3	0
55	33	39	0.662	3	0
56	35	40	0.662	3	0
57	37	45	1.000	3	0
58	38	48	1.000	3	0
59	39	51	1.000	3	0
60	40	54	1.000	3	0
61	41	35	0.662	3	0
62	42	36	0.662	3	0
63	43	34	0.661	3	0
64	44	36	0.661	3	0
65	45	46	1.000	3	0
66	46	47	1.000	3	0
67	47	41	1.000	3	0
68	48	49	1.000	3	0
69	49	50	1.000	3	0
70	50	42	1.000	3	0
71	51	52	1.000	3	0
72	52	53	1.000	3	0
73	53	43	1.000	3	0
74	54	55	1.000	3	0
75	55	56	1.000	3	0
76	56	44	1.000	3	0
113	82	83	1.000	2	0
114	83	84	1.000	2	0
115	84	85	1.000	2	0
116	85	86	1.000	2	0
117	86	87	1.000	2	0
118	87	88	1.000	2	0
119	88	3	1.000	2	0
120	89	90	1.000	2	0
121	90	91	1.000	2	0
122	91	92	1.000	2	0
123	92	93	1.000	2	0
124	93	94	1.000	2	0
125	94	95	1.000	2	0
126	95	7	1.000	2	0
127	96	97	1.000	2	0
128	97	98	1.000	2	0
129	98	99	1.000	2	0
130	99	100	1.000	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
131	100	101	1.000	2	0
132	101	102	1.000	2	0
133	102	11	1.000	2	0
134	103	104	1.000	2	0
135	104	105	1.000	2	0
136	105	106	1.000	2	0
137	106	107	1.000	2	0
138	107	108	1.000	2	0
139	108	109	1.000	2	0
140	109	15	1.000	2	0
141	110	111	1.000	2	0
142	111	112	1.000	2	0
143	112	113	1.000	2	0
144	113	114	1.000	2	0
145	114	115	1.000	2	0
146	115	116	1.000	2	0
147	116	9	1.000	2	0
148	117	118	1.000	2	0
149	118	119	1.000	2	0
150	119	120	1.000	2	0
151	120	121	1.000	2	0
152	121	122	1.000	2	0
153	122	123	1.000	2	0
154	123	12	1.000	2	0
155	124	125	1.000	2	0
156	125	126	1.000	2	0
157	126	127	1.000	2	0
158	127	128	1.000	2	0
159	128	129	1.000	2	0
160	129	130	1.000	2	0
161	130	19	1.000	2	0
162	131	132	1.000	2	0
163	132	133	1.000	2	0
164	133	134	1.000	2	0
165	134	135	1.000	2	0
166	135	136	1.000	2	0
167	136	137	1.000	2	0
168	137	23	1.000	2	0
169	138	139	1.000	2	0
170	139	140	1.000	2	0
171	140	141	1.000	2	0
172	141	142	1.000	2	0
173	142	143	1.000	2	0
174	143	144	1.000	2	0
175	144	26	1.000	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
176	145	146	1.000	2	0
177	146	147	1.000	2	0
178	147	148	1.000	2	0
179	148	149	1.000	2	0
180	149	150	1.000	2	0
181	150	151	1.000	2	0
182	151	28	1.000	2	0
183	152	153	0.958	2	0
184	153	154	0.958	2	0
185	154	155	0.958	2	0
186	155	156	0.958	2	0
187	156	157	0.958	2	0
188	157	158	0.958	2	0
189	158	2	0.958	2	0
190	159	160	0.958	2	0
191	160	161	0.958	2	0
192	161	162	0.958	2	0
193	162	163	0.958	2	0
194	163	164	0.958	2	0
195	164	165	0.958	2	0
196	165	4	0.958	2	0
197	166	167	0.958	2	0
198	167	168	0.958	2	0
199	168	169	0.958	2	0
200	169	170	0.958	2	0
201	170	171	0.958	2	0
202	171	172	0.958	2	0
203	172	14	0.958	2	0
204	173	174	0.958	2	0
205	174	175	0.958	2	0
206	175	176	0.958	2	0
207	176	177	0.958	2	0
208	177	178	0.958	2	0
209	178	179	0.958	2	0
210	179	16	0.958	2	0
211	180	181	0.958	2	0
212	181	182	0.958	2	0
213	182	183	0.958	2	0
214	183	184	0.958	2	0
215	184	185	0.958	2	0
216	185	186	0.958	2	0
217	186	18	0.958	2	0
218	187	188	0.958	2	0
219	188	189	0.958	2	0
220	189	190	0.958	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
221	190	191	0.958	2	0
222	191	192	0.958	2	0
223	192	193	0.958	2	0
224	193	20	0.958	2	0
225	194	195	0.958	2	0
226	195	196	0.958	2	0
227	196	197	0.958	2	0
228	197	198	0.958	2	0
229	198	199	0.958	2	0
230	199	200	0.958	2	0
231	200	22	0.958	2	0
232	201	202	0.958	2	0
233	202	203	0.958	2	0
234	203	204	0.958	2	0
235	204	205	0.958	2	0
236	205	206	0.958	2	0
237	206	207	0.958	2	0
238	207	24	0.958	2	0
239	208	209	0.945	2	0
240	209	210	0.944	2	0
241	210	211	0.945	2	0
242	211	212	0.944	2	0
243	212	25	0.944	2	0
244	213	214	0.945	2	0
245	214	215	0.944	2	0
246	215	216	0.945	2	0
247	216	217	0.944	2	0
248	217	26	0.944	2	0
249	218	219	0.944	2	0
250	219	220	0.944	2	0
251	220	221	0.944	2	0
252	221	222	0.944	2	0
253	222	8	0.944	2	0
254	223	224	0.944	2	0
255	224	225	0.944	2	0
256	225	226	0.944	2	0
257	226	227	0.944	2	0
258	227	12	0.944	2	0
259	228	27	1.000	2	0
260	229	28	1.000	2	0
261	230	6	1.000	2	0
262	231	10	1.000	2	0
263	232	233	0.945	2	0
264	233	234	0.944	2	0
265	234	235	0.945	2	0

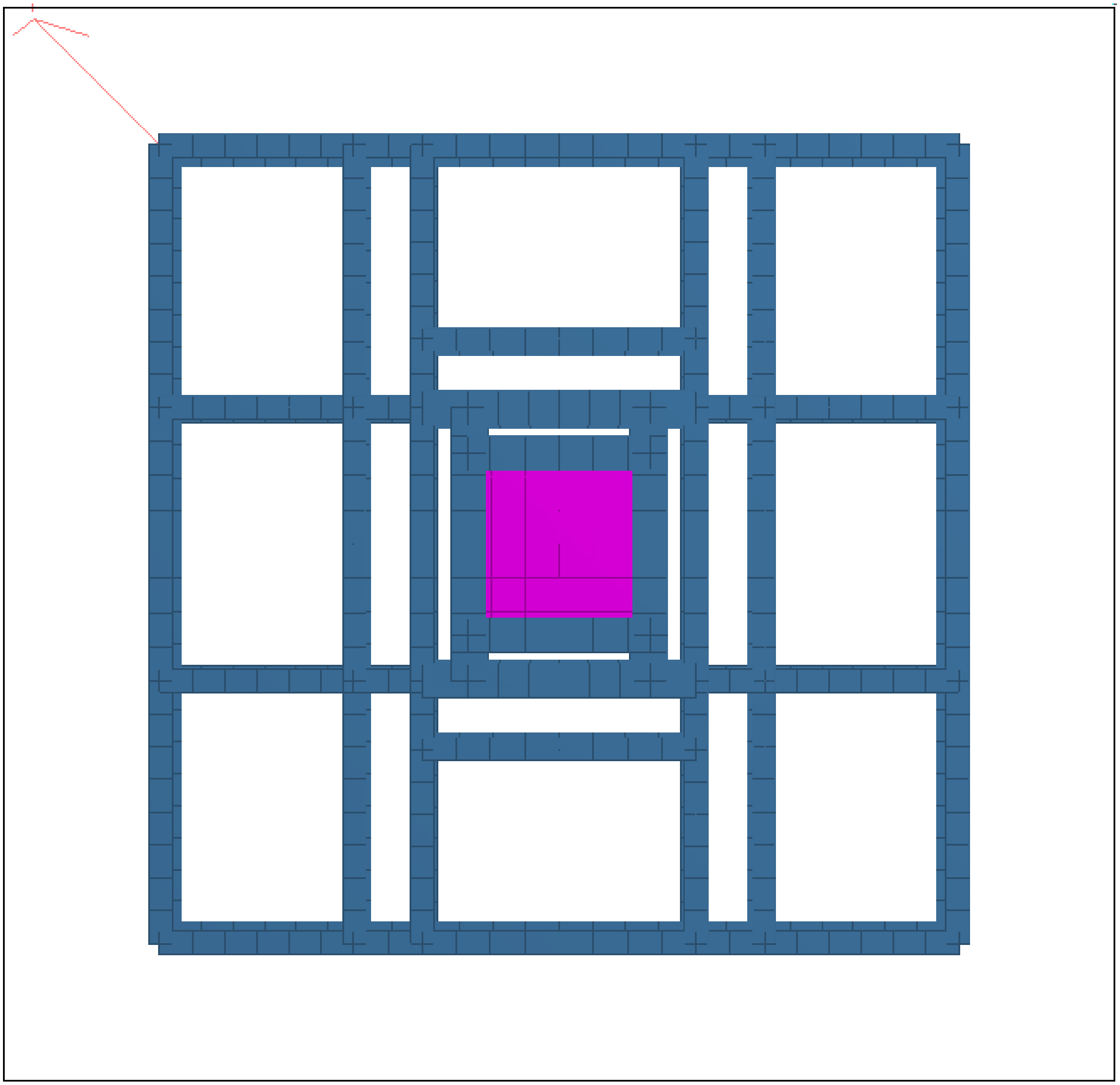
Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
266	235	236	0.944	2	0
267	236	17	0.944	2	0
268	237	238	0.945	2	0
269	238	239	0.944	2	0
270	239	240	0.945	2	0
271	240	241	0.944	2	0
272	241	18	0.944	2	0
273	242	243	0.945	2	0
274	243	244	0.944	2	0
275	244	245	0.945	2	0
276	245	246	0.944	2	0
277	246	19	0.944	2	0
278	247	248	0.945	2	0
279	248	249	0.944	2	0
280	249	250	0.945	2	0
281	250	251	0.944	2	0
282	251	20	0.944	2	0
283	252	253	0.944	2	0
284	253	254	0.944	2	0
285	254	255	0.944	2	0
286	255	256	0.945	2	0
287	256	13	0.944	2	0
288	257	258	0.944	2	0
289	258	259	0.944	2	0
290	259	260	0.944	2	0
291	260	261	0.945	2	0
292	261	14	0.944	2	0
293	262	263	0.944	2	0
294	263	264	0.944	2	0
295	264	265	0.944	2	0
296	265	266	0.945	2	0
297	266	15	0.944	2	0
298	267	268	0.944	2	0
299	268	269	0.944	2	0
300	269	270	0.944	2	0
301	270	271	0.945	2	0
302	271	16	0.944	2	0
303	272	21	1.000	2	0
304	273	22	1.000	2	0
305	274	23	1.000	2	0
306	275	24	1.000	2	0
307	276	5	1.000	2	0
308	277	6	1.000	2	0
309	278	7	1.000	2	0
310	279	8	1.000	2	0

Beams Cont...

Beam	Node A	Node B	Length (ft)	Property	β (degrees)
311	280	281	0.875	3	0
312	281	282	0.875	3	0
313	282	283	0.875	3	0
314	283	284	0.875	3	0
315	284	31	0.911	3	0
316	285	286	0.875	3	0
317	286	287	0.875	3	0
318	287	288	0.875	3	0
319	288	289	0.875	3	0
320	289	32	0.911	3	0
347	33	290	0.505	3	0
348	34	291	0.505	3	0
349	35	297	0.505	3	0
350	36	298	0.505	3	0
371	290	29	0.834	3	0
372	291	31	0.834	3	0
373	297	30	0.833	3	0
374	298	32	0.833	3	0

Software licensed to Dewberry	Job No **50075968**	Sheet No **18**	Rev 1
	Part		
Job Title Westbrook	Ref		
	By MLS	Date 9/28/17	Chd JY
Client Telecom Tower Rentals, LLC	File 50075968 - Westbrook - F	Date/Time 28-Sep-2017 16:40	



3D Render

Plates

Plate	Node A	Node B	Node C	Node D	Property
84	57	62	64	59	1
85	62	67	69	64	1
86	67	72	74	69	1
87	72	77	79	74	1
90	59	64	65	60	1
91	64	69	70	65	1
92	69	74	75	70	1
93	74	79	80	75	1
96	60	65	66	61	1
97	65	70	71	66	1
98	70	75	76	71	1
99	75	80	81	76	1
102	61	66	63	58	1
103	66	71	68	63	1
104	71	76	73	68	1
105	76	81	78	73	1
351	33	39	57	37	1
352	39	51	62	57	1
353	51	52	67	62	1
354	52	53	72	67	1
355	53	43	77	72	1
356	43	34	38	77	1
357	77	38	48	79	1
358	79	48	49	80	1
359	80	49	50	81	1
360	81	50	42	78	1
361	78	42	36	44	1
362	73	78	44	56	1
363	68	73	56	55	1
364	63	68	55	54	1
365	58	63	54	40	1
366	41	58	40	35	1
367	47	61	58	41	1
368	46	60	61	47	1
369	45	59	60	46	1
370	37	57	59	45	1

Section Properties

Prop	Section	Area (in^2)	I_{yy} (in^4)	I_{zz} (in^4)	J (in^4)	Material
2	W12X40	11.700	44.100	307.000	0.827	STEEL
3	W12X96	28.200	270.000	833.000	6.584	STEEL

Plate Thickness

Prop	Node A (in)	Node B (in)	Node C (in)	Node D (in)	Material
1	3.000	3.000	3.000	3.000	STEEL

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E -6
3	ALUMINUM	10E+3	0.330	0.000	13E -6
4	CONCRETE	3.15E+3	0.170	0.000	5E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
1	Fixed	20.000	Fixed	-	-	-
2	Fixed	20.000	Fixed	-	-	-
3	Fixed	20.000	Fixed	-	-	-
4	Fixed	20.000	Fixed	-	-	-
5	Fixed	20.000	Fixed	-	-	-
6	Fixed	20.000	Fixed	-	-	-
7	Fixed	20.000	Fixed	-	-	-
8	Fixed	20.000	Fixed	-	-	-
9	Fixed	20.000	Fixed	-	-	-
10	Fixed	20.000	Fixed	-	-	-
11	Fixed	20.000	Fixed	-	-	-
12	Fixed	20.000	Fixed	-	-	-
13	Fixed	20.000	Fixed	-	-	-
14	Fixed	20.000	Fixed	-	-	-
15	Fixed	20.000	Fixed	-	-	-
16	Fixed	20.000	Fixed	-	-	-
17	Fixed	20.000	Fixed	-	-	-
18	Fixed	20.000	Fixed	-	-	-
19	Fixed	20.000	Fixed	-	-	-
20	Fixed	20.000	Fixed	-	-	-
21	Fixed	20.000	Fixed	-	-	-
22	Fixed	20.000	Fixed	-	-	-
23	Fixed	20.000	Fixed	-	-	-
24	Fixed	20.000	Fixed	-	-	-
25	Fixed	20.000	Fixed	-	-	-
26	Fixed	20.000	Fixed	-	-	-
27	Fixed	20.000	Fixed	-	-	-
28	Fixed	20.000	Fixed	-	-	-
29	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
30	Fixed	20.000	Fixed	-	-	-
31	Fixed	20.000	Fixed	-	-	-
32	Fixed	20.000	Fixed	-	-	-
33	Fixed	20.000	Fixed	-	-	-
34	Fixed	20.000	Fixed	-	-	-
35	Fixed	20.000	Fixed	-	-	-
36	Fixed	20.000	Fixed	-	-	-
37	Fixed	20.000	Fixed	-	-	-
38	Fixed	20.000	Fixed	-	-	-
39	Fixed	20.000	Fixed	-	-	-
40	Fixed	20.000	Fixed	-	-	-
41	Fixed	20.000	Fixed	-	-	-
42	Fixed	20.000	Fixed	-	-	-
43	Fixed	20.000	Fixed	-	-	-
44	Fixed	20.000	Fixed	-	-	-
45	Fixed	20.000	Fixed	-	-	-
46	Fixed	20.000	Fixed	-	-	-
47	Fixed	20.000	Fixed	-	-	-
48	Fixed	20.000	Fixed	-	-	-
49	Fixed	20.000	Fixed	-	-	-
50	Fixed	20.000	Fixed	-	-	-
51	Fixed	20.000	Fixed	-	-	-
52	Fixed	20.000	Fixed	-	-	-
53	Fixed	20.000	Fixed	-	-	-
54	Fixed	20.000	Fixed	-	-	-
55	Fixed	20.000	Fixed	-	-	-
56	Fixed	20.000	Fixed	-	-	-
82	Fixed	20.000	Fixed	-	-	-
83	Fixed	20.000	Fixed	-	-	-
84	Fixed	20.000	Fixed	-	-	-
85	Fixed	20.000	Fixed	-	-	-
86	Fixed	20.000	Fixed	-	-	-
87	Fixed	20.000	Fixed	-	-	-
88	Fixed	20.000	Fixed	-	-	-
89	Fixed	20.000	Fixed	-	-	-
90	Fixed	20.000	Fixed	-	-	-
91	Fixed	20.000	Fixed	-	-	-
92	Fixed	20.000	Fixed	-	-	-
93	Fixed	20.000	Fixed	-	-	-
94	Fixed	20.000	Fixed	-	-	-
95	Fixed	20.000	Fixed	-	-	-
96	Fixed	20.000	Fixed	-	-	-
97	Fixed	20.000	Fixed	-	-	-
98	Fixed	20.000	Fixed	-	-	-
99	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
100	Fixed	20.000	Fixed	-	-	-
101	Fixed	20.000	Fixed	-	-	-
102	Fixed	20.000	Fixed	-	-	-
103	Fixed	20.000	Fixed	-	-	-
104	Fixed	20.000	Fixed	-	-	-
105	Fixed	20.000	Fixed	-	-	-
106	Fixed	20.000	Fixed	-	-	-
107	Fixed	20.000	Fixed	-	-	-
108	Fixed	20.000	Fixed	-	-	-
109	Fixed	20.000	Fixed	-	-	-
110	Fixed	20.000	Fixed	-	-	-
111	Fixed	20.000	Fixed	-	-	-
112	Fixed	20.000	Fixed	-	-	-
113	Fixed	20.000	Fixed	-	-	-
114	Fixed	20.000	Fixed	-	-	-
115	Fixed	20.000	Fixed	-	-	-
116	Fixed	20.000	Fixed	-	-	-
117	Fixed	20.000	Fixed	-	-	-
118	Fixed	20.000	Fixed	-	-	-
119	Fixed	20.000	Fixed	-	-	-
120	Fixed	20.000	Fixed	-	-	-
121	Fixed	20.000	Fixed	-	-	-
122	Fixed	20.000	Fixed	-	-	-
123	Fixed	20.000	Fixed	-	-	-
124	Fixed	20.000	Fixed	-	-	-
125	Fixed	20.000	Fixed	-	-	-
126	Fixed	20.000	Fixed	-	-	-
127	Fixed	20.000	Fixed	-	-	-
128	Fixed	20.000	Fixed	-	-	-
129	Fixed	20.000	Fixed	-	-	-
130	Fixed	20.000	Fixed	-	-	-
131	Fixed	20.000	Fixed	-	-	-
132	Fixed	20.000	Fixed	-	-	-
133	Fixed	20.000	Fixed	-	-	-
134	Fixed	20.000	Fixed	-	-	-
135	Fixed	20.000	Fixed	-	-	-
136	Fixed	20.000	Fixed	-	-	-
137	Fixed	20.000	Fixed	-	-	-
138	Fixed	20.000	Fixed	-	-	-
139	Fixed	20.000	Fixed	-	-	-
140	Fixed	20.000	Fixed	-	-	-
141	Fixed	20.000	Fixed	-	-	-
142	Fixed	20.000	Fixed	-	-	-
143	Fixed	20.000	Fixed	-	-	-
144	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip`ft/deg)	rY (kip`ft/deg)	rZ (kip`ft/deg)
145	Fixed	20.000	Fixed	-	-	-
146	Fixed	20.000	Fixed	-	-	-
147	Fixed	20.000	Fixed	-	-	-
148	Fixed	20.000	Fixed	-	-	-
149	Fixed	20.000	Fixed	-	-	-
150	Fixed	20.000	Fixed	-	-	-
151	Fixed	20.000	Fixed	-	-	-
152	Fixed	20.000	Fixed	-	-	-
153	Fixed	20.000	Fixed	-	-	-
154	Fixed	20.000	Fixed	-	-	-
155	Fixed	20.000	Fixed	-	-	-
156	Fixed	20.000	Fixed	-	-	-
157	Fixed	20.000	Fixed	-	-	-
158	Fixed	20.000	Fixed	-	-	-
159	Fixed	20.000	Fixed	-	-	-
160	Fixed	20.000	Fixed	-	-	-
161	Fixed	20.000	Fixed	-	-	-
162	Fixed	20.000	Fixed	-	-	-
163	Fixed	20.000	Fixed	-	-	-
164	Fixed	20.000	Fixed	-	-	-
165	Fixed	20.000	Fixed	-	-	-
166	Fixed	20.000	Fixed	-	-	-
167	Fixed	20.000	Fixed	-	-	-
168	Fixed	20.000	Fixed	-	-	-
169	Fixed	20.000	Fixed	-	-	-
170	Fixed	20.000	Fixed	-	-	-
171	Fixed	20.000	Fixed	-	-	-
172	Fixed	20.000	Fixed	-	-	-
173	Fixed	20.000	Fixed	-	-	-
174	Fixed	20.000	Fixed	-	-	-
175	Fixed	20.000	Fixed	-	-	-
176	Fixed	20.000	Fixed	-	-	-
177	Fixed	20.000	Fixed	-	-	-
178	Fixed	20.000	Fixed	-	-	-
179	Fixed	20.000	Fixed	-	-	-
180	Fixed	20.000	Fixed	-	-	-
181	Fixed	20.000	Fixed	-	-	-
182	Fixed	20.000	Fixed	-	-	-
183	Fixed	20.000	Fixed	-	-	-
184	Fixed	20.000	Fixed	-	-	-
185	Fixed	20.000	Fixed	-	-	-
186	Fixed	20.000	Fixed	-	-	-
187	Fixed	20.000	Fixed	-	-	-
188	Fixed	20.000	Fixed	-	-	-
189	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
190	Fixed	20.000	Fixed	-	-	-
191	Fixed	20.000	Fixed	-	-	-
192	Fixed	20.000	Fixed	-	-	-
193	Fixed	20.000	Fixed	-	-	-
194	Fixed	20.000	Fixed	-	-	-
195	Fixed	20.000	Fixed	-	-	-
196	Fixed	20.000	Fixed	-	-	-
197	Fixed	20.000	Fixed	-	-	-
198	Fixed	20.000	Fixed	-	-	-
199	Fixed	20.000	Fixed	-	-	-
200	Fixed	20.000	Fixed	-	-	-
201	Fixed	20.000	Fixed	-	-	-
202	Fixed	20.000	Fixed	-	-	-
203	Fixed	20.000	Fixed	-	-	-
204	Fixed	20.000	Fixed	-	-	-
205	Fixed	20.000	Fixed	-	-	-
206	Fixed	20.000	Fixed	-	-	-
207	Fixed	20.000	Fixed	-	-	-
208	Fixed	20.000	Fixed	-	-	-
209	Fixed	20.000	Fixed	-	-	-
210	Fixed	20.000	Fixed	-	-	-
211	Fixed	20.000	Fixed	-	-	-
212	Fixed	20.000	Fixed	-	-	-
213	Fixed	20.000	Fixed	-	-	-
214	Fixed	20.000	Fixed	-	-	-
215	Fixed	20.000	Fixed	-	-	-
216	Fixed	20.000	Fixed	-	-	-
217	Fixed	20.000	Fixed	-	-	-
218	Fixed	20.000	Fixed	-	-	-
219	Fixed	20.000	Fixed	-	-	-
220	Fixed	20.000	Fixed	-	-	-
221	Fixed	20.000	Fixed	-	-	-
222	Fixed	20.000	Fixed	-	-	-
223	Fixed	20.000	Fixed	-	-	-
224	Fixed	20.000	Fixed	-	-	-
225	Fixed	20.000	Fixed	-	-	-
226	Fixed	20.000	Fixed	-	-	-
227	Fixed	20.000	Fixed	-	-	-
228	Fixed	20.000	Fixed	-	-	-
229	Fixed	20.000	Fixed	-	-	-
230	Fixed	20.000	Fixed	-	-	-
231	Fixed	20.000	Fixed	-	-	-
232	Fixed	20.000	Fixed	-	-	-
233	Fixed	20.000	Fixed	-	-	-
234	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
235	Fixed	20.000	Fixed	-	-	-
236	Fixed	20.000	Fixed	-	-	-
237	Fixed	20.000	Fixed	-	-	-
238	Fixed	20.000	Fixed	-	-	-
239	Fixed	20.000	Fixed	-	-	-
240	Fixed	20.000	Fixed	-	-	-
241	Fixed	20.000	Fixed	-	-	-
242	Fixed	20.000	Fixed	-	-	-
243	Fixed	20.000	Fixed	-	-	-
244	Fixed	20.000	Fixed	-	-	-
245	Fixed	20.000	Fixed	-	-	-
246	Fixed	20.000	Fixed	-	-	-
247	Fixed	20.000	Fixed	-	-	-
248	Fixed	20.000	Fixed	-	-	-
249	Fixed	20.000	Fixed	-	-	-
250	Fixed	20.000	Fixed	-	-	-
251	Fixed	20.000	Fixed	-	-	-
252	Fixed	20.000	Fixed	-	-	-
253	Fixed	20.000	Fixed	-	-	-
254	Fixed	20.000	Fixed	-	-	-
255	Fixed	20.000	Fixed	-	-	-
256	Fixed	20.000	Fixed	-	-	-
257	Fixed	20.000	Fixed	-	-	-
258	Fixed	20.000	Fixed	-	-	-
259	Fixed	20.000	Fixed	-	-	-
260	Fixed	20.000	Fixed	-	-	-
261	Fixed	20.000	Fixed	-	-	-
262	Fixed	20.000	Fixed	-	-	-
263	Fixed	20.000	Fixed	-	-	-
264	Fixed	20.000	Fixed	-	-	-
265	Fixed	20.000	Fixed	-	-	-
266	Fixed	20.000	Fixed	-	-	-
267	Fixed	20.000	Fixed	-	-	-
268	Fixed	20.000	Fixed	-	-	-
269	Fixed	20.000	Fixed	-	-	-
270	Fixed	20.000	Fixed	-	-	-
271	Fixed	20.000	Fixed	-	-	-
272	Fixed	20.000	Fixed	-	-	-
273	Fixed	20.000	Fixed	-	-	-
274	Fixed	20.000	Fixed	-	-	-
275	Fixed	20.000	Fixed	-	-	-
276	Fixed	20.000	Fixed	-	-	-
277	Fixed	20.000	Fixed	-	-	-
278	Fixed	20.000	Fixed	-	-	-
279	Fixed	20.000	Fixed	-	-	-

Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
280	Fixed	20.000	Fixed	-	-	-
281	Fixed	20.000	Fixed	-	-	-
282	Fixed	20.000	Fixed	-	-	-
283	Fixed	20.000	Fixed	-	-	-
284	Fixed	20.000	Fixed	-	-	-
285	Fixed	20.000	Fixed	-	-	-
286	Fixed	20.000	Fixed	-	-	-
287	Fixed	20.000	Fixed	-	-	-
288	Fixed	20.000	Fixed	-	-	-
289	Fixed	20.000	Fixed	-	-	-
290	Fixed	20.000	Fixed	-	-	-
291	Fixed	20.000	Fixed	-	-	-
297	Fixed	20.000	Fixed	-	-	-
298	Fixed	20.000	Fixed	-	-	-

Releases

Beam ends not shown in this table are fixed in all directions.

Beam	Node	x	y	z	rx	ry	rz
13	1	Fixed	Fixed	Fixed	Fixed	Pin	Pin
14	5	Fixed	Fixed	Fixed	Fixed	Pin	Pin
15	9	Fixed	Fixed	Fixed	Fixed	Pin	Pin
16	2	Fixed	Fixed	Fixed	Fixed	Pin	Pin
19	3	Fixed	Fixed	Fixed	Fixed	Pin	Pin
22	4	Fixed	Fixed	Fixed	Fixed	Pin	Pin
23	8	Fixed	Fixed	Fixed	Fixed	Pin	Pin
24	12	Fixed	Fixed	Fixed	Fixed	Pin	Pin
32	24	Fixed	Fixed	Fixed	Fixed	Pin	Pin
37	17	Fixed	Fixed	Fixed	Fixed	Pin	Pin
38	18	Fixed	Fixed	Fixed	Fixed	Pin	Pin
39	19	Fixed	Fixed	Fixed	Fixed	Pin	Pin
41	22	Fixed	Fixed	Fixed	Fixed	Pin	Pin
42	23	Fixed	Fixed	Fixed	Fixed	Pin	Pin
43	25	Fixed	Fixed	Fixed	Fixed	Pin	Pin
44	27	Fixed	Fixed	Fixed	Fixed	Pin	Pin
147	9	Fixed	Fixed	Fixed	Fixed	Pin	Pin
154	12	Fixed	Fixed	Fixed	Fixed	Pin	Pin
161	19	Fixed	Fixed	Fixed	Fixed	Pin	Pin
168	23	Fixed	Fixed	Fixed	Fixed	Pin	Pin
175	26	Fixed	Fixed	Fixed	Fixed	Pin	Pin
182	28	Fixed	Fixed	Fixed	Fixed	Pin	Pin
217	18	Fixed	Fixed	Fixed	Fixed	Pin	Pin
224	20	Fixed	Fixed	Fixed	Fixed	Pin	Pin

Releases Cont...

Beam	Node	x	y	z	rx	ry	rz
231	22	Fixed	Fixed	Fixed	Fixed	Pin	Pin
287	13	Fixed	Fixed	Fixed	Fixed	Pin	Pin
292	14	Fixed	Fixed	Fixed	Fixed	Pin	Pin
297	15	Fixed	Fixed	Fixed	Fixed	Pin	Pin
302	16	Fixed	Fixed	Fixed	Fixed	Pin	Pin
306	24	Fixed	Fixed	Fixed	Fixed	Pin	Pin
307	5	Fixed	Fixed	Fixed	Fixed	Pin	Pin
310	8	Fixed	Fixed	Fixed	Fixed	Pin	Pin

Primary Load Cases

Number	Name	Type
1	SELF WEIGHT	None
2	AXIAL	None
3	SHEAR(Z)	None
4	MOMENT(Z)	None
5	SHEAR(X)	None
6	MOMENT(X)	None
7	BALLAST	None

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
8	P+V(Z)+M(Z)+B	1	SELF WEIGHT	1.00
		2	AXIAL	1.00
		3	SHEAR(Z)	1.00
		4	MOMENT(Z)	1.00
		7	BALLAST	1.00
9	P+V(X)+M(X)+B	1	SELF WEIGHT	1.00
		2	AXIAL	1.00
		5	SHEAR(X)	1.00
		6	MOMENT(X)	1.00
		7	BALLAST	1.00

Software licensed to Dewberry	Job No 50075968	Sheet No **28**	Rev 1
	Part		
Job Title Westbrook	Ref		
	By MLS	Date 9/28/17	Chd JY
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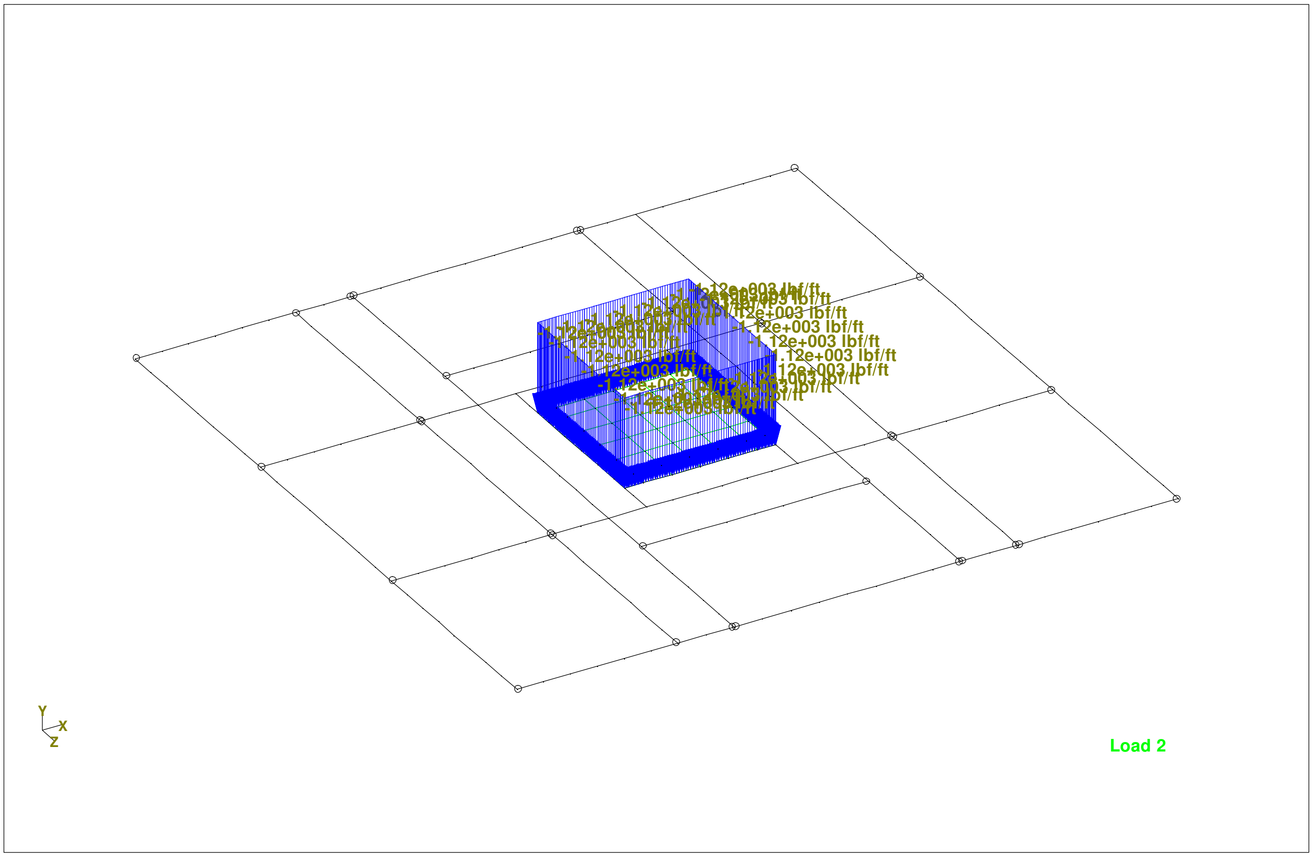

Tower Weight + Unfactored Equipment Axial (23.86k)

Software licensed to Dewberry	Job No 50075968	Sheet No 29	Rev 1
	Part		
Job Title Westbrook	Ref		
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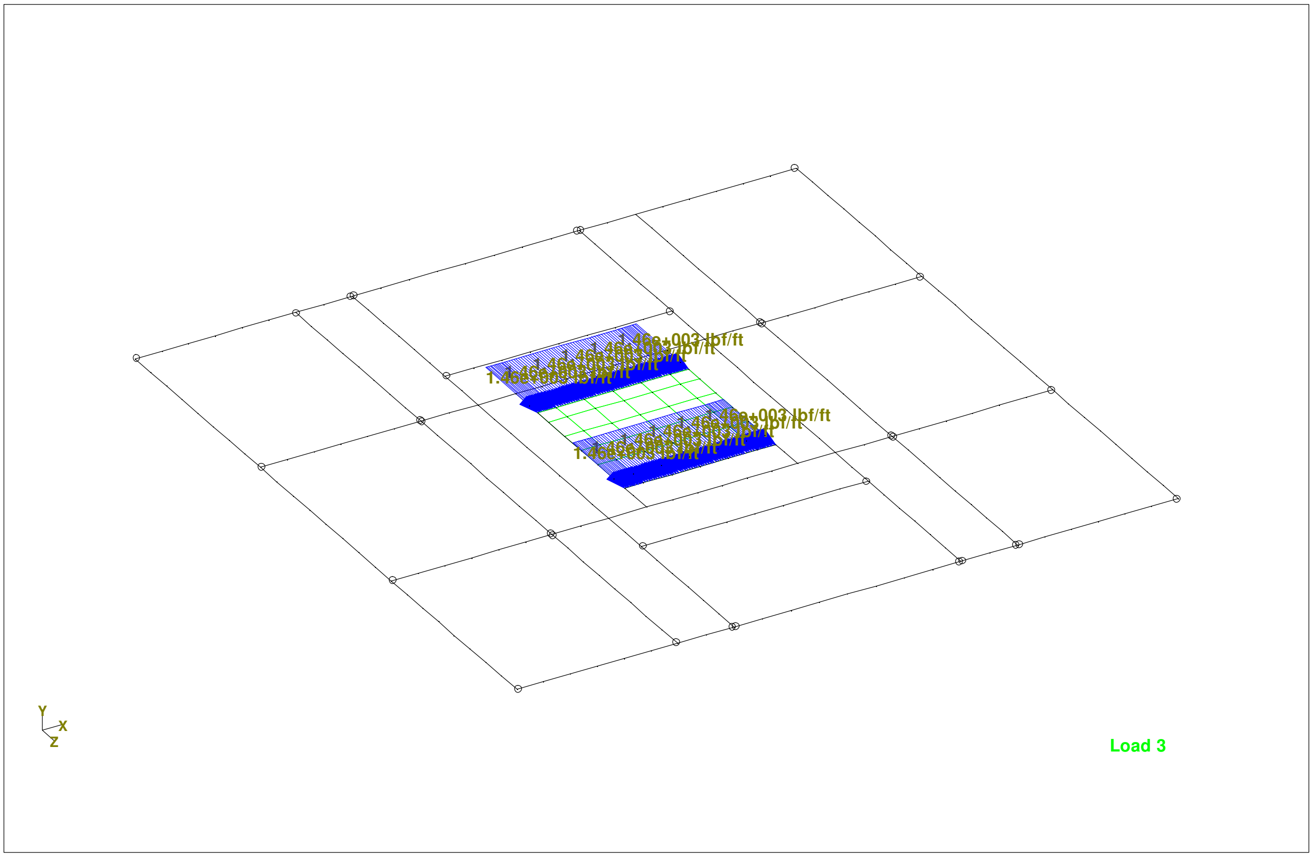

Unfactored Tower Shear (15.52k)

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	Part		
Job Title Westbrook	Ref		
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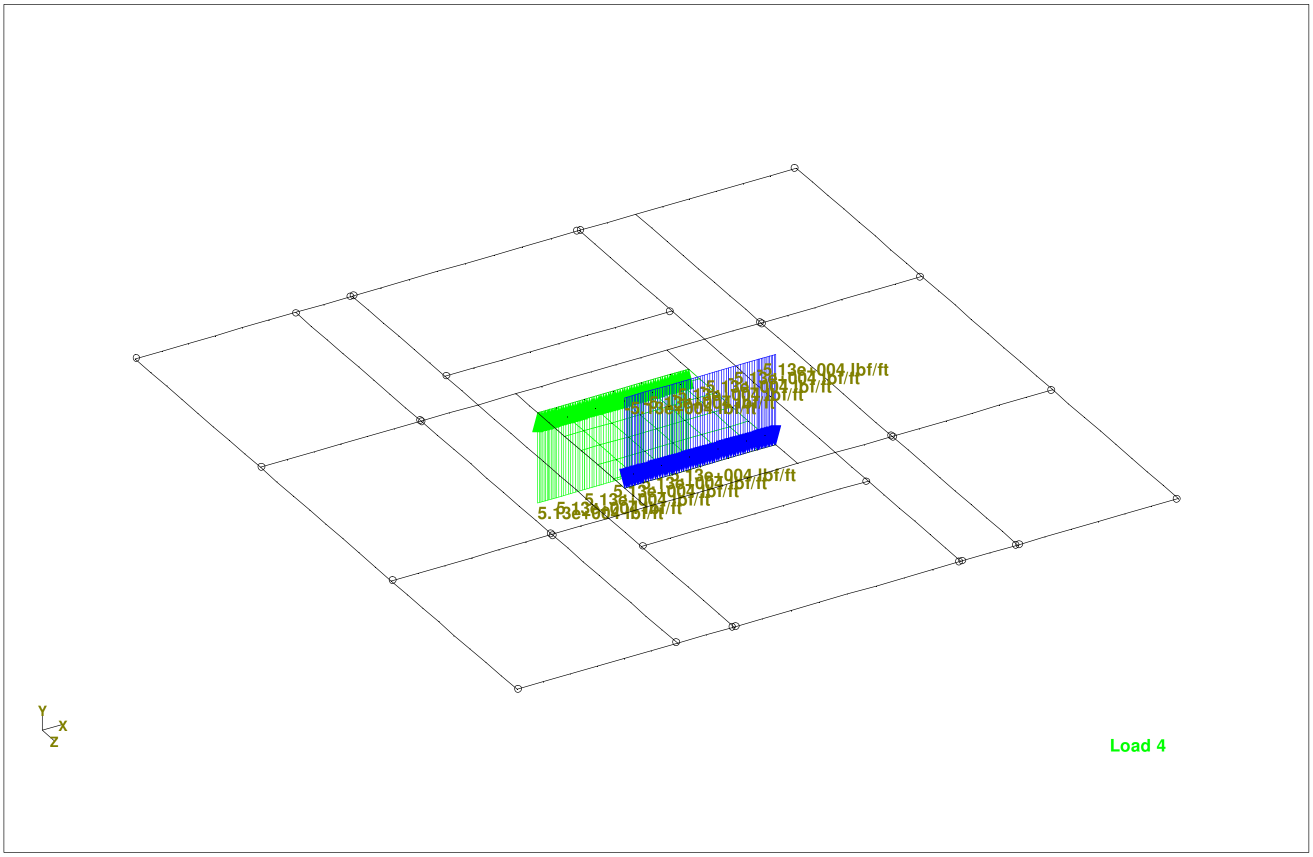
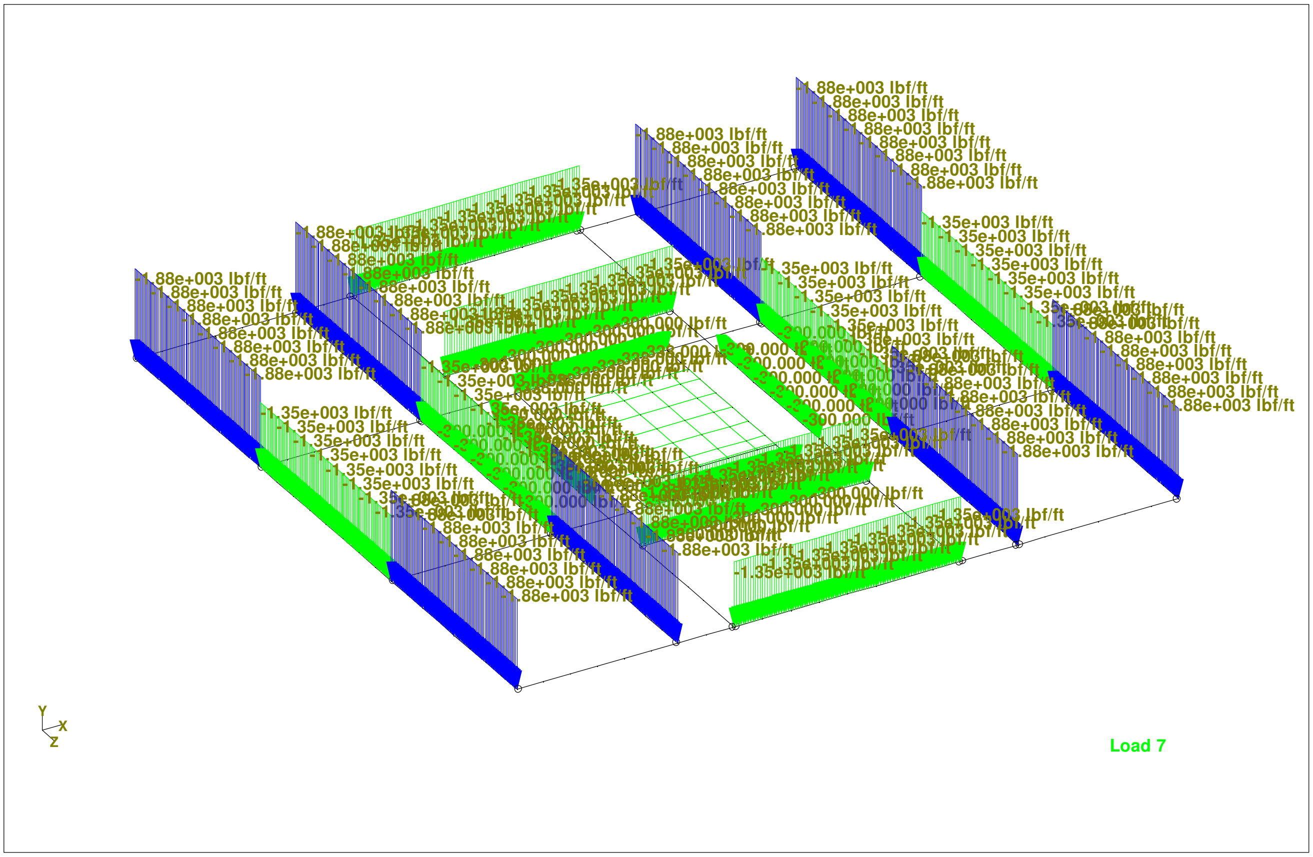


Unfactored Tower Moment (1452.59kip-ft)



Ballast Loading (187.2k)

Software licensed to Dewberry	Job No 50075968	Sheet No **32**	Rev 1
	Part		
Job Title Westbrook	Ref		
	By MLS	Date 9/28/17	Chd JY
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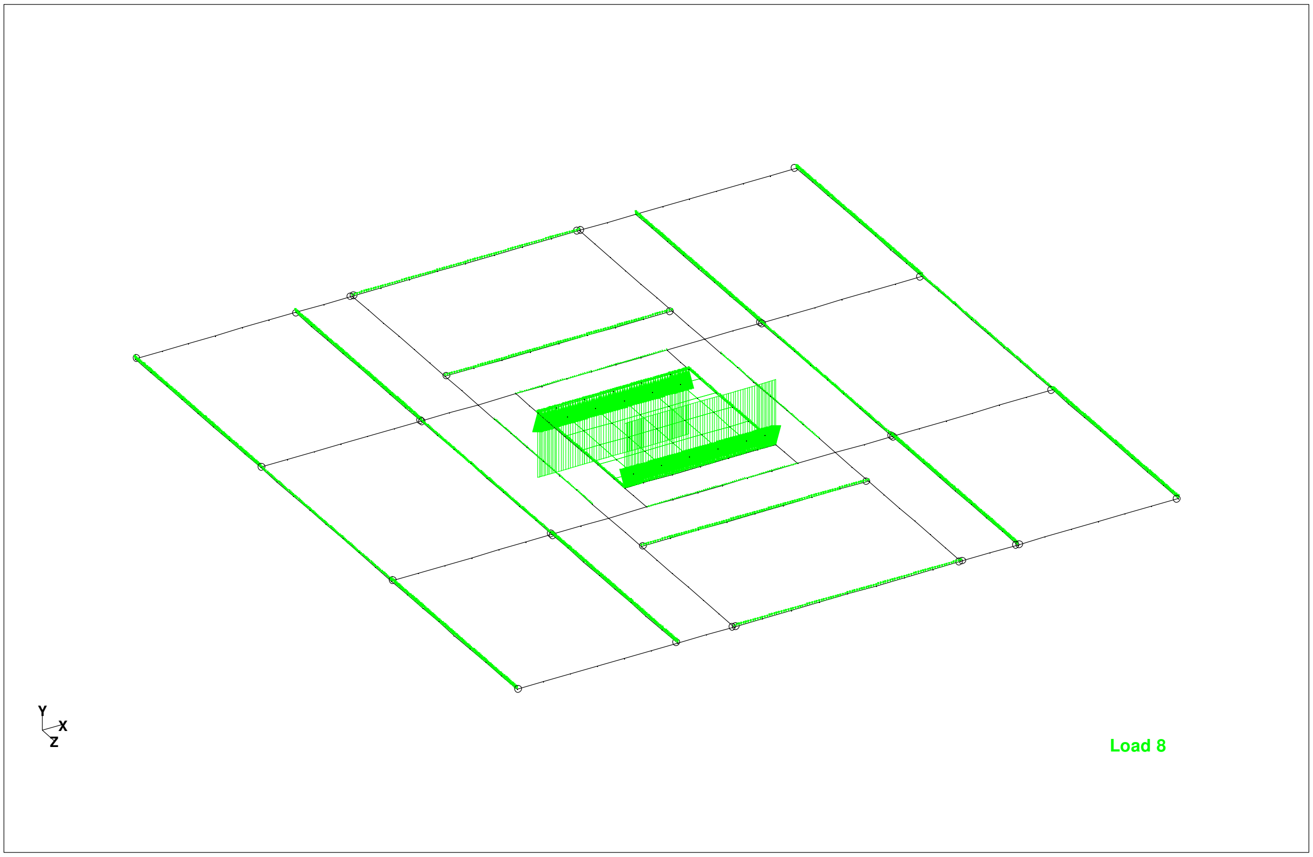
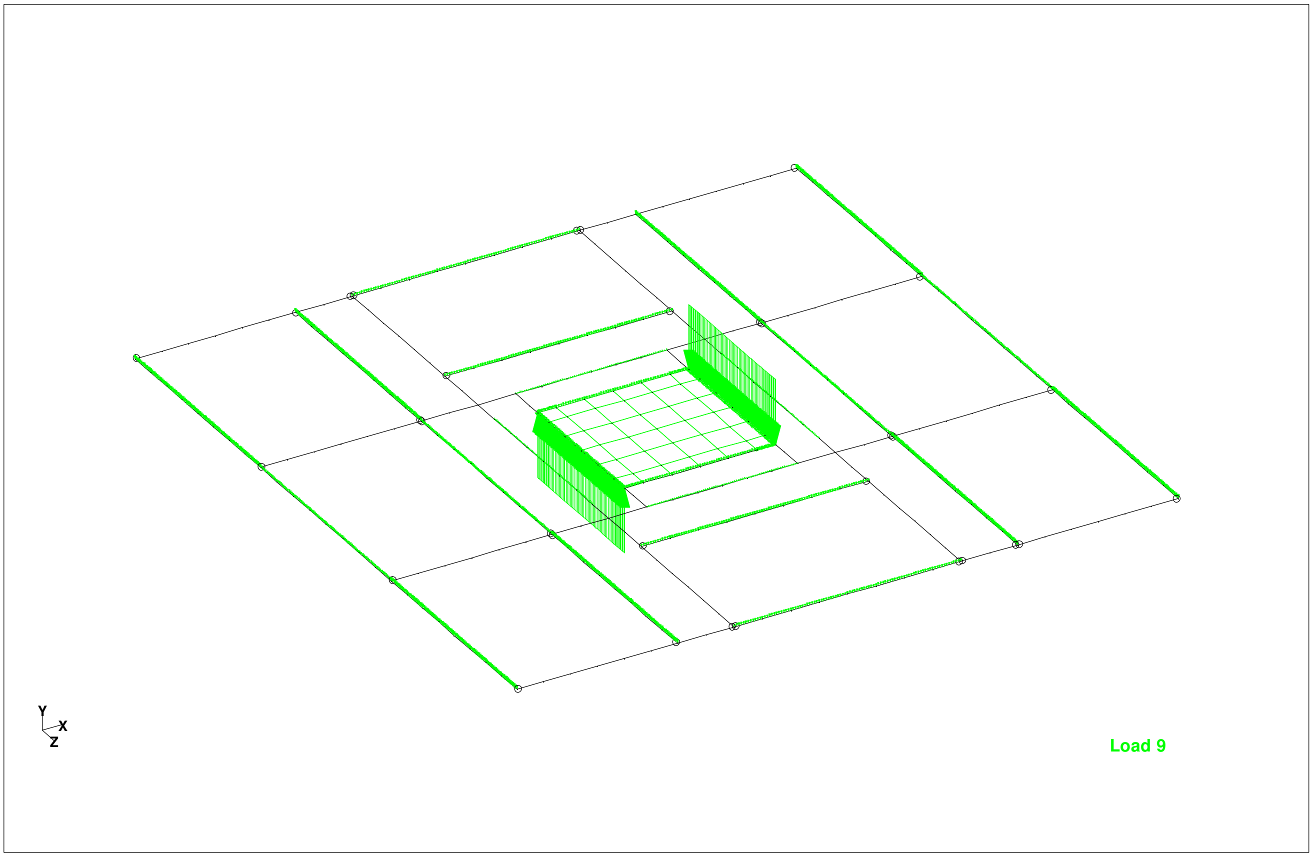


P+V(Z)+M(Z)+B



P+V(X)+M(X)+B

Beam Combined Axial and Bending Stresses Summary

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
1	8:P+V(Z)+M(Z)	0.958	423.454	0.958	1	-423.454	0.958	3
	9:P+V(X)+M(X)	0.958	461.636	0.958	1	-461.636	0.958	3
2	8:P+V(Z)+M(Z)	1.000	800.545	0.000	1	-800.545	0.000	3
	9:P+V(X)+M(X)	1.000	862.983	0.000	3	-862.983	0.000	1
3	8:P+V(Z)+M(Z)	0.958	1.03E+3	0.000	3	-1.03E+3	0.000	1
	9:P+V(X)+M(X)	0.958	866.613	0.000	3	-866.613	0.000	1
4	8:P+V(Z)+M(Z)	0.945	963.724	0.945	3	-963.724	0.945	1
	9:P+V(X)+M(X)	0.945	374.020	0.945	3	-374.020	0.945	1
5	8:P+V(Z)+M(Z)	1.000	18.6E+3	0.000	3	-18.6E+3	0.000	1
	9:P+V(X)+M(X)	1.000	6.33E+3	0.000	3	-6.33E+3	0.000	1
6	8:P+V(Z)+M(Z)	1.000	19.6E+3	0.000	1	-19.6E+3	0.000	3
	9:P+V(X)+M(X)	1.000	6.02E+3	0.000	3	-6.02E+3	0.000	1
7	8:P+V(Z)+M(Z)	0.945	956.226	0.945	3	-956.226	0.945	1
	9:P+V(X)+M(X)	0.945	311.023	0.945	3	-311.023	0.945	1
8	8:P+V(Z)+M(Z)	1.000	18.6E+3	0.000	3	-18.6E+3	0.000	1

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	**L/C**	**Length** (ft)	**Stress** (psi)	**d** (ft)	**Corner**	**Stress** (psi)	**d** (ft)	**Corner**
	9:P+V(X)+M(X)	1.000	7.1E+3	0.000	1	-7.1E+3	0.000	3
9	8:P+V(Z)+M(Z)	1.000	19.3E+3	0.000	1	-19.3E+3	0.000	3
	9:P+V(X)+M(X)	1.000	6.7E+3	0.000	1	-6.7E+3	0.000	3
10	8:P+V(Z)+M(Z)	0.958	426.020	0.958	1	-426.020	0.958	3
	9:P+V(X)+M(X)	0.958	474.027	0.958	1	-474.027	0.958	3
11	8:P+V(Z)+M(Z)	1.000	783.047	0.000	1	-783.047	0.000	3
	9:P+V(X)+M(X)	1.000	638.840	0.000	1	-638.840	0.000	3
12	8:P+V(Z)+M(Z)	0.958	1.16E+3	0.000	3	-1.16E+3	0.000	1
	9:P+V(X)+M(X)	0.958	760.502	0.878	1	-760.502	0.878	3
13	8:P+V(Z)+M(Z)	0.945	365.023	0.945	3	-365.023	0.945	1
	9:P+V(X)+M(X)	0.945	438.323	0.945	3	-438.323	0.945	1
14	8:P+V(Z)+M(Z)	1.000	565.078	1.000	1	-565.078	1.000	3
	9:P+V(X)+M(X)	1.000	323.392	1.000	1	-323.392	1.000	3
15	8:P+V(Z)+M(Z)	1.000	423.388	1.000	1	-423.388	1.000	3
	9:P+V(X)+M(X)	1.000	181.824	1.000	3	-181.824	1.000	1
16	8:P+V(Z)+M(Z)	0.945	16.657	0.945	1	-16.657	0.945	3
	9:P+V(X)+M(X)	0.945	1.13E+3	0.945	3	-1.13E+3	0.945	1
17	8:P+V(Z)+M(Z)	1.338	9.55E+3	1.338	3	-9.55E+3	1.338	1
	9:P+V(X)+M(X)	1.338	14.2E+3	1.338	3	-14.2E+3	1.338	1
18	8:P+V(Z)+M(Z)	1.000	4.57E+3	0.000	3	-4.57E+3	0.000	1
	9:P+V(X)+M(X)	1.000	18.4E+3	0.000	1	-18.4E+3	0.000	3
19	8:P+V(Z)+M(Z)	0.945	1.13E+3	0.945	3	-1.13E+3	0.945	1
	9:P+V(X)+M(X)	0.945	1.14E+3	0.945	3	-1.14E+3	0.945	1
20	8:P+V(Z)+M(Z)	1.338	8.67E+3	1.338	1	-8.67E+3	1.338	3
	9:P+V(X)+M(X)	1.338	14.2E+3	1.338	3	-14.2E+3	1.338	1
21	8:P+V(Z)+M(Z)	1.000	2.25E+3	0.000	1	-2.25E+3	0.000	3
	9:P+V(X)+M(X)	1.000	18.4E+3	0.000	1	-18.4E+3	0.000	3
22	8:P+V(Z)+M(Z)	0.945	518.476	0.945	3	-518.476	0.945	1
	9:P+V(X)+M(X)	0.945	435.601	0.945	3	-435.601	0.945	1
23	8:P+V(Z)+M(Z)	1.000	160.191	1.000	1	-160.191	1.000	3
	9:P+V(X)+M(X)	1.000	304.231	1.000	1	-304.231	1.000	3
24	8:P+V(Z)+M(Z)	1.000	100.691	1.000	3	-100.691	1.000	1
	9:P+V(X)+M(X)	1.000	54.041	1.000	3	-54.041	1.000	1
25	8:P+V(Z)+M(Z)	1.000	991.912	0.000	1	-991.912	0.000	3
	9:P+V(X)+M(X)	1.000	613.408	0.000	1	-613.408	0.000	3
26	8:P+V(Z)+M(Z)	1.000	1.69E+3	0.000	1	-1.69E+3	0.000	3
	9:P+V(X)+M(X)	1.000	13.8E+3	1.000	3	-13.8E+3	1.000	1
27	8:P+V(Z)+M(Z)	1.000	1.37E+3	0.000	3	-1.37E+3	0.000	1
	9:P+V(X)+M(X)	1.000	13.8E+3	1.000	3	-13.8E+3	1.000	1
28	8:P+V(Z)+M(Z)	1.000	592.043	0.000	3	-592.043	0.000	1
	9:P+V(X)+M(X)	1.000	626.945	0.000	1	-626.945	0.000	3
29	8:P+V(Z)+M(Z)	0.944	998.720	0.000	1	-998.720	0.000	3
	9:P+V(X)+M(X)	0.944	566.884	0.944	3	-566.884	0.944	1
30	8:P+V(Z)+M(Z)	0.944	1.66E+3	0.000	1	-1.66E+3	0.000	3

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Part			
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Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	**L/C**	**Length** (ft)	**Stress** (psi)	**d** (ft)	**Corner**	**Stress** (psi)	**d** (ft)	**Corner**
	9:P+V(X)+M(X	0.944	7.76E+3	0.000	1	-7.76E+3	0.000	3
31	8:P+V(Z)+M(Z)	0.944	2.16E+3	0.944	3	-2.16E+3	0.944	1
	9:P+V(X)+M(X	0.944	7.81E+3	0.000	1	-7.81E+3	0.000	3
32	8:P+V(Z)+M(Z)	0.944	329.198	0.944	3	-329.198	0.944	1
	9:P+V(X)+M(X	0.944	319.670	0.944	3	-319.670	0.944	1
33	8:P+V(Z)+M(Z)	1.000	13E+3	1.000	3	-13E+3	1.000	1
	9:P+V(X)+M(X	1.000	3.71E+3	1.000	3	-3.71E+3	1.000	1
34	8:P+V(Z)+M(Z)	1.000	13E+3	1.000	3	-13E+3	1.000	1
	9:P+V(X)+M(X	1.000	4.28E+3	1.000	1	-4.28E+3	1.000	3
35	8:P+V(Z)+M(Z)	0.944	8.59E+3	0.000	1	-8.59E+3	0.000	3
	9:P+V(X)+M(X	0.944	1.75E+3	0.000	3	-1.75E+3	0.000	1
36	8:P+V(Z)+M(Z)	0.944	8.23E+3	0.000	1	-8.23E+3	0.000	3
	9:P+V(X)+M(X	0.944	2.38E+3	0.000	1	-2.38E+3	0.000	3
37	8:P+V(Z)+M(Z)	0.958	1.16E+3	0.958	1	-1.16E+3	0.958	3
	9:P+V(X)+M(X	0.958	1.12E+3	0.958	1	-1.12E+3	0.958	3
38	8:P+V(Z)+M(Z)	1.000	912.252	1.000	1	-912.252	1.000	3
	9:P+V(X)+M(X	1.000	2.2E+3	1.000	1	-2.2E+3	1.000	3
39	8:P+V(Z)+M(Z)	0.958	248.514	0.958	3	-248.514	0.958	1
	9:P+V(X)+M(X	0.958	1.63E+3	0.958	1	-1.63E+3	0.958	3
40	8:P+V(Z)+M(Z)	0.958	1.16E+3	0.958	1	-1.16E+3	0.958	3
	9:P+V(X)+M(X	0.958	175.696	0.879	1	-175.696	0.879	3
41	8:P+V(Z)+M(Z)	1.000	908.955	1.000	1	-908.955	1.000	3
	9:P+V(X)+M(X	1.000	1.19E+3	1.000	3	-1.19E+3	1.000	1
42	8:P+V(Z)+M(Z)	0.958	155.915	0.958	3	-155.915	0.958	1
	9:P+V(X)+M(X	0.958	318.473	0.958	3	-318.473	0.958	1
43	8:P+V(Z)+M(Z)	1.000	2.51E+3	1.000	1	-2.51E+3	1.000	3
	9:P+V(X)+M(X	1.000	981.734	1.000	1	-981.734	1.000	3
44	8:P+V(Z)+M(Z)	1.000	1.35E+3	1.000	3	-1.35E+3	1.000	1
	9:P+V(X)+M(X	1.000	977.617	1.000	1	-977.617	1.000	3
45	8:P+V(Z)+M(Z)	0.912	9.55E+3	0.000	3	-9.55E+3	0.000	1
	9:P+V(X)+M(X	0.912	14.1E+3	0.000	3	-14.1E+3	0.000	1
46	8:P+V(Z)+M(Z)	0.912	8.68E+3	0.000	1	-8.68E+3	0.000	3
	9:P+V(X)+M(X	0.912	14.1E+3	0.000	3	-14.1E+3	0.000	1
47	8:P+V(Z)+M(Z)	1.339	9.56E+3	0.000	3	-9.56E+3	0.000	1
	9:P+V(X)+M(X	1.339	13.4E+3	0.000	1	-13.4E+3	0.000	3
48	8:P+V(Z)+M(Z)	1.339	8.68E+3	0.000	1	-8.68E+3	0.000	3
	9:P+V(X)+M(X	1.339	13.4E+3	0.000	1	-13.4E+3	0.000	3
51	8:P+V(Z)+M(Z)	0.661	9.29E+3	0.000	3	-9.29E+3	0.000	1
	9:P+V(X)+M(X	0.661	17.7E+3	0.661	3	-17.7E+3	0.661	1
52	8:P+V(Z)+M(Z)	0.661	9.29E+3	0.000	3	-9.29E+3	0.000	1
	9:P+V(X)+M(X	0.661	18.2E+3	0.661	1	-18.2E+3	0.661	3
55	8:P+V(Z)+M(Z)	0.662	5.11E+3	0.662	3	-5.11E+3	0.662	1
	9:P+V(X)+M(X	0.662	528.956	0.662	3	-528.956	0.662	1
56	8:P+V(Z)+M(Z)	0.662	5.24E+3	0.662	1	-5.24E+3	0.662	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X)	0.662	529.110	0.662	3	-529.110	0.662	1
57	8:P+V(Z)+M(Z)	1.000	6.38E+3	0.000	3	-6.38E+3	0.000	1
	9:P+V(X)+M(X)	1.000	22.8E+3	1.000	3	-22.8E+3	1.000	1
58	8:P+V(Z)+M(Z)	1.000	6.38E+3	0.000	3	-6.38E+3	0.000	1
	9:P+V(X)+M(X)	1.000	23.5E+3	1.000	1	-23.5E+3	1.000	3
59	8:P+V(Z)+M(Z)	1.000	11.1E+3	1.000	3	-11.1E+3	1.000	1
	9:P+V(X)+M(X)	1.000	189.986	0.000	1	-189.986	0.000	3
60	8:P+V(Z)+M(Z)	1.000	11.4E+3	1.000	1	-11.4E+3	1.000	3
	9:P+V(X)+M(X)	1.000	189.466	0.000	1	-189.466	0.000	3
61	8:P+V(Z)+M(Z)	0.662	9.74E+3	0.662	1	-9.74E+3	0.662	3
	9:P+V(X)+M(X)	0.662	17.7E+3	0.000	3	-17.7E+3	0.000	1
62	8:P+V(Z)+M(Z)	0.662	9.73E+3	0.662	1	-9.73E+3	0.662	3
	9:P+V(X)+M(X)	0.662	18.2E+3	0.000	1	-18.2E+3	0.000	3
63	8:P+V(Z)+M(Z)	0.661	5.11E+3	0.000	3	-5.11E+3	0.000	1
	9:P+V(X)+M(X)	0.661	652.362	0.000	1	-652.362	0.000	3
64	8:P+V(Z)+M(Z)	0.661	5.23E+3	0.000	1	-5.23E+3	0.000	3
	9:P+V(X)+M(X)	0.661	634.901	0.000	1	-668.791	0.000	3
65	8:P+V(Z)+M(Z)	1.000	2.71E+3	0.000	3	-2.71E+3	0.000	1
	9:P+V(X)+M(X)	1.000	24.8E+3	0.833	3	-24.8E+3	0.833	1
66	8:P+V(Z)+M(Z)	1.000	3.41E+3	1.000	1	-3.41E+3	1.000	3
	9:P+V(X)+M(X)	1.000	24.8E+3	0.167	4	-24.8E+3	0.167	2
67	8:P+V(Z)+M(Z)	1.000	6.94E+3	1.000	1	-6.94E+3	1.000	3
	9:P+V(X)+M(X)	1.000	22.8E+3	0.000	3	-22.8E+3	0.000	1
68	8:P+V(Z)+M(Z)	1.000	2.71E+3	0.000	3	-2.71E+3	0.000	1
	9:P+V(X)+M(X)	1.000	25.5E+3	0.833	1	-25.5E+3	0.833	3
69	8:P+V(Z)+M(Z)	1.000	3.4E+3	1.000	1	-3.4E+3	1.000	3
	9:P+V(X)+M(X)	1.000	25.5E+3	0.167	1	-25.5E+3	0.167	3
70	8:P+V(Z)+M(Z)	1.000	6.94E+3	1.000	1	-6.94E+3	1.000	3
	9:P+V(X)+M(X)	1.000	23.5E+3	0.000	1	-23.5E+3	0.000	3
71	8:P+V(Z)+M(Z)	1.000	13.3E+3	0.917	3	-13.3E+3	0.917	1
	9:P+V(X)+M(X)	1.000	307.507	0.000	1	-307.507	0.000	3
72	8:P+V(Z)+M(Z)	1.000	13.3E+3	0.083	3	-13.3E+3	0.083	1
	9:P+V(X)+M(X)	1.000	386.215	0.000	1	-386.215	0.000	3
73	8:P+V(Z)+M(Z)	1.000	11.1E+3	0.000	3	-11.1E+3	0.000	1
	9:P+V(X)+M(X)	1.000	363.639	0.000	1	-363.639	0.000	3
74	8:P+V(Z)+M(Z)	1.000	13.7E+3	0.833	1	-13.7E+3	0.833	3
	9:P+V(X)+M(X)	1.000	306.688	0.000	1	-306.688	0.000	3
75	8:P+V(Z)+M(Z)	1.000	13.7E+3	0.167	2	-13.7E+3	0.167	4
	9:P+V(X)+M(X)	1.000	385.237	0.000	1	-385.237	0.000	3
76	8:P+V(Z)+M(Z)	1.000	11.4E+3	0.000	1	-11.4E+3	0.000	3
	9:P+V(X)+M(X)	1.000	362.718	0.000	1	-362.718	0.000	3
113	8:P+V(Z)+M(Z)	1.000	584.554	0.000	1	-584.554	0.000	3
	9:P+V(X)+M(X)	1.000	532.308	0.000	3	-532.308	0.000	1
114	8:P+V(Z)+M(Z)	1.000	389.131	0.000	1	-389.131	0.000	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X	1.000	296.065	0.000	3	-296.065	0.000	1
115	8:P+V(Z)+M(Z)	1.000	203.462	0.000	1	-203.462	0.000	3
	9:P+V(X)+M(X	1.000	154.665	0.000	3	-154.665	0.000	1
116	8:P+V(Z)+M(Z)	1.000	189.022	1.000	3	-189.022	1.000	1
	9:P+V(X)+M(X	1.000	155.967	1.000	3	-155.967	1.000	1
117	8:P+V(Z)+M(Z)	1.000	422.657	1.000	3	-422.657	1.000	1
	9:P+V(X)+M(X	1.000	298.692	1.000	3	-298.692	1.000	1
118	8:P+V(Z)+M(Z)	1.000	698.799	1.000	3	-698.799	1.000	1
	9:P+V(X)+M(X	1.000	536.305	1.000	3	-536.305	1.000	1
119	8:P+V(Z)+M(Z)	1.000	1.03E+3	1.000	3	-1.03E+3	1.000	1
	9:P+V(X)+M(X	1.000	868.404	1.000	3	-868.404	1.000	1
120	8:P+V(Z)+M(Z)	1.000	13.5E+3	0.000	3	-13.5E+3	0.000	1
	9:P+V(X)+M(X	1.000	4.39E+3	0.000	3	-4.39E+3	0.000	1
121	8:P+V(Z)+M(Z)	1.000	8.85E+3	0.000	3	-8.85E+3	0.000	1
	9:P+V(X)+M(X	1.000	2.96E+3	0.000	3	-2.96E+3	0.000	1
122	8:P+V(Z)+M(Z)	1.000	4.55E+3	0.000	3	-4.55E+3	0.000	1
	9:P+V(X)+M(X	1.000	2.1E+3	0.000	3	-2.1E+3	0.000	1
123	8:P+V(Z)+M(Z)	1.000	3.89E+3	1.000	1	-3.89E+3	1.000	3
	9:P+V(X)+M(X	1.000	2.1E+3	1.000	3	-2.1E+3	1.000	1
124	8:P+V(Z)+M(Z)	1.000	8.47E+3	1.000	1	-8.47E+3	1.000	3
	9:P+V(X)+M(X	1.000	2.95E+3	1.000	3	-2.95E+3	1.000	1
125	8:P+V(Z)+M(Z)	1.000	13.6E+3	1.000	1	-13.6E+3	1.000	3
	9:P+V(X)+M(X	1.000	4.38E+3	1.000	3	-4.38E+3	1.000	1
126	8:P+V(Z)+M(Z)	1.000	19.4E+3	1.000	1	-19.4E+3	1.000	3
	9:P+V(X)+M(X	1.000	6.32E+3	1.000	3	-6.32E+3	1.000	1
127	8:P+V(Z)+M(Z)	1.000	13.5E+3	0.000	3	-13.5E+3	0.000	1
	9:P+V(X)+M(X	1.000	4.42E+3	0.000	1	-4.42E+3	0.000	3
128	8:P+V(Z)+M(Z)	1.000	8.91E+3	0.000	3	-8.91E+3	0.000	1
	9:P+V(X)+M(X	1.000	2.53E+3	0.000	1	-2.53E+3	0.000	3
129	8:P+V(Z)+M(Z)	1.000	4.64E+3	0.000	3	-4.64E+3	0.000	1
	9:P+V(X)+M(X	1.000	1.38E+3	0.000	1	-1.38E+3	0.000	3
130	8:P+V(Z)+M(Z)	1.000	3.74E+3	1.000	1	-3.74E+3	1.000	3
	9:P+V(X)+M(X	1.000	1.36E+3	1.000	1	-1.36E+3	1.000	3
131	8:P+V(Z)+M(Z)	1.000	8.28E+3	1.000	1	-8.28E+3	1.000	3
	9:P+V(X)+M(X	1.000	2.48E+3	1.000	1	-2.48E+3	1.000	3
132	8:P+V(Z)+M(Z)	1.000	13.3E+3	1.000	1	-13.3E+3	1.000	3
	9:P+V(X)+M(X	1.000	4.36E+3	1.000	1	-4.36E+3	1.000	3
133	8:P+V(Z)+M(Z)	1.000	19.1E+3	1.000	1	-19.1E+3	1.000	3
	9:P+V(X)+M(X	1.000	7.02E+3	1.000	1	-7.02E+3	1.000	3
134	8:P+V(Z)+M(Z)	1.000	557.322	0.000	1	-557.322	0.000	3
	9:P+V(X)+M(X	1.000	416.712	0.000	1	-416.712	0.000	3
135	8:P+V(Z)+M(Z)	1.000	350.274	0.000	1	-350.274	0.000	3
	9:P+V(X)+M(X	1.000	260.468	0.167	1	-260.468	0.167	3
136	8:P+V(Z)+M(Z)	1.000	151.044	0.000	1	-151.044	0.000	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X)	1.000	177.704	0.417	1	-177.704	0.417	3
137	8:P+V(Z)+M(Z)	1.000	273.789	1.000	3	-273.789	1.000	1
	9:P+V(X)+M(X)	1.000	169.524	0.583	1	-169.524	0.583	3
138	8:P+V(Z)+M(Z)	1.000	525.377	1.000	3	-525.377	1.000	1
	9:P+V(X)+M(X)	1.000	235.648	0.750	1	-235.648	0.750	3
139	8:P+V(Z)+M(Z)	1.000	819.607	1.000	3	-819.607	1.000	1
	9:P+V(X)+M(X)	1.000	375.929	1.000	1	-375.929	1.000	3
140	8:P+V(Z)+M(Z)	1.000	1.17E+3	1.000	3	-1.17E+3	1.000	1
	9:P+V(X)+M(X)	1.000	586.157	1.000	1	-586.157	1.000	3
141	8:P+V(Z)+M(Z)	1.000	955.184	1.000	1	-955.184	1.000	3
	9:P+V(X)+M(X)	1.000	581.708	1.000	1	-581.708	1.000	3
142	8:P+V(Z)+M(Z)	1.000	1.18E+3	1.000	1	-1.18E+3	1.000	3
	9:P+V(X)+M(X)	1.000	765.365	1.000	1	-765.365	1.000	3
143	8:P+V(Z)+M(Z)	1.000	1.27E+3	0.750	1	-1.27E+3	0.750	3
	9:P+V(X)+M(X)	1.000	868.346	0.833	1	-868.346	0.833	3
144	8:P+V(Z)+M(Z)	1.000	1.27E+3	0.250	1	-1.27E+3	0.250	3
	9:P+V(X)+M(X)	1.000	899.269	0.500	1	-899.269	0.500	3
145	8:P+V(Z)+M(Z)	1.000	1.18E+3	0.000	1	-1.18E+3	0.000	3
	9:P+V(X)+M(X)	1.000	857.312	0.083	1	-857.312	0.083	3
146	8:P+V(Z)+M(Z)	1.000	954.794	0.000	1	-954.794	0.000	3
	9:P+V(X)+M(X)	1.000	726.603	0.000	1	-726.603	0.000	3
147	8:P+V(Z)+M(Z)	1.000	564.736	0.000	1	-564.736	0.000	3
	9:P+V(X)+M(X)	1.000	450.612	0.000	1	-450.612	0.000	3
148	8:P+V(Z)+M(Z)	1.000	260.803	0.750	1	-260.803	0.750	3
	9:P+V(X)+M(X)	1.000	542.760	1.000	1	-542.760	1.000	3
149	8:P+V(Z)+M(Z)	1.000	316.199	0.583	1	-316.199	0.583	3
	9:P+V(X)+M(X)	1.000	708.778	1.000	1	-708.778	1.000	3
150	8:P+V(Z)+M(Z)	1.000	331.610	0.500	1	-331.610	0.500	3
	9:P+V(X)+M(X)	1.000	802.145	0.750	1	-802.145	0.750	3
151	8:P+V(Z)+M(Z)	1.000	312.243	0.417	1	-312.243	0.417	3
	9:P+V(X)+M(X)	1.000	827.982	0.500	1	-827.982	0.500	3
152	8:P+V(Z)+M(Z)	1.000	264.543	0.333	1	-264.543	0.333	3
	9:P+V(X)+M(X)	1.000	784.503	0.083	1	-784.503	0.083	3
153	8:P+V(Z)+M(Z)	1.000	194.056	0.250	1	-194.056	0.250	3
	9:P+V(X)+M(X)	1.000	660.644	0.000	1	-660.644	0.000	3
154	8:P+V(Z)+M(Z)	1.000	105.564	0.167	1	-105.564	0.167	3
	9:P+V(X)+M(X)	1.000	407.734	0.000	1	-407.734	0.000	3
155	8:P+V(Z)+M(Z)	1.000	1.34E+3	1.000	1	-1.34E+3	1.000	3
	9:P+V(X)+M(X)	1.000	3.74E+3	1.000	1	-3.74E+3	1.000	3
156	8:P+V(Z)+M(Z)	1.000	1.42E+3	0.583	1	-1.42E+3	0.583	3
	9:P+V(X)+M(X)	1.000	4.65E+3	1.000	1	-4.65E+3	1.000	3
157	8:P+V(Z)+M(Z)	1.000	1.39E+3	0.000	1	-1.39E+3	0.000	3
	9:P+V(X)+M(X)	1.000	4.94E+3	1.000	1	-4.94E+3	1.000	3
158	8:P+V(Z)+M(Z)	1.000	1.17E+3	0.000	1	-1.17E+3	0.000	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X	1.000	4.94E+3	0.000	1	-4.94E+3	0.000	3
159	8:P+V(Z)+M(Z)	1.000	814.565	0.000	1	-814.565	0.000	3
	9:P+V(X)+M(X	1.000	4.65E+3	0.000	1	-4.65E+3	0.000	3
160	8:P+V(Z)+M(Z)	1.000	421.512	0.000	1	-421.512	0.000	3
	9:P+V(X)+M(X	1.000	3.74E+3	0.000	1	-3.74E+3	0.000	3
161	8:P+V(Z)+M(Z)	1.000	108.188	0.167	1	-108.188	0.167	3
	9:P+V(X)+M(X	1.000	2.2E+3	0.000	1	-2.2E+3	0.000	3
162	8:P+V(Z)+M(Z)	1.000	1.34E+3	1.000	1	-1.34E+3	1.000	3
	9:P+V(X)+M(X	1.000	1.98E+3	1.000	3	-1.98E+3	1.000	1
163	8:P+V(Z)+M(Z)	1.000	1.41E+3	0.583	1	-1.41E+3	0.583	3
	9:P+V(X)+M(X	1.000	2.45E+3	1.000	3	-2.45E+3	1.000	1
164	8:P+V(Z)+M(Z)	1.000	1.38E+3	0.000	1	-1.38E+3	0.000	3
	9:P+V(X)+M(X	1.000	2.6E+3	1.000	3	-2.6E+3	1.000	1
165	8:P+V(Z)+M(Z)	1.000	1.16E+3	0.000	1	-1.16E+3	0.000	3
	9:P+V(X)+M(X	1.000	2.6E+3	0.000	3	-2.6E+3	0.000	1
166	8:P+V(Z)+M(Z)	1.000	798.001	0.000	1	-798.001	0.000	3
	9:P+V(X)+M(X	1.000	2.45E+3	0.000	3	-2.45E+3	0.000	1
167	8:P+V(Z)+M(Z)	1.000	406.199	0.000	1	-406.199	0.000	3
	9:P+V(X)+M(X	1.000	1.98E+3	0.000	3	-1.98E+3	0.000	1
168	8:P+V(Z)+M(Z)	1.000	99.836	0.250	1	-99.836	0.250	3
	9:P+V(X)+M(X	1.000	1.19E+3	0.000	3	-1.19E+3	0.000	1
169	8:P+V(Z)+M(Z)	1.000	4.28E+3	1.000	1	-4.28E+3	1.000	3
	9:P+V(X)+M(X	1.000	1.47E+3	1.000	1	-1.47E+3	1.000	3
170	8:P+V(Z)+M(Z)	1.000	5.31E+3	1.000	1	-5.31E+3	1.000	3
	9:P+V(X)+M(X	1.000	1.56E+3	0.750	1	-1.56E+3	0.750	3
171	8:P+V(Z)+M(Z)	1.000	5.65E+3	1.000	1	-5.65E+3	1.000	3
	9:P+V(X)+M(X	1.000	1.55E+3	0.000	1	-1.55E+3	0.000	3
172	8:P+V(Z)+M(Z)	1.000	5.65E+3	0.000	1	-5.65E+3	0.000	3
	9:P+V(X)+M(X	1.000	1.35E+3	0.000	1	-1.35E+3	0.000	3
173	8:P+V(Z)+M(Z)	1.000	5.31E+3	0.000	1	-5.31E+3	0.000	3
	9:P+V(X)+M(X	1.000	987.818	0.000	1	-987.818	0.000	3
174	8:P+V(Z)+M(Z)	1.000	4.28E+3	0.000	1	-4.28E+3	0.000	3
	9:P+V(X)+M(X	1.000	566.876	0.000	1	-566.876	0.000	3
175	8:P+V(Z)+M(Z)	1.000	2.51E+3	0.000	1	-2.51E+3	0.000	3
	9:P+V(X)+M(X	1.000	192.071	0.000	1	-192.071	0.000	3
176	8:P+V(Z)+M(Z)	1.000	2.26E+3	1.000	3	-2.26E+3	1.000	1
	9:P+V(X)+M(X	1.000	1.46E+3	1.000	1	-1.46E+3	1.000	3
177	8:P+V(Z)+M(Z)	1.000	2.8E+3	1.000	3	-2.8E+3	1.000	1
	9:P+V(X)+M(X	1.000	1.55E+3	0.667	1	-1.55E+3	0.667	3
178	8:P+V(Z)+M(Z)	1.000	2.98E+3	1.000	3	-2.98E+3	1.000	1
	9:P+V(X)+M(X	1.000	1.54E+3	0.000	1	-1.54E+3	0.000	3
179	8:P+V(Z)+M(Z)	1.000	2.98E+3	0.000	3	-2.98E+3	0.000	1
	9:P+V(X)+M(X	1.000	1.34E+3	0.000	1	-1.34E+3	0.000	3
180	8:P+V(Z)+M(Z)	1.000	2.81E+3	0.000	3	-2.81E+3	0.000	1

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X)	1.000	972.446	0.000	1	-972.446	0.000	3
181	8:P+V(Z)+M(Z)	1.000	2.27E+3	0.000	3	-2.27E+3	0.000	1
	9:P+V(X)+M(X)	1.000	553.113	0.000	1	-553.113	0.000	3
182	8:P+V(Z)+M(Z)	1.000	1.36E+3	0.000	3	-1.36E+3	0.000	1
	9:P+V(X)+M(X)	1.000	183.148	0.000	1	-183.148	0.000	3
183	8:P+V(Z)+M(Z)	0.958	730.569	0.958	1	-730.569	0.958	3
	9:P+V(X)+M(X)	0.958	757.897	0.958	1	-757.897	0.958	3
184	8:P+V(Z)+M(Z)	0.958	934.373	0.958	1	-934.373	0.958	3
	9:P+V(X)+M(X)	0.958	898.263	0.799	1	-898.263	0.799	3
185	8:P+V(Z)+M(Z)	0.958	1.06E+3	0.719	1	-1.06E+3	0.719	3
	9:P+V(X)+M(X)	0.958	932.118	0.399	1	-932.118	0.399	3
186	8:P+V(Z)+M(Z)	0.958	1.12E+3	0.559	1	-1.12E+3	0.559	3
	9:P+V(X)+M(X)	0.958	869.026	0.080	1	-869.026	0.080	3
187	8:P+V(Z)+M(Z)	0.958	1.13E+3	0.399	1	-1.13E+3	0.399	3
	9:P+V(X)+M(X)	0.958	686.838	0.000	1	-686.838	0.000	3
188	8:P+V(Z)+M(Z)	0.958	1.07E+3	0.240	1	-1.07E+3	0.240	3
	9:P+V(X)+M(X)	0.958	343.202	0.000	1	-343.202	0.000	3
189	8:P+V(Z)+M(Z)	0.958	964.075	0.080	1	-964.075	0.080	3
	9:P+V(X)+M(X)	0.958	861.185	0.958	3	-861.185	0.958	1
190	8:P+V(Z)+M(Z)	0.958	315.118	0.000	3	-315.118	0.000	1
	9:P+V(X)+M(X)	0.958	337.768	0.958	1	-337.768	0.958	3
191	8:P+V(Z)+M(Z)	0.958	626.626	0.958	1	-626.626	0.958	3
	9:P+V(X)+M(X)	0.958	681.540	0.958	1	-681.540	0.958	3
192	8:P+V(Z)+M(Z)	0.958	855.566	0.958	1	-855.566	0.958	3
	9:P+V(X)+M(X)	0.958	863.987	0.878	1	-863.987	0.878	3
193	8:P+V(Z)+M(Z)	0.958	942.865	0.639	1	-942.865	0.639	3
	9:P+V(X)+M(X)	0.958	927.428	0.559	1	-927.428	0.559	3
194	8:P+V(Z)+M(Z)	0.958	928.654	0.240	1	-928.654	0.240	3
	9:P+V(X)+M(X)	0.958	893.988	0.160	1	-893.988	0.160	3
195	8:P+V(Z)+M(Z)	0.958	806.226	0.000	1	-806.226	0.000	3
	9:P+V(X)+M(X)	0.958	754.416	0.000	1	-754.416	0.000	3
196	8:P+V(Z)+M(Z)	0.958	506.781	0.000	1	-506.781	0.000	3
	9:P+V(X)+M(X)	0.958	459.570	0.000	1	-459.570	0.000	3
197	8:P+V(Z)+M(Z)	0.958	732.646	0.958	1	-732.646	0.958	3
	9:P+V(X)+M(X)	0.958	787.508	0.958	1	-787.508	0.958	3
198	8:P+V(Z)+M(Z)	0.958	935.529	0.958	1	-935.529	0.958	3
	9:P+V(X)+M(X)	0.958	971.196	0.879	1	-971.196	0.879	3
199	8:P+V(Z)+M(Z)	0.958	1.06E+3	0.719	1	-1.06E+3	0.719	3
	9:P+V(X)+M(X)	0.958	1.07E+3	0.639	1	-1.07E+3	0.639	3
200	8:P+V(Z)+M(Z)	0.958	1.12E+3	0.559	1	-1.12E+3	0.559	3
	9:P+V(X)+M(X)	0.958	1.09E+3	0.479	1	-1.09E+3	0.479	3
201	8:P+V(Z)+M(Z)	0.958	1.12E+3	0.399	1	-1.12E+3	0.399	3
	9:P+V(X)+M(X)	0.958	1.06E+3	0.319	1	-1.06E+3	0.319	3
202	8:P+V(Z)+M(Z)	0.958	1.07E+3	0.240	1	-1.07E+3	0.240	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X	0.958	966.331	0.160	1	-966.331	0.160	3
203	8:P+V(Z)+M(Z)	0.958	952.380	0.080	1	-952.380	0.080	3
	9:P+V(X)+M(X	0.958	823.975	0.080	1	-823.975	0.080	3
204	8:P+V(Z)+M(Z)	0.958	476.712	0.000	3	-476.712	0.000	1
	9:P+V(X)+M(X	0.958	894.195	0.799	1	-894.195	0.799	3
205	8:P+V(Z)+M(Z)	0.958	434.252	0.958	1	-434.252	0.958	3
	9:P+V(X)+M(X	0.958	981.192	0.639	1	-981.192	0.639	3
206	8:P+V(Z)+M(Z)	0.958	662.185	0.958	1	-662.185	0.958	3
	9:P+V(X)+M(X	0.958	1.02E+3	0.479	1	-1.02E+3	0.479	3
207	8:P+V(Z)+M(Z)	0.958	758.588	0.639	1	-758.588	0.639	3
	9:P+V(X)+M(X	0.958	989.421	0.319	1	-989.421	0.319	3
208	8:P+V(Z)+M(Z)	0.958	757.719	0.319	1	-757.719	0.319	3
	9:P+V(X)+M(X	0.958	897.623	0.080	1	-897.623	0.080	3
209	8:P+V(Z)+M(Z)	0.958	659.549	0.000	1	-659.549	0.000	3
	9:P+V(X)+M(X	0.958	726.589	0.000	1	-726.589	0.000	3
210	8:P+V(Z)+M(Z)	0.958	417.985	0.000	1	-417.985	0.000	3
	9:P+V(X)+M(X	0.958	437.347	0.000	1	-437.347	0.000	3
211	8:P+V(Z)+M(Z)	0.958	2.07E+3	0.958	1	-2.07E+3	0.958	3
	9:P+V(X)+M(X	0.958	2.03E+3	0.958	1	-2.03E+3	0.958	3
212	8:P+V(Z)+M(Z)	0.958	2.7E+3	0.958	1	-2.7E+3	0.958	3
	9:P+V(X)+M(X	0.958	2.7E+3	0.958	1	-2.7E+3	0.958	3
213	8:P+V(Z)+M(Z)	0.958	3.01E+3	0.958	1	-3.01E+3	0.958	3
	9:P+V(X)+M(X	0.958	3.07E+3	0.958	1	-3.07E+3	0.958	3
214	8:P+V(Z)+M(Z)	0.958	3.04E+3	0.399	1	-3.04E+3	0.399	3
	9:P+V(X)+M(X	0.958	3.12E+3	0.479	1	-3.12E+3	0.479	3
215	8:P+V(Z)+M(Z)	0.958	2.96E+3	0.000	1	-2.96E+3	0.000	3
	9:P+V(X)+M(X	0.958	3.07E+3	0.000	1	-3.07E+3	0.000	3
216	8:P+V(Z)+M(Z)	0.958	2.49E+3	0.000	1	-2.49E+3	0.000	3
	9:P+V(X)+M(X	0.958	2.62E+3	0.000	1	-2.62E+3	0.000	3
217	8:P+V(Z)+M(Z)	0.958	1.53E+3	0.000	1	-1.53E+3	0.000	3
	9:P+V(X)+M(X	0.958	1.63E+3	0.000	1	-1.63E+3	0.000	3
218	8:P+V(Z)+M(Z)	0.958	313.510	0.958	3	-313.510	0.958	1
	9:P+V(X)+M(X	0.958	2.62E+3	0.958	1	-2.62E+3	0.958	3
219	8:P+V(Z)+M(Z)	0.958	313.510	0.000	3	-313.510	0.000	1
	9:P+V(X)+M(X	0.958	3.07E+3	0.958	1	-3.07E+3	0.958	3
220	8:P+V(Z)+M(Z)	0.958	252.683	0.000	3	-252.683	0.000	1
	9:P+V(X)+M(X	0.958	3.13E+3	0.479	1	-3.13E+3	0.479	3
221	8:P+V(Z)+M(Z)	0.958	122.101	0.000	3	-122.101	0.000	1
	9:P+V(X)+M(X	0.958	3.08E+3	0.000	1	-3.08E+3	0.000	3
222	8:P+V(Z)+M(Z)	0.958	140.966	0.719	1	-140.966	0.719	3
	9:P+V(X)+M(X	0.958	2.71E+3	0.000	1	-2.71E+3	0.000	3
223	8:P+V(Z)+M(Z)	0.958	185.633	0.479	1	-185.633	0.479	3
	9:P+V(X)+M(X	0.958	2.04E+3	0.000	1	-2.04E+3	0.000	3
224	8:P+V(Z)+M(Z)	0.958	145.007	0.160	1	-145.007	0.160	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X	0.958	1.12E+3	0.000	1	-1.12E+3	0.000	3
225	8:P+V(Z)+M(Z)	0.958	2.07E+3	0.958	1	-2.07E+3	0.958	3
	9:P+V(X)+M(X	0.958	214.160	0.399	1	-214.160	0.399	3
226	8:P+V(Z)+M(Z)	0.958	2.69E+3	0.958	1	-2.69E+3	0.958	3
	9:P+V(X)+M(X	0.958	153.140	0.160	1	-153.140	0.160	3
227	8:P+V(Z)+M(Z)	0.958	3.01E+3	0.958	1	-3.01E+3	0.958	3
	9:P+V(X)+M(X	0.958	201.823	0.958	3	-201.823	0.958	1
228	8:P+V(Z)+M(Z)	0.958	3.04E+3	0.399	1	-3.04E+3	0.399	3
	9:P+V(X)+M(X	0.958	378.604	0.958	3	-378.604	0.958	1
229	8:P+V(Z)+M(Z)	0.958	2.96E+3	0.000	1	-2.96E+3	0.000	3
	9:P+V(X)+M(X	0.958	455.709	0.958	3	-455.709	0.958	1
230	8:P+V(Z)+M(Z)	0.958	2.49E+3	0.000	1	-2.49E+3	0.000	3
	9:P+V(X)+M(X	0.958	455.709	0.000	3	-455.709	0.000	1
231	8:P+V(Z)+M(Z)	0.958	1.53E+3	0.000	1	-1.53E+3	0.000	3
	9:P+V(X)+M(X	0.958	356.010	0.000	3	-356.010	0.000	1
232	8:P+V(Z)+M(Z)	0.958	155.915	0.000	3	-155.915	0.000	1
	9:P+V(X)+M(X	0.958	381.983	0.958	3	-381.983	0.958	1
233	8:P+V(Z)+M(Z)	0.958	132.140	0.000	3	-132.140	0.000	1
	9:P+V(X)+M(X	0.958	381.983	0.000	3	-381.983	0.000	1
234	8:P+V(Z)+M(Z)	0.958	184.447	0.878	1	-184.447	0.878	3
	9:P+V(X)+M(X	0.958	274.302	0.000	3	-274.302	0.000	1
235	8:P+V(Z)+M(Z)	0.958	344.724	0.878	1	-344.724	0.878	3
	9:P+V(X)+M(X	0.958	129.230	0.958	1	-129.230	0.958	3
236	8:P+V(Z)+M(Z)	0.958	433.645	0.639	1	-433.645	0.639	3
	9:P+V(X)+M(X	0.958	270.442	0.799	1	-270.442	0.799	3
237	8:P+V(Z)+M(Z)	0.958	426.855	0.240	1	-426.855	0.240	3
	9:P+V(X)+M(X	0.958	307.312	0.479	1	-307.312	0.479	3
238	8:P+V(Z)+M(Z)	0.958	320.647	0.000	1	-320.647	0.000	3
	9:P+V(X)+M(X	0.958	247.674	0.000	1	-247.674	0.000	3
239	8:P+V(Z)+M(Z)	0.945	1.93E+3	0.945	3	-1.93E+3	0.945	1
	9:P+V(X)+M(X	0.945	607.171	0.945	3	-607.171	0.945	1
240	8:P+V(Z)+M(Z)	0.944	3E+3	0.944	3	-3E+3	0.944	1
	9:P+V(X)+M(X	0.944	777.543	0.944	3	-777.543	0.944	1
241	8:P+V(Z)+M(Z)	0.945	4.28E+3	0.945	3	-4.28E+3	0.945	1
	9:P+V(X)+M(X	0.945	971.925	0.945	3	-971.925	0.945	1
242	8:P+V(Z)+M(Z)	0.944	5.85E+3	0.944	3	-5.85E+3	0.944	1
	9:P+V(X)+M(X	0.944	1.27E+3	0.944	3	-1.27E+3	0.944	1
243	8:P+V(Z)+M(Z)	0.944	7.82E+3	0.944	3	-7.82E+3	0.944	1
	9:P+V(X)+M(X	0.944	1.77E+3	0.944	3	-1.77E+3	0.944	1
244	8:P+V(Z)+M(Z)	0.945	1.92E+3	0.945	3	-1.92E+3	0.945	1
	9:P+V(X)+M(X	0.945	433.984	0.945	3	-433.984	0.945	1
245	8:P+V(Z)+M(Z)	0.944	2.99E+3	0.944	3	-2.99E+3	0.944	1
	9:P+V(X)+M(X	0.944	433.984	0.000	3	-433.984	0.000	1
246	8:P+V(Z)+M(Z)	0.945	4.27E+3	0.945	3	-4.27E+3	0.945	1

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	**L/C**	**Length** (ft)	**Stress** (psi)	**d** (ft)	**Corner**	**Stress** (psi)	**d** (ft)	**Corner**
	9:P+V(X)+M(X)	0.945	297.112	0.000	3	-297.112	0.000	1
247	8:P+V(Z)+M(Z)	0.944	5.85E+3	0.944	3	-5.85E+3	0.944	1
	9:P+V(X)+M(X)	0.944	1.09E+3	0.944	1	-1.09E+3	0.944	3
248	8:P+V(Z)+M(Z)	0.944	7.81E+3	0.944	3	-7.81E+3	0.944	1
	9:P+V(X)+M(X)	0.944	2.51E+3	0.944	1	-2.51E+3	0.944	3
249	8:P+V(Z)+M(Z)	0.944	5.7E+3	0.000	1	-5.7E+3	0.000	3
	9:P+V(X)+M(X)	0.944	1.26E+3	0.000	3	-1.26E+3	0.000	1
250	8:P+V(Z)+M(Z)	0.944	3.52E+3	0.000	1	-3.52E+3	0.000	3
	9:P+V(X)+M(X)	0.944	956.137	0.000	3	-956.137	0.000	1
251	8:P+V(Z)+M(Z)	0.944	1.96E+3	0.000	1	-1.96E+3	0.000	3
	9:P+V(X)+M(X)	0.944	762.859	0.000	3	-762.859	0.000	1
252	8:P+V(Z)+M(Z)	0.944	916.132	0.000	1	-916.132	0.000	3
	9:P+V(X)+M(X)	0.944	595.191	0.000	3	-595.191	0.000	1
253	8:P+V(Z)+M(Z)	0.944	295.351	0.000	1	-295.351	0.000	3
	9:P+V(X)+M(X)	0.944	366.809	0.000	3	-366.809	0.000	1
254	8:P+V(Z)+M(Z)	0.944	5.33E+3	0.000	1	-5.33E+3	0.000	3
	9:P+V(X)+M(X)	0.944	956.807	0.000	1	-956.807	0.000	3
255	8:P+V(Z)+M(Z)	0.944	3.16E+3	0.000	1	-3.16E+3	0.000	3
	9:P+V(X)+M(X)	0.944	413.946	0.944	3	-413.946	0.944	1
256	8:P+V(Z)+M(Z)	0.944	1.62E+3	0.000	1	-1.62E+3	0.000	3
	9:P+V(X)+M(X)	0.944	527.692	0.944	3	-527.692	0.944	1
257	8:P+V(Z)+M(Z)	0.944	646.330	0.000	1	-646.330	0.000	3
	9:P+V(X)+M(X)	0.944	527.692	0.000	3	-527.692	0.000	1
258	8:P+V(Z)+M(Z)	0.944	133.926	0.000	1	-133.926	0.000	3
	9:P+V(X)+M(X)	0.944	366.405	0.000	3	-366.405	0.000	1
259	8:P+V(Z)+M(Z)	1.000	13.7E+3	0.000	1	-13.7E+3	0.000	3
	9:P+V(X)+M(X)	1.000	3.69E+3	0.000	3	-3.69E+3	0.000	1
260	8:P+V(Z)+M(Z)	1.000	13.3E+3	0.000	1	-13.3E+3	0.000	3
	9:P+V(X)+M(X)	1.000	4.17E+3	0.000	1	-4.17E+3	0.000	3
261	8:P+V(Z)+M(Z)	1.000	18.8E+3	1.000	3	-18.8E+3	1.000	1
	9:P+V(X)+M(X)	1.000	6.04E+3	1.000	3	-6.04E+3	1.000	1
262	8:P+V(Z)+M(Z)	1.000	18.8E+3	1.000	3	-18.8E+3	1.000	1
	9:P+V(X)+M(X)	1.000	6.79E+3	1.000	1	-6.79E+3	1.000	3
263	8:P+V(Z)+M(Z)	0.945	495.617	0.945	3	-495.617	0.945	1
	9:P+V(X)+M(X)	0.945	661.957	0.945	3	-661.957	0.945	1
264	8:P+V(Z)+M(Z)	0.944	495.617	0.000	3	-495.617	0.000	1
	9:P+V(X)+M(X)	0.944	672.094	0.944	3	-672.094	0.944	1
265	8:P+V(Z)+M(Z)	0.945	410.229	0.000	3	-410.229	0.000	1
	9:P+V(X)+M(X)	0.945	672.094	0.000	3	-672.094	0.000	1
266	8:P+V(Z)+M(Z)	0.944	348.098	0.944	1	-348.098	0.944	3
	9:P+V(X)+M(X)	0.944	466.643	0.000	3	-466.643	0.000	1
267	8:P+V(Z)+M(Z)	0.944	995.810	0.944	1	-995.810	0.944	3
	9:P+V(X)+M(X)	0.944	615.367	0.944	1	-615.367	0.944	3
268	8:P+V(Z)+M(Z)	0.945	263.651	0.945	1	-263.651	0.945	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X	0.945	2.17E+3	0.945	3	-2.17E+3	0.945	1
269	8:P+V(Z)+M(Z)	0.944	647.934	0.944	1	-647.934	0.944	3
	9:P+V(X)+M(X	0.944	3.22E+3	0.944	3	-3.22E+3	0.944	1
270	8:P+V(Z)+M(Z)	0.945	1.08E+3	0.945	1	-1.08E+3	0.945	3
	9:P+V(X)+M(X	0.945	4.39E+3	0.945	3	-4.39E+3	0.945	1
271	8:P+V(Z)+M(Z)	0.944	1.45E+3	0.944	1	-1.45E+3	0.944	3
	9:P+V(X)+M(X	0.944	5.77E+3	0.944	3	-5.77E+3	0.944	1
272	8:P+V(Z)+M(Z)	0.944	1.68E+3	0.944	1	-1.68E+3	0.944	3
	9:P+V(X)+M(X	0.944	7.43E+3	0.944	3	-7.43E+3	0.944	1
273	8:P+V(Z)+M(Z)	0.945	1.97E+3	0.945	3	-1.97E+3	0.945	1
	9:P+V(X)+M(X	0.945	2.18E+3	0.945	3	-2.18E+3	0.945	1
274	8:P+V(Z)+M(Z)	0.944	2.48E+3	0.944	3	-2.48E+3	0.944	1
	9:P+V(X)+M(X	0.944	3.23E+3	0.944	3	-3.23E+3	0.944	1
275	8:P+V(Z)+M(Z)	0.945	2.6E+3	0.945	3	-2.6E+3	0.945	1
	9:P+V(X)+M(X	0.945	4.4E+3	0.945	3	-4.4E+3	0.945	1
276	8:P+V(Z)+M(Z)	0.944	2.6E+3	0.000	3	-2.6E+3	0.000	1
	9:P+V(X)+M(X	0.944	5.78E+3	0.944	3	-5.78E+3	0.944	1
277	8:P+V(Z)+M(Z)	0.944	2.25E+3	0.000	3	-2.25E+3	0.000	1
	9:P+V(X)+M(X	0.944	7.44E+3	0.944	3	-7.44E+3	0.944	1
278	8:P+V(Z)+M(Z)	0.945	868.048	0.945	3	-868.048	0.945	1
	9:P+V(X)+M(X	0.945	656.176	0.945	3	-656.176	0.945	1
279	8:P+V(Z)+M(Z)	0.944	1.05E+3	0.944	3	-1.05E+3	0.944	1
	9:P+V(X)+M(X	0.944	663.293	0.944	3	-663.293	0.944	1
280	8:P+V(Z)+M(Z)	0.945	1.07E+3	0.945	3	-1.07E+3	0.945	1
	9:P+V(X)+M(X	0.945	663.293	0.000	3	-663.293	0.000	1
281	8:P+V(Z)+M(Z)	0.944	1.07E+3	0.000	3	-1.07E+3	0.000	1
	9:P+V(X)+M(X	0.944	455.256	0.000	3	-455.256	0.000	1
282	8:P+V(Z)+M(Z)	0.944	922.554	0.000	3	-922.554	0.000	1
	9:P+V(X)+M(X	0.944	628.878	0.944	1	-628.878	0.944	3
283	8:P+V(Z)+M(Z)	0.944	350.053	0.000	1	-350.053	0.000	3
	9:P+V(X)+M(X	0.944	758.418	0.944	3	-758.418	0.944	1
284	8:P+V(Z)+M(Z)	0.944	409.441	0.944	3	-409.441	0.944	1
	9:P+V(X)+M(X	0.944	812.622	0.944	3	-812.622	0.944	1
285	8:P+V(Z)+M(Z)	0.944	495.158	0.944	3	-495.158	0.944	1
	9:P+V(X)+M(X	0.944	812.622	0.000	3	-812.622	0.000	1
286	8:P+V(Z)+M(Z)	0.945	495.158	0.000	3	-495.158	0.000	1
	9:P+V(X)+M(X	0.945	716.071	0.000	3	-716.071	0.000	1
287	8:P+V(Z)+M(Z)	0.944	364.806	0.000	3	-364.806	0.000	1
	9:P+V(X)+M(X	0.944	451.893	0.000	3	-451.893	0.000	1
288	8:P+V(Z)+M(Z)	0.944	1.44E+3	0.000	1	-1.44E+3	0.000	3
	9:P+V(X)+M(X	0.944	4.98E+3	0.000	1	-4.98E+3	0.000	3
289	8:P+V(Z)+M(Z)	0.944	1.07E+3	0.000	1	-1.07E+3	0.000	3
	9:P+V(X)+M(X	0.944	2.88E+3	0.000	1	-2.88E+3	0.000	3
290	8:P+V(Z)+M(Z)	0.944	646.947	0.000	1	-646.947	0.000	3

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	L/C	Length (ft)	Stress (psi)	d (ft)	Corner	Stress (psi)	d (ft)	Corner
	9:P+V(X)+M(X)	0.944	1.4E+3	0.000	1	-1.4E+3	0.000	3
291	8:P+V(Z)+M(Z)	0.945	264.626	0.000	1	-264.626	0.000	3
	9:P+V(X)+M(X)	0.945	470.151	0.000	1	-470.151	0.000	3
292	8:P+V(Z)+M(Z)	0.944	17.963	0.000	1	-17.963	0.000	3
	9:P+V(X)+M(X)	0.944	26.684	0.000	1	-26.684	0.000	3
293	8:P+V(Z)+M(Z)	0.944	2.53E+3	0.944	3	-2.53E+3	0.944	1
	9:P+V(X)+M(X)	0.944	5.01E+3	0.000	1	-5.01E+3	0.000	3
294	8:P+V(Z)+M(Z)	0.944	2.53E+3	0.000	3	-2.53E+3	0.000	1
	9:P+V(X)+M(X)	0.944	2.9E+3	0.000	1	-2.9E+3	0.000	3
295	8:P+V(Z)+M(Z)	0.944	2.44E+3	0.000	3	-2.44E+3	0.000	1
	9:P+V(X)+M(X)	0.944	1.41E+3	0.000	1	-1.41E+3	0.000	3
296	8:P+V(Z)+M(Z)	0.945	1.95E+3	0.000	3	-1.95E+3	0.000	1
	9:P+V(X)+M(X)	0.945	476.180	0.000	1	-476.180	0.000	3
297	8:P+V(Z)+M(Z)	0.944	1.12E+3	0.000	3	-1.12E+3	0.000	1
	9:P+V(X)+M(X)	0.944	28.742	0.000	1	-28.742	0.000	3
298	8:P+V(Z)+M(Z)	0.944	549.977	0.944	3	-549.977	0.944	1
	9:P+V(X)+M(X)	0.944	540.951	0.944	3	-540.951	0.944	1
299	8:P+V(Z)+M(Z)	0.944	646.827	0.944	3	-646.827	0.944	1
	9:P+V(X)+M(X)	0.944	643.641	0.944	3	-643.641	0.944	1
300	8:P+V(Z)+M(Z)	0.944	646.827	0.000	3	-646.827	0.000	1
	9:P+V(X)+M(X)	0.944	643.641	0.000	3	-643.641	0.000	1
301	8:P+V(Z)+M(Z)	0.945	601.792	0.000	3	-601.792	0.000	1
	9:P+V(X)+M(X)	0.945	605.145	0.000	3	-605.145	0.000	1
302	8:P+V(Z)+M(Z)	0.944	394.060	0.000	3	-394.060	0.000	1
	9:P+V(X)+M(X)	0.944	400.027	0.000	3	-400.027	0.000	1
303	8:P+V(Z)+M(Z)	1.000	994.823	1.000	1	-994.823	1.000	3
	9:P+V(X)+M(X)	1.000	246.975	1.000	3	-246.975	1.000	1
304	8:P+V(Z)+M(Z)	1.000	1.68E+3	1.000	1	-1.68E+3	1.000	3
	9:P+V(X)+M(X)	1.000	12.7E+3	0.000	1	-12.7E+3	0.000	3
305	8:P+V(Z)+M(Z)	1.000	1.24E+3	1.000	3	-1.24E+3	1.000	1
	9:P+V(X)+M(X)	1.000	12.7E+3	0.000	1	-12.7E+3	0.000	3
306	8:P+V(Z)+M(Z)	1.000	100.691	0.000	3	-100.691	0.000	1
	9:P+V(X)+M(X)	1.000	54.041	0.000	3	-54.041	0.000	1
307	8:P+V(Z)+M(Z)	1.000	422.116	0.000	1	-422.116	0.000	3
	9:P+V(X)+M(X)	1.000	179.677	0.000	1	-179.677	0.000	3
308	8:P+V(Z)+M(Z)	1.000	4.54E+3	1.000	3	-4.54E+3	1.000	1
	9:P+V(X)+M(X)	1.000	20.7E+3	1.000	3	-20.7E+3	1.000	1
309	8:P+V(Z)+M(Z)	1.000	2.21E+3	1.000	1	-2.21E+3	1.000	3
	9:P+V(X)+M(X)	1.000	20.7E+3	1.000	3	-20.7E+3	1.000	1
310	8:P+V(Z)+M(Z)	1.000	404.135	0.000	3	-404.135	0.000	1
	9:P+V(X)+M(X)	1.000	187.754	0.000	1	-187.754	0.000	3
311	8:P+V(Z)+M(Z)	0.875	8.74E+3	0.000	3	-8.74E+3	0.000	1
	9:P+V(X)+M(X)	0.875	9.35E+3	0.000	3	-9.35E+3	0.000	1
312	8:P+V(Z)+M(Z)	0.875	8.27E+3	0.000	3	-8.27E+3	0.000	1

Beam Combined Axial and Bending Stresses Summary Cont...

			Max Comp			Max Tens		
Beam	**L/C**	**Length** (ft)	**Stress** (psi)	**d** (ft)	**Corner**	**Stress** (psi)	**d** (ft)	**Corner**
	9:P+V(X)+M(X	0.875	4.93E+3	0.000	3	-4.93E+3	0.000	1
313	8:P+V(Z)+M(Z)	0.875	8.28E+3	0.875	3	-8.28E+3	0.875	1
	9:P+V(X)+M(X	0.875	3.86E+3	0.875	1	-3.86E+3	0.875	3
314	8:P+V(Z)+M(Z)	0.875	8.75E+3	0.875	3	-8.75E+3	0.875	1
	9:P+V(X)+M(X	0.875	8.36E+3	0.875	1	-8.36E+3	0.875	3
315	8:P+V(Z)+M(Z)	0.911	9.56E+3	0.911	3	-9.56E+3	0.911	1
	9:P+V(X)+M(X	0.911	13.2E+3	0.911	1	-13.2E+3	0.911	3
316	8:P+V(Z)+M(Z)	0.875	7.73E+3	0.000	1	-7.73E+3	0.000	3
	9:P+V(X)+M(X	0.875	9.36E+3	0.000	3	-9.36E+3	0.000	1
317	8:P+V(Z)+M(Z)	0.875	7.18E+3	0.000	1	-7.18E+3	0.000	3
	9:P+V(X)+M(X	0.875	4.94E+3	0.000	3	-4.94E+3	0.000	1
318	8:P+V(Z)+M(Z)	0.875	7.18E+3	0.875	1	-7.18E+3	0.875	3
	9:P+V(X)+M(X	0.875	3.85E+3	0.875	1	-3.85E+3	0.875	3
319	8:P+V(Z)+M(Z)	0.875	7.74E+3	0.875	1	-7.74E+3	0.875	3
	9:P+V(X)+M(X	0.875	8.35E+3	0.875	1	-8.35E+3	0.875	3
320	8:P+V(Z)+M(Z)	0.911	8.69E+3	0.911	1	-8.69E+3	0.911	3
	9:P+V(X)+M(X	0.911	13.2E+3	0.911	1	-13.2E+3	0.911	3
347	8:P+V(Z)+M(Z)	0.505	9.59E+3	0.000	3	-9.59E+3	0.000	1
	9:P+V(X)+M(X	0.505	13.2E+3	0.000	3	-13.2E+3	0.000	1
348	8:P+V(Z)+M(Z)	0.505	9.59E+3	0.000	3	-9.59E+3	0.000	1
	9:P+V(X)+M(X	0.505	13.6E+3	0.000	1	-13.6E+3	0.000	3
349	8:P+V(Z)+M(Z)	0.505	10E+3	0.000	1	-10E+3	0.000	3
	9:P+V(X)+M(X	0.505	13.2E+3	0.000	3	-13.2E+3	0.000	1
350	8:P+V(Z)+M(Z)	0.505	10E+3	0.000	1	-10E+3	0.000	3
	9:P+V(X)+M(X	0.505	13.6E+3	0.000	1	-13.6E+3	0.000	3
371	8:P+V(Z)+M(Z)	0.834	5.93E+3	0.000	3	-5.93E+3	0.000	1
	9:P+V(X)+M(X	0.834	8.06E+3	0.000	3	-8.06E+3	0.000	1
372	8:P+V(Z)+M(Z)	0.834	5.93E+3	0.000	3	-5.93E+3	0.000	1
	9:P+V(X)+M(X	0.834	8.28E+3	0.000	1	-8.28E+3	0.000	3
373	8:P+V(Z)+M(Z)	0.833	6.15E+3	0.000	1	-6.15E+3	0.000	3
	9:P+V(X)+M(X	0.833	8.05E+3	0.000	3	-8.05E+3	0.000	1
374	8:P+V(Z)+M(Z)	0.833	6.15E+3	0.000	1	-6.15E+3	0.000	3
	9:P+V(X)+M(X	0.833	8.28E+3	0.000	1	-8.28E+3	0.000	3

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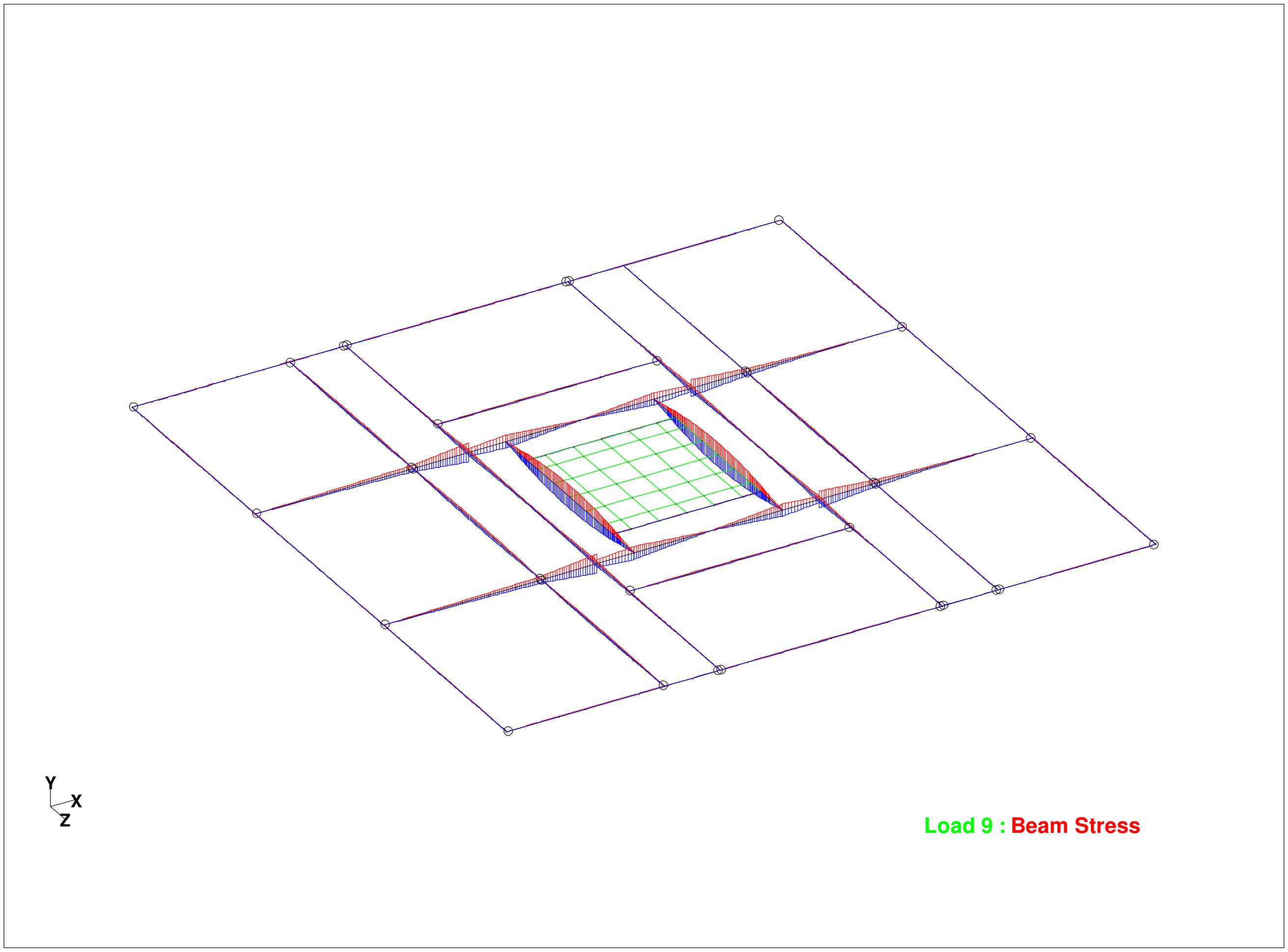

Stresses

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	Part		
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	By MLS	Date 9/28/17	Chd JY
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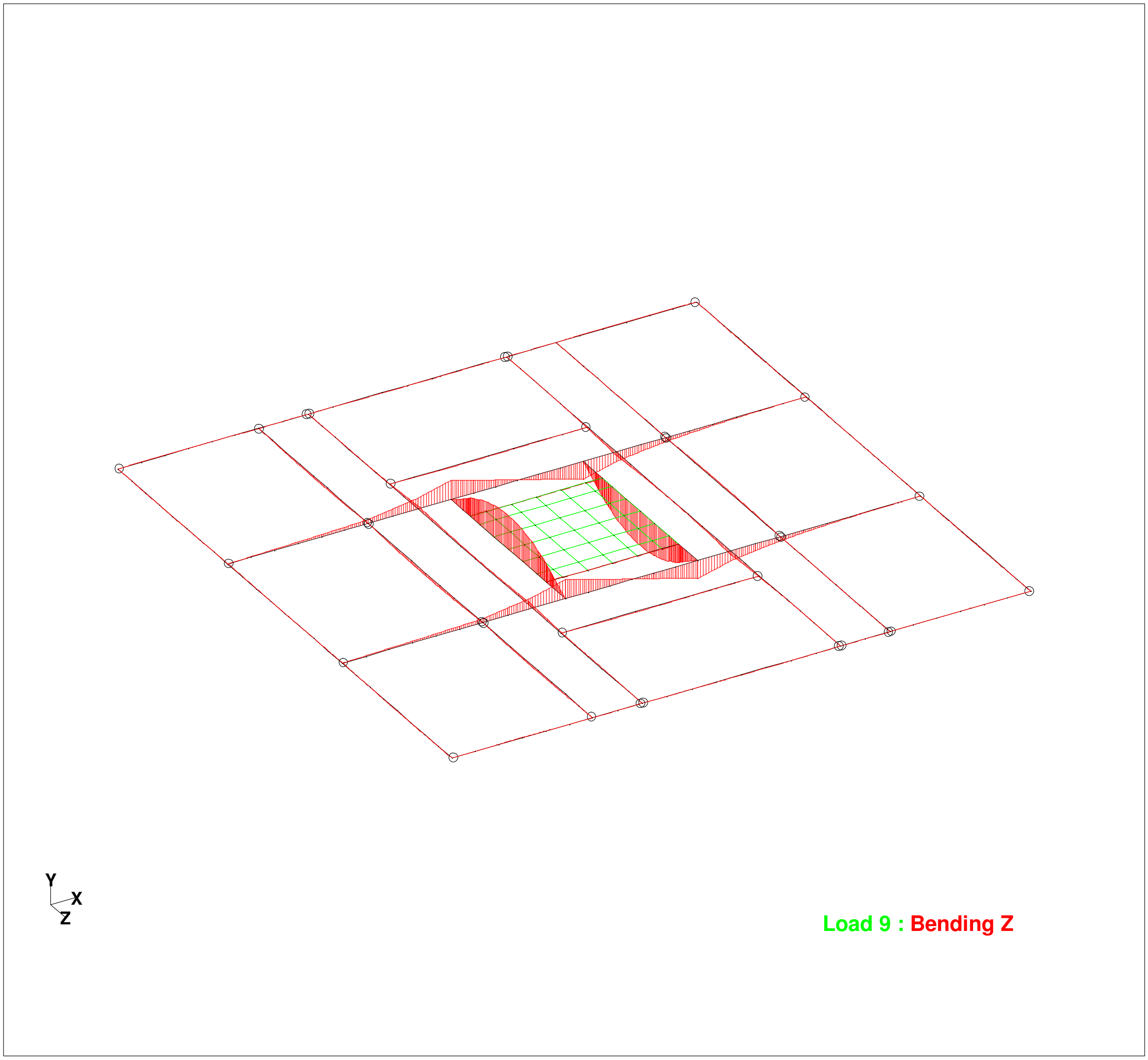

Beam Moment

Node Displacement Summary

	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
Max X	79	9:P+V(X)+M(X)	**0.000**	-0.242	-0.000	0.242	0.002	0.000	-0.009
Min X	72	8:P+V(Z)+M(Z)	**-0.000**	0.105	0.000	0.105	0.006	0.000	-0.001
Max Y	46	9:P+V(X)+M(X)	0.000	**0.247**	0.000	0.247	0.000	0.000	-0.010
Min Y	49	9:P+V(X)+M(X)	0.000	**-0.327**	0.000	0.327	0.000	0.000	-0.010
Max Z	72	8:P+V(Z)+M(Z)	-0.000	0.105	**0.000**	0.105	0.006	0.000	-0.001
Min Z	79	9:P+V(X)+M(X)	0.000	-0.242	**-0.000**	0.242	0.002	0.000	-0.009
Max rX	52	8:P+V(Z)+M(Z)	0.000	0.165	0.000	0.165	**0.007**	0.000	0.000
Min rX	32	9:P+V(X)+M(X)	0.000	-0.155	0.000	0.155	**-0.004**	-0.000	-0.002
Max rY	43	8:P+V(Z)+M(Z)	0.000	0.135	0.000	0.135	0.006	**0.000**	-0.001
Min rY	39	8:P+V(Z)+M(Z)	0.000	0.135	0.000	0.135	0.006	**-0.000**	0.001
Max rZ	277	8:P+V(Z)+M(Z)	0.000	0.086	0.000	0.086	0.001	0.000	**0.002**
Min rZ	46	9:P+V(X)+M(X)	0.000	0.247	0.000	0.247	0.000	0.000	**-0.010**
Max Rst	49	9:P+V(X)+M(X)	0.000	-0.327	0.000	**0.327**	0.000	0.000	-0.010

Reaction Summary

			Horizontal	Vertical	Horizontal	Moment		
	Node	L/C	FX (kip)	FY (kip)	FZ (kip)	MX (kip-in)	MY (kip-in)	MZ (kip-in)
Max FX	297	8:P+V(Z)+M(Z)	**0.020**	4.172	0.000	0.000	0.000	0.000
Min FX	45	9:P+V(X)+M(X)	**-1.466**	-4.703	0.006	0.000	0.000	0.000
Max FY	49	9:P+V(X)+M(X)	-1.459	**6.547**	-0.000	0.000	0.000	0.000
Min FY	46	9:P+V(X)+M(X)	-1.459	**-4.944**	0.000	0.000	0.000	0.000
Max FZ	35	9:P+V(X)+M(X)	-0.459	-3.341	**0.024**	0.000	0.000	0.000
Min FZ	56	8:P+V(Z)+M(Z)	0.006	4.718	**-1.479**	0.000	0.000	0.000
Max MX	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	**0.000**	0.000	0.000
Min MX	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	**0.000**	0.000	0.000
Max MY	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	0.000	**0.000**	0.000
Min MY	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	0.000	**0.000**	0.000
Max MZ	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	0.000	0.000	**0.000**
Min MZ	1	8:P+V(Z)+M(Z)	0.000	1.200	0.000	0.000	0.000	**0.000**

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Utilization Ratio

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
1	W12X40	W12X40	0.046	1.000	0.046	SHEAR -Y	9	11.700	307.000	44.100	0.906
2	W12X40	W12X40	0.033	1.000	0.033	SHEAR -Y	9	11.700	307.000	44.100	0.906
3	W12X40	W12X40	0.063	1.000	0.063	SHEAR -Y	8	11.700	307.000	44.100	0.906
4	W12X40	W12X40	0.068	1.000	0.068	SHEAR -Y	8	11.700	307.000	44.100	0.906
5	W12X40	W12X40	0.575	1.000	0.575	AISC- H1-3	4	11.700	307.000	44.100	0.906
6	W12X40	W12X40	0.594	1.000	0.594	AISC- H1-3	8	11.700	307.000	44.100	0.906
7	W12X40	W12X40	0.068	1.000	0.068	SHEAR -Y	8	11.700	307.000	44.100	0.906
8	W12X40	W12X40	0.575	1.000	0.575	AISC- H1-3	4	11.700	307.000	44.100	0.906
9	W12X40	W12X40	0.586	1.000	0.586	AISC- H1-3	8	11.700	307.000	44.100	0.906
10	W12X40	W12X40	0.047	1.000	0.047	SHEAR -Y	9	11.700	307.000	44.100	0.906
11	W12X40	W12X40	0.027	1.000	0.027	AISC- H1-3	4	11.700	307.000	44.100	0.906
12	W12X40	W12X40	0.062	1.000	0.062	SHEAR -Y	8	11.700	307.000	44.100	0.906
13	W12X40	W12X40	0.031	1.000	0.031	SHEAR -Y	7	11.700	307.000	44.100	0.906
14	W12X40	W12X40	0.048	1.000	0.048	SHEAR -Y	8	11.700	307.000	44.100	0.906
15	W12X40	W12X40	0.028	1.000	0.028	SHEAR -Y	8	11.700	307.000	44.100	0.906
16	W12X40	W12X40	0.080	1.000	0.080	SHEAR -Y	9	11.700	307.000	44.100	0.906
17	W12X96	W12X96	0.506	1.000	0.506	SHEAR -Y	4	28.200	833.000	270.000	6.850
18	W12X40	W12X40	0.591	1.000	0.591	AISC- H1-3	6	11.700	307.000	44.100	0.906
19	W12X40	W12X40	0.080	1.000	0.080	SHEAR -Y	9	11.700	307.000	44.100	0.906
20	W12X96	W12X96	0.508	1.000	0.508	SHEAR -Y	8	28.200	833.000	270.000	6.850
21	W12X40	W12X40	0.592	1.000	0.592	AISC- H1-3	6	11.700	307.000	44.100	0.906
22	W12X40	W12X40	0.037	1.000	0.037	SHEAR -Y	8	11.700	307.000	44.100	0.906
23	W12X40	W12X40	0.036	1.000	0.036	SHEAR -Y	7	11.700	307.000	44.100	0.906
24	W12X40	W12X40	0.007	1.000	0.007	SHEAR -Y	8	11.700	307.000	44.100	0.906
25	W12X40	W12X40	0.038	1.000	0.038	SHEAR -Y	8	11.700	307.000	44.100	0.906
26	W12X40	W12X40	0.424	1.000	0.424	SHEAR -Y	9	11.700	307.000	44.100	0.906
27	W12X40	W12X40	0.424	1.000	0.424	SHEAR -Y	9	11.700	307.000	44.100	0.906
28	W12X40	W12X40	0.029	1.000	0.029	SHEAR -Y	9	11.700	307.000	44.100	0.906
29	W12X40	W12X40	0.046	1.000	0.046	SHEAR -Y	8	11.700	307.000	44.100	0.906
30	W12X40	W12X40	0.235	1.000	0.235	AISC- H1-3	9	11.700	307.000	44.100	0.906
31	W12X40	W12X40	0.237	1.000	0.237	AISC- H1-3	9	11.700	307.000	44.100	0.906
32	W12X40	W12X40	0.035	1.000	0.035	SHEAR -Y	7	11.700	307.000	44.100	0.906
33	W12X40	W12X40	0.404	1.000	0.404	AISC- H1-3	4	11.700	307.000	44.100	0.906
34	W12X40	W12X40	0.404	1.000	0.404	AISC- H1-3	4	11.700	307.000	44.100	0.906
35	W12X40	W12X40	0.260	1.000	0.260	AISC- H1-3	8	11.700	307.000	44.100	0.906
36	W12X40	W12X40	0.250	1.000	0.250	AISC- H1-3	8	11.700	307.000	44.100	0.906
37	W12X40	W12X40	0.094	1.000	0.094	SHEAR -Y	8	11.700	307.000	44.100	0.906
38	W12X40	W12X40	0.156	1.000	0.156	SHEAR -Y	9	11.700	307.000	44.100	0.906
39	W12X40	W12X40	0.127	1.000	0.127	SHEAR -Y	9	11.700	307.000	44.100	0.906
40	W12X40	W12X40	0.095	1.000	0.095	SHEAR -Y	8	11.700	307.000	44.100	0.906
41	W12X40	W12X40	0.112	1.000	0.112	SHEAR -Y	6	11.700	307.000	44.100	0.906
42	W12X40	W12X40	0.064	1.000	0.064	SHEAR -Y	6	11.700	307.000	44.100	0.906
43	W12X40	W12X40	0.177	1.000	0.177	SHEAR -Y	8	11.700	307.000	44.100	0.906
44	W12X40	W12X40	0.128	1.000	0.128	SHEAR -Y	4	11.700	307.000	44.100	0.906
45	W12X96	W12X96	0.457	1.000	0.457	SHEAR -Y	6	28.200	833.000	270.000	6.850

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
46	W12X96	W12X96	0.457	1.000	0.457	SHEAR -Y	6	28.200	833.000	270.000	6.850
47	W12X96	W12X96	0.506	1.000	0.506	SHEAR -Y	4	28.200	833.000	270.000	6.850
48	W12X96	W12X96	0.507	1.000	0.507	SHEAR -Y	8	28.200	833.000	270.000	6.850
51	W12X96	W12X96	0.682	1.000	0.682	SHEAR -Y	6	28.200	833.000	270.000	6.850
52	W12X96	W12X96	0.691	1.000	0.691	SHEAR -Y	9	28.200	833.000	270.000	6.850
55	W12X96	W12X96	0.752	1.000	0.752	SHEAR -Y	4	28.200	833.000	270.000	6.850
56	W12X96	W12X96	0.762	1.000	0.762	SHEAR -Y	8	28.200	833.000	270.000	6.850
57	W12X96	W12X96	0.701	1.000	0.701	AISC- H1-3	6	28.200	833.000	270.000	6.850
58	W12X96	W12X96	0.712	1.000	0.712	AISC- H1-3	9	28.200	833.000	270.000	6.850
59	W12X96	W12X96	0.633	1.000	0.633	SHEAR -Y	4	28.200	833.000	270.000	6.850
60	W12X96	W12X96	0.643	1.000	0.643	SHEAR -Y	8	28.200	833.000	270.000	6.850
61	W12X96	W12X96	0.682	1.000	0.682	SHEAR -Y	6	28.200	833.000	270.000	6.850
62	W12X96	W12X96	0.691	1.000	0.691	SHEAR -Y	9	28.200	833.000	270.000	6.850
63	W12X96	W12X96	0.751	1.000	0.751	SHEAR -Y	4	28.200	833.000	270.000	6.850
64	W12X96	W12X96	0.762	1.000	0.762	SHEAR -Y	8	28.200	833.000	270.000	6.850
65	W12X96	W12X96	0.762	1.000	0.762	AISC- H1-3	6	28.200	833.000	270.000	6.850
66	W12X96	W12X96	0.762	1.000	0.762	AISC- H1-3	6	28.200	833.000	270.000	6.850
67	W12X96	W12X96	0.701	1.000	0.701	AISC- H1-3	6	28.200	833.000	270.000	6.850
68	W12X96	W12X96	0.773	1.000	0.773	AISC- H1-3	9	28.200	833.000	270.000	6.850
69	W12X96	W12X96	0.773	1.000	0.773	AISC- H1-3	9	28.200	833.000	270.000	6.850
70	W12X96	W12X96	0.712	1.000	0.712	AISC- H1-3	9	28.200	833.000	270.000	6.850
71	W12X96	W12X96	0.409	1.000	0.409	AISC- H1-3	4	28.200	833.000	270.000	6.850
72	W12X96	W12X96	0.409	1.000	0.409	AISC- H1-3	4	28.200	833.000	270.000	6.850
73	W12X96	W12X96	0.633	1.000	0.633	SHEAR -Y	4	28.200	833.000	270.000	6.850
74	W12X96	W12X96	0.414	1.000	0.414	AISC- H1-3	8	28.200	833.000	270.000	6.850
75	W12X96	W12X96	0.414	1.000	0.414	AISC- H1-3	8	28.200	833.000	270.000	6.850
76	W12X96	W12X96	0.643	1.000	0.643	SHEAR -Y	8	28.200	833.000	270.000	6.850
113	W12X40	W12X40	0.026	1.000	0.026	SHEAR -Y	9	11.700	307.000	44.100	0.906
114	W12X40	W12X40	0.023	1.000	0.023	SHEAR -Y	8	11.700	307.000	44.100	0.906
115	W12X40	W12X40	0.023	1.000	0.023	SHEAR -Y	8	11.700	307.000	44.100	0.906
116	W12X40	W12X40	0.024	1.000	0.024	SHEAR -Y	8	11.700	307.000	44.100	0.906
117	W12X40	W12X40	0.026	1.000	0.026	SHEAR -Y	8	11.700	307.000	44.100	0.906
118	W12X40	W12X40	0.029	1.000	0.029	SHEAR -Y	8	11.700	307.000	44.100	0.906
119	W12X40	W12X40	0.033	1.000	0.033	SHEAR -Y	9	11.700	307.000	44.100	0.906
120	W12X40	W12X40	0.409	1.000	0.409	AISC- H1-3	4	11.700	307.000	44.100	0.906
121	W12X40	W12X40	0.294	1.000	0.294	SHEAR -Y	4	11.700	307.000	44.100	0.906
122	W12X40	W12X40	0.279	1.000	0.279	SHEAR -Y	4	11.700	307.000	44.100	0.906
123	W12X40	W12X40	0.285	1.000	0.285	SHEAR -Y	8	11.700	307.000	44.100	0.906
124	W12X40	W12X40	0.305	1.000	0.305	SHEAR -Y	8	11.700	307.000	44.100	0.906
125	W12X40	W12X40	0.411	1.000	0.411	AISC- H1-3	8	11.700	307.000	44.100	0.906
126	W12X40	W12X40	0.588	1.000	0.588	AISC- H1-3	8	11.700	307.000	44.100	0.906
127	W12X40	W12X40	0.410	1.000	0.410	AISC- H1-3	4	11.700	307.000	44.100	0.906
128	W12X40	W12X40	0.291	1.000	0.291	SHEAR -Y	4	11.700	307.000	44.100	0.906
129	W12X40	W12X40	0.276	1.000	0.276	SHEAR -Y	8	11.700	307.000	44.100	0.906
130	W12X40	W12X40	0.282	1.000	0.282	SHEAR -Y	8	11.700	307.000	44.100	0.906

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
131	W12X40	W12X40	0.303	1.000	0.303	SHEAR -Y	8	11.700	307.000	44.100	0.906
132	W12X40	W12X40	0.404	1.000	0.404	AISC- H1-3	8	11.700	307.000	44.100	0.906
133	W12X40	W12X40	0.580	1.000	0.580	AISC- H1-3	8	11.700	307.000	44.100	0.906
134	W12X40	W12X40	0.024	1.000	0.024	SHEAR -Y	8	11.700	307.000	44.100	0.906
135	W12X40	W12X40	0.024	1.000	0.024	SHEAR -Y	8	11.700	307.000	44.100	0.906
136	W12X40	W12X40	0.024	1.000	0.024	SHEAR -Y	8	11.700	307.000	44.100	0.906
137	W12X40	W12X40	0.025	1.000	0.025	SHEAR -Y	8	11.700	307.000	44.100	0.906
138	W12X40	W12X40	0.027	1.000	0.027	SHEAR -Y	8	11.700	307.000	44.100	0.906
139	W12X40	W12X40	0.030	1.000	0.030	SHEAR -Y	8	11.700	307.000	44.100	0.906
140	W12X40	W12X40	0.035	1.000	0.035	AISC- H1-3	8	11.700	307.000	44.100	0.906
141	W12X40	W12X40	0.036	1.000	0.036	SHEAR -Y	8	11.700	307.000	44.100	0.906
142	W12X40	W12X40	0.036	1.000	0.036	AISC- H1-3	8	11.700	307.000	44.100	0.906
143	W12X40	W12X40	0.038	1.000	0.038	AISC- H1-3	8	11.700	307.000	44.100	0.906
144	W12X40	W12X40	0.038	1.000	0.038	AISC- H1-3	8	11.700	307.000	44.100	0.906
145	W12X40	W12X40	0.036	1.000	0.036	AISC- H1-3	8	11.700	307.000	44.100	0.906
146	W12X40	W12X40	0.036	1.000	0.036	SHEAR -Y	8	11.700	307.000	44.100	0.906
147	W12X40	W12X40	0.048	1.000	0.048	SHEAR -Y	8	11.700	307.000	44.100	0.906
148	W12X40	W12X40	0.029	1.000	0.029	SHEAR -Y	7	11.700	307.000	44.100	0.906
149	W12X40	W12X40	0.025	1.000	0.025	AISC- H1-3	7	11.700	307.000	44.100	0.906
150	W12X40	W12X40	0.027	1.000	0.027	AISC- H1-3	7	11.700	307.000	44.100	0.906
151	W12X40	W12X40	0.028	1.000	0.028	AISC- H1-3	7	11.700	307.000	44.100	0.906
152	W12X40	W12X40	0.026	1.000	0.026	AISC- H1-3	7	11.700	307.000	44.100	0.906
153	W12X40	W12X40	0.029	1.000	0.029	SHEAR -Y	7	11.700	307.000	44.100	0.906
154	W12X40	W12X40	0.038	1.000	0.038	SHEAR -Y	9	11.700	307.000	44.100	0.906
155	W12X40	W12X40	0.115	1.000	0.115	SHEAR -Y	9	11.700	307.000	44.100	0.906
156	W12X40	W12X40	0.141	1.000	0.141	AISC- H1-3	9	11.700	307.000	44.100	0.906
157	W12X40	W12X40	0.150	1.000	0.150	AISC- H1-3	9	11.700	307.000	44.100	0.906
158	W12X40	W12X40	0.150	1.000	0.150	AISC- H1-3	9	11.700	307.000	44.100	0.906
159	W12X40	W12X40	0.141	1.000	0.141	AISC- H1-3	9	11.700	307.000	44.100	0.906
160	W12X40	W12X40	0.115	1.000	0.115	SHEAR -Y	9	11.700	307.000	44.100	0.906
161	W12X40	W12X40	0.156	1.000	0.156	SHEAR -Y	9	11.700	307.000	44.100	0.906
162	W12X40	W12X40	0.087	1.000	0.087	AISC- H1-3	6	11.700	307.000	44.100	0.906
163	W12X40	W12X40	0.108	1.000	0.108	AISC- H1-3	6	11.700	307.000	44.100	0.906
164	W12X40	W12X40	0.115	1.000	0.115	AISC- H1-3	6	11.700	307.000	44.100	0.906
165	W12X40	W12X40	0.115	1.000	0.115	AISC- H1-3	6	11.700	307.000	44.100	0.906
166	W12X40	W12X40	0.108	1.000	0.108	AISC- H1-3	6	11.700	307.000	44.100	0.906
167	W12X40	W12X40	0.087	1.000	0.087	AISC- H1-3	6	11.700	307.000	44.100	0.906
168	W12X40	W12X40	0.112	1.000	0.112	SHEAR -Y	6	11.700	307.000	44.100	0.906
169	W12X40	W12X40	0.130	1.000	0.130	AISC- H1-3	8	11.700	307.000	44.100	0.906
170	W12X40	W12X40	0.161	1.000	0.161	AISC- H1-3	8	11.700	307.000	44.100	0.906
171	W12X40	W12X40	0.171	1.000	0.171	AISC- H1-3	8	11.700	307.000	44.100	0.906
172	W12X40	W12X40	0.171	1.000	0.171	AISC- H1-3	8	11.700	307.000	44.100	0.906
173	W12X40	W12X40	0.161	1.000	0.161	AISC- H1-3	8	11.700	307.000	44.100	0.906
174	W12X40	W12X40	0.130	1.000	0.130	AISC- H1-3	8	11.700	307.000	44.100	0.906
175	W12X40	W12X40	0.177	1.000	0.177	SHEAR -Y	8	11.700	307.000	44.100	0.906

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
176	W12X40	W12X40	0.099	1.000	0.099	AISC- H1-3	4	11.700	307.000	44.100	0.906
177	W12X40	W12X40	0.123	1.000	0.123	AISC- H1-3	4	11.700	307.000	44.100	0.906
178	W12X40	W12X40	0.131	1.000	0.131	AISC- H1-3	4	11.700	307.000	44.100	0.906
179	W12X40	W12X40	0.131	1.000	0.131	AISC- H1-3	4	11.700	307.000	44.100	0.906
180	W12X40	W12X40	0.124	1.000	0.124	AISC- H1-3	4	11.700	307.000	44.100	0.906
181	W12X40	W12X40	0.100	1.000	0.100	AISC- H1-3	4	11.700	307.000	44.100	0.906
182	W12X40	W12X40	0.129	1.000	0.129	SHEAR -Y	4	11.700	307.000	44.100	0.906
183	W12X40	W12X40	0.035	1.000	0.035	SHEAR -Y	8	11.700	307.000	44.100	0.906
184	W12X40	W12X40	0.028	1.000	0.028	AISC- H1-3	8	11.700	307.000	44.100	0.906
185	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	8	11.700	307.000	44.100	0.906
186	W12X40	W12X40	0.034	1.000	0.034	AISC- H1-3	8	11.700	307.000	44.100	0.906
187	W12X40	W12X40	0.038	1.000	0.038	SHEAR -Y	9	11.700	307.000	44.100	0.906
188	W12X40	W12X40	0.049	1.000	0.049	SHEAR -Y	9	11.700	307.000	44.100	0.906
189	W12X40	W12X40	0.062	1.000	0.062	SHEAR -Y	9	11.700	307.000	44.100	0.906
190	W12X40	W12X40	0.052	1.000	0.052	SHEAR -Y	8	11.700	307.000	44.100	0.906
191	W12X40	W12X40	0.041	1.000	0.041	SHEAR -Y	8	11.700	307.000	44.100	0.906
192	W12X40	W12X40	0.030	1.000	0.030	SHEAR -Y	8	11.700	307.000	44.100	0.906
193	W12X40	W12X40	0.030	1.000	0.030	AISC- H1-3	7	11.700	307.000	44.100	0.906
194	W12X40	W12X40	0.028	1.000	0.028	AISC- H1-3	7	11.700	307.000	44.100	0.906
195	W12X40	W12X40	0.035	1.000	0.035	SHEAR -Y	7	11.700	307.000	44.100	0.906
196	W12X40	W12X40	0.049	1.000	0.049	SHEAR -Y	8	11.700	307.000	44.100	0.906
197	W12X40	W12X40	0.036	1.000	0.036	SHEAR -Y	9	11.700	307.000	44.100	0.906
198	W12X40	W12X40	0.029	1.000	0.029	AISC- H1-3	9	11.700	307.000	44.100	0.906
199	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	9	11.700	307.000	44.100	0.906
200	W12X40	W12X40	0.034	1.000	0.034	AISC- H1-3	8	11.700	307.000	44.100	0.906
201	W12X40	W12X40	0.034	1.000	0.034	AISC- H1-3	8	11.700	307.000	44.100	0.906
202	W12X40	W12X40	0.035	1.000	0.035	SHEAR -Y	7	11.700	307.000	44.100	0.906
203	W12X40	W12X40	0.043	1.000	0.043	SHEAR -Y	7	11.700	307.000	44.100	0.906
204	W12X40	W12X40	0.051	1.000	0.051	SHEAR -Y	8	11.700	307.000	44.100	0.906
205	W12X40	W12X40	0.040	1.000	0.040	SHEAR -Y	8	11.700	307.000	44.100	0.906
206	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	7	11.700	307.000	44.100	0.906
207	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	7	11.700	307.000	44.100	0.906
208	W12X40	W12X40	0.030	1.000	0.030	AISC- H1-3	7	11.700	307.000	44.100	0.906
209	W12X40	W12X40	0.036	1.000	0.036	SHEAR -Y	7	11.700	307.000	44.100	0.906
210	W12X40	W12X40	0.048	1.000	0.048	SHEAR -Y	7	11.700	307.000	44.100	0.906
211	W12X40	W12X40	0.077	1.000	0.077	SHEAR -Y	9	11.700	307.000	44.100	0.906
212	W12X40	W12X40	0.082	1.000	0.082	AISC- H1-3	9	11.700	307.000	44.100	0.906
213	W12X40	W12X40	0.093	1.000	0.093	AISC- H1-3	9	11.700	307.000	44.100	0.906
214	W12X40	W12X40	0.095	1.000	0.095	AISC- H1-3	9	11.700	307.000	44.100	0.906
215	W12X40	W12X40	0.093	1.000	0.093	AISC- H1-3	9	11.700	307.000	44.100	0.906
216	W12X40	W12X40	0.082	1.000	0.082	SHEAR -Y	9	11.700	307.000	44.100	0.906
217	W12X40	W12X40	0.127	1.000	0.127	SHEAR -Y	9	11.700	307.000	44.100	0.906
218	W12X40	W12X40	0.082	1.000	0.082	SHEAR -Y	9	11.700	307.000	44.100	0.906
219	W12X40	W12X40	0.093	1.000	0.093	AISC- H1-3	9	11.700	307.000	44.100	0.906
220	W12X40	W12X40	0.095	1.000	0.095	AISC- H1-3	9	11.700	307.000	44.100	0.906

Utilization Ratio Cont...

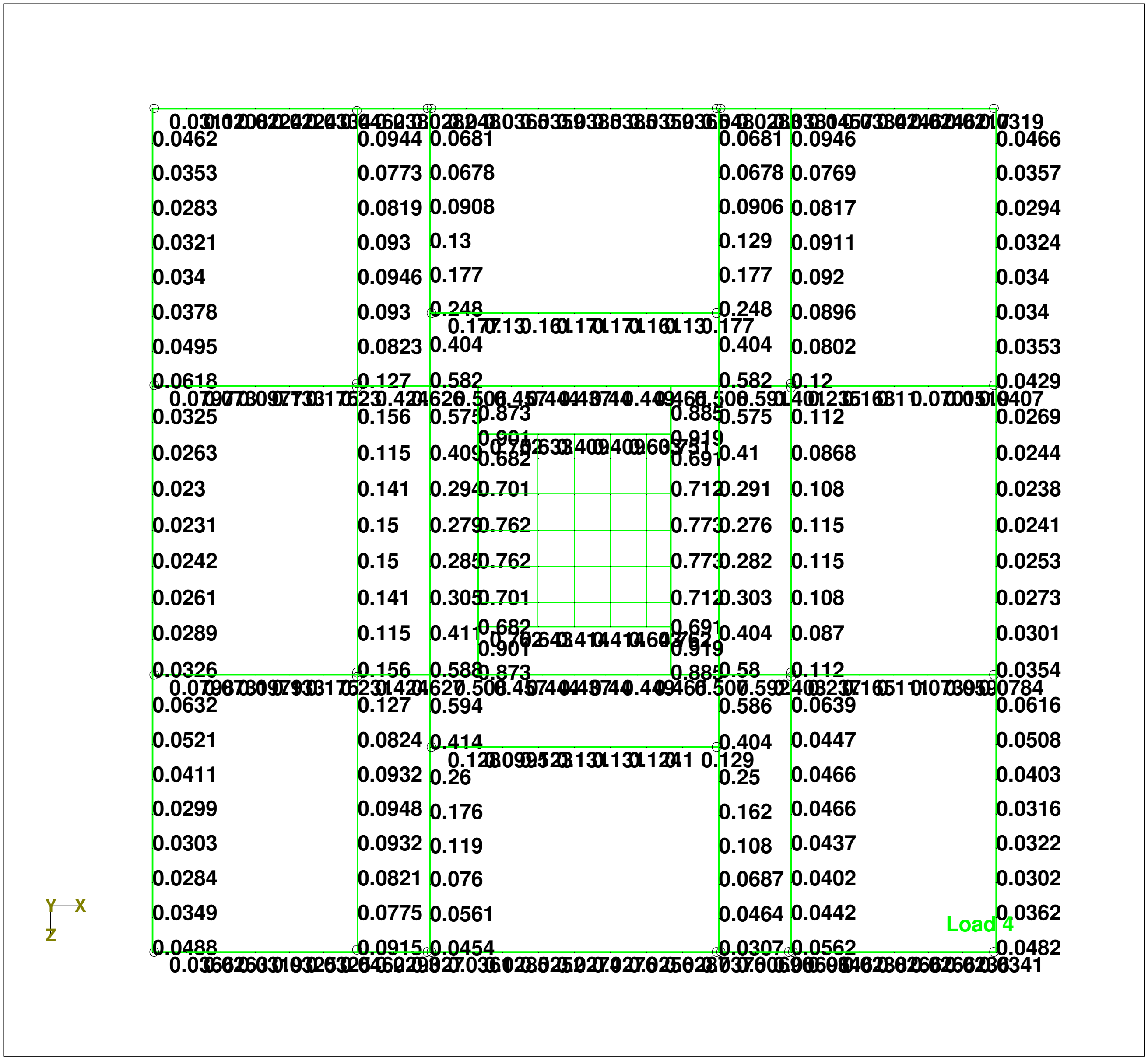
Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
221	W12X40	W12X40	0.093	1.000	0.093	AISC- H1-3	9	11.700	307.000	44.100	0.906
222	W12X40	W12X40	0.082	1.000	0.082	AISC- H1-3	9	11.700	307.000	44.100	0.906
223	W12X40	W12X40	0.078	1.000	0.078	SHEAR -Y	9	11.700	307.000	44.100	0.906
224	W12X40	W12X40	0.091	1.000	0.091	SHEAR -Y	9	11.700	307.000	44.100	0.906
225	W12X40	W12X40	0.077	1.000	0.077	SHEAR -Y	8	11.700	307.000	44.100	0.906
226	W12X40	W12X40	0.082	1.000	0.082	AISC- H1-3	8	11.700	307.000	44.100	0.906
227	W12X40	W12X40	0.091	1.000	0.091	AISC- H1-3	8	11.700	307.000	44.100	0.906
228	W12X40	W12X40	0.092	1.000	0.092	AISC- H1-3	8	11.700	307.000	44.100	0.906
229	W12X40	W12X40	0.090	1.000	0.090	AISC- H1-3	8	11.700	307.000	44.100	0.906
230	W12X40	W12X40	0.080	1.000	0.080	SHEAR -Y	8	11.700	307.000	44.100	0.906
231	W12X40	W12X40	0.120	1.000	0.120	SHEAR -Y	8	11.700	307.000	44.100	0.906
232	W12X40	W12X40	0.045	1.000	0.045	SHEAR -Y	7	11.700	307.000	44.100	0.906
233	W12X40	W12X40	0.047	1.000	0.047	AISC- H1-3	6	11.700	307.000	44.100	0.906
234	W12X40	W12X40	0.047	1.000	0.047	AISC- H1-3	6	11.700	307.000	44.100	0.906
235	W12X40	W12X40	0.044	1.000	0.044	AISC- H1-3	7	11.700	307.000	44.100	0.906
236	W12X40	W12X40	0.040	1.000	0.040	AISC- H1-3	7	11.700	307.000	44.100	0.906
237	W12X40	W12X40	0.044	1.000	0.044	SHEAR -Y	7	11.700	307.000	44.100	0.906
238	W12X40	W12X40	0.056	1.000	0.056	SHEAR -Y	7	11.700	307.000	44.100	0.906
239	W12X40	W12X40	0.068	1.000	0.068	SHEAR -Y	8	11.700	307.000	44.100	0.906
240	W12X40	W12X40	0.091	1.000	0.091	AISC- H1-3	8	11.700	307.000	44.100	0.906
241	W12X40	W12X40	0.130	1.000	0.130	AISC- H1-3	8	11.700	307.000	44.100	0.906
242	W12X40	W12X40	0.177	1.000	0.177	AISC- H1-3	8	11.700	307.000	44.100	0.906
243	W12X40	W12X40	0.248	1.000	0.248	AISC- H1-3	4	11.700	307.000	44.100	0.906
244	W12X40	W12X40	0.068	1.000	0.068	SHEAR -Y	8	11.700	307.000	44.100	0.906
245	W12X40	W12X40	0.091	1.000	0.091	AISC- H1-3	8	11.700	307.000	44.100	0.906
246	W12X40	W12X40	0.129	1.000	0.129	AISC- H1-3	8	11.700	307.000	44.100	0.906
247	W12X40	W12X40	0.177	1.000	0.177	AISC- H1-3	8	11.700	307.000	44.100	0.906
248	W12X40	W12X40	0.248	1.000	0.248	AISC- H1-3	4	11.700	307.000	44.100	0.906
249	W12X40	W12X40	0.176	1.000	0.176	AISC- H1-3	4	11.700	307.000	44.100	0.906
250	W12X40	W12X40	0.119	1.000	0.119	AISC- H1-3	4	11.700	307.000	44.100	0.906
251	W12X40	W12X40	0.076	1.000	0.076	AISC- H1-3	4	11.700	307.000	44.100	0.906
252	W12X40	W12X40	0.056	1.000	0.056	SHEAR -Y	4	11.700	307.000	44.100	0.906
253	W12X40	W12X40	0.045	1.000	0.045	SHEAR -Y	4	11.700	307.000	44.100	0.906
254	W12X40	W12X40	0.162	1.000	0.162	AISC- H1-3	8	11.700	307.000	44.100	0.906
255	W12X40	W12X40	0.108	1.000	0.108	SHEAR -Y	8	11.700	307.000	44.100	0.906
256	W12X40	W12X40	0.069	1.000	0.069	SHEAR -Y	8	11.700	307.000	44.100	0.906
257	W12X40	W12X40	0.046	1.000	0.046	SHEAR -Y	4	11.700	307.000	44.100	0.906
258	W12X40	W12X40	0.031	1.000	0.031	SHEAR -Y	4	11.700	307.000	44.100	0.906
259	W12X40	W12X40	0.414	1.000	0.414	AISC- H1-3	8	11.700	307.000	44.100	0.906
260	W12X40	W12X40	0.404	1.000	0.404	AISC- H1-3	8	11.700	307.000	44.100	0.906
261	W12X40	W12X40	0.582	1.000	0.582	AISC- H1-3	4	11.700	307.000	44.100	0.906
262	W12X40	W12X40	0.582	1.000	0.582	AISC- H1-3	4	11.700	307.000	44.100	0.906
263	W12X40	W12X40	0.021	1.000	0.021	AISC- H1-3	7	11.700	307.000	44.100	0.906
264	W12X40	W12X40	0.022	1.000	0.022	AISC- H1-3	7	11.700	307.000	44.100	0.906
265	W12X40	W12X40	0.022	1.000	0.022	AISC- H1-3	7	11.700	307.000	44.100	0.906

Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
266	W12X40	W12X40	0.033	1.000	0.033	SHEAR -Y	8	11.700	307.000	44.100	0.906
267	W12X40	W12X40	0.046	1.000	0.046	SHEAR -Y	9	11.700	307.000	44.100	0.906
268	W12X40	W12X40	0.073	1.000	0.073	SHEAR -Y	9	11.700	307.000	44.100	0.906
269	W12X40	W12X40	0.098	1.000	0.098	AISC- H1-3	9	11.700	307.000	44.100	0.906
270	W12X40	W12X40	0.133	1.000	0.133	AISC- H1-3	9	11.700	307.000	44.100	0.906
271	W12X40	W12X40	0.175	1.000	0.175	AISC- H1-3	9	11.700	307.000	44.100	0.906
272	W12X40	W12X40	0.230	1.000	0.230	AISC- H1-3	6	11.700	307.000	44.100	0.906
273	W12X40	W12X40	0.073	1.000	0.073	SHEAR -Y	9	11.700	307.000	44.100	0.906
274	W12X40	W12X40	0.098	1.000	0.098	AISC- H1-3	9	11.700	307.000	44.100	0.906
275	W12X40	W12X40	0.133	1.000	0.133	AISC- H1-3	9	11.700	307.000	44.100	0.906
276	W12X40	W12X40	0.175	1.000	0.175	AISC- H1-3	9	11.700	307.000	44.100	0.906
277	W12X40	W12X40	0.231	1.000	0.231	AISC- H1-3	6	11.700	307.000	44.100	0.906
278	W12X40	W12X40	0.026	1.000	0.026	AISC- H1-3	8	11.700	307.000	44.100	0.906
279	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	8	11.700	307.000	44.100	0.906
280	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	8	11.700	307.000	44.100	0.906
281	W12X40	W12X40	0.032	1.000	0.032	AISC- H1-3	8	11.700	307.000	44.100	0.906
282	W12X40	W12X40	0.046	1.000	0.046	SHEAR -Y	9	11.700	307.000	44.100	0.906
283	W12X40	W12X40	0.033	1.000	0.033	SHEAR -Y	8	11.700	307.000	44.100	0.906
284	W12X40	W12X40	0.025	1.000	0.025	AISC- H1-3	9	11.700	307.000	44.100	0.906
285	W12X40	W12X40	0.025	1.000	0.025	AISC- H1-3	9	11.700	307.000	44.100	0.906
286	W12X40	W12X40	0.022	1.000	0.022	AISC- H1-3	9	11.700	307.000	44.100	0.906
287	W12X40	W12X40	0.032	1.000	0.032	SHEAR -Y	9	11.700	307.000	44.100	0.906
288	W12X40	W12X40	0.163	1.000	0.163	AISC- H1-3	6	11.700	307.000	44.100	0.906
289	W12X40	W12X40	0.110	1.000	0.110	AISC- H1-3	6	11.700	307.000	44.100	0.906
290	W12X40	W12X40	0.070	1.000	0.070	AISC- H1-3	6	11.700	307.000	44.100	0.906
291	W12X40	W12X40	0.052	1.000	0.052	SHEAR -Y	6	11.700	307.000	44.100	0.906
292	W12X40	W12X40	0.041	1.000	0.041	SHEAR -Y	6	11.700	307.000	44.100	0.906
293	W12X40	W12X40	0.165	1.000	0.165	AISC- H1-3	6	11.700	307.000	44.100	0.906
294	W12X40	W12X40	0.111	1.000	0.111	AISC- H1-3	6	11.700	307.000	44.100	0.906
295	W12X40	W12X40	0.074	1.000	0.074	AISC- H1-3	8	11.700	307.000	44.100	0.906
296	W12X40	W12X40	0.059	1.000	0.059	AISC- H1-3	8	11.700	307.000	44.100	0.906
297	W12X40	W12X40	0.078	1.000	0.078	SHEAR -Y	8	11.700	307.000	44.100	0.906
298	W12X40	W12X40	0.024	1.000	0.024	AISC- H1-3	7	11.700	307.000	44.100	0.906
299	W12X40	W12X40	0.027	1.000	0.027	AISC- H1-3	7	11.700	307.000	44.100	0.906
300	W12X40	W12X40	0.027	1.000	0.027	AISC- H1-3	7	11.700	307.000	44.100	0.906
301	W12X40	W12X40	0.024	1.000	0.024	AISC- H1-3	7	11.700	307.000	44.100	0.906
302	W12X40	W12X40	0.034	1.000	0.034	SHEAR -Y	7	11.700	307.000	44.100	0.906
303	W12X40	W12X40	0.038	1.000	0.038	SHEAR -Y	8	11.700	307.000	44.100	0.906
304	W12X40	W12X40	0.401	1.000	0.401	AISC- H1-3	6	11.700	307.000	44.100	0.906
305	W12X40	W12X40	0.403	1.000	0.403	AISC- H1-3	6	11.700	307.000	44.100	0.906
306	W12X40	W12X40	0.007	1.000	0.007	SHEAR -Y	8	11.700	307.000	44.100	0.906
307	W12X40	W12X40	0.028	1.000	0.028	SHEAR -Y	8	11.700	307.000	44.100	0.906
308	W12X40	W12X40	0.626	1.000	0.626	AISC- H1-3	9	11.700	307.000	44.100	0.906
309	W12X40	W12X40	0.627	1.000	0.627	AISC- H1-3	9	11.700	307.000	44.100	0.906
310	W12X40	W12X40	0.027	1.000	0.027	SHEAR -Y	8	11.700	307.000	44.100	0.906

Utilization Ratio Cont...

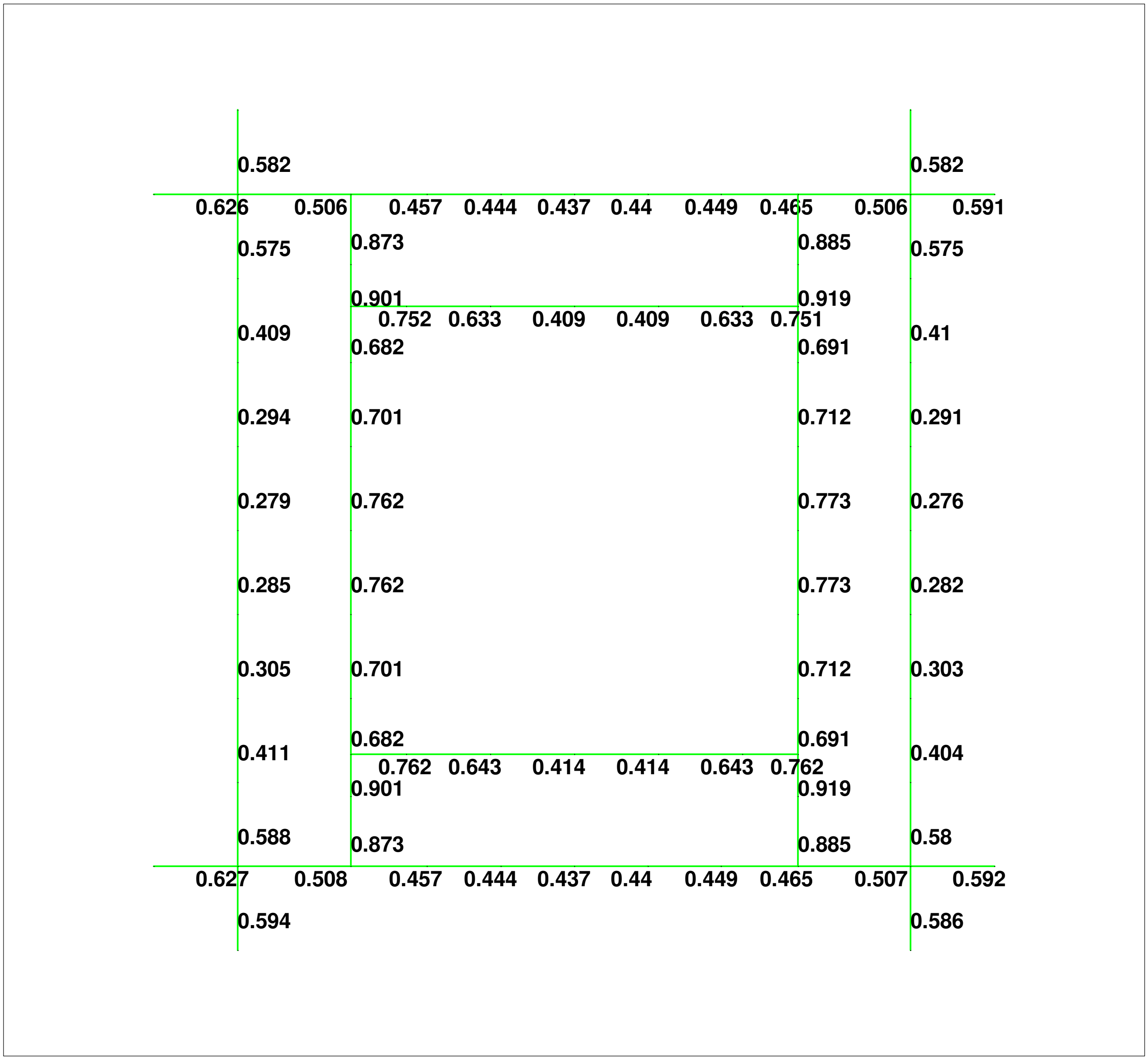
Beam	Analysis Property	Design Property	Actual Ratio	Allowable Ratio	Ratio (Act./Allow.)	Clause	L/C	Ax (in^2)	Iz (in^4)	Iy (in^4)	Ix (in^4)
311	W12X96	W12X96	0.444	1.000	0.444	SHEAR -Y	6	28.200	833.000	270.000	6.850
312	W12X96	W12X96	0.437	1.000	0.437	SHEAR -Y	9	28.200	833.000	270.000	6.850
313	W12X96	W12X96	0.440	1.000	0.440	SHEAR -Y	9	28.200	833.000	270.000	6.850
314	W12X96	W12X96	0.449	1.000	0.449	SHEAR -Y	9	28.200	833.000	270.000	6.850
315	W12X96	W12X96	0.465	1.000	0.465	SHEAR -Y	9	28.200	833.000	270.000	6.850
316	W12X96	W12X96	0.444	1.000	0.444	SHEAR -Y	6	28.200	833.000	270.000	6.850
317	W12X96	W12X96	0.437	1.000	0.437	SHEAR -Y	9	28.200	833.000	270.000	6.850
318	W12X96	W12X96	0.440	1.000	0.440	SHEAR -Y	9	28.200	833.000	270.000	6.850
319	W12X96	W12X96	0.449	1.000	0.449	SHEAR -Y	9	28.200	833.000	270.000	6.850
320	W12X96	W12X96	0.465	1.000	0.465	SHEAR -Y	9	28.200	833.000	270.000	6.850
347	W12X96	W12X96	0.901	1.000	0.901	SHEAR -Y	6	28.200	833.000	270.000	6.850
348	W12X96	W12X96	0.919	1.000	0.919	SHEAR -Y	9	28.200	833.000	270.000	6.850
349	W12X96	W12X96	0.901	1.000	0.901	SHEAR -Y	6	28.200	833.000	270.000	6.850
350	W12X96	W12X96	0.919	1.000	0.919	SHEAR -Y	9	28.200	833.000	270.000	6.850
371	W12X96	W12X96	0.873	1.000	0.873	SHEAR -Y	6	28.200	833.000	270.000	6.850
372	W12X96	W12X96	0.885	1.000	0.885	SHEAR -Y	9	28.200	833.000	270.000	6.850
373	W12X96	W12X96	0.873	1.000	0.873	SHEAR -Y	6	28.200	833.000	270.000	6.850
374	W12X96	W12X96	0.885	1.000	0.885	SHEAR -Y	9	28.200	833.000	270.000	6.850



Utilization Ratio (Overall)

Software licensed to Dewberry

Job No 50075968
Sheet No 58
Rev 1
Part
Ref
Job Title Westbrook
By MLS
Date 9/28/17
Chd JY
Client Telecom Tower Rentals, LLC
File 50075968 - Westbrook - F
Date/Time 28-Sep-2017 16:40



Utilization Ratio (Transition Framing--Most Severe)

Job Information

	Engineer	**Checked**	**Approved**
Name:	MLS	JJY	
Date:	9/25/17	9/26/17	

Project ID	
Project Name	

Structure Type	SPACE FRAME

Number of Nodes	315	Highest Node	321
Number of Plates	280	Highest Plate	340

Number of Basic Load Cases	3
Number of Combination Load Cases	1

Included in this printout are data for:

All	The Whole Structure

Included in this printout are results for load cases:

Type	**L/C**	**Name**
Combination	4	P+V+M

Software licensed to Dewberry

Job No **50075968**

Sheet No **2**

Rev 1

Part Base Plate

Job Title Westbrook CT

Ref

By MLS

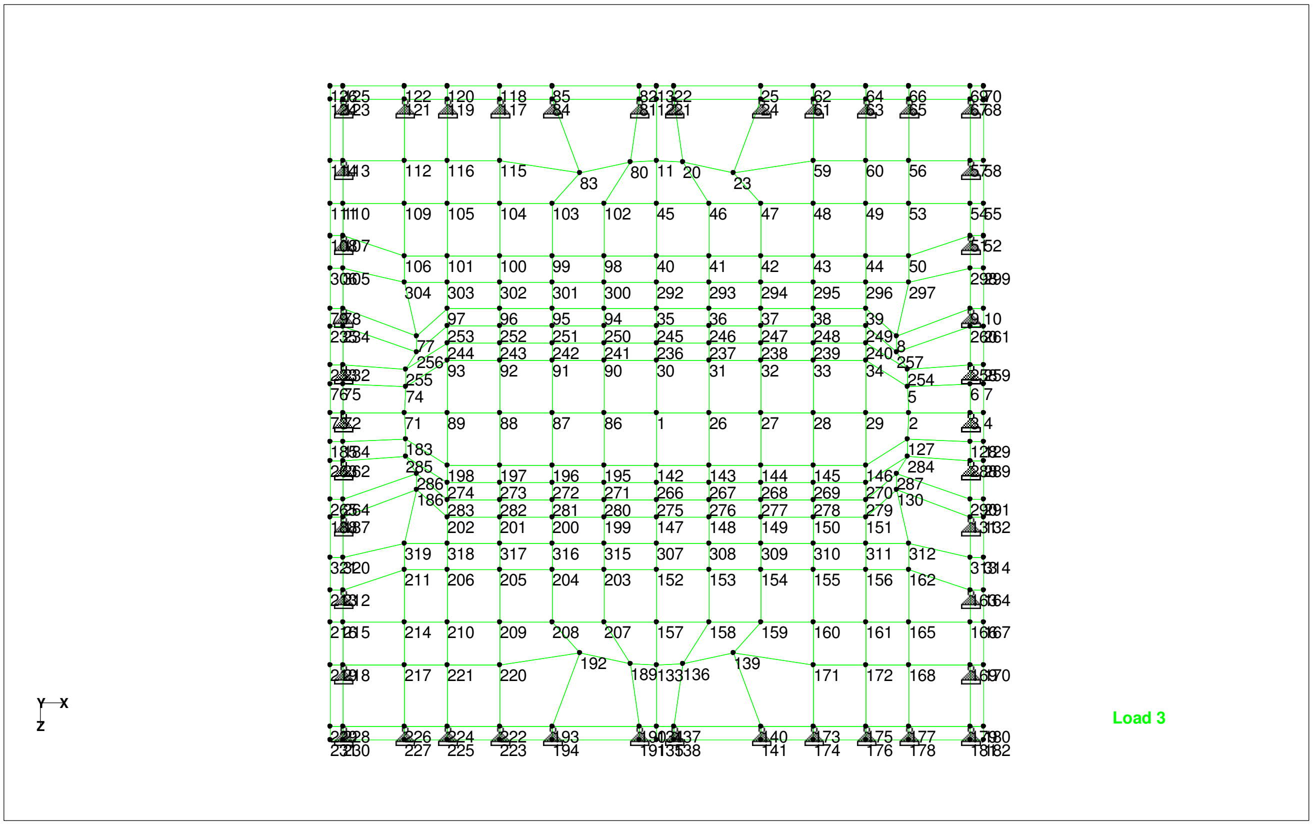
Date 9/25/17

Chd JJY

Client Telecom Tower Rentals, LLC

File Westbrook-Baseplate.std

Date/Time 28-Sep-2017 16:28



Node Layout

Software licensed to Dewberry

Job No **50075968**
Sheet No **3**
Rev 1
Part Base Plate
Job Title Westbrook CT
Ref
By MLS
Date 9/25/17
Chd JJY
Client Telecom Tower Rentals, LLC
File Westbrook-Baseplate.std
Date/Time 28-Sep-2017 16:28

Nodes

Node	X (ft)	Y (ft)	Z (ft)
1	0.000	0.000	0.000
2	2.417	0.000	0.000
3	3.005	0.000	0.000
4	3.130	0.000	0.000
5	2.404	0.000	-0.250
6	3.005	0.000	-0.277
7	3.130	0.000	-0.277
8	2.301	0.000	-0.737
9	3.005	0.000	-1.000
10	3.130	0.000	-1.000
11	0.000	0.000	-2.417
12	0.000	0.000	-3.005
13	0.000	0.000	-3.130
20	0.250	0.000	-2.404
21	0.168	0.000	-3.005
22	0.168	0.000	-3.130
23	0.737	0.000	-2.301
24	1.002	0.000	-3.005
25	1.002	0.000	-3.130
26	0.501	0.000	0.000
27	1.002	0.000	0.000
28	1.503	0.000	0.000
29	2.003	0.000	0.000
30	0.000	0.000	-0.501
31	0.501	0.000	-0.501
32	1.002	0.000	-0.501
33	1.503	0.000	-0.501
34	2.003	0.000	-0.501
35	0.000	0.000	-1.002
36	0.501	0.000	-1.002
37	1.002	0.000	-1.002
38	1.503	0.000	-1.002
39	2.003	0.000	-1.002
40	0.000	0.000	-1.503
41	0.501	0.000	-1.503
42	1.002	0.000	-1.503
43	1.503	0.000	-1.503
44	2.003	0.000	-1.503
45	0.000	0.000	-2.003
46	0.501	0.000	-2.003
47	1.002	0.000	-2.003
48	1.503	0.000	-2.003
49	2.003	0.000	-2.003
50	2.417	0.000	-1.503
51	3.005	0.000	-1.695

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
52	3.130	0.000	-1.695
53	2.417	0.000	-2.003
54	3.005	0.000	-2.003
55	3.130	0.000	-2.003
56	2.417	0.000	-2.417
57	3.005	0.000	-2.417
58	3.130	0.000	-2.417
59	1.503	0.000	-2.417
60	2.003	0.000	-2.417
61	1.503	0.000	-3.005
62	1.503	0.000	-3.130
63	2.003	0.000	-3.005
64	2.003	0.000	-3.130
65	2.417	0.000	-3.005
66	2.417	0.000	-3.130
67	3.005	0.000	-3.005
68	3.130	0.000	-3.005
69	3.005	0.000	-3.130
70	3.130	0.000	-3.130
71	-2.417	0.000	0.000
72	-3.005	0.000	0.000
73	-3.130	0.000	0.000
74	-2.404	0.000	-0.250
75	-3.005	0.000	-0.277
76	-3.130	0.000	-0.277
77	-2.301	0.000	-0.737
78	-3.005	0.000	-1.000
79	-3.130	0.000	-1.000
80	-0.250	0.000	-2.404
81	-0.168	0.000	-3.005
82	-0.168	0.000	-3.130
83	-0.737	0.000	-2.301
84	-1.002	0.000	-3.005
85	-1.002	0.000	-3.130
86	-0.501	0.000	0.000
87	-1.002	0.000	0.000
88	-1.503	0.000	0.000
89	-2.003	0.000	0.000
90	-0.501	0.000	-0.501
91	-1.002	0.000	-0.501
92	-1.503	0.000	-0.501
93	-2.003	0.000	-0.501
94	-0.501	0.000	-1.002
95	-1.002	0.000	-1.002
96	-1.503	0.000	-1.002

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
97	-2.003	0.000	-1.002
98	-0.501	0.000	-1.503
99	-1.002	0.000	-1.503
100	-1.503	0.000	-1.503
101	-2.003	0.000	-1.503
102	-0.501	0.000	-2.003
103	-1.002	0.000	-2.003
104	-1.503	0.000	-2.003
105	-2.003	0.000	-2.003
106	-2.417	0.000	-1.503
107	-3.005	0.000	-1.695
108	-3.130	0.000	-1.695
109	-2.417	0.000	-2.003
110	-3.005	0.000	-2.003
111	-3.130	0.000	-2.003
112	-2.417	0.000	-2.417
113	-3.005	0.000	-2.417
114	-3.130	0.000	-2.417
115	-1.503	0.000	-2.417
116	-2.003	0.000	-2.417
117	-1.503	0.000	-3.005
118	-1.503	0.000	-3.130
119	-2.003	0.000	-3.005
120	-2.003	0.000	-3.130
121	-2.417	0.000	-3.005
122	-2.417	0.000	-3.130
123	-3.005	0.000	-3.005
124	-3.130	0.000	-3.005
125	-3.005	0.000	-3.130
126	-3.130	0.000	-3.130
127	2.404	0.000	0.250
128	3.005	0.000	0.277
129	3.130	0.000	0.277
130	2.301	0.000	0.737
131	3.005	0.000	1.000
132	3.130	0.000	1.000
133	0.000	0.000	2.417
134	0.000	0.000	3.005
135	0.000	0.000	3.130
136	0.250	0.000	2.404
137	0.168	0.000	3.005
138	0.168	0.000	3.130
139	0.737	0.000	2.301
140	1.002	0.000	3.005
141	1.002	0.000	3.130

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
142	0.000	0.000	0.501
143	0.501	0.000	0.501
144	1.002	0.000	0.501
145	1.503	0.000	0.501
146	2.003	0.000	0.501
147	0.000	0.000	1.002
148	0.501	0.000	1.002
149	1.002	0.000	1.002
150	1.503	0.000	1.002
151	2.003	0.000	1.002
152	0.000	0.000	1.503
153	0.501	0.000	1.503
154	1.002	0.000	1.503
155	1.503	0.000	1.503
156	2.003	0.000	1.503
157	0.000	0.000	2.003
158	0.501	0.000	2.003
159	1.002	0.000	2.003
160	1.503	0.000	2.003
161	2.003	0.000	2.003
162	2.417	0.000	1.503
163	3.005	0.000	1.695
164	3.130	0.000	1.695
165	2.417	0.000	2.003
166	3.005	0.000	2.003
167	3.130	0.000	2.003
168	2.417	0.000	2.417
169	3.005	0.000	2.417
170	3.130	0.000	2.417
171	1.503	0.000	2.417
172	2.003	0.000	2.417
173	1.503	0.000	3.005
174	1.503	0.000	3.130
175	2.003	0.000	3.005
176	2.003	0.000	3.130
177	2.417	0.000	3.005
178	2.417	0.000	3.130
179	3.005	0.000	3.005
180	3.130	0.000	3.005
181	3.005	0.000	3.130
182	3.130	0.000	3.130
183	-2.404	0.000	0.250
184	-3.005	0.000	0.277
185	-3.130	0.000	0.277
186	-2.301	0.000	0.737

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
187	-3.005	0.000	1.000
188	-3.130	0.000	1.000
189	-0.250	0.000	2.404
190	-0.168	0.000	3.005
191	-0.168	0.000	3.130
192	-0.737	0.000	2.301
193	-1.002	0.000	3.005
194	-1.002	0.000	3.130
195	-0.501	0.000	0.501
196	-1.002	0.000	0.501
197	-1.503	0.000	0.501
198	-2.003	0.000	0.501
199	-0.501	0.000	1.002
200	-1.002	0.000	1.002
201	-1.503	0.000	1.002
202	-2.003	0.000	1.002
203	-0.501	0.000	1.503
204	-1.002	0.000	1.503
205	-1.503	0.000	1.503
206	-2.003	0.000	1.503
207	-0.501	0.000	2.003
208	-1.002	0.000	2.003
209	-1.503	0.000	2.003
210	-2.003	0.000	2.003
211	-2.417	0.000	1.503
212	-3.005	0.000	1.695
213	-3.130	0.000	1.695
214	-2.417	0.000	2.003
215	-3.005	0.000	2.003
216	-3.130	0.000	2.003
217	-2.417	0.000	2.417
218	-3.005	0.000	2.417
219	-3.130	0.000	2.417
220	-1.503	0.000	2.417
221	-2.003	0.000	2.417
222	-1.503	0.000	3.005
223	-1.503	0.000	3.130
224	-2.003	0.000	3.005
225	-2.003	0.000	3.130
226	-2.417	0.000	3.005
227	-2.417	0.000	3.130
228	-3.005	0.000	3.005
229	-3.130	0.000	3.005
230	-3.005	0.000	3.130
231	-3.130	0.000	3.130

Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
232	-3.005	0.000	-0.459
233	-3.130	0.000	-0.459
234	-3.005	0.000	-0.829
235	-3.130	0.000	-0.829
236	0.000	0.000	-0.668
237	0.501	0.000	-0.668
238	1.002	0.000	-0.668
239	1.503	0.000	-0.668
240	2.003	0.000	-0.668
241	-0.501	0.000	-0.668
242	-1.002	0.000	-0.668
243	-1.503	0.000	-0.668
244	-2.003	0.000	-0.668
245	0.000	0.000	-0.834
246	0.501	0.000	-0.834
247	1.002	0.000	-0.834
248	1.503	0.000	-0.834
249	2.003	0.000	-0.834
250	-0.501	0.000	-0.834
251	-1.002	0.000	-0.834
252	-1.503	0.000	-0.834
253	-2.003	0.000	-0.834
254	2.404	0.000	-0.416
255	-2.404	0.000	-0.416
256	-2.301	0.000	-0.583
257	2.301	0.000	-0.583
258	3.005	0.000	-0.459
259	3.130	0.000	-0.459
260	3.005	0.000	-0.829
261	3.130	0.000	-0.829
262	-3.005	0.000	0.458
263	-3.130	0.000	0.458
264	-3.005	0.000	0.829
265	-3.130	0.000	0.829
266	0.000	0.000	0.668
267	0.501	0.000	0.668
268	1.002	0.000	0.668
269	1.503	0.000	0.668
270	2.003	0.000	0.668
271	-0.501	0.000	0.668
272	-1.002	0.000	0.668
273	-1.503	0.000	0.668
274	-2.003	0.000	0.668
275	0.000	0.000	0.834
276	0.501	0.000	0.834

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Rev 1
Part Base Plate
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Nodes Cont...

Node	X (ft)	Y (ft)	Z (ft)
277	1.002	0.000	0.834
278	1.503	0.000	0.834
279	2.003	0.000	0.834
280	-0.501	0.000	0.834
281	-1.002	0.000	0.834
282	-1.503	0.000	0.834
283	-2.003	0.000	0.834
284	2.404	0.000	0.416
285	-2.404	0.000	0.416
286	-2.301	0.000	0.583
287	2.301	0.000	0.583
288	3.005	0.000	0.458
289	3.130	0.000	0.458
290	3.005	0.000	0.829
291	3.130	0.000	0.829
292	0.000	0.000	-1.253
293	0.501	0.000	-1.253
294	1.002	0.000	-1.253
295	1.503	0.000	-1.253
296	2.003	0.000	-1.253
297	2.417	0.000	-1.253
298	3.005	0.000	-1.383
299	3.130	0.000	-1.383
300	-0.501	0.000	-1.253
301	-1.002	0.000	-1.253
302	-1.503	0.000	-1.253
303	-2.003	0.000	-1.253
304	-2.417	0.000	-1.253
305	-3.005	0.000	-1.383
306	-3.130	0.000	-1.383
307	0.000	0.000	1.253
308	0.501	0.000	1.253
309	1.002	0.000	1.253
310	1.503	0.000	1.253
311	2.003	0.000	1.253
312	2.417	0.000	1.253
313	3.005	0.000	1.383
314	3.130	0.000	1.383
315	-0.501	0.000	1.253
316	-1.002	0.000	1.253
317	-1.503	0.000	1.253
318	-2.003	0.000	1.253
319	-2.417	0.000	1.253
320	-3.005	0.000	1.383
321	-3.130	0.000	1.383

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Job No 50075968	Sheet No **10**		Rev 1
	Part Base Plate		
Job Title Westbrook CT	Ref		
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Plates

Plate	Node A	Node B	Node C	Node D	Property
1	2	3	6	5	1
2	3	4	7	6	1
9	11	12	21	20	1
10	12	13	22	21	1
11	20	21	24	23	1
12	21	22	25	24	1
13	1	26	31	30	1
14	26	27	32	31	1
15	27	28	33	32	1
16	28	29	34	33	1
17	29	2	5	34	1
27	40	41	46	45	1
28	41	42	47	46	1
29	42	43	48	47	1
30	43	44	49	48	1
31	45	46	20	11	1
32	46	47	23	20	1
36	44	50	53	49	1
37	50	51	54	53	1
38	51	52	55	54	1
39	47	48	59	23	1
40	48	49	60	59	1
41	49	53	56	60	1
42	53	54	57	56	1
43	54	55	58	57	1
44	23	59	61	24	1
45	59	60	63	61	1
46	60	56	65	63	1
47	56	57	67	65	1
48	57	58	68	67	1
49	24	61	62	25	1
50	61	63	64	62	1
51	63	65	66	64	1
52	65	67	69	66	1
53	67	68	70	69	1
54	71	72	75	74	1
55	72	73	76	75	1
58	11	12	81	80	1
59	12	13	82	81	1
60	80	81	84	83	1
61	81	82	85	84	1
62	1	86	90	30	1
63	86	87	91	90	1
64	87	88	92	91	1
65	88	89	93	92	1

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	Part Base Plate		
Job Title Westbrook CT	Ref		
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Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
66	89	71	74	93	1
76	40	98	102	45	1
77	98	99	103	102	1
78	99	100	104	103	1
79	100	101	105	104	1
80	45	102	80	11	1
81	102	103	83	80	1
85	101	106	109	105	1
86	106	107	110	109	1
87	107	108	111	110	1
88	103	104	115	83	1
89	104	105	116	115	1
90	105	109	112	116	1
91	109	110	113	112	1
92	110	111	114	113	1
93	83	115	117	84	1
94	115	116	119	117	1
95	116	112	121	119	1
96	112	113	123	121	1
97	113	114	124	123	1
98	84	117	118	85	1
99	117	119	120	118	1
100	119	121	122	120	1
101	121	123	125	122	1
102	123	124	126	125	1
103	2	3	128	127	1
104	3	4	129	128	1
107	133	134	137	136	1
108	134	135	138	137	1
109	136	137	140	139	1
110	137	138	141	140	1
111	1	26	143	142	1
112	26	27	144	143	1
113	27	28	145	144	1
114	28	29	146	145	1
115	29	2	127	146	1
125	152	153	158	157	1
126	153	154	159	158	1
127	154	155	160	159	1
128	155	156	161	160	1
129	157	158	136	133	1
130	158	159	139	136	1
134	156	162	165	161	1
135	162	163	166	165	1
136	163	164	167	166	1

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Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
137	159	160	171	139	1
138	160	161	172	171	1
139	161	165	168	172	1
140	165	166	169	168	1
141	166	167	170	169	1
142	139	171	173	140	1
143	171	172	175	173	1
144	172	168	177	175	1
145	168	169	179	177	1
146	169	170	180	179	1
147	140	173	174	141	1
148	173	175	176	174	1
149	175	177	178	176	1
150	177	179	181	178	1
151	179	180	182	181	1
152	71	72	184	183	1
153	72	73	185	184	1
156	133	134	190	189	1
157	134	135	191	190	1
158	189	190	193	192	1
159	190	191	194	193	1
160	1	86	195	142	1
161	86	87	196	195	1
162	87	88	197	196	1
163	88	89	198	197	1
164	89	71	183	198	1
174	152	203	207	157	1
175	203	204	208	207	1
176	204	205	209	208	1
177	205	206	210	209	1
178	157	207	189	133	1
179	207	208	192	189	1
183	206	211	214	210	1
184	211	212	215	214	1
185	212	213	216	215	1
186	208	209	220	192	1
187	209	210	221	220	1
188	210	214	217	221	1
189	214	215	218	217	1
190	215	216	219	218	1
191	192	220	222	193	1
192	220	221	224	222	1
193	221	217	226	224	1
194	217	218	228	226	1
195	218	219	229	228	1

Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
196	193	222	223	194	1
197	222	224	225	223	1
198	224	226	227	225	1
199	226	228	230	227	1
200	228	229	231	230	1
201	76	75	232	233	1
202	75	74	255	232	1
203	74	93	244	255	1
204	93	92	243	244	1
205	92	91	242	243	1
206	91	90	241	242	1
207	90	30	236	241	1
208	30	31	237	236	1
209	31	32	238	237	1
210	32	33	239	238	1
211	33	34	240	239	1
212	34	5	254	240	1
213	5	6	258	254	1
214	6	7	259	258	1
215	233	232	234	235	1
216	232	255	256	234	1
217	255	244	253	256	1
218	244	243	252	253	1
219	243	242	251	252	1
220	242	241	250	251	1
221	241	236	245	250	1
222	236	237	246	245	1
223	237	238	247	246	1
224	238	239	248	247	1
225	239	240	249	248	1
226	240	254	257	249	1
227	254	258	260	257	1
228	258	259	261	260	1
229	235	234	78	79	1
230	234	256	77	78	1
231	256	253	97	77	1
232	253	252	96	97	1
233	252	251	95	96	1
234	251	250	94	95	1
235	250	245	35	94	1
236	245	246	36	35	1
237	246	247	37	36	1
238	247	248	38	37	1
239	248	249	39	38	1
240	249	257	8	39	1

Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
241	257	260	9	8	1
242	260	261	10	9	1
243	185	184	262	263	1
244	184	183	285	262	1
245	183	198	274	285	1
246	198	197	273	274	1
247	197	196	272	273	1
248	196	195	271	272	1
249	195	142	266	271	1
250	142	143	267	266	1
251	143	144	268	267	1
252	144	145	269	268	1
253	145	146	270	269	1
254	146	127	284	270	1
255	127	128	288	284	1
256	128	129	289	288	1
257	263	262	264	265	1
258	262	285	286	264	1
259	285	274	283	286	1
260	274	273	282	283	1
261	273	272	281	282	1
262	272	271	280	281	1
263	271	266	275	280	1
264	266	267	276	275	1
265	267	268	277	276	1
266	268	269	278	277	1
267	269	270	279	278	1
268	270	284	287	279	1
269	284	288	290	287	1
270	288	289	291	290	1
271	265	264	187	188	1
272	264	286	186	187	1
273	286	283	202	186	1
274	283	282	201	202	1
275	282	281	200	201	1
276	281	280	199	200	1
277	280	275	147	199	1
278	275	276	148	147	1
279	276	277	149	148	1
280	277	278	150	149	1
281	278	279	151	150	1
282	279	287	130	151	1
283	287	290	131	130	1
284	290	291	132	131	1
285	79	78	305	306	1

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Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
286	306	305	107	108	1
287	78	77	304	305	1
288	77	97	303	304	1
289	97	96	302	303	1
290	96	95	301	302	1
291	95	94	300	301	1
292	94	35	292	300	1
293	35	36	293	292	1
294	36	37	294	293	1
295	37	38	295	294	1
296	38	39	296	295	1
297	39	8	297	296	1
298	8	9	298	297	1
299	9	10	299	298	1
300	305	304	106	107	1
301	304	303	101	106	1
302	303	302	100	101	1
303	302	301	99	100	1
304	301	300	98	99	1
305	300	292	40	98	1
306	292	293	41	40	1
307	293	294	42	41	1
308	294	295	43	42	1
309	295	296	44	43	1
310	296	297	50	44	1
311	297	298	51	50	1
312	298	299	52	51	1
313	188	187	320	321	1
314	321	320	212	213	1
315	187	186	319	320	1
316	186	202	318	319	1
317	202	201	317	318	1
318	201	200	316	317	1
319	200	199	315	316	1
320	199	147	307	315	1
321	147	148	308	307	1
322	148	149	309	308	1
323	149	150	310	309	1
324	150	151	311	310	1
325	151	130	312	311	1
326	130	131	313	312	1
327	131	132	314	313	1
328	320	319	211	212	1
329	319	318	206	211	1
330	318	317	205	206	1

Plates Cont...

Plate	Node A	Node B	Node C	Node D	Property
331	317	316	204	205	1
332	316	315	203	204	1
333	315	307	152	203	1
334	307	308	153	152	1
335	308	309	154	153	1
336	309	310	155	154	1
337	310	311	156	155	1
338	311	312	162	156	1
339	312	313	163	162	1
340	313	314	164	163	1

Plate Thickness

Prop	Node A (in)	Node B (in)	Node C (in)	Node D (in)	Material
1	3.000	3.000	3.000	3.000	STEEL

Materials

Mat	Name	E (kip/in^2)	ν	Density (kip/in^3)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E -6
3	ALUMINUM	10E+3	0.330	0.000	13E -6
4	CONCRETE	3.15E+3	0.170	0.000	5E -6

Supports

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip¯ft/deg)	rY (kip¯ft/deg)	rZ (kip¯ft/deg)
3	Fixed	Fixed	Fixed	-	-	-
9	Fixed	Fixed	Fixed	-	-	-
21	Fixed	Fixed	Fixed	-	-	-
24	Fixed	Fixed	Fixed	-	-	-
51	Fixed	Fixed	Fixed	-	-	-
57	Fixed	Fixed	Fixed	-	-	-
61	Fixed	Fixed	Fixed	-	-	-
63	Fixed	Fixed	Fixed	-	-	-
65	Fixed	Fixed	Fixed	-	-	-
67	Fixed	Fixed	Fixed	-	-	-
72	Fixed	Fixed	Fixed	-	-	-
78	Fixed	Fixed	Fixed	-	-	-
81	Fixed	Fixed	Fixed	-	-	-

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Sheet No **17**

Rev 1

Part Base Plate

Job Title Westbrook CT

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Supports Cont...

Node	X (kip/in)	Y (kip/in)	Z (kip/in)	rX (kip˙ft/deg)	rY (kip˙ft/deg)	rZ (kip˙ft/deg)
84	Fixed	Fixed	Fixed	-	-	-
107	Fixed	Fixed	Fixed	-	-	-
113	Fixed	Fixed	Fixed	-	-	-
117	Fixed	Fixed	Fixed	-	-	-
119	Fixed	Fixed	Fixed	-	-	-
121	Fixed	Fixed	Fixed	-	-	-
123	Fixed	Fixed	Fixed	-	-	-
131	Fixed	Fixed	Fixed	-	-	-
137	Fixed	Fixed	Fixed	-	-	-
140	Fixed	Fixed	Fixed	-	-	-
163	Fixed	Fixed	Fixed	-	-	-
169	Fixed	Fixed	Fixed	-	-	-
173	Fixed	Fixed	Fixed	-	-	-
175	Fixed	Fixed	Fixed	-	-	-
177	Fixed	Fixed	Fixed	-	-	-
179	Fixed	Fixed	Fixed	-	-	-
187	Fixed	Fixed	Fixed	-	-	-
190	Fixed	Fixed	Fixed	-	-	-
193	Fixed	Fixed	Fixed	-	-	-
212	Fixed	Fixed	Fixed	-	-	-
218	Fixed	Fixed	Fixed	-	-	-
222	Fixed	Fixed	Fixed	-	-	-
224	Fixed	Fixed	Fixed	-	-	-
226	Fixed	Fixed	Fixed	-	-	-
228	Fixed	Fixed	Fixed	-	-	-
232	Fixed	Fixed	Fixed	-	-	-
258	Fixed	Fixed	Fixed	-	-	-
262	Fixed	Fixed	Fixed	-	-	-
288	Fixed	Fixed	Fixed	-	-	-

Primary Load Cases

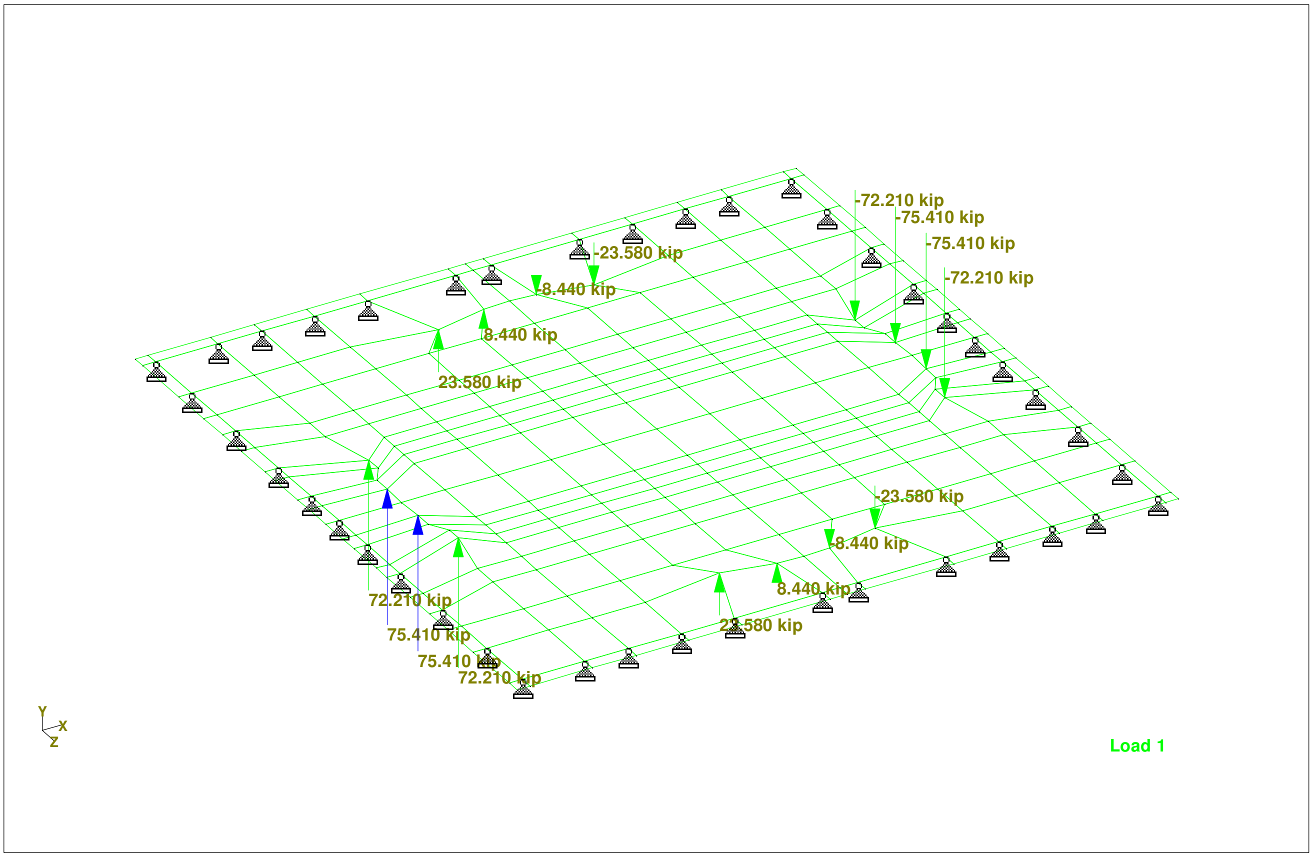
Number	Name	Type
1	MOMENT	None
2	WEIGHT	None
3	SHEAR	None

Combination Load Cases

Comb.	Combination L/C Name	Primary	Primary L/C Name	Factor
4	P+V+M	1	MOMENT	1.00
		2	WEIGHT	1.00
		3	SHEAR	1.00

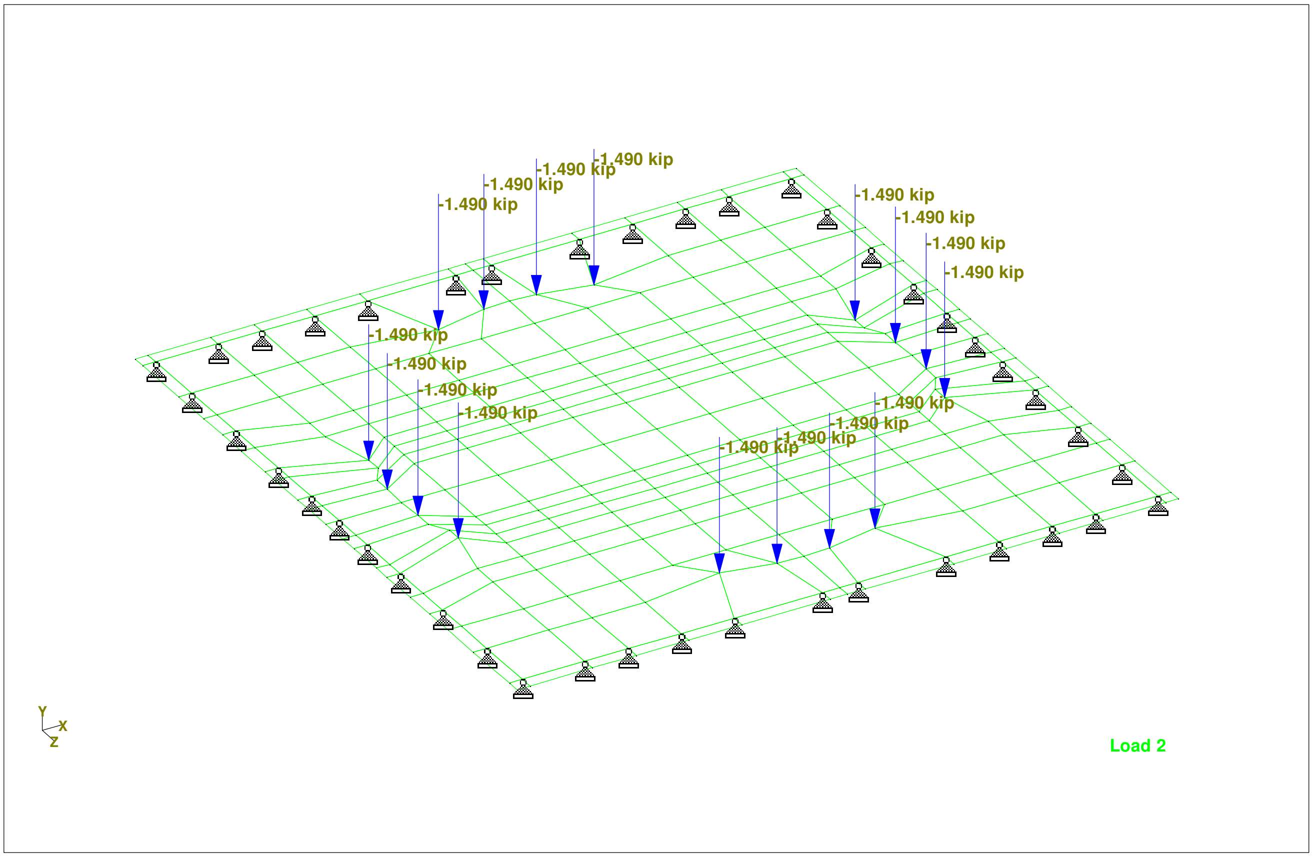
Software licensed to Dewberry

Job No 50075968	Sheet No 19		Rev 1
Part Base Plate			
Job Title Westbrook CT	Ref		
	By MLS	Date 9/25/17	Chd JJY
Client Telecom Tower Rentals, LLC	File Westbrook-Baseplate.std	Date/Time 28-Sep-2017 16:28	



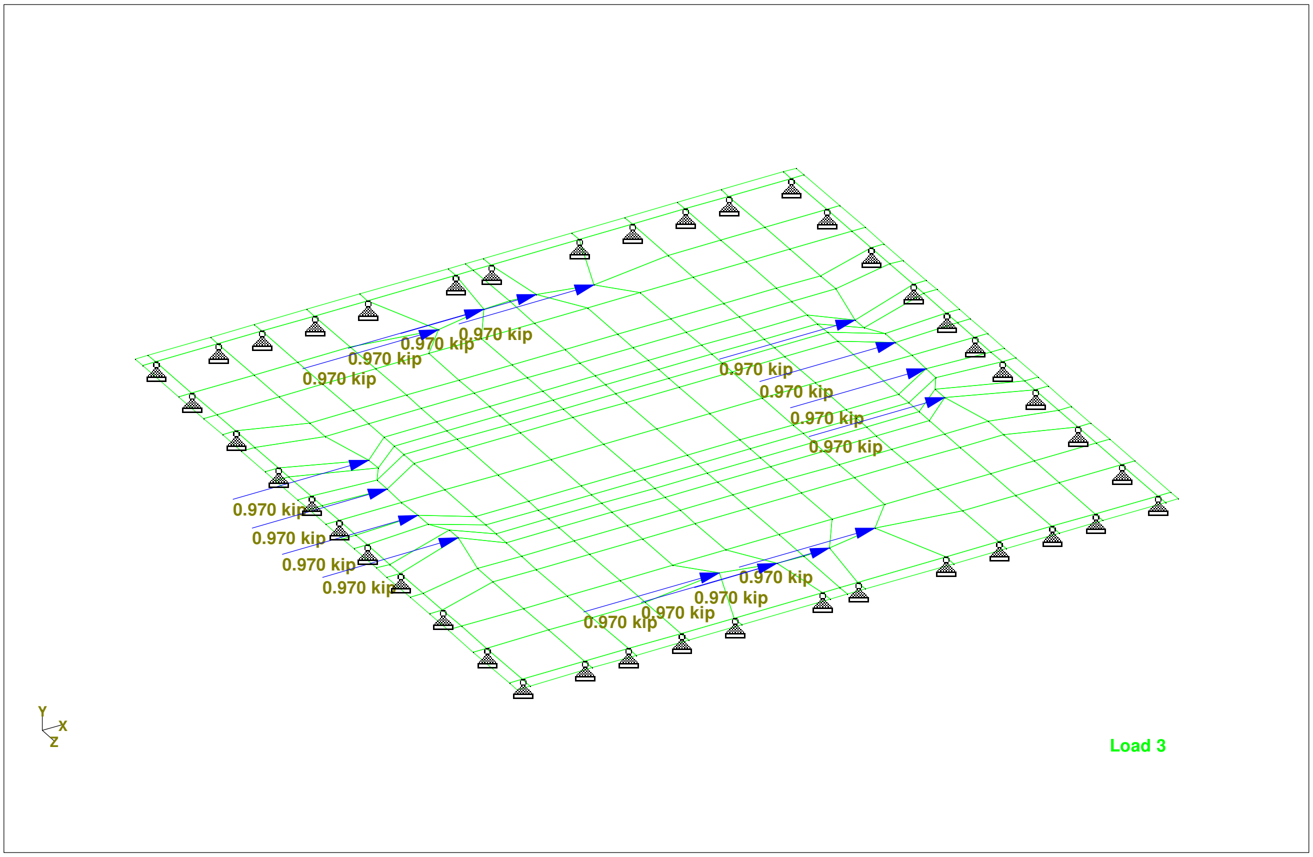
Unfactored Tower Moment (1452.6 kip-ft) (Applied at Monopole Anchor Bolt Locations)

Software licensed to Dewberry	Job No 50075968	Sheet No 20	Rev 1
	Part Base Plate		
Job Title Westbrook CT	Ref		
	By MLS	Date 9/25/17	Chd JJY
Client Telecom Tower Rentals, LLC	File Westbrook-Baseplate.std	Date/Time 28-Sep-2017 16:28	



Tower Weight + Unfactored Axial from Equipment (23.86k) (Applied at Monopole Anchor Bolt Locations)

Software licensed to Dewberry	Job No **50075968**	Sheet No **21**	Rev 1
	Part Base Plate		
Job Title Westbrook CT	Ref		
	By MLS	Date 9/25/17	Chd JJY
Client Telecom Tower Rentals, LLC	File Westbrook-Baseplate.std	Date/Time 28-Sep-2017 16:28	



Unfactored Tower Shear (15.52k) (Applied at Monopole Anchor Bolt Locations)

Software licensed to Dewberry

	Job No 50075968	Sheet No **22**	Rev 1
	Part Base Plate		
Job Title Westbrook CT	Ref		
	By MLS	Date 9/25/17	Chd JJY
Client Telecom Tower Rentals, LLC	File Westbrook-Baseplate.std	Date/Time 28-Sep-2017 16:28	

Plate Center Principal Stress Summary

			Principal		Von Mis		Tresca	
	Plate	**L/C**	**Top** (psi)	**Bottom** (psi)	**Top** (psi)	**Bottom** (psi)	**Top** (psi)	**Bottom** (psi)
Max (t)	115	4:P+V+M	**30E+3**	-16.1E+3	26E+3	26E+3	30E+3	30E+3
Max (b)	17	4:P+V+M	-16.1E+3	**30E+3**	26E+3	26E+3	30E+3	30E+3
Max VM (t)	115	4:P+V+M	30E+3	-16.1E+3	**26E+3**	26E+3	30E+3	30E+3
Max VM (b)	17	4:P+V+M	-16.1E+3	30E+3	26E+3	**26E+3**	30E+3	30E+3
Tresca (t)	115	4:P+V+M	30E+3	-16.1E+3	26E+3	26E+3	**30E+3**	30E+3
Tresca (b)	17	4:P+V+M	-16.1E+3	30E+3	26E+3	26E+3	30E+3	**30E+3**

Allowable Stress = Fy*0.75 = 37.5ksi

Actual Stress = 30.0ksi

30.0 < 37.5 OK

Reaction Summary

			Horizontal	Vertical	Horiz			
	Node	**L/C**	**FX** (kip)	**FY** (kip)	**F** (k			
Max FX	67	4:P+V+M	**-0.055**	-16.111	0.060	0.000	0.000	0.000
Min FX	3	4:P+V+M	**-0.870**	48.960	-0.000	0.000	0.000	0.000
Max FY	258	4:P+V+M	-0.797	**52.862**	0.085	0.000	0.000	0.000
Min FY	232	4:P+V+M	-0.797	**-50.278**	-0.085	0.000	0.000	0.000
Max FZ	24	4:P+V+M	-0.496	15.411	**0.201**	0.000	0.000	0.000
Min FZ	84	4:P+V+M	-0.496	-12.854	**-0.201**	0.000	0.000	0.000
Max MX	3	4:P+V+M	-0.870	48.960	-0.000	**0.000**	0.000	0.000
Min MX	3	4:P+V+M	-0.870	48.960	-0.000	**0.000**	0.000	0.000
Max MY	3	4:P+V+M	-0.870	48.960	-0.000	0.000	**0.000**	0.000
Min MY	3	4:P+V+M	-0.870	48.960	-0.000	0.000	**0.000**	0.000
Max MZ	3	4:P+V+M	-0.870	48.960	-0.000	0.000	0.000	**0.000**
Min MZ	3	4:P+V+M	-0.870	48.960	-0.000	0.000	0.000	**0.000**

Max Bolt Tension = 50.278k (Controlling Load Case)

Available Strength for A325X 1 1/4" dia. bolts:
Tension = 55.2k
Shear = 33.8k

IE:
50.278/55.2 + (0.797+0.085)/33.8 = 0.937 < 1.0 OK

Software licensed to Dewberry

	Job No **50075968**	Sheet No **23**	Rev 1
	Part Base Plate		
Job Title Westbrook CT	Ref		
	By MLS	Date 9/25/17	Chd JJY
Client Telecom Tower Rentals, LLC	File Westbrook-Baseplate.std	Date/Time 28-Sep-2017 16:28	

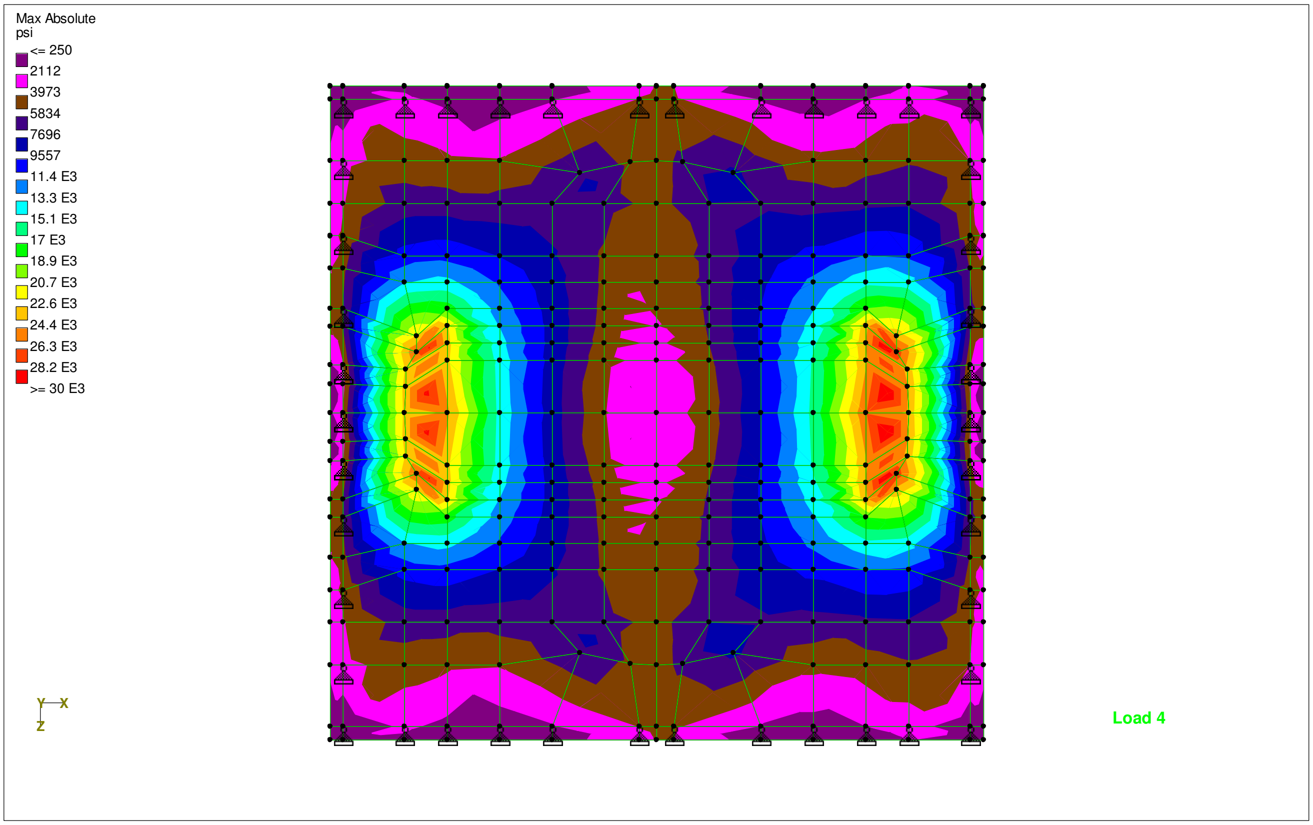


Plate Stresses

APPENDIX E – REFERENCED MATERIAL

ASCE 7 Windspeed | ASCE 7 Ground Snow Load | Related Resources | Sponsors | About ATC | Contact

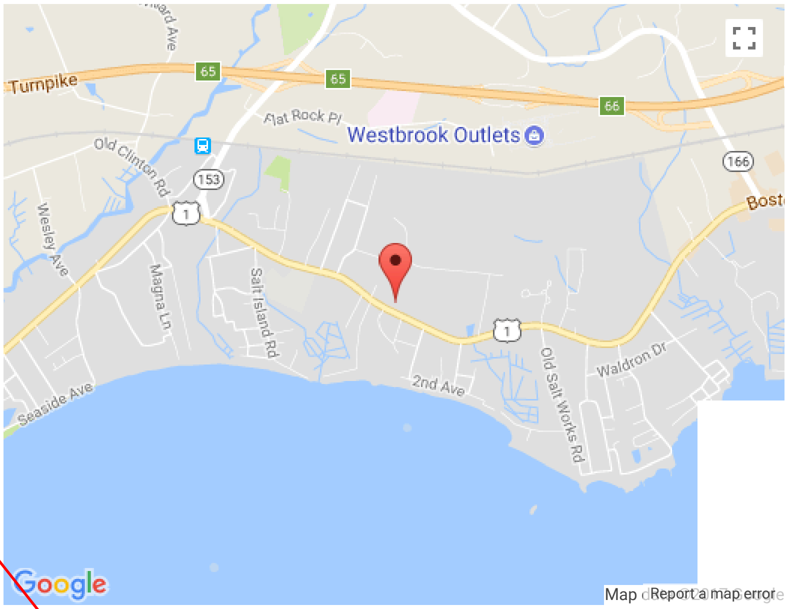
Search Results

Query Date: Mon Sep 25 2017
Latitude: 41.2820
Longitude: -72.4374

ASCE 7-10 Windspeeds
(3-sec peak gust in mph*):

Risk Category I: 121
Risk Category II: 132
Risk Category III-IV: 142
MRI 10-Year:** 79
MRI 25-Year:** 89
MRI 50-Year:** 97
MRI 100-Year:** 107

ASCE 7-05 Windspeed:
117 (3-sec peak gust in mph)
ASCE 7-93 Windspeed:
84 (fastest mile in mph)



132*sqrt(0.6)=102.2mph

*Miles per hour
**Mean Recurrence Interval

Users should consult with local building officials
to determine if there are community-specific wind speed
requirements that govern.

Print your results

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Final Loading for Temp Tower at Westbrook H2O:

Verizon:

(3) SBNHH-1D65B antennas
(6) Kaelus QBC002F1V51-1 Diplexers
(12) 1-5/8” coax.
The RRHs will go with Verizon’s ground equipment

AT&T:

(3) AM-X-CD-14-65-00T-RET
(6) Powerwave LGP 21401 TMAs
(6) 1-5/8" Coax
(3) 3/8” Ret Cables

T-Mobile:

(3) AIR21 B4A/B2P
(3) AIR21 B2A/B2)
(1) 9/18” Fiber

Geotechnical Engineering Report

Proposed Telecommunications Towers: Westbrook H2O
1542 Boston Post Road
Westbrook, Connecticut

FOR

All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

BY

NOBIS ENGINEERING, INC.
122 CHURCH STREET
NAUGATUCK, CT 06770

(203) 409-1292
www.nobiseng.com

Nobis Project No. 92790.01
SEPTEMBER 11, 2017

Engineering a Sustainable Future

Nobis
Engineering a Sustainable Future

September 11, 2017
File No. 92790.01

All-Points Technology Corporation, P.C.
Mr. Scott M. Chasse, P.E.
3 Saddlebrook Drive
Killingworth, CT 06419

Re: Transmittal of Revised Geotechnical Engineering Report
Proposed Telecommunications Towers: Westbrook H2O
1542 Boston Post Road, Westbrook, Connecticut

Dear Scott:

This report provides the results of Nobis Engineering Inc.'s (Nobis') geotechnical engineering review for the proposed telecommunications towers to be located at 1592 Boston Post Road in Westbrook, Connecticut. Our services were performed in general accordance with our January 8, 2017, *Geotechnical Engineering Services Proposal* and *August 16, 2017, Supplemental Geotechnical Engineering Services Proposal*. This report provides geotechnical recommendations for earthwork and foundation design for the proposed permanent and temporary tower. The results of our field exploration program and geotechnical analyses are provided herein.

We appreciate the opportunity to work with you. Please call if you have any questions.

Sincerely,

NOBIS ENGINEERING, INC.

Raymond P. Janeiro, PE
Project Manager

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING REPORT
PROPOSED TELECOMMUNICATIONS TOWERS: WESTBROOK H2O
1542 BOSTON POST ROAD
WESTBROOK, CONNECTICUT

NOBIS FILE NO. 92790.01

1.0 INTRODUCTION

Nobis Engineering, Inc. (Nobis) prepared this revised geotechnical engineering report for the two proposed telecommunications towers located at 1542 Boston Post Road in Westbrook, Connecticut (“Site”) for All-Points Technology Corporation, P.C. (“Client”). A Site Locus Plan is included as **Figure 1 – Appendix A**.

Existing conditions and proposed features relating to Site development are generally based on the Client’s provided drawings (*Westbrook H2O, 1542 Boston Post Road, Westbrook, CT, sheets LE-1 through LE-3A, prepared by All-Points Technology Corp., dated 12/22/2016, and SK-1, dated 08/29/16*). Elevations (Elev.) referenced herein reference the NAVD88 datum. This report is subject to the limitations presented in **Appendix C**.

2.0 SITE AND PROJECT DESCRIPTIONS

2.1 Existing Site Conditions

The Site generally consists of an existing water tank currently mounted with telecommunications equipment. The Site is owned by the Connecticut Water Company and it is their intention to demolish the water tank. This will require temporary relocation of the existing telecommunications equipment until a permanent tower can be constructed within the footprint of the tank.

The Site is bordered by the Boston Post Road (U.S. Route 1) to the south and various commercial parcels to the east, north and west. Existing site grades are relatively level in the area of existing Site improvements at about Elev. 47± according to the referenced drawings. Existing site conditions consist of an unpaved parking area and fenced compound around the existing tank and equipment shelters.

2.2 Proposed Construction

The project will initially consist of constructing a 165-foot temporary monopole tower supported on a 24-foot by 24-foot ballasted frame. The temporary tower was originally sited at the rear of the existing compound, but will now be located to the south of the existing water tank. Once the equipment is relocated and the water tank is demolished, a permanent 130-foot monopole tower will be constructed within the former tank footprint. Minor adjustments to the existing chain link fence at the perimeter of the compound will be required to accommodate the proposed improvements. It is our understanding that the existing equipment shelters will remain.

The estimated vertical load of the permanent tower is assumed to be about 30 kips, and the ballast lot for the temporary tower is proposed at 150 kips. It's anticipated that nominal cuts and fills on the order of 1-foot or less are anticipated to achieve design grade and that no significant slopes will be required. Refer to the Exploration Location Plan (**Figure 2 – Appendix A**) for additional proposed development details.

3.0 SUBSURFACE CONDITIONS

3.1 Geologic Information

We reviewed available subsurface/geological information in the vicinity of the project area (*Surficial Geologic Map of the Essex Quadrangle, Connecticut, Richard Flint, 1972* and *Bedrock Geology of the Essex Quadrangle, Lawrence Lundgren, Jr., 1964)*.

The surficial material within the area of the proposed telecommunications compound is mapped as glacial till consisting of a variable mixture of gravel, sand, silt, and clay that is intermixed with cobbles and boulders. The underlying bedrock is classified as light- to dark-gray, medium-grained plagioclase-quartz gneiss (Monson Formation).

3.2 Subsurface Exploration Program

The subsurface exploration program coordinated and logged by Nobis included the observation of three test borings (NB-1 through NB-3) and seven test probes (NP-1 through NP-7). The test borings and probes were completed on March 8 and 9, 2017, and September 1, 2017, by New England Boring Contractors, Inc. of Derry, New Hampshire. Test borings were completed to assess in-situ soil conditions, and, if encountered, groundwater and bedrock conditions at the Site. The explorations were field located using taped measurements referencing existing site features. The approximate, as-drilled exploration locations are depicted on the attached **Figure 2**, *Exploration Location Plan*.

The explorations were completed using an ATV-mounted drill rig utilizing drive and wash and hollow-stem auger drilling methods to advance the test borings to a depth of approximately 26 to 36 feet (Elev. 11.5 to 21) below ground surface. Upon encountering equipment refusal at NB-1, at a depth of approximately 31 feet bgs, a rock core sample was obtained to aid in bedrock confirmation and evaluating the type and quality of bedrock. The core samples were drilled using a five foot, double-barrel, NQ-size core barrel. The core times were recorded every foot of core length and rock quality was determined using visual classification.

The test probes were advanced using a series of 2-inch outside diameter split-spoon samplers to a depth of 6 feet bgs. The objective of the probes was to asses fill thickness, relative density, and soil consistency within the area of the proposed temporary tower.

Soil samples were obtained in the explorations by split-spoon sampling procedures in general accordance with ASTM D-1586. The split-spoon sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the middle 12-inches of a typical 24-inch penetration is recorded as the Standard Penetration Resistance Value (N). The blows are indicated on the boring log at their depth of occurrence and provide an indication of the relative consistency of the material.

3.3 Generalized Subsurface Profile

Excluding the presence of fill, the explorations were generally consistent with published geologic mapping. A silt stratum was also encountered at the northern limits of the existing compound (near an area of flagged wetlands). The generalized subsurface profile in the area of the proposed telecommunications compound, as inferred from the subsurface exploration data, is summarized as follows:

- Fill: Loose to medium dense, dark brown, silty SAND with gravel, containing very few organic fibers and wood debris (SM)
  – 1.5 to 5.5 feet thick (to about Elev. 45.5 to 42); over

- Organic Silt (encountered in NP-1 and NP-3): Loose, black, SILT with sand, containing very few organic fibers (ML)
  – 0.5 to 1.5 feet thick (to about Elev. 44 to 43.5);

- Glacial Till: Dense to very dense (surficially loose), brown, silty SAND with gravel (SM)
  – 14.5 to 16.5 feet thick (to about Elev. 28.5 to 25.5); over

- Decomposed Rock: Very dense, gray-white, well-graded SAND with gravel (SW)
  – 14 feet thick in NB-1 (to about Elev. 11.5). A core barrel was advanced within the Decomposed Rock stratum in NB-1. Bedrock was classified as soft, extremely weathered, white/gray Gneiss. The core recovery and rock quality designation (RQD), was 20% and 0%, respectively, indicating a very poor rock mass quality.

Visual classifications of soil and rock, and conditions encountered at each exploration location can be found in the provided boring and test probes logs, included as **Appendix B**.

3.4 Groundwater

Groundwater levels were measured in the boreholes at the times and under the conditions stated on the logs. Water was encountered at about 4 to 5 feet bgs during the March 2017 drilling program. Water was encountered at about 10 feet bgs during the September 2017 drilling program for the revised temporary tower location.

Groundwater observations were measured at the time of drilling and may not be indicative of stabilized groundwater elevation. Additionally, the drive-and-wash drilling method utilized introduces water to the borehole which may result in an elevated groundwater measurement. Groundwater levels will vary due to seasonal factors, temperature, precipitation, construction activity and other conditions which may be different from the time of the exploration program. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

3.5 Soil Resistivity Testing

On February 24 and March 1, 2017, Nobis field personnel conducted in-situ soil resistivity testing in accordance with accepted engineering practices using the Wenner electrode configuration. Electrodes were spaced at 5, 10, 20, 30 and 40 feet, where possible. Two sets of two approximately perpendicular resistivity lines were completed in the general vicinity of the proposed tower location. The approximate locations and orientations of the resistivity lines are shown on the attached **Figure 2**. The results of the resistivity tests are as follows:

	Resistivity (ohm-cm)			
Electrode Spacing (ft)	Line 1	Line 2	Line 3	Line 4
5	68,940	27,768	60,323	42,130
10	22,980	5,745	30,640	32,555
20	3,830	3,830	19,150	11,490
30	5,745	5,745	11,490	11,490
40	7,660	-*	7,660	-*

*The proximity of the property lines did not allow completion of this spacing interval.

Field resistivity results may be influenced by boulders, concrete, foundations, and underground utilities within the test area. Resistivity results will also fluctuate depending on the degree of compaction, moisture content, constituent solubility, and temperature. Field resistivity values may also vary depending upon season, precipitation, and other conditions that may differ from those at the time of testing.

4.0 GEOTECHNICAL DESIGN AND CONSTRUCTION RECOMMENDATIONS

4.1 Geotechnical Evaluation

Based on the results of our subsurface investigation, it is our opinion the proposed 130-foot permanent steel monopole telecommunications tower may be supported on a monolithic mat or a pier-and-pad foundation bearing on the glacial till, or compacted Structural Fill or Crushed Stone (see *Section 4.5 Materials and Compaction*) placed over a prepared glacial till subgrade. Alternatively, the permanent telecommunications tower may be supported on a drilled shaft foundation extending into competent glacial till and weathered bedrock.

We understand the proposed 165-foot temporary tower will be supported on a 24-feet by 24-feet ballasted frame foundation. Referenced drawings indicated the foundation system will bear at finish grade at approximately Elev. 47 and not have embedment. We recommend that the ballasted frame foundation may derive support from a minimum 12-inch layer of compacted structural fill placed above existing fill proof-rolled as discussed herein. However, the existing fill contains an appreciable amount of fines (silt and clay) and will be susceptible to frost action. The effects of frost action can be reduced may replacing existing soil within the foundation zone of influence [defined as the area beneath 1 horizontal to 1 vertical (1H:1V) lines extending downward and outward from the foundation edge] with nonfrost-susceptible soil.

Supporting the temporary foundation on existing fill is discussed in this report. The owner must understand and accept the risks associated with building over existing fill. Regardless of the extent of subsurface investigations, there is an inherent risk that compressible fill or unsuitable material within or buried by the fill may not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill and unsuitable material. However, the risk can be reduced by performing additional evaluations at the time of construction, such as performing additional test pits and proof-rolling fill subgrades. If the owner is not willing to accept the risks associated with leaving existing fill in-place, we recommend removing the existing fill and placing structural fill in controlled lifts to achieve design foundation elevation.

Additional design recommendations and construction considerations for the recommended foundation systems are presented in the following sections.

4.2 Seismic Design Recommendations

Based on the density/consistency of the soils encountered in the explorations, it is our opinion that Site soils are not considered susceptible to liquefaction. Seismic forces on foundations should be designed in accordance with the Connecticut State Building Code. We recommend using the following seismic design values based on the 2016 Connecticut State Building Code:

- Site Class: C;
- MCE Spectral Response Accelerations: S_s = 0.167g and S_1 = 0.059g;
- Site Coefficients: F_a = 1.2 and F_v = 1.7; and
- Seismic Design Parameters: S_{MS} = 0.200 and S_{M1} = 0.100; S_{DS} = 0.134 and S_{D1} = 0.067.

4.3 Permanent Tower Foundation Design Recommendations

4.3.1 Shallow Foundation (Mat/Pad) Alternative

The proposed permanent monopole communications tower may be supported on a mat or pad-and-pier foundation bearing on proof-rolled glacial till, or compacted Structural Fill or Crushed Stone placed on above a proof-rolled glacial till subgrade. Crushed stone, if used, should be separated from soil subgrades, excavation sidewalls and backfill using a geotextile separation fabric such as Mirafi 140N, or equivalent.

Nobis recommends a maximum net allowable bearing pressure of 6 kips per square foot (ksf). Foundations should be embedded a minimum of 42 inches below final grades for frost protection. The total settlement is anticipated to be less than 1 inch and differential settlement to be less than 0.5 inches. Foundation settlement will depend on the variations within the subsurface soil profile, the structural loading conditions, the embedment depth of the foundation, the thickness of compacted fill, and the quality of earthwork operations.

We recommend an ultimate passive pressure coefficient (Kp) of 3.0. Calculated passive pressures should be reduced by a minimum factor of safety of 3, to reflect the amount of movement required to mobilize the passive resistance. We also recommend an ultimate coefficient of sliding friction of 0.5. A factor of safety of at least 1.5 should be applied to calculated sliding resistance.

To summarize, we recommend the following static design parameters:

Description	Value
Maximum Net Allowable Bearing Pressure	6 kips per square foot
Minimum Foundation Width	Isolated Spread Footing/Mat Foundation: 2 feet
Minimum Embedment Below Finished Grade	42 inches
Estimated Total Settlement	<1 inch
Estimated Differential Settlement	<½ inch
Total Soil Unit Weight	130 pounds per cubic foot
Ultimate Passive Pressure Coefficient, Kp	3.0
Ultimate Coefficient of Sliding Friction	0.5

Uplift resistance for the tower foundation may be computed as the sum of the weight of the foundation element and the weight of the soil overlying the foundation.

4.3.2 Shallow Foundation (Mat/Pad) Construction Recommendations

The proposed mat/pad foundation and associated equipment areas should be cleared of existing structures and vegetation and grubbed; and existing cobbles, boulders, and any identifiable compressible or deleterious materials should be removed. Existing fill (including re-worked parent materials), and other unsuitable materials (e.g., silt deposit), must be removed from beneath footing zones of influence to the top of firm, natural glacial till prior to construction. Over-excavation below foundations should include the zone of influence, defined as the area beneath 1 horizontal to 1 vertical (1H:1V) lines extending downward and outward from footing edges. Footings shall bear on a prepared subgrade of firm natural glacial till, or compacted Structural Fill or Crushed Stone (over firm natural soil). Refer to *Section 4.5 Materials and Compaction* for material placement recommendations.

The proposed project area is partially occupied with the existing water tank and associated underground utilities. The existing water tank will be demolished prior to construction of the permanent communications tower. Existing foundation elements and underground utilities should be removed where they conflict with the planned development. Areas disturbed during removal of foundations and utilities should be undercut and the excavations should be backfilled in systematic, compacted lifts. Fill materials and compaction efforts should be consistent with the intended future use.

Excavations for foundation subgrades are anticipated to consist of native glacial till containing varying amounts of silt that will be easily disturbed when wet. Earthwork should be performed in dry conditions so that disturbance to foundation subgrades is limited. During earthwork, the Contractor should be responsible for protecting subgrades from the elements and maintaining the soils in a suitable state until completion of the project. Backfill should not be placed over a subgrade with standing water or that is frozen. Standing water, if present, should be removed and any soft and yielding soil should be removed prior to backfill placement. Excavations to subgrade levels should be performed using a smooth-edged bucket to minimize possible disturbance to the in-place subgrade soils.

Soil subgrades should be proof-rolled under the observation of a qualified Geotechnical Engineer with at least four (4) passes of a smooth-drum vibratory roller (minimum 8,000 pounds, minimum centrifugal force of 12,500 pounds) or, where approved by the geotechnical engineer, a vibratory plate compactor with a minimum of 2,500 pounds of centrifugal force. Any soft or loose zones identified during proof-rolling should be excavated and replaced with compacted Structural Fill, as necessary, and as required by the Geotechnical Engineer. It is imperative that subgrade preparations occur under the observation of the Geotechnical Engineer, as applying vibratory energy to a well-prepared natural, glacial till subgrade may cause disturbance and create soft and loose zones.

4.3.3 Deep Foundation (Drilled Shaft) Alternative

We recommend the following static design parameters for a drilled shaft foundation alternative:

Description	Value
Maximum Net Allowable Bearing Capacity	
Glacial Till	6 kips per square foot (ksf)
Decomposed Rock	8 ksf

Ultimate Side Friction Values[2] Glacial Till Decomposed Rock	20 pounds per square inch (psi) 25 psi
Coefficient of Lateral Subgrade Reaction[3] Glacial Till Decomposed Rock	80 (z/D) kips per cubic foot (kcf) 90 (z/D) kcf
Angle of Internal Friction Glacial Till Decomposed Rock	36 38
Total Soil Unit Weight Glacial Till Decomposed Rock	135 pounds per cubic foot (pcf) 140 (pcf)
Minimum Drilled Shaft Diameter	Diameter of Monopole Base
Allowable Deflection at Top of Shaft	0.5 inch

1. The allowable end bearing capacity also assumes that loose, disturbed material has been removed from the base of the shaft.
2. Contribution to shaft capacity from soil above a depth of 4 feet should be ignored. The uplift capacity should be based on the dead weight of the shaft and side resistance provided by the glacial till and decomposed rock. It's assumed that applied loading will not have a significant Poissons-effect on the shaft.
3. z represents the depth below ground surface (feet) and D is the diameter of the foundation element (feet).

We anticipate that the design length of the shaft will be primarily dependent on the embedment/lateral capacity required to resist live loading. The base of the drilled shaft should be at least 15 feet below ground surface. The drilled shaft will be subject to tension loads and therefore should have reinforcing steel that extend through the entire length of the shaft.

4.3.4 Deep Foundation (Drilled Shaft) Construction Recommendations

Technical specifications should be prepared by the specialty Contractor that require detailed material and construction submittals and proof of experience in drilled shaft installation. The drilling method or combination of methods selected by the contractor should be submitted for review by the geotechnical engineer, prior to mobilization of drilling equipment.

A section of temporary casing may be required to reduce the likelihood of caving of the side walls of the shaft hole. Concrete should be placed by directing the concrete down the center of the shaft to reduce the likelihood of hitting the reinforcing steel and segregating. Groundwater, if encountered in the shaft, should be removed prior to placing concrete; alternatively, concrete may be placed by tremie methods.

4.4 Temporary Tower Foundation Design Recommendations

4.4.1 Ballasted Frame Alternative

Nobis recommends that the proposed ballasted frame be supported on a minimum of 12-inches of compacted Structural Fill overlying densified existing fill soils as described in *Section 4.3.2 Shallow Foundation (Mat/Pad) Construction Recommendations*. A woven geotextile, such as Mirafi 500X or equivalent, is recommended over stable proof-rolled subgrade and beneath the Structural Fill.

We recommend a maximum net allowable bearing pressure of 5 kips per square foot (ksf) for the 24-foot by 24-foot foundation. This allowable bearing capacity is based on the minimum recommended 12-inch depth for removal/replacement of existing fill below the ballasted frame foundation. Deeper excavation may be required if exposed subgrades have an appreciable amount of organic content or appear unsuitable for bearing. Nobis should be retained to evaluate exposed subgrade conditions prior to placing fill.

We recommend an ultimate coefficient of sliding friction of 0.45. A factor of safety of at least 1.5 should be applied to the sliding resistance.

The total settlement is anticipated to be less than 1 inch and differential settlement to be less than 0.5 inch. Based on the granular nature of bearing materials, much of the settlement is anticipated settlement to occur as load is applied. Foundation settlement will depend on the variations within the subsurface soil profile, the structural loading conditions, frost susceptibility of subgrade soils, the embedment depth of the foundation, the thickness of compacted fill, and the quality of earthwork operations.

4.5 Materials and Compaction

Recommended earthwork materials are as follows:

Structural Fill is to be used beneath footings, and other areas as appropriate, or as directed by the Geotechnical Engineer or his/her representative. The material shall consist of hard, inert, durable particles of stone and coarse sand. It shall be free from ice and snow, roots, surface coatings, sod, loam, clay, rubbish, and other deleterious or organic matter, and shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
3-inch	100
½-inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10*

*To be considered nonfrost-susceptible, structural fill should have a maximum of 3 percent of particles by weight smaller than 0.02mm in effective diameter.

Crushed Stone shall consist of either angular fragments of crushed rock or durable crushed gravel stone, be reasonably free of loam, clay, or other deleterious or organic matter, and shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
¾-inch	100
½-inch	10-50
⅝-inch	0-20
No. 4	0-5

Nonfrost-Susceptible Material shall consist of granular fill or crushed stone containing less than 3 percent smaller than 0.02 mm.

Structural Fill and Crushed Stone should be placed in loose lifts not exceeding 8 inches in depth, and compacted to at least 95 percent of its maximum dry density, and within 2% of optimum moisture content, as determined by ASTM D1557, Method C (Modified Proctor).

4.6 Additional Construction Considerations

Based on information obtained from the subsurface exploration program, groundwater may be encountered during construction. We anticipate that water can be managed with conventional sump pumps and trenches in the excavations; however, the contractor should review the plans and borings and make his/her own interpretation of the means and methods needed to control water during construction. Stormwater runoff should not be permitted to accumulate on/within exposed subgrades and the runoff should be directed away from the exposed subgrade areas.

Where space permits and as needed, temporary slopes no steeper than 1.5H:1V appear to be appropriate. Excavation geometry should conform to OSHA excavation regulations contained in 29 CFR Part 1926. Temporary earth support is not anticipated for the excavations. If needed, temporary earth support systems should be designed by a Professional Engineer registered in the State of Connecticut.

We recommend that Nobis be provided the opportunity to review the final design plans and specifications to ensure that the recommendations of this report have been incorporated as intended. We further recommend that Nobis observes excavation to subgrade levels, subgrade preparation, and fill placement and compaction. This is recommended to evaluate and document the bearing material for the foundation subgrades. We also recommend that Nobis be retained to monitor the construction of the drilled shaft, if selected as the foundation alternative. The geotechnical engineer in the field should observe the work for compliance with the recommendations in this report, identify changes in subsurface conditions from those observed in the explorations should they become apparent, and assist in the development of design changes should subsurface conditions differ from those anticipated prior to the start of construction.

5.0 CLOSURE

This report is subject to the Limitations, included as **Appendix C**.

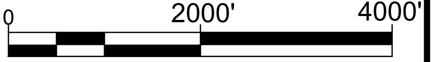
APPENDIX A – Figures

NORTH

USGS TOPOGRAPHIC MAP

7.5 MINUTE QUADRANGLE: ESSEX, CT
1977

APPROX. SCALE IN FEET



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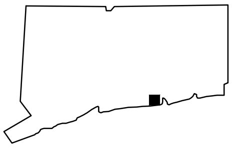


QUADRANGLE LOCATION

FIGURE 1

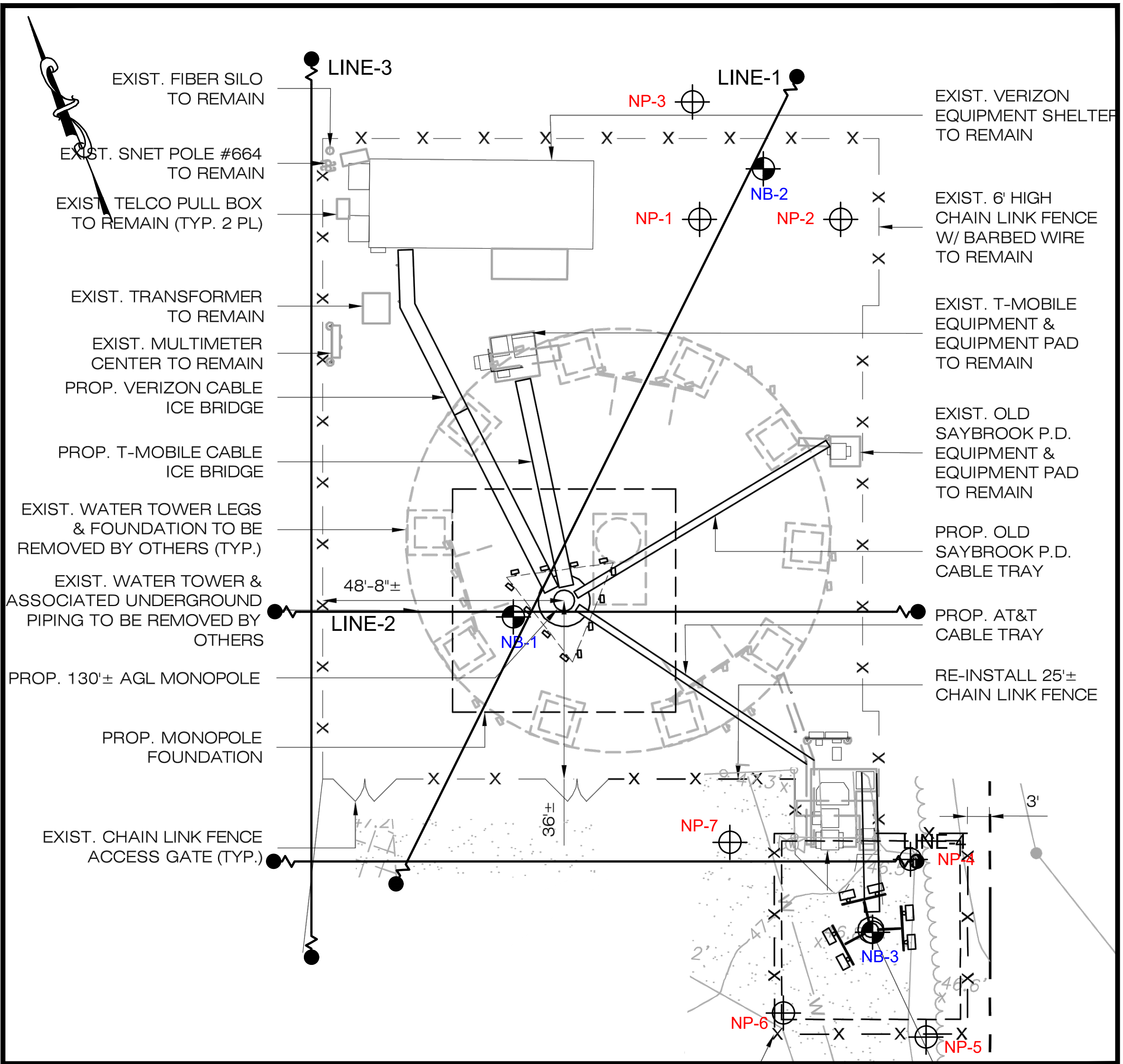
LOCUS PLAN

WESTBROOK H2O
1542 BOSTON POST ROAD
WESTBROOK, CT 06498

PROJECT NO. 92790.01

DATE: SEPTEMBER 2017

J:\92790.00 – Westbrook H2O Cell Tower, Westbrook, CT\01 – Revised Temporary Tower Location\CADD\1542 Boston Post Road, Westbrook, CT Cell Tower.dwg 9/5/2017 8:13 AM



NOTES:

1. THE BASE PLAN WAS DEVELOPED FROM FIGURES ENTITLED, "COMPOUND PLAN," AND "PARTIAL SITE PLAN," PREPARED BY ALL-POINTS TECHNOLOGY ENGINEERING CORPORATION, P.C., REVISION DATED DECEMBER 22, 2016 AND AUGUST 29, 2016 RESPECTIVELY.
2. TEST BORINGS AND PROBES WERE DRILLED BY NEW ENGLAND BORING CONTRACTORS OF GLASTONBURY, CONNECTICUT, AND OBSERVED BY NOBIS ON MARCH 8, 2017 AND SEPTEMBER 1, 2017.
3. RESISTIVITY TESTING WAS PERFORMED ON FEBRUARY 24 2017 AND MARCH 1, 2017 BY NOBIS FIELD STAFF.
4. THE APPROXIMATE LOCATIONS OF THE TEST BORINGS, TEST PROBES, AND RESISTIVITY TESTS WERE TAPED FROM EXISTING SITE FEATURES. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:

⊕ NP-1	TEST PROBE LOCATION OBSERVED BY NOBIS (MAR. & SEPT. 2017)
◐ NB-1	TEST BORING LOCATION OBSERVED BY NOBIS (MAR. & SEPT. 2017)
● LINE-1 ●	RESISTIVITY TEST LOCATION (TYP.)

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APPROX. SCALE IN FEET
0 20' 40'

DRAWN BY: JDV
CHECKED BY: RPJ

FIGURE 2

EXPLORATION LOCATION PLAN
WESTBROOK H2O
1542 BOSTON POST ROAD
WESTBROOK, CONNECTICUT 06498

PROJECT NO. 92790.01
DATE: SEPTEMBER 2017

J:\92790.00 – Westbrook H2O Cell Tower, Westbrook, CT\01 – Revised Temporary Tower Location\CADD\1542 Boston Post Road, Westbrook, CT Cell Tower.dwg 9/6/2017 3:57 PM

APPENDIX B – Exploration Logs

BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.00

Boring No.: **NB-1**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: March 8, 2017

Date Finish: March 8, 2017

Contractor: New England Boring Contractors

Driller: Bub Thompson

Nobis Rep.: R. Janeiro

Rig Type / Model: ATV/ Acker Soil Scout

Hammer Type: Donut Hammer

Hammer Hoist: Rope & Cathead

Ground Surface Elev.: (+/-) 47.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	Flush Joint Casing	Split-Spoon
Size ID (in.)	4	1-3/8
Advancement	Standard Rotary	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
▼ 03/08/17	10:05	5	N/A	N/A	Wet Sample

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	REC % / RQD %	Drilling Rate (min/ft)	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
1	S-1	13	0-2	3 4 5						S-1 (4"): Dark Brown, TOPSOIL. S-1 (9"): Loose, brown, fine to coarse SAND and SILT, trace fine Gravel, very few organic fibers.	
2											
3	S-2	18	2-4	2 3 3					FILL	S-2: Loose, brown, SILT and fine to medium SAND, trace fine Gravel, very few organic fibers. moist.	
4											
5	S-3	14	4-6	2 3 3 3 8 21			▼			S-3 (11"): Loose to medium dense, brown, fine to coarse SAND and SILT, trace fine Gravel, very few decomposed wood fragments. wet.	
6											
7										S-3 (3"): Loose to medium dense, orange brown, fine to coarse SAND, little Silt. wet.	
8											
9											
10	S-4	8	9-9.8	30 50/3"						S-4: Very dense (refusal), brown, fine to coarse SAND, trace Silt, few weathered rock fragments, with a piece of weathered rock in sample tip.	
11											
12											
13											
14									TILL		
15	S-5	19	14-15.8	50 52 55 50/4"						S-5: Very dense (refusal), brown, fine to coarse SAND and GRAVEL, little Silt, few weathered rock fragments.	
16											
17											
18											1
19											
20	S-6	8	19-19.8	42 50/4"						S-6: Very dense (refusal), brown, fine to coarse SAND, little fine Gravel, little Silt.	
21											
22											
23											2
24											
25	S-7	4	24-24.3	100/4"						S-7: Very dense (refusal), gray/ orange/ white, fine to coarse SAND and GRAVEL, trace Silt.	
26											
27											
28											
29											
30	S-8	2	29-29.2	50/2"					DECOMPOSED ROCK	S-8: Very dense (refusal), gray-white, fine to coarse GRAVEL and SAND, trace Silt.	
31											
32	C-1	12	31-36		20/0	2				C-1: Very Poor Quality, Soft, Extremely Weathered, gray-white, coarse grained, GNEISS.	
33						2					
34						3					
35						2					
36						2			11.5 / 36.0		
37										Boring terminated at 36 feet.	
38											
39											
40											

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

1) Rig chatter observed from 17 to 31 feet below grade (fbg).
2) Driller notes increased drilling resistance at 22 fbg.

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BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.00

Boring No.: **NB-2**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: March 8, 2017

Date Finish: March 8, 2017

Contractor: New England Boring Contractors

Driller: Bub Thompson

Nobis Rep.: R. Janeiro

Rig Type / Model: ATV/ Acker Soil Scout

Hammer Type: Donut Hammer

Hammer Hoist: Rope & Cathead

Ground Surface Elev.: (+/-) 47

Datum: NAVD 88

	Drilling Method	Sampler
Type	Flush Joint Casing	Split-Spoon
Size ID (in.)	4	1-3/8
Advancement	Standard Rotary	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
03/09/17	00:00	Not Documented			

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
1	S-1	8	0-2	2 36 35 28			FILL	S-1 (3"): Very dense, dark brown, TOPSOIL. moist. S-1 (8"): Very dense, white-gray, pulverized coarse GRAVEL fragments, (inferred boulder), dry.	
3	S-2	0	2-2	60/0"				S-2: Very dense (refusal), No Recovery.	
5	S-3	20	4-6	23 32 53 50			TILL	S-3: Very dense, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt, with pulverized rock fragments at sample tip. wet.	
10	S-4	16	9-11	19 15 18 20				S-4: Dense, brown, fine to coarse SAND, some Silt, little fine to coarse Gravel.	
15	S-5	19	14-16	13 27 44 65				S-5: Very dense, brown, fine to coarse SAND and SILT, trace fine Gravel.	
20	S-6	13	19-20.3	36 88 100/3"			DECOMPOSED ROCK	S-6: Very dense (refusal), white-brown-gray, fine to coarse SAND and GRAVEL, trace Silt.	2 3
25	S-7	14	24-25.8	43 53 39 50/4"			21.2 / 25.8	S-7: Very dense, orange - gray, fine to coarse SAND and GRAVEL, little Silt.	
27								Boring terminated at 25.8 feet.	

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:
1) Groundwater not documented. Had to introduce water to drill through boulder.
2) Driller notes increased drilling resistance observed at 18.5 feet below grade (fbg).
3) Intermittent rig chatter observed from 19 fbg to end of exploration.

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

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BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.01

Boring No.: **NB-3**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: September 1, 2017

Date Finish: September 1, 2017

Contractor: New England Boring Contractors

Driller: W. Cone

Nobis Rep.: J. Vanotti

Rig Type / Model: ATV / Diedrich D-50

Hammer Type: Safety Hammer

Hammer Hoist: Hydraulic

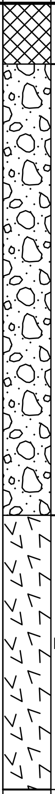
Ground Surface Elev.: (+/-) 46.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	Hollow Stem Auger	Split-Spoon
Size ID (in.)	3-1/4	1-3/8
Advancement	Augered	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
▼ 09/01/17	08:35	10	12	12	Wet Sample
▽ 09/01/17	09:40	10.4	25	25.8	0



Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
1	1	10	0-2	13 27 31 20		FILL	S-1: Very dense, dark brown, fine to coarse SAND and GRAVEL, trace Silt.	
2								
3	2	11	2-4	16 14 13 23			S-2: Medium dense, light brown, fine to medium SAND, some Silt, trace fine to coarse Gravel.	
4								1
5								
6	3	15	5-7	60 24 36 48			S-3: Very dense, light brown, fine to medium SAND, some Silt, trace fine Gravel.	
7								2
8								
9								
10					▼ ▽	TILL		
11	4	18	10-12	17 30 41 45			S-4: Very dense, brown, fine to coarse SAND, some fine to coarse Gravel, some Silt. wet.	
12								
13								
14								
15								
16	5	21	15-16.8	31 45 65 65/4"			S-5: Very dense (refusal), brown, fine to coarse SAND and GRAVEL, some Silt, with very few decomposed rock fragments. wet.	
17								
18								
19								
20								
21	6	2	20-20.3	65/3"		DECOMPOSED ROCK	S-6: Very dense (refusal), white-gray-orange, fine to coarse SAND, with decomposed rock fragments.	
22								
23								
24								
25								
26	7	10	25-25.8	29 65/4"		20.7 / 25.8	S-7: Very dense (refusal), brown, fine to coarse SAND and SILT, some fine Gravel, with white-orange rock in sample tip. Boring terminated at 25.8 feet on refusal.	
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:
1) Rig chatter observed at about 3 to 4 feet below grade (fbg).
2) Rig chatter observed at about 6 to 7 feet below grade (fbg).

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

BORING LOG

Engineering a Sustainable Future	Project: Westbrook H2O Towers	Boring No.: **NP-1**
		Boring Location: See Boring Location Plan
	Location: 1542 Boston Post Rd, Westbrook, CT	Checked by: R. Janeiro
	Nobis Project No.: 92790.00	Date Start: March 8, 2017
		Date Finish: March 8, 2017
Contractor: New England Boring Contractors	Rig Type / Model: ATV/ Acker Soil Scout	Ground Surface Elev.: (+/-) 46.5
Driller: Bub Thompson	Hammer Type: Donut Hammer	
Nobis Rep.: R. Janeiro	Hammer Hoist: Rope & Cathead	Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
▼ 03/08/17	00:00	3	NP-1	N/A	Wet Sample

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	S-1	17	0-2	2				S-1 (4"): Loose, dark brown, TOPSOIL, with few stone process fragments.	
1				3				S-1 (13"): Loose, dark brown, fine to coarse SAND and SILT, trace fine Gravel, very few organic fibers. moist.	
				3			FILL		
2				2					
	S-2	18	2-4	2				S-2 (10"): Loose, brown, fine to coarse SAND, some fine Gravel, some Silt, very few organic fibers. moist.	
3				2	▼			S-2 (4"): Loose, black, SILT, little fine Sand, very few organic fibers. moist.	
				2			SILT	S-2 (4"): Loose, brown, fine to coarse SAND and SILT, trace fine Gravel. wet.	
4				6					
	S-3	19	4-6	18				S-3: Medium dense to dense, brown, fine to coarse SAND, some Silt, trace fine Gravel. wet.	
5				16			TILL		
				14					
6				15			40.5 / 6.0		
								Boring terminated at 6 feet.	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.00

Boring No.: **NP-2**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: March 8, 2017

Date Finish: March 8, 2017

Contractor: New England Boring Contractors

Driller: Bub Thompson

Nobis Rep.: R. Janeiro

Rig Type / Model: ATV/ Acker Soil Scout

Hammer Type: Donut Hammer

Hammer Hoist: Rope & Cathead

Ground Surface Elev.: (+/-) 46.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
▼ 03/08/17	00:00	4	NP-2	N/A	Wet Sample

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	S-1	12	0-2	3		▨		S-1 (3"): Very loose, dark brown, TOPSOIL, with few stone process fragments.	
1				2		▨		S-1 (9"): Very loose, dark brown, fine to coarse SAND and SILT, little fine Gravel, very few organic fibers. moist.	
				2		▨			
2				3		▨			
	S-2	14	2-4	9		▨	FILL	S-2 (10"): Loose, dark brown, fine to coarse SAND and SILT, little fine Gravel, very few organic fibers and decomposed wood fragments. moist.	
3				4		▨		S-2 (4"): Loose, olive, fine to medium SAND and SILT, (mottled), very few organic fibers. moist.	
				2		▨			
4				3	▼	▨			
	S-3	15	4-6	8		⁖		S-3: Dense, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt. wet.	
5				23		⁖	TILL		
				24		⁖			
6				24		⁖	40.5 / 6.0		
								Boring terminated at 6 feet.	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

BORING LOG

Engineering a Sustainable Future

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.00

Boring No.: **NP-3**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: March 8, 2017

Date Finish: March 8, 2017

Contractor: New England Boring Contractors

Driller: Bub Thompson

Nobis Rep.: R. Janeiro

Rig Type / Model: ATV/ Acker Soil Scout

Hammer Type: Donut Hammer

Hammer Hoist: Rope & Cathead

Ground Surface Elev.: (+/-) 47

Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
▼ 03/08/17	00:00	4	NP-3	N/A	Wet Sample

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
1 2	S-1	16	0-2	2 2 3 6			FILL SILT	S-1 (3"): Loose, dark brown, TOPSOIL, very few organic fibers. S-1 (7"): Loose, brown, fine to coarse SAND, some fine to coarse Gravel, some Silt, very few organic fibers. moist. S-1 (6"): Loose, black, SILT, little fine to medium Sand, few organic fibers. moist.	
3 4	S-2	7	2-4	3 4 15 27	▼		SILT	S-2: Medium dense, black, SILT, some fine to coarse Sand, very few organic fibers.	
5 6	S-3	14	4-6	42 27 24 24			TILL 41.0 / 6.0	S-3: Very dense, brown, fine to coarse SAND, some Silt, little fine to coarse Gravel, with a piece of fractured coarse gravel at top of sample.	
7								Boring terminated at 6 feet.	
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

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BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT
Nobis Project No.: 92790.01

Boring No.: **NP-4**
Boring Location: See Boring Location Plan

Checked by: R. Janeiro
Date Start: September 1, 2017
Date Finish: September 1, 2017

Contractor: New England Boring Contractors
Driller: W. Cone
Nobis Rep.: J. Vanotti

Rig Type / Model: ATV / Diedrich D-50
Hammer Type: Safety Hammer
Hammer Hoist: Hydraulic

Ground Surface Elev.: (+/-) 46.5
Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
09/01/17	00:00	Not Encountered			

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	1	10	0-2	8			FILL	S-1: Dense, dark brown, fine to coarse SAND and GRAVEL, little Silt, very few organic fibers, very few asphalt fragments.	
1				10					
				10					
2				8					
	2	13	2-4	21			TILL	S-2: Very dense, light brown, fine to coarse SAND, some Silt, little fine to coarse Gravel.	
3				35					
				21					
4				31					
	3	20	4-6	56				S-3: Very dense, brown, fine to coarse SAND and GRAVEL, little Silt, very few cobbles.	
5				53					
				45					
6				39			40.5 / 6.0		
								Boring terminated at 6 feet.	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

Nobis
Engineering a Sustainable Future

BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT
Nobis Project No.: 92790.01

Boring No.: **NP-5**
Boring Location: See Boring Location Plan

Checked by: R. Janeiro
Date Start: September 1, 2017
Date Finish: September 1, 2017

Contractor: New England Boring Contractors
Driller: W. Cone
Nobis Rep.: J. Vanotti

Rig Type / Model: ATV / Diedrich D-50
Hammer Type: Safety Hammer
Hammer Hoist: Hydraulic

Ground Surface Elev.: (+/-) 46.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
09/01/17	00:00	Not Encountered			

Depth (ft.)	SAMPLE INFORMATION				Ground Water	LITHOLOGY		SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.		Graphic	Stratum Elev. / Depth (ft.)		
	1	12	0-2	8		▨		S-1: Dense, brown, fine to coarse SAND, some fine to coarse Gravel, little Silt.	
1				20		▨	FILL		
				15		▨			
2				14		▨			
	2	13	2-4	10		○		S-2: Loose to medium dense, light brown, fine to medium SAND and SILT.	
3				3		○			
				7		○			
4				12		○	TILL		
	3	23	4-6	24		○		S-3: Very dense, brown, fine to coarse SAND and GRAVEL, some Silt, very few pulverized rock fragments.	
5				32		○			
				26		○			
6				31		○	40.5 / 6.0		
								Boring terminated at 6 feet.	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

Engineering a Sustainable Future

BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.01

Boring No.: **NP-6**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: September 1, 2017

Date Finish: September 1, 2017

Contractor: New England Boring Contractors

Driller: W. Cone

Nobis Rep.: J. Vanotti

Rig Type / Model: ATV / Diedrich D-50

Hammer Type: Safety Hammer

Hammer Hoist: Hydraulic

Ground Surface Elev.: (+/-) 46.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
09/01/17	00:00	Not Encountered			

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	1	16	0-2	7			FILL	S-1: Medium dense, dark brown, fine to coarse SAND, little Silt, little fine to coarse Gravel.	
1				8					
				4					
2				5					
	2	14	2-4	8			TILL	S-2: Dense, light brown, fine to medium SAND, some Silt, little fine Gravel.	
3				15					
				25					
4				52					
	3	23	4-6	40				S-3: Very dense, brown, fine to coarse SAND and GRAVEL, some Silt, very few cobbles.	
5				46					
				37					
6				32			40.5 / 6.0		
7								Boring terminated at 6 feet.	
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

Nobis
Engineering a Sustainable Future

BORING LOG

Project: Westbrook H2O Towers

Location: 1542 Boston Post Rd, Westbrook, CT

Nobis Project No.: 92790.01

Boring No.: **NP-7**

Boring Location: See Boring Location Plan

Checked by: R. Janeiro

Date Start: September 1, 2017

Date Finish: September 1, 2017

Contractor: New England Boring Contractors

Driller: W. Cone

Nobis Rep.: J. Vanotti

Rig Type / Model: ATV / Diedrich D-50

Hammer Type: Safety Hammer

Hammer Hoist: Hydraulic

Ground Surface Elev.: (+/-) 47.5

Datum: NAVD 88

	Drilling Method	Sampler
Type	N/A	Split-Spoon
Size ID (in.)	N/A	1-3/8
Advancement	N/A	140-lb Hammer

Groundwater Observations

Date	Time	Depth Below Ground (ft.)	Depth of Casing (ft.)	Depth to Bottom of Hole (ft.)	Stabilization Time
09/01/17	00:00	Not Encountered			

Depth (ft.)	SAMPLE INFORMATION Type & No.	Rec (in.)	Depth (ft.)	Blows/ 6 in.	Ground Water	LITHOLOGY Graphic	Stratum Elev. / Depth (ft.)	SAMPLE DESCRIPTION AND REMARKS (Classification System: Modified Burmister)	NOTES
	1	11	0-1.2	7				S-1: Very dense (refusal), dark brown, fine to coarse SAND and GRAVEL, some Silt.	
1				14			FILL		
				65/2"					
2									
	2	16	2-4	2				S-2: Loose, brown, SILT and fine to medium SAND, little fine Gravel.	
3				3					
				4					
4				2			TILL		
	3	23	4-6	11				S-3: Very dense, brown, fine to medium SAND and SILT, little fine Gravel. moist.	
5				28					
				31					
6				26			41.5 / 6.0		
								Boring terminated at 6 feet.	
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Soil	Percentage	Non-Soil
trace	5 - 10	very few
little	10 - 20	few
some	20 - 35	several
and	35 - 50	numerous

NOTES:

Soil descriptions are based on visual classifications and should be considered approximate. Stratification lines are approximate boundaries between stratums; transitions may be gradual.

APPENDIX C – Limitations

GEOTECHNICAL LIMITATIONS

Explorations and Subsurface Conditions

1. The analyses and design recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

   In preparing this report, Nobis relied on certain information provided by the Client and other parties referenced therein which were made available to Nobis at the time of our evaluation. Nobis did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the exploration logs.

3. Water level readings have been made in the explorations at times and under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made. The water table encountered in the course of the work may differ from that indicated in the Report.

   Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

4. Nobis' geotechnical services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

Additional Services

5. Nobis recommends that we be retained to provide services during future site observations, design, implementation activities, construction and/or property development/ redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our recommendations, design concepts and/or opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design recommendations; and iv) assess the consequences of changes in technologies and/or regulations.

Use of Report

6. Nobis prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in our proposal and/or report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to Nobis.

   This report is for design purposes only and is not sufficient to prepare an accurate construction bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

7. Nobis' findings and conclusions are based on the work conducted as part of the scope of work set forth in our proposal and/or report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions considering the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the project design has been altered in any way, Nobis shall be so notified and afforded the opportunity to revise the report, as appropriate, to reflect the unanticipated changed conditions.

8. Nobis' services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

Compliance with Codes and Regulations

9. Nobis used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Opinion of Cost

10. This report may contain or be based on comparative cost opinions for the purpose of evaluating alternative foundation schemes. These opinions may also involve approximate quantity evaluations. It should be noted that quantity estimates may not be accurate enough for construction bids. In addition, since we are not professional estimators of labor and materials cost, the evaluation of construction costs should be considered as approximate guidelines and could vary significantly from actual costs. Nobis does not guarantee the accuracy of our cost opinions as compared to contractor's bids for construction costs.

END OF LIMITATIONS

ALL-POINTS
TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
WWW.ALLPOINTSTECH.COM

PHONE: (860)-663-1697
FAX: (860)-663-0935

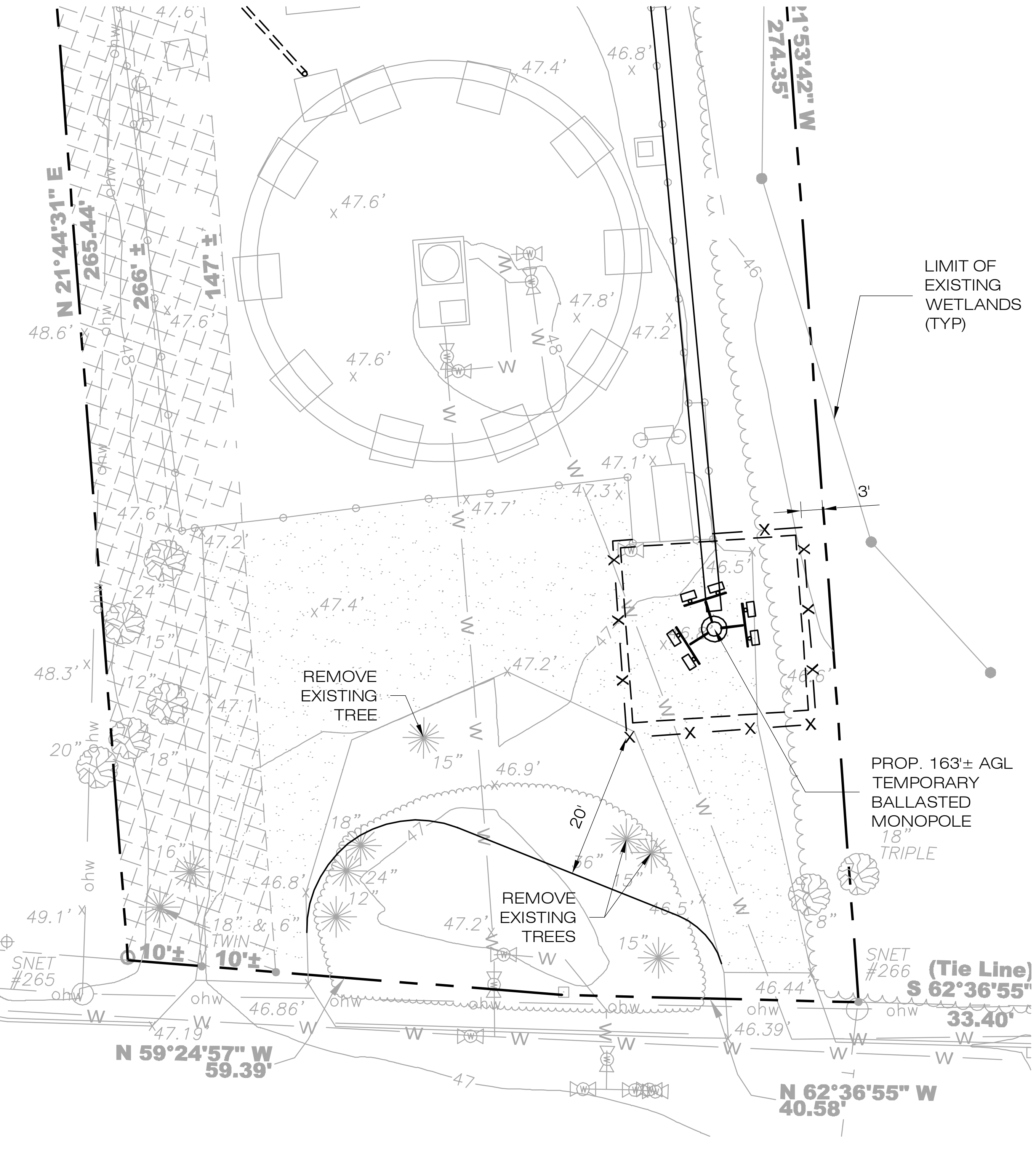
APT FILING NUMBER: CT242700	
SK-1	
SCALE: AS NOTED	**DRAWN BY: CSH**
DATE: 08/29/16	**CHECKED BY: RCB**

MCM

MESSAGE CENTER MANAGEMENT
40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

MCM SITE NUMBER: CT-XXX

WESTBROOK H2O
1542 BOSTON POST ROAD
WESTBROOK, CT 06498



PARTIAL SITE PLAN

SCALE : 1" = 20'-0"

N
TRUE

NOTE: EXACT LOCATION AND ORIENTATION OF PROPOSED LEASE AREA PENDING SITE SURVEY & FURTHER ENGINEERING REVIEW AND ANALYSIS. PROPOSED UTILITY ROUTING AND R.O.W. EXTENTS TO BE DETERMINED BY LOCAL UTILITY PROVIDERS.

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COMMSCOPE® (/)

Search... Go

(/catalog/imagesCache/0000007/t006_r20066_v5.jpg)

(addtoproject.aspx?id=3766&company=andrew)SBNHH-1D65B

Andrew® Tri-band Antenna, 698–896 and 2x 1695–2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Specifications (product_details.aspx?id=3766)

Related Products (product_details.aspx?id=3766&tab=2)

Documents/Tools (product_details.aspx?id=3766&tab=3)

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1695–1880**	**1850–1990**	**1920–2200**	**2300–2360**

Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS, dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
CPR at Boresight, dB	20	23	20	20	17	21
CPR at Sector, dB	14	10	12	10	9	1
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	**698 –806**	**806 –896**	**1695 –1880**	**1850 –1990**	**1920 –2200**	**2300 –2360**
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3

Gain by Beam Tilt, average, dBi	0 ° | 14.6 7 ° | 14.6 14 ° | 14.2	0 ° | 14.5 7 ° | 14.4 14 ° | 13.6	0 ° | 17.4 3 ° | 17.5 7 ° | 17.4	0 ° | 17.8 3 ° | 17.9 7 ° | 17.9	0 ° | 18.1 3 ° | 18.3 7 ° | 18.2	0 ° | 18.2 3 ° | 18.4 7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs. (http://info.commscope.com/2014-Gated-Assetts_BASTA_TimeToRaiseBarOnBSAs_WP-108068---LP.html)

General Specifications	
Antenna Brand	Andrew®
Antenna Type	DualPol® multiband with internal RET
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	6
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241.4 km/h | 150.0 mph

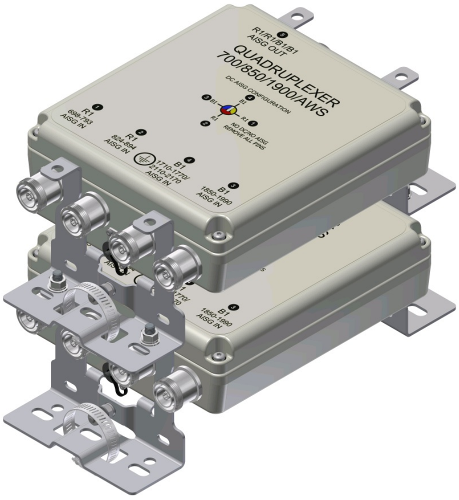
Dimensions	
Depth	181.0 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information	
Input Voltage	10–30 Vdc
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)

QBC0002F1V51-2

QUADRUPLEXER 700/850/1900/AWS

Designed to combine 700, 850, 1900 and AWS technologies, the Kaelus QBC0002 saves significant capital and operational expenses by limiting feeder runs and components needed on the tower.



FEATURES

- Combines 700, 850, 1900 and AWS Bands
- DC/AISG bypass field settable
- Very low insertion loss
- Wall or pole mounting
- Designed for low passive intermodulation
- High power handling

TECHNICAL SPECIFICATIONS

BAND NAME	700	850	1900	AWS
RF PERFORMANCE				
Passband	698 - 793MHz	824 - 894MHz	1850 - 1990MHz	1710 - 1770MHz / 2110 - 2170MHz
Insertion loss	0.3dB typical	0.25dB typical	0.4dB typical	0.3dB typical
Return loss	24dB typical / 20dB minimum			
Group delay variation	<15ns / 10MHz maximum			
Maximum input power	150W (average) / 1.5kW (PEP)	500W (average) / 5kW (PEP)	250W (average) / 2.5kW (PEP)	150W (average) / 1.5kW (PEP)
Phase linearity variation	<10° / 10MHz maximum			
Isolation at 700	N/A	59dB typical	80dB typical	80dB typical
Isolation at 850	53dB typical	N/A	80dB typical	80dB typical
Isolation at 1900	80dB typical	70dB typical	N/A	58dB typical
Isolation at AWS	70dB typical	60dB typical	58dB typical	N/A
ELECTRICAL				
Intermodulation products	-153dBc typical / -150dBc maximum all ports with 2 x 20W carriers			
DC / AISG				
A field selectable DC/AISG path is achieved via mechanical links on a IEC60130-9, 8-pin female connector (see electrical block diagram). It is Kaelus's recommendation that due to AISG link budget reasons that a maximum of 2 DC/AISG paths are activated simultaneously without active repeating of the AISG signal				
Passband	0 - 3MHz			
Insertion loss, single DC/AISG pass	1dB maximum			
Return loss, single DC/AISG pass	12dB maximum			
Insertion loss, two DC/AISG pass	4.5dB typical			
Return loss, two DC/AISG pass	9dB typical			
Input voltage range	31V DC maximum			
DC current rating	2.5A continuous, 4A peak			
Port 1 DC to COM plug color	Yellow			
Port 2 DC to COM plug color	Red			
Port 3 DC to COM plug color	Blue			
Port 4 DC to COM plug color	White			

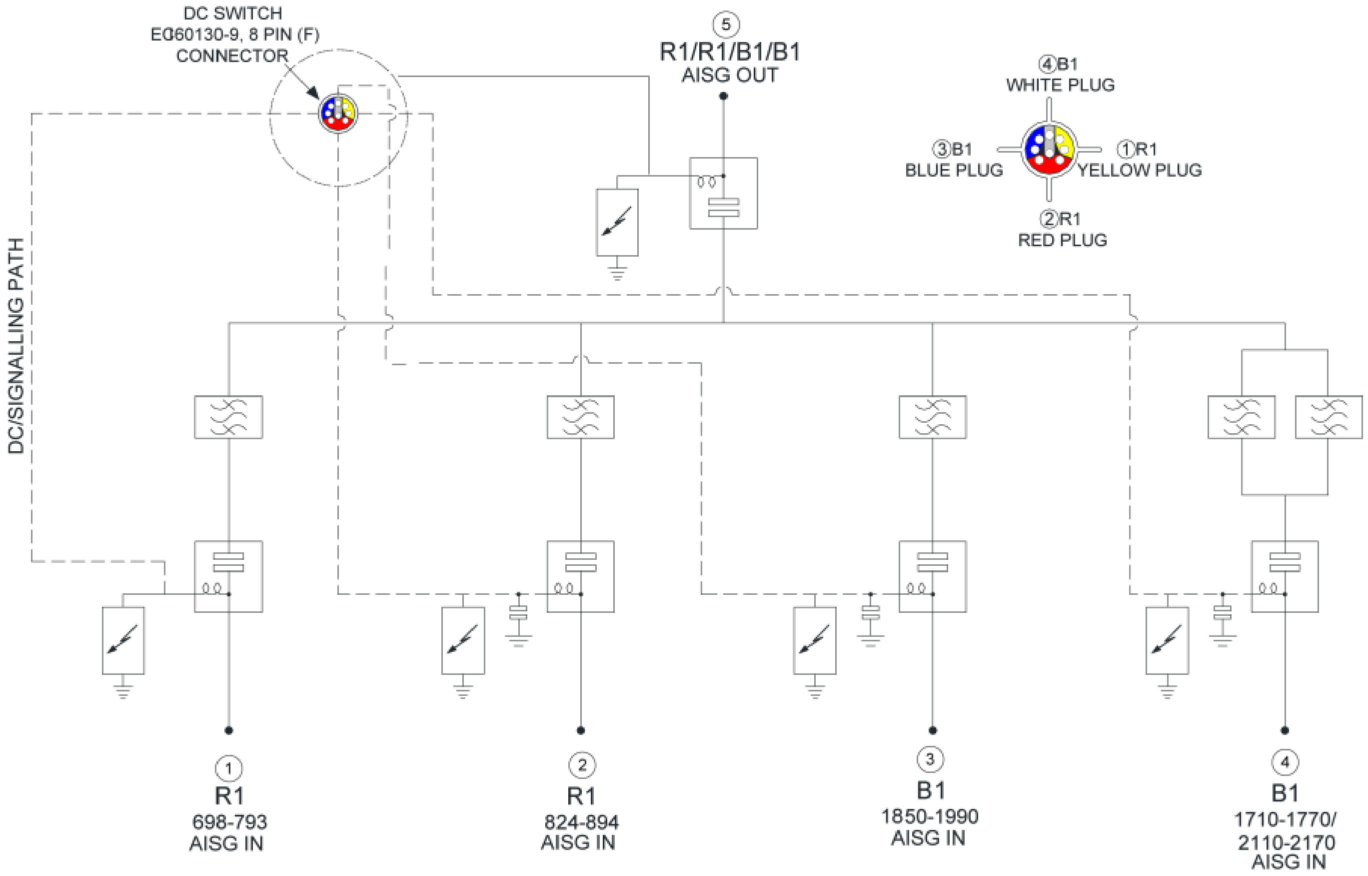
ENVIRONMENTAL	
For further details of environmental compliance, please contact Kaelus.	
Temperature range	-40ºC to +65ºC | -40ºF to +149ºF
Ingress protection	IP67
Lightning protection	±5kA maximum (8/20us)
MTBF	>1,000,000 hours
Compliance	ETSI EN 300 019 class 4.1, RoHS

MECHANICAL	
Dimensions H x D x W (single unit)	246 x 90 x 223mm | 9.7 x 3.5 x 8.7in
Dimensions H x D x W (twin unit)	246 x 208 x 223mm | 9.7 x 8.2 x 8.7in
Weight	8.5kg | 18.75lb (single unit) 17kg | 37.5lb (twin unit)
Connectors	DIN 7-16 (F) x 5 long neck (single unit) DIN 7-16 (F) x 10 long neck (twin unit)
Mounting	Pole/wall bracket supplied with two metal clamps for 45-178 mm diameter poles

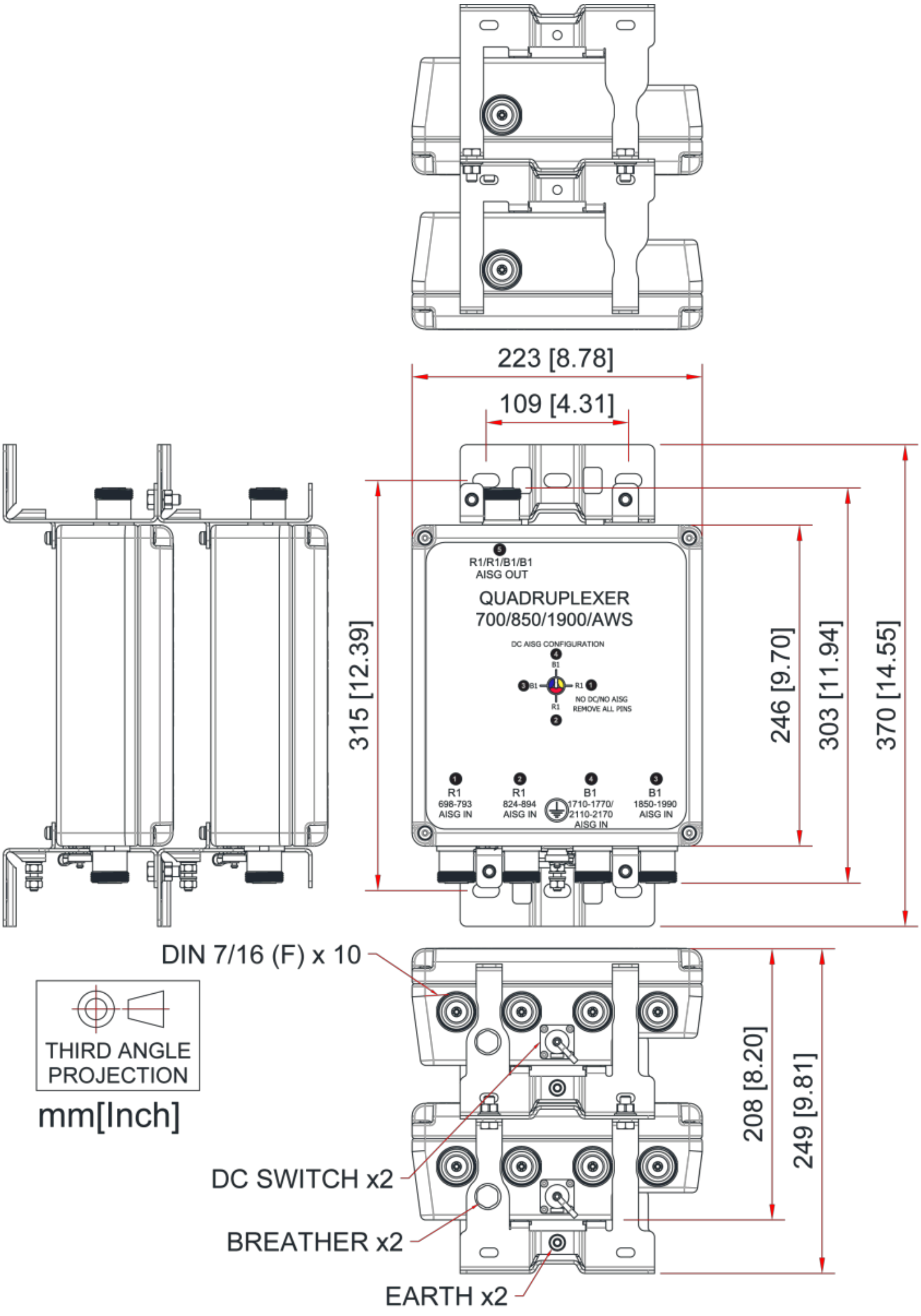
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
QBC0002F1V51-1	Quadruplexer, 700/850/1900/AWS, field settable DC/AISG Switch
QBC0002F1V51-2	Quadruplexer x2, 700/850/1900/AWS, field settable DC/AISG Switch

ELECTRICAL BLOCK DIAGRAM



MECHANICAL BLOCK DIAGRAM



AM-X-CD-14-65-00T-RET (4' 65° Dual Broadband Antenna)

Dual Band Electrical DownTilt Antenna

698 ~ 894MHz, X-pol., H65° / V17.0°

1710 ~ 2170MHz, X-pol., H65° / V8.5°

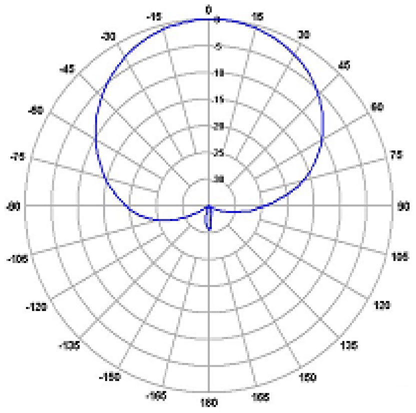
Electrical Specification

Frequency Range		698~894MHz	1710~2170MHz
Impedance		50Ω	
Polarization		Dual, Slant ±45°	
Gain		14.0dBi / 11.85dBd @ 698-806MHz 14.8dBi / 12.65dBd @ 824-894MHz	16.1dBi / 13.95dBd @1710-1755MHz 16.3dBi / 14.15dBd @1850-1900MHz 16.0dBi / 13.85dBd @2110-2155MHz
Beamwidth	Horizontal	67° @ 698-806MHz 65° @ 824-894MHz	60° @ 1710-1755MHz 61° @ 1850-1900MHz 64° @ 2110-2155MHz
	Vertical	17.5 @ 698-806MHz 16.5° @ 824-894MHz	8.8° @ 1710-1755MHz 8.5° @ 1850-1900MHz 8.0° @ 2110-2155MHz
VSWR		≤1.5:1	
Front-to-Back Ratio		≥28 dB	
Electrical Downtilt Range		2° ~ 16°	0° ~ 10°
Isolation Between Ports		≥30 dB	
Isolation Between Ports of Different Frequency Elements		≥35 dB	
Cross Pole Discrimination		10.0 dB @ ±60° 15.0 dBi @ 0°	
First Upper Side Lobe Suppression		16dB	
Side Lobe Suppression		> 16 dB @ 0-6° Tilt > 18 dB @ 7-12° Tilt (Up to 15° from Boresight)	> 16 dB @ 0-6° Tilt > 18 dB @ 7-10° Tilt (Up to 15° from Boresight)
Passive Intermodulation		≤ -150 dBc @ 2x20w	
Input Maximum CW Power		500 W	300 W
Environmental Compliance		IP65 for Radome IP67 for Connectors	
RET Motor Configuration		Field Replaceable RET Electronic Control Module / RET Motor is internal to antenna & not field replaceable	
Compliant with AISG 1.1 and 2.0		AISG 1.1 and 2.0	

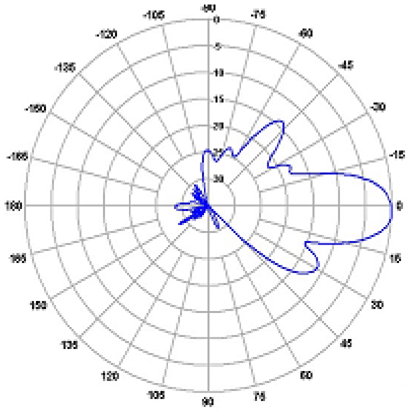
Mechanical Specification

Dimension (W×D×H)	11.8×5.9×48 inches (300×150×1219mm)
Weight (Without clamp)	36.4 lbs (16.5 kg)
Connector	4 x 7/16 DIN(F), Long Neck
Max Wind Speed	150 mph
Wind Load (@150 mph)	1260 N

AM-X-CD-14-65-00T-RET (4' 65˚ Dual Broadband Antenna)

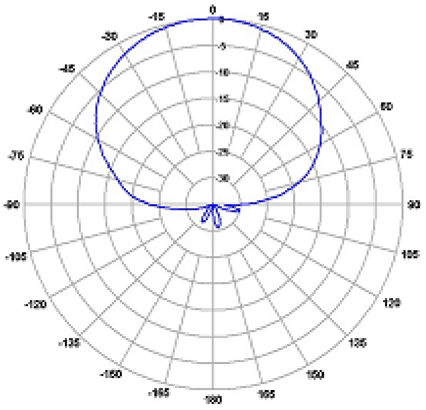


Horizontal Pattern

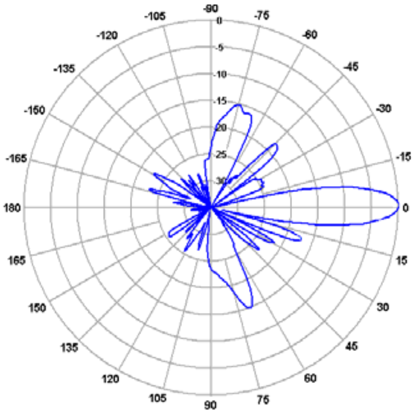


Vertical Pattern (Downtilt 2˚)

700MHz band Pattern

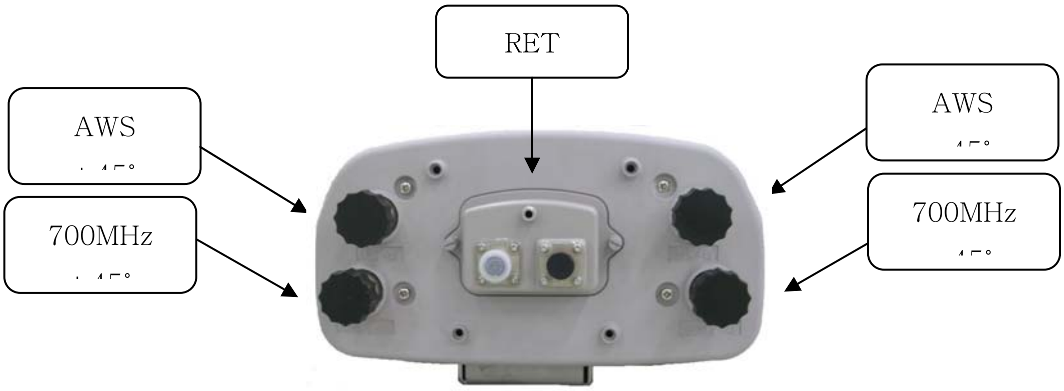


Horizontal Pattern



Vertical Pattern (Downtilt 0˚)

AWS band Pattern



ERICSSON

DATA-SHEET FOR

AIR 21, 1.3 M, B2A B4P

The Antenna-Integrated Radio (AIR) is a single tower-mounted unit that can replace the antenna/s and radio for one sector. Additional electronics such as ASC? and a RET Actuator and control are also included. A passive antenna function for an extra band is optional.

ericsson.com

ANTENNA-INTEGRATED RADIO

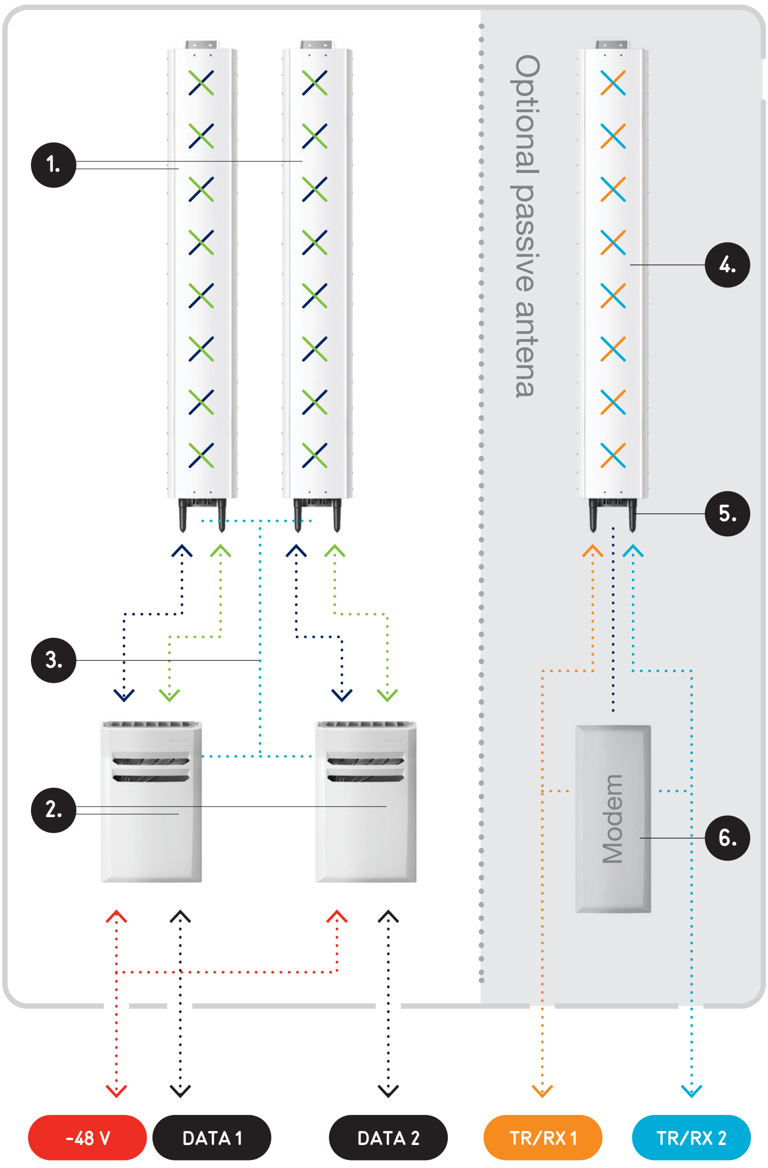
Figure 2 →
Three-sector tower site
with three AIR units.e

The Antenna-Integrated Radio (AIR) is a single tower-mounted unit that can replace the antenna/s and radio for one sector. Additional electronics such as ASC? and a RET Actuator and control are also included. A passive antenna function for an extra band is optional. (The option has to be specified when ordering, retrofit is not possible).
The height and width are the same as for a passive antenna with similar characteristics. The depth is increased to house the radios' electronics. Digital Units (DUs) from Ericsson's RBS 6000 family provide the baseband function and support GSM, WCDMA and LTE.

Digital Units (DUs) from Ericsson's RBS 6000 family provide the baseband function and support GSM, WCDMA and LTE.

One or two DUs, depending on capacity and the standards to be supported, are needed for a three-sector site with AIR units.

The AIR is especially suited for state of the art mobile broadband basestations utilizing advanced MIMO techniques. Less tower-mounted equipment is required and the unit's attractive appearance enables it to blend in well with other existing equipment. The same applies to sites with multiple access technologies on different frequency bands. With Air, it is only necessary to swap antennas in order to add new 3G/4G technology on-site or at a new site. The AIR also saves power compared to traditional macro RBSs that use long feeders for antenna connections.



← Figure 2
Example of hardware that a single AIR unit can replace

Functionality for the AIR unit

Figure 2 shows an example of the hardware that a single AIR unit can replace. The function of the AIR unit is the same, but the implementation is different.
The AIR unit's active band has two radios (2) connected to a pair of cross-polarized antenna arrays (1). Remote electrical tilt (3) is included. Air supports 2 TX for the down-link and 4 RX for the up-link.
The passive antenna function on the frequency band not used by the AIR unit's active part is optional. The passive function includes an antenna array (4) and a RET motor (5) with a modem to control it (6).
The tilts for the active part and the passive part are controlled independently, but each band has the same tilt for both arrays and for both polarizations.

Configuration Example

Figure 3 shows a typical configuration with WCDMA with 2 × 2 MIMO for Band 1.
One AIR unit is deployed in each sector.
A common base band unit with a DUW inside provides base band processing and back-haul.
The AIR units can be specified with passive antennas for Band 4.

Figure 3 →
Three sector configuration example: RBS 6601 with three AIR units.

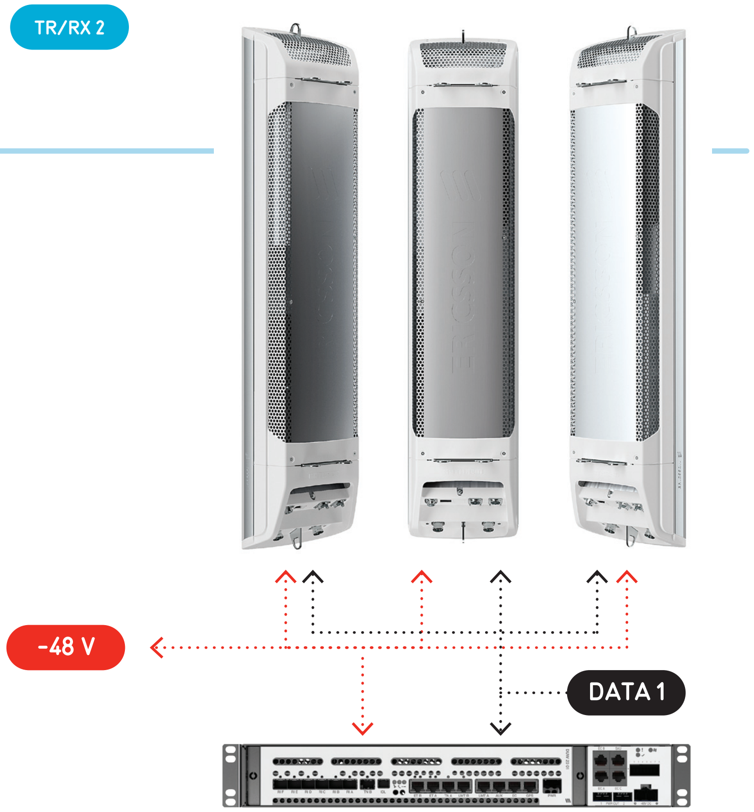
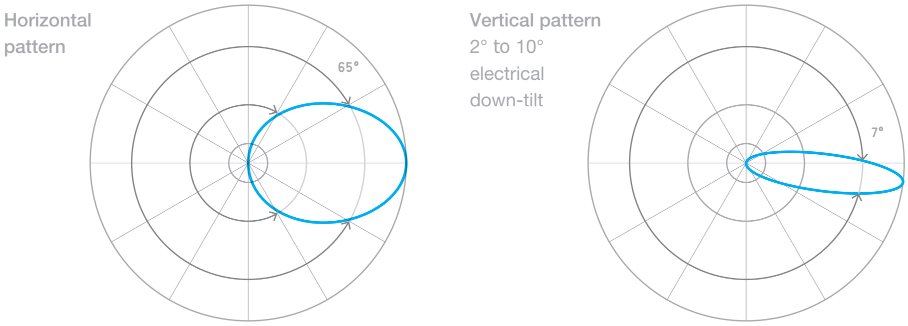


Figure 4
Antenna
Characteristics


Horizontal pattern

Vertical pattern
2° to 10° electrical down-tilt

Technical Specification

RADIO	
Active frequency band	Band 2 (1850-1910 / 1930-1990 MHz)
Passive frequency band (optional)	Band 4 (1710-1755 / 2110-2155 MHz)
Downlink EIRP in bore-sight direction for the active band	2 x 63 dBm
Uplink sensitivity	TBD*
Remote electrical tilt	-2° to -12°, independently controlled per frequency band
MIMO	2 x 2 for DL 4 RX branches to be used for diversity/beam-steering
Instantaneous bandwidth	20 MHz
Capacity (single standard per sector)	Up to 8 carriers GSM Up to 4 carriers WCDMA with 2 x 2 DL MIMO Up to 20 MHz LTE with 2 x 2 DL MIMO
Multi-RAT capability	Single standard or two simultaneous standards (Capacity above is reduced for multi-RAT)
Bore-sight antenna gain for passive antenna option	17.5 dBi
Nominal beam-width, azimuth	65°
Nominal beam-width, elevation	7°
Additional antenna parameters	See Figure 3
MECHANICAL	
Weight	32 kg (70 lb) for active only 38 kg (83 lb) for active and passive
Size (H x W x D)	56” x 12” x 8” (1422 mm x 300 mm x 200 mm)
Wind load (frontal/lateral/rear-side) @ 150 km/h wind speed	580 N / 300 N / 720 N
INTERFACES	
AIR – DU	DATA 1, Data 2: CPRI links (SFP modules with LC socket + flanges that match protective cover TYCO C20611458)
Power	- 48 V DC (TYCO/Ericsson RPT 447 04)
Passive antenna (option)	TX/RX 1, TX/RX 2: RF connectors (7/16 female)
SUPPORTING BASE-BAND	
RBS 6601	One or two units depending on configuration.

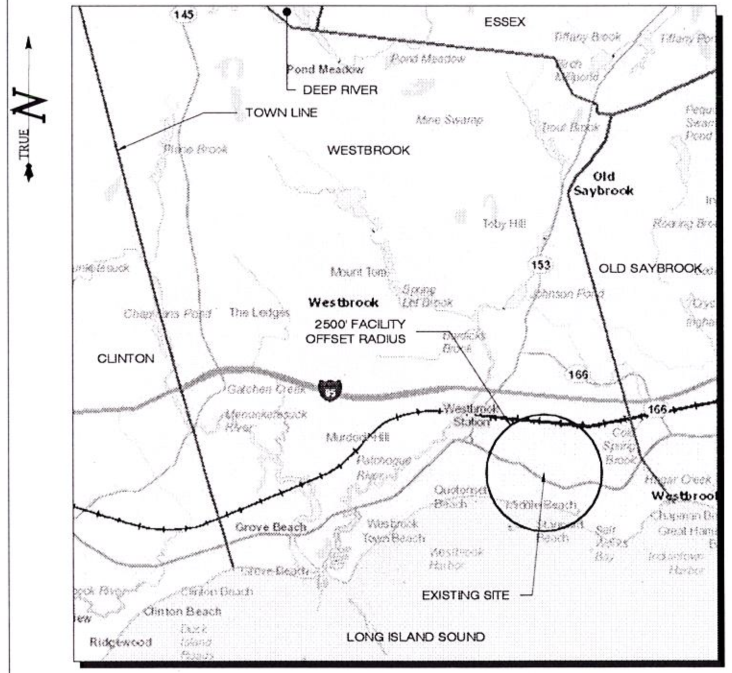
* Target: 1 dB better than best-in-class RRU connected to same size best-in-class antenna

** Other base-band configurations are available

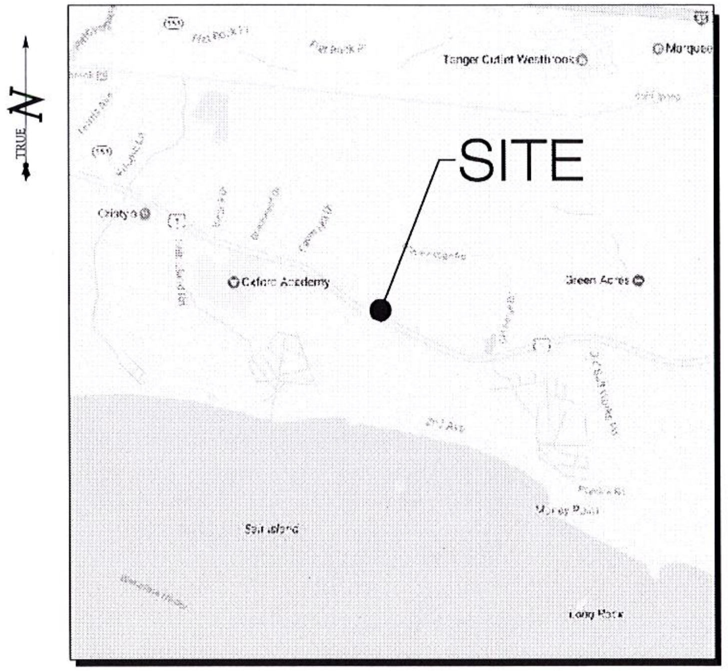
MCM COMMUNICATIONS, LLC

40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

WESTBROOK CT H2O TANK
1542 BOSTON POST ROAD
WESTBROOK, CT 06498



MUNICIPAL NOTIFICATION LIMIT MAP
SCALE : 1" = 4000'-0"



VICINITY MAP
SCALE : 1" = 1000'-0"

SITE INFORMATION

SITE TYPE:	NEW 163'± AGL TEMPORARY BALLASTED MONOPOLE
SCOPE OF WORK:	RELOCATED RF EQUIPMENT TEMPORARILY ON TEMPORARY BALLASTED MONOPOLE OUTSIDE OF THE EXIST. IRREGULARLY SHAPED (6,355± SF) FENCED COMPOUND
SITE NAME:	WESTBROOK CT H2O TANK
SITE ADDRESS:	1542 BOSTON POST ROAD WESTBROOK, CT 06498
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
COUNTY:	MIDDLESEX
ASSESSOR'S TAX ID#:	MAP: 182, LOT 7
ZONING DISTRICT:	NEIGHBORHOOD COMMERCIAL DISTRICT (NCD)
LATITUDE:	41° 16' 54.42193" N
LONGITUDE:	72° 26' 14.66283" W
GROUND ELEVATION:	47'± AMSL
PROPERTY OWNER:	CONNECTICUT WATER COMPANY 93 WEST MAIN STREET CLINTON, CT 06413
APPLICANT:	MCM COMMUNICATIONS, LLC 40 WOODLAND STREET HARTFORD, CT 06105
LEGAL:	CUDDY & FEDER, LLP 445 HAMILTON AVENUE 14TH FLOOR WHITE PLAINS, NY 10601
SITE ENGINEER:	ALL-POINTS TECHNOLOGY CORP., P.C. 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419 (860) 663-1697

LIST OF DRAWINGS

T-1	TITLE SHEET & INDEX
1 OF 1	TOPOGRAPHIC SURVEY
R-1	ABUTTERS MAP
A-1	COMPOUND PLAN & TOWER ELEVATION

MCM COMMUNICATIONS, LLC
40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

ALL-POINTS
TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

PERMITTING DOCUMENTS

NO	DATE	REVISION
0	06/12/17	FOR REVIEW: RCB
1	07/07/17	CLIENT REVS: RCB
2	07/19/17	FOR REVIEW: RCB
3	09/26/17	RELOCATE TOWER: RCB
4	09/28/17	CLIENT REVS: RCB
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

OWNER: THE CONNECTICUT WATER COMPANY
ADDRESS: 93 WEST MAIN STREET
CLINTON, CT 06413

MCM COMMUNICATIONS, LLC
"WESTBROOK CT H2O TANK "

SITE ADDRESS: 1542 BOSTON POST ROAD
WESTBROOK, CT 06498

APT FILING NUMBER: CT524120

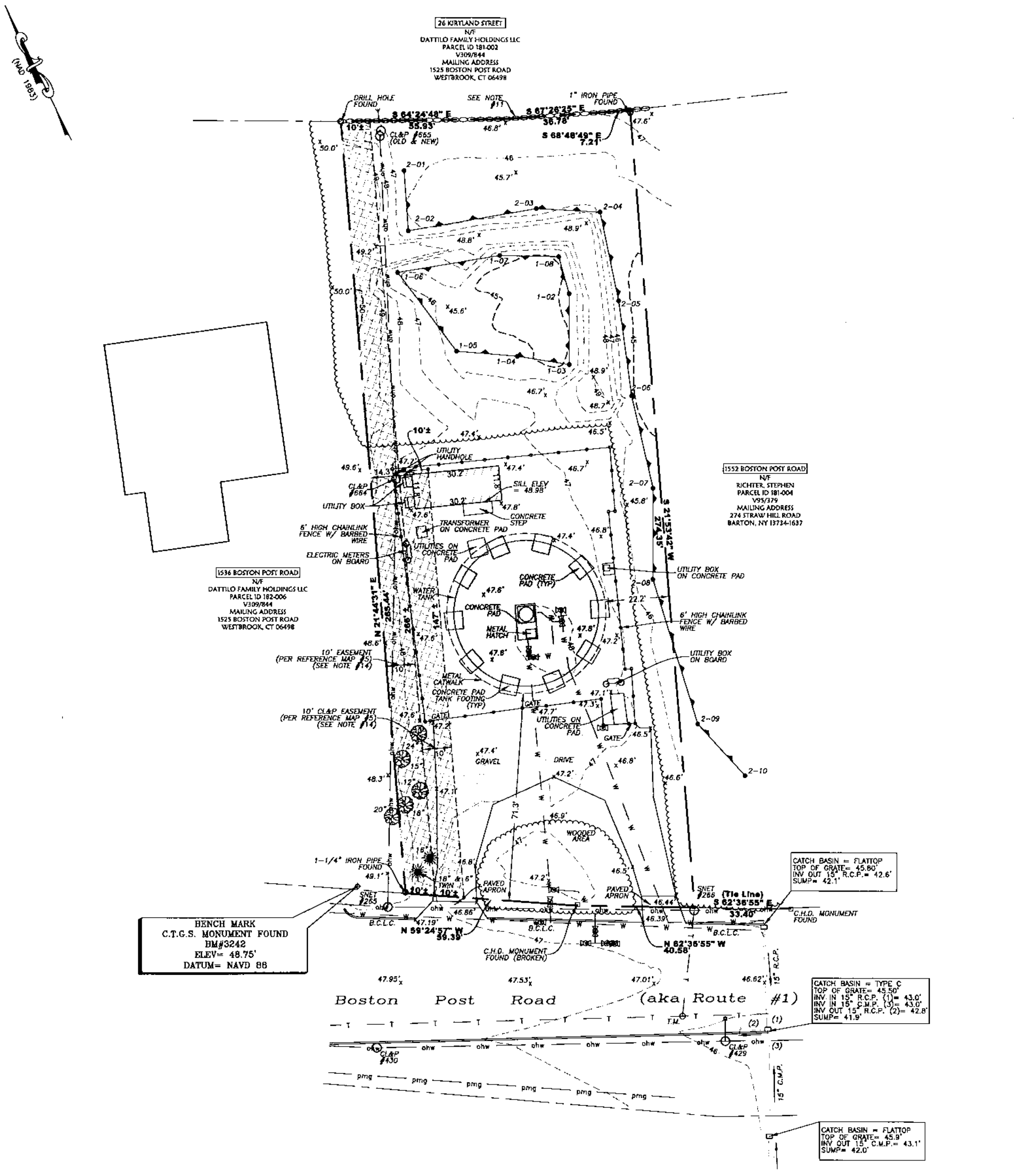
	DRAWN BY: CSH
DATE: 06/12/17	CHECKED BY: RCB

SHEET TITLE:
TITLE SHEET & INDEX

SHEET NUMBER:
T-1

Legend

SYMBOL	DESCRIPTION
•	PROPERTY CORNER
⊙	IP / REBAR
▣	MON / MERESTONE
◆	BENCH MARK
○	UTILITY POLE
○—•	UTILITY POLE W/ LIGHT
—<	GUY WIRE
⋈	GAS VALVE
⋈	WATER VALVE
◉	FIRE HYDRANT
□	CATCH BASIN
○	MANHOLE
⊤	SIGN
○	LIGHT POLE
■	YARD LIGHT
○	WOOD POST
❀	DECIDUOUS TREE
✹	CONIFEROUS TREE
○	SHRUB
●	STUMP
▭	HEDGE
∞	STONEWALL
⌒⌒	TREELINE
•—•—•	FENCE LINE
—ohw—	OVERHEAD WIRES
—w—w—	WATER LINE
—T—T—	TELEPHONE LINE
—pmg—	PAINT MARK GAS
— — —	INDEX CONTOUR
- - - -	INTERMEDIATE CONTOUR
━ ━ ━	PROPERTY LINE
—-—	PROPERTY LINE OTHER
⋯	ROAD PAINTMARKS
—▲—	WETLANDS
•?-??	WETLANDS FLAG
ˣX.X'	SPOT ELEVATION
▒	PLANTED AREA
░	GRAVEL AREA
□	EXISTING BUILDING
▨	EASEMENT
N/F	NOW OR FORMERLY
ELEV / EL	ELEVATION
E.M.	ELECTRIC METER
T.M.	TELEPHONE MANHOLE
(TYP)	TYPICAL
C.M.P.	CORRUGATED METAL PIPE
R.C.P.	REINFORCED CONCRETE PIPE
C.P.P.	CORRUGATED PLASTIC PIPE
E.O.P.	EDGE OF PAVEMENT
B.C.L.C.	BITUMINOUS CONCRETE LIP CURB
W/	WITH
C.H.D.	CONNECTICUT HIGHWAY DEPARTMENT
C.T.G.S.	CONNECTICUT GEODETIC SURVEY



Scale: 1"=20'

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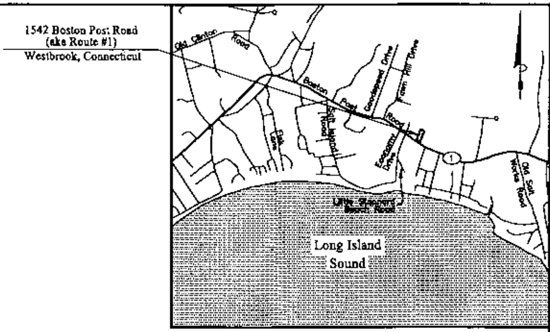

Location Map

Scale: 1"=2000'

0 1000 2000 4000

Notes

1) THIS SURVEY PLAN HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20-300B-1 THROUGH 20-300B-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF THE LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
A. TYPE OF SURVEY: TOPOGRAPHIC SURVEY
B. WITH RESPECT TO THE PERIMETER OF THE PROPERTY THE BOUNDARY DETERMINATION IS BASED UPON A RESURVEY OF REFERENCE MAP #4.
C. THIS SURVEY CONFORMS TO THE STANDARDS AND THE ACCURACY OF CLASS: A-2 HORIZONTAL & T-2 TOPOGRAPHIC ACCURACY.
D. BEARINGS AS DEPICTED ARE BASED UPON THE CONNECTICUT GRID SYSTEM NORTH AMERICAN DATUM OF 1983
E. ELEVATIONS BASED UPON NORTH AMERICAN VERTICAL DATUM 1988
F. CONTOUR INTERVAL = 1'
G. THE INTENT OF THIS MAP IS TO DEPICT THE EXISTING CONDITIONS OF THE PROPERTY

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6) WETLANDS BOUNDARY LIMITS DELINEATED BY ALL POINTS TECHNOLOGY CORPORATION AND FIELD LOCATED BY GESICK & ASSOCIATES, P.C. 01/09/2017.

7) THE FLOOD ZONE BOUNDARIES SHOWN WERE DERIVED UTILIZING FLOOD INSURANCE RATE MAPS. THE FLOOD ZONE BOUNDARIES WERE DIGITIZED AND ARE TO BE CONSIDERED AS APPROXIMATE ONLY AND FOR INFORMATIONAL PURPOSES ONLY. DATUM = NAVD 1988

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9) TREES SHOWN ON THIS MAP WERE FIELD LOCATED BUT ARE NOT SHOWN TO SCALE

10) UNLESS OTHERWISE NOTED, BUILDING OFFSETS ARE TO BUILDING SIDING ABOVE THE FOUNDATION

11) THE STONEWALLS AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF COURSE BETWEEN PRINCIPAL POINTS OF COURSE INDICATED.

12) TIE LINE IS NOT PROPERTY LINE.

13) HEIGHT OF WATER TANK = 121.8'

14) PARCEL IS SUBJECT TO EASEMENTS TO THE CONNECTICUT LIGHT AND POWER COMPANY AS SHOWN IN VOLUME 232 PAGE 245 OF THE TOWN OF WESTBROOK LAND RECORDS

Reference Maps

1. "MAP OF PROPERTY OF M.EUGENE CULVER & KATE H. SPARROW WESTBROOK CONNECTICUT"
   PREPARED BY L. NORMAN GERMAIN
   DATED SEPTEMBER, 1927 SCALE 1"=30' TOWN CLERK MAP #66
2. "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF WESTBROOK BOSTON POST ROAD FROM STANNARD BEACH ROAD WESTERLY ABOUT 1900 FEET ROUTE NO 1"
   PREPARED BY THE CONNECTICUT STATE HIGHWAY DEPARTMENT
   DATED OCTOBER 21, 1927 SCALE 1"=40' DRAWING 70 SHEET 1 OF 1
3. "CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP TOWN OF WESTBROOK BOSTON POST ROAD FROM WESTBROOK CENTER EASTERLY TO STANNARD HILL ROUTE US 1"
   PREPARED BY THE CONNECTICUT STATE HIGHWAY DEPARTMENT
   DATED MAY 28, 1929 SCALE 1"=40' DRAWING 831 SHEET 2 OF 2
4. "MAP OF PROPERTY OWNED BY THE CONNECTICUT WATER COMPANY WESTBROOK CONNECTICUT"
   PREPARED BY ROBERT C HART
   DATED OCTOBER 7, 1996 SCALE 1"=20'
5. "COMPILATION PLAN MAP SHOWING EASEMENT AREA TO BE GRANTED TO THE CONNECTICUT LIGHT AND POWER COMPANY ACROSS THE PROPERTY OF THE CONNECTICUT WATER COMPANY 1542 BOSTON POST ROAD WESTBROOK CONNECTICUT"
   PREPARED BY L-C ASSOCIATES INC.
   DATED OCTOBER 1, 2002 SCALE 1"=20' TOWN CLERK MAP #2325

Subject Parcel Information

OWNER:	THE CONNECTICUT WATER COMPANY
PARCEL ADDRESS:	1542 BOSTON POST ROAD WESTBROOK, CONNECTICUT 06498
MAILING ADDRESS:	93 WEST MAIN STREET CLINTON, CONNECTICUT 06413
PARCEL ID:	MAP 182 LOT 007
DEED:	VOLUME 15 PAGE 287
LAND USE ZONE:	NEIGHBORHOOD COMMERCIAL DISTRICT
AREA:	26833.12 SQ. FT. ± OR .62 ACRES ±
FLOOD ZONE:	ZONE X PER FIRM MAP COMMUNITY PANEL #S 09007C0337J & 09007C0341J DATED FEBRUARY 6, 2013 (SEE NOTE #6)

Copies of this survey map not bearing the Land Surveyor's Embossed Seal shall not be considered to be valid copies, certificates indicated or implied hereon shall run only to the party for whom the Survey is prepared, and on behalf to the additional parties listed hereon. Certificates are not transferable to additional parties, or subsequent owners not listed hereon.

To the best of my knowledge and belief this map is substantially correct as noted hereon.

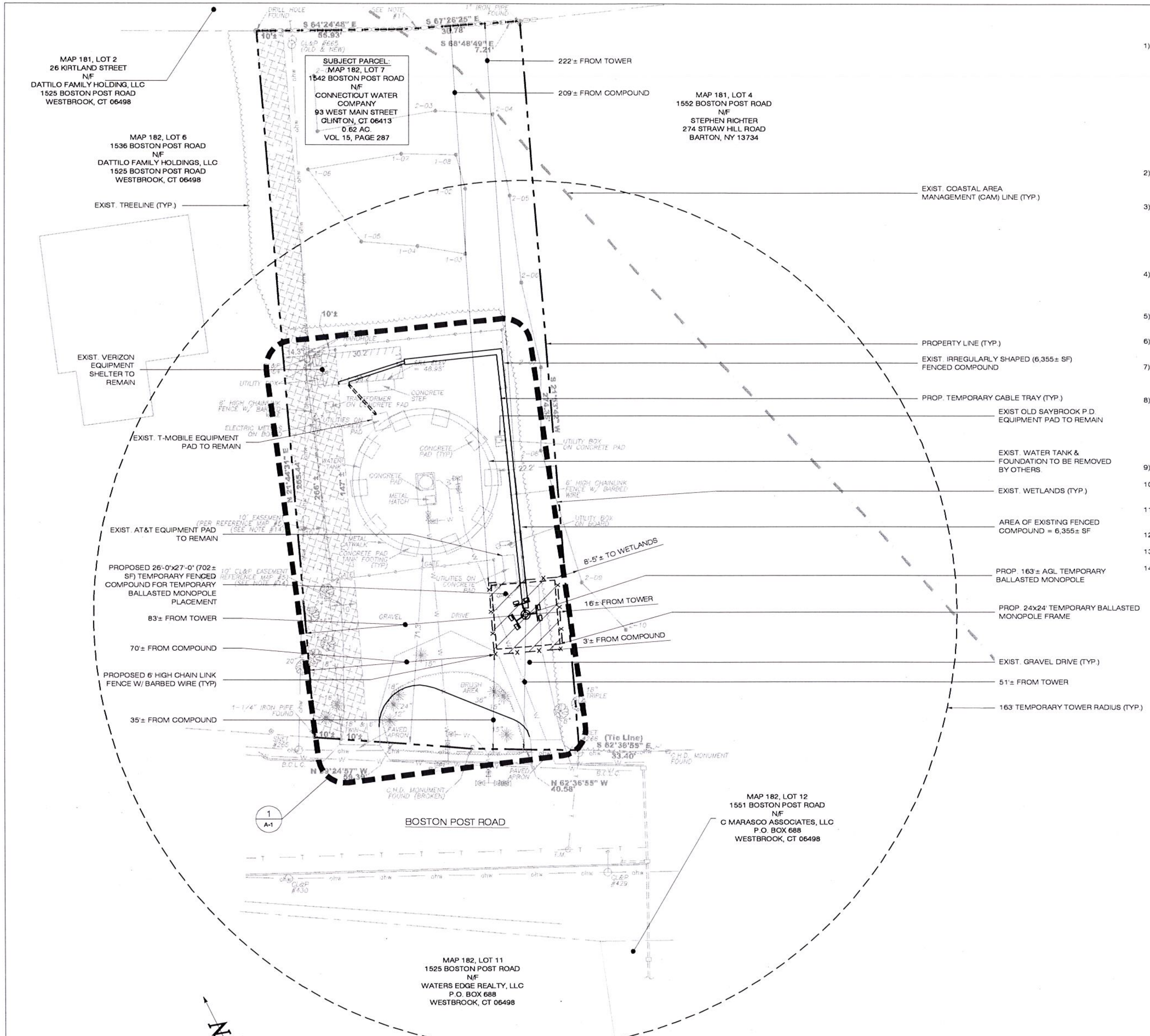
Donald L. Gesick Jr. L.S
Reg. No. 18417

GESICK & ASSOCIATES, P.C.
SURVEYORS ⬧ MAPPERS ⬧ PLANNERS
19 CEDAR ISLAND AVE.
CLINTON, CONNECTICUT 06413
OFFICE: 860-669-7799 FAX: 860-669-5833
www.gesicksurveyors.com

Topographic Survey
of
1542 Boston Post Road
(aka Route #1)
Westbrook, Connecticut
Prepared for
ConnecticutWater

Revisions

Date: January 18, 2017
Drawing: 17-002a
CWC Drawing: SL-1612
Drawn: P.H.
Sheet 1 OF 1



1 R-1 ABUTTERS MAP
SCALE : 1" = 20'-0"

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

SURVEY NOTES

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MCM COMMUNICATIONS, LLC
40 WOODLAND STREET
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3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419
WWW.ALLPOINTSTECH.COM
PHONE: (860)-663-1697
FAX: (860)-663-0935

PERMITTING DOCUMENTS

NO	DATE	REVISION
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2	07/19/17	FOR REVIEW: RCB
3	09/26/17	RELOCATE TOWER: RCB
4	09/28/17	CLIENT REVS: RCB
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

OWNER: THE CONNECTICUT WATER COMPANY
ADDRESS: 93 WEST MAIN STREET
CLINTON, CT 06413

MCM COMMUNICATIONS, LLC
"WESTBROOK CT H2O TANK "

SITE ADDRESS: 1542 BOSTON POST ROAD
WESTBROOK, CT 06498

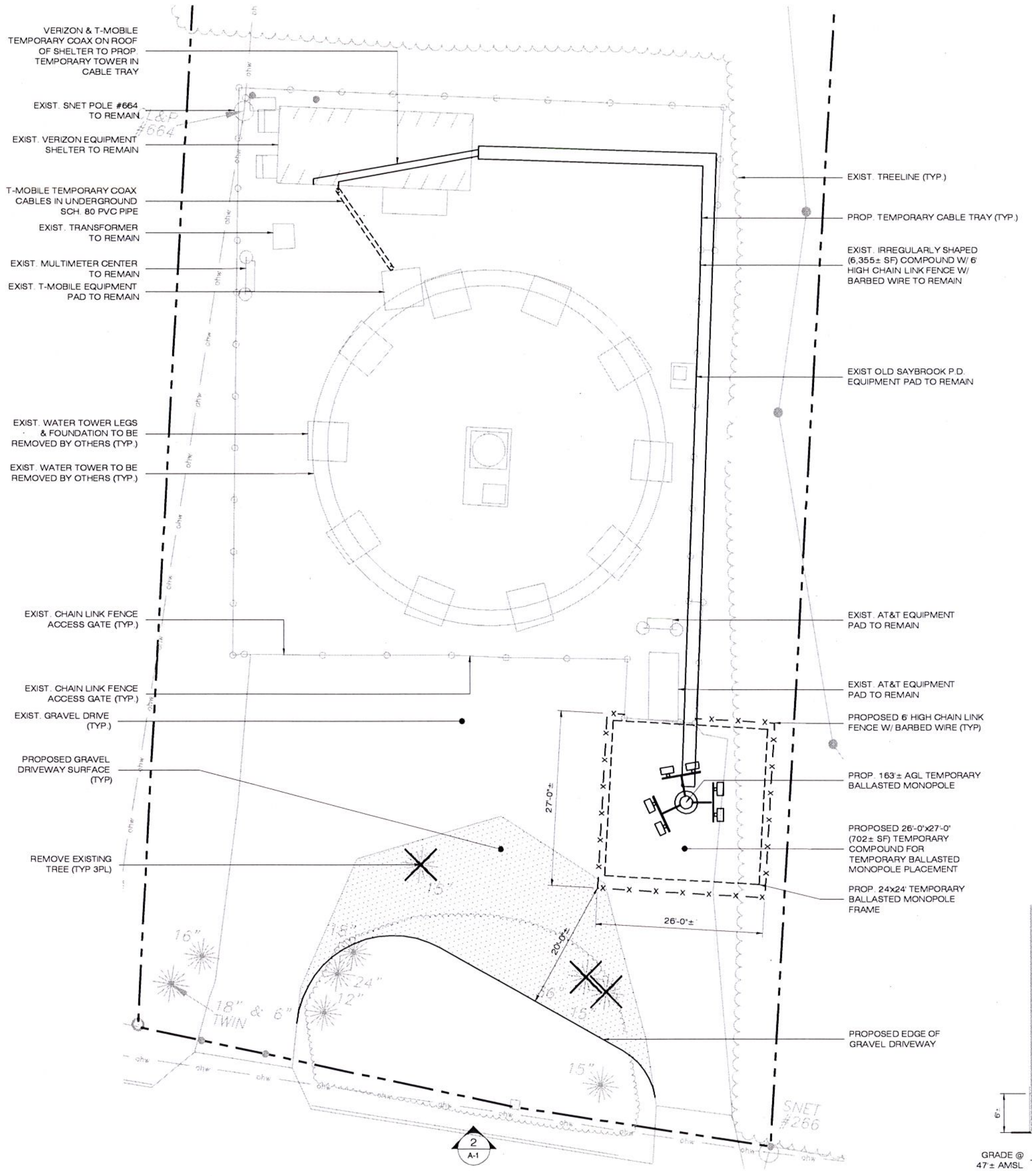
APT FILING NUMBER: CT524120

DRAWN BY: CSH
DATE: 06/12/17
CHECKED BY: RCB

SCOTT M CHASSE
No. 197

SHEET TITLE:
ABUTTERS MAP

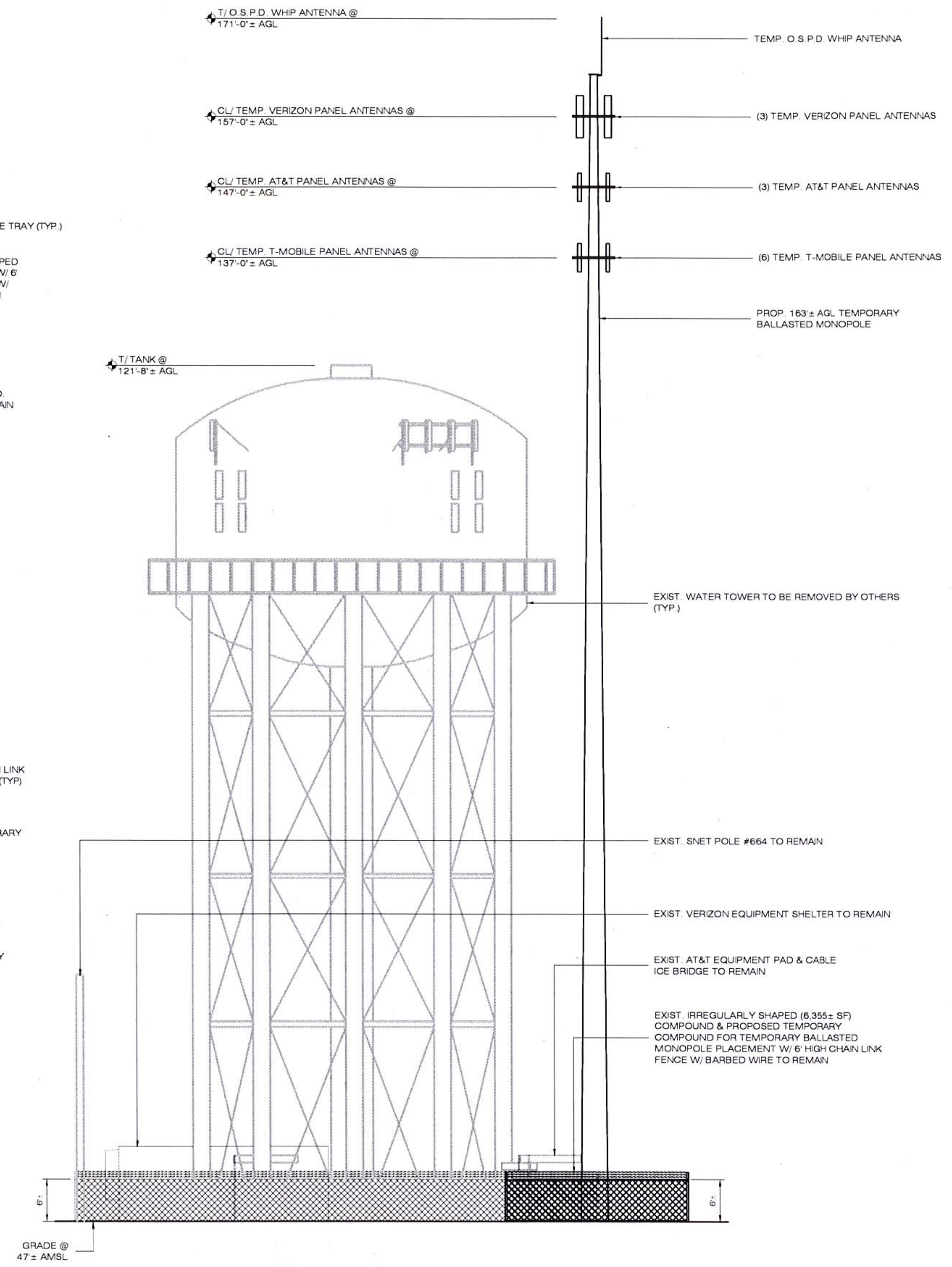
SHEET NUMBER:
R-1



N
TRUE

1 COMPOUND PLAN
A-1 SCALE : 1" = 10'-0"

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



2 SOUTH ELEVATION
A-1 SCALE : 1" = 10'-0"

MCM COMMUNICATIONS, LLC
40 WOODLAND STREET
HARTFORD, CT 06105
OFFICE: (888) 973-7483

ALL-POINTS
TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

PERMITTING DOCUMENTS

NO	DATE	REVISION
0	06/12/17	FOR REVIEW: RCB
1	07/07/17	CLIENT REVS: RCB
2	07/19/17	FOR REVIEW: RCB
3	09/26/17	RELOCATE TOWER: RCB
4	09/28/17	CLIENT REVS: RCB
5		
6		

DESIGN PROFESSIONALS OF RECORD

PROF: SCOTT M. CHASSE P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE
KILLINGWORTH, CT 06419

OWNER: THE CONNECTICUT WATER COMPANY
ADDRESS: 93 WEST MAIN STREET
CLINTON, CT 06413

MCM COMMUNICATIONS, LLC
"WESTBROOK CT H2O TANK "

SITE ADDRESS: 1542 BOSTON POST ROAD
WESTBROOK, CT 06498

APT FILING NUMBER: CT524120

DRAWN BY: CSH
DATE: 06/12/17
CHECKED BY: RCB

SHEET TITLE:
COMPOUND PLAN & TOWER ELEVATION

SHEET NUMBER:
A-1

Visual Assessment & Photo-Simulations

WESTBROOK CT H2O TANK
1542 BOSTON POST ROAD
WESTBROOK, CT 06498

Prepared in September 2017 by:
All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

Prepared for MCM Communications, LLC

ALL-POINTS
TECHNOLOGY CORPORATION

VISUAL ASSESSMENT & PHOTO-SIMULATIONS

MCM Communications, LLC ("MCM Communications") is seeking to relocate existing wireless communications facilities from a decommissioned Connecticut Water Company water tower located at 1542 Boston Post Road in Westbrook, Connecticut (the “Host Property”) to a temporary ballast mounted monopole at the same address. At the request of MCM Communications, All-Points Technology Corporation, P.C. (“APT”) completed this visual assessment and prepared computer-generated photo-simulations depicting the proposed installation of the temporary wireless telecommunications facility (“Facility”) at 1542 Boston Post Road in Westbrook, Connecticut (the “Host Property”).

Project Setting

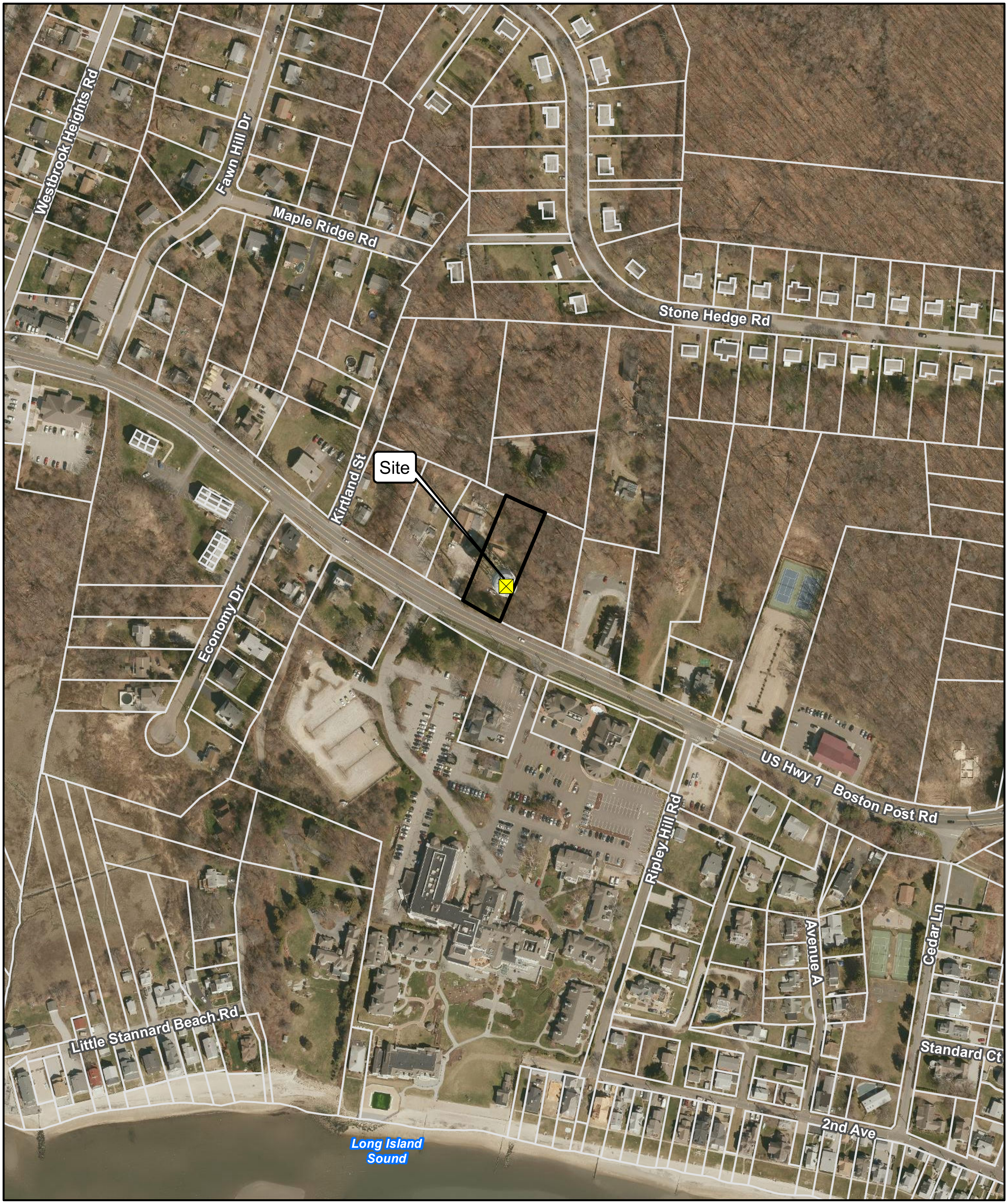
The Host Property is located along the northern side of Boston Post Road (US Route 1) and east of Kirtland Street, approximately ±0.24 mile north of Long Island Sound. The Host Property is currently developed with a ±121-foot-tall water tower housing exterior façade-mounted antennas and appurtenances belonging to three (3) separate service providers. The existing water tower is surrounded by a gravel base, fenced compound that houses communications ground equipment and enclosures. The water tower is scheduled to be removed in 2018 (by others). The surrounding land use is primarily residential, including beach communities associated with Long Island Sound to the southeast and southwest with the Water’s Edge Resort & Spa located directly across Boston Post Road to the south. Residences and undeveloped forested land are prevalent to the north. *See Figure 1 – Site Location Map.*

The proposed temporary Facility includes a ±163-foot-tall ballast mounted monopole surrounded by a ±27-foot by ±27-foot chain link fence, located approximately 36 feet to the southeast of the water tower. The temporary monopole would extend approximately 42 feet above the top of the existing water tank and would be constructed to temporarily hold the existing antennas currently affixed to the water tower, plus one (1) emergency services whip antenna, until a new permanent structure is constructed at a later date. Old Saybrook Police Department would install the temporary whip antenna at the top of the monopole that would extend to an approximate height of 171 feet above ground level (“AGL”). Verizon, AT&T and T-Mobile would install antenna arrays on the temporary monopole at centerline heights of ±160 AGL, ±150 AGL, and ±140 AGL, respectively. The proposed Facility components and their locations are illustrated in *Figure 2 – Proposed Equipment Location and Elevation Plan.*

Methodology

On July 26, 2017, APT personnel conducted field reconnaissance and photo-documented existing conditions. The existing water tower was used for reference during the reconnaissance. At each photo location, the geographic coordinates of the camera’s position were logged using global positioning system (“GPS”) technology. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter (“mm”) zoom lens using a focal length of 50 mm for consistency.

Three-dimensional computer models were developed for the building and proposed wireless telecommunication components from AutoCAD information. Photographic simulations were then generated to portray scaled renderings of the proposed temporary installation for comparative purposes. Using field data, site plan information and image editing software, the proposed Facility was scaled to the correct location and height, relative to the existing structure and surrounding area. A photolog map and copies of the existing conditions and photo-simulations are attached.



Legend

☒ Site

▢ Subject Property

▢ Approximate Parcel Boundary (CTDEEP GIS)

Figure 1 - Site Location Map

Proposed Wireless
Telecommunications Facility
Westbrook H2O
1542 Boston Post Road
Westbrook, Connecticut

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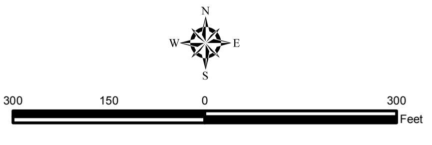
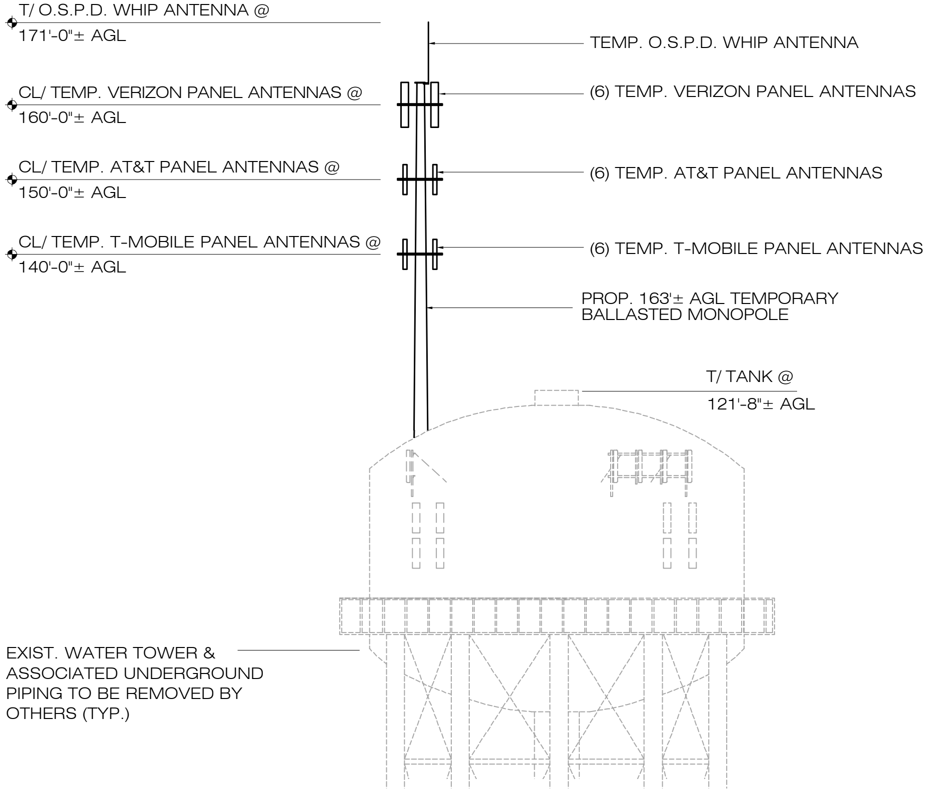
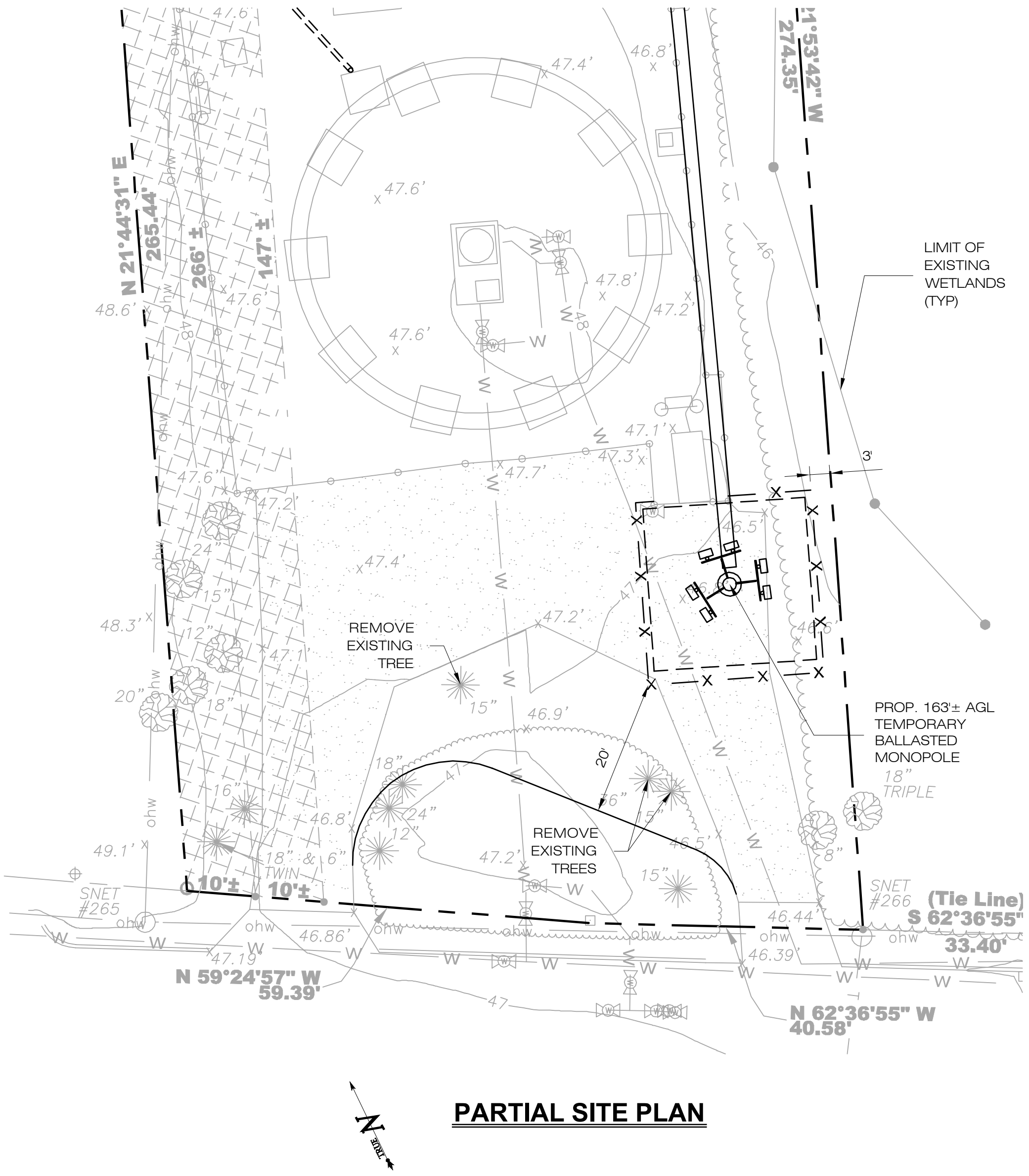
Map Notes:
Base Map Source: CT ECO 2016 Imagery
Map Scale: 1 inch = 300 feet
Map Date: September 2017





NORTH ELEVATION



PARTIAL SITE PLAN

FIGURE 2 - PROPOSED EQUIPMENT LOCATION AND ELEVATION PLAN

NOT TO SCALE.

Photograph Locations

Eight (8) photo-locations were simulated and present generally unobstructed view lines towards at least a portion of the proposed temporary Facility. The table below summarizes characteristics of the photographs and simulations presented in the attachment to this report including a description of each location, view orientation, and the distance from where the photo was taken relative to the proposed Facility. The photo locations are depicted on the photo-log map provided as an attachment to this report.

View	Location	Orientation	Distance to Site
1	Pointina Road	Northwest	±0.49 Mile
2	Old Salt Works Road	Northwest	±0.51 Mile
3	Ripley Hill Road	Northwest	±0.13 Mile
4	Water’s Edge Parking Area	North	±0.14 Mile
5	Water’s Edge Parking Area	Northeast	±0.11 Mile
6	Pepperidge Avenue at Salt Island Road	Northeast	±0.40 Mile
7	Salt Island Road	Northeast	±0.40 Mile
8	Seaside Avenue	Northeast	±0.95 Mile

Conclusions

The visibility of the proposed temporary Facility would be limited to neighboring areas up to ±0.50 mile to the southeast and to select shoreline locations extending to nearly one mile to the southwest, primarily where the existing water tower can be seen today. The combination of relatively flat terrain, existing residences and dense, mature tree canopy assist in limiting views of the Facility beyond these locations and to the north. The character of near-range views would change due to the addition of the temporary Facility and its increased height. Similarly, the overall footprint of visibility is anticipated to increase slightly when compared to that of the existing water tower. The monopole’s narrower profile will assist in decreasing visual impacts in general, especially at distances beyond ±0.50 mile.

Based on the results of this assessment, it is our opinion that the proposed installation of the proposed temporary Facility will have a minimal and short-term visual impact on existing views.

Limitations

The photo-simulations provide a representation of the Facility under similar settings as those encountered during the reconnaissance. They are however static in nature and do not necessarily characterize the prevailing views from all locations within a given area. For example, moving a few feet in either direction from a specific photo location may significantly alter the view, including obscuring the Facility altogether. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location.

ATTACHMENTS

PHOTO LOG

Legend

■ Site ● Visible

N W E S

1 inch = 1,000 feet

1,000 500 0 1,000 Feet

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**POINTINA ROAD**	**NORTHWEST**	**+/- 0.49 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	**POINTINA ROAD**	**NORTHWEST**	**+/- 0.49 MILE**

PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	**OLD SALT WORKS ROAD**	**NORTHWEST**	**+/- 0.51 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	OLD SALT WORKS ROAD	NORTHWEST	+/- 0.51 MILE

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**RIPLEY HILL ROAD**	**NORTHWEST**	**+/- 0.13 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
3	**RIPLEY HILL ROAD**	**NORTHWEST**	**+/- 0.13 MILE**

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**WATER'S EDGE PARKING AREA**	**NORTH**	**+/- 0.14 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
4	**WATER'S EDGE PARKING AREA**	**NORTH**	**+/- 0.14 MILE**

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	**WATER'S EDGE PARKING AREA**	**NORTHEAST**	**+/- 0.11 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
5	WATER'S EDGE PARKING AREA	NORTHEAST	+/- 0.11 MILE

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**PEPPERIDGE AVENUE AT SALT ISLAND ROAD**	**NORTHEAST**	**+/- 0.40 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
6	**PEPPERIDGE AVENUE AT SALT ISLAND ROAD**	**NORTHEAST**	**+/- 0.40 MILE**

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	SALT ISLAND ROAD	NORTHEAST	+/- 0.40 MILE

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MCM Communications, LLC

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
7	SALT ISLAND ROAD	NORTHEAST	+/- 0.40 MILE

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PHOTOGRAPHED ON 7/26/2017

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**SEASIDE AVENUE**	**NORTHEAST**	**+/- 0.95 MILE**

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PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
8	**SEASIDE AVENUE**	**NORTHEAST**	**+/- 0.95 MILE**

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ENVIRONMENTAL RESOURCES SCREENING

September 22, 2017

MCM Communications, LLC
40 Woodland Street
Hartford, CT 06105-2327
Attn: Virginia King

APT Project No.: CT524120

Re: Proposed Canterbury South Facility
1542 Boston Post Road
Westbrook, Connecticut

On behalf of MCM Communications, LLC ("MCM Communications"), All-Points Technology Corporation, P.C. ("APT") has completed desktop and field reviews to identify environmental resources at or in the vicinity of 1542 Boston Post Road in Westbrook, Connecticut (the "Host Property"). This memorandum documents those findings and provides an evaluation of potential effects on those resources by installing a temporary wireless communications facility ("Facility") at the Host Property.

The Host Property is located north of Boston Post Road (US Route 1) and east of Kirtland Street, approximately ±0.24 mile north of Long Island Sound. A ±121-foot-tall decommissioned Connecticut Water Company water tower is located in the southern portion of the Host Property housing multiple façade-mounted antennas and appurtenances belonging to three (3) separate service providers. The water tower is scheduled for removal by others in 2018, necessitating the installation of the Facility until a new permanent structure is constructed at a later date. The proposed Facility includes a temporary ±163-foot-tall ballast mounted monopole surrounded by a ±27-foot by ±27-foot chain link fence, located approximately 36 feet to the southeast of the water tower.

A review of environmental resources demonstrates that no sensitive resources would be directly impacted by the proposed Facility. The proposed Facility location is within a level area, currently covered in grass that requires minimal grading to construct the temporary Facility. Three (3) trees require removal to facilitate construction access.

The Facility location is not within wetlands, watercourses, flood zones, critical habitat or an aquifer protection area. Further, the Host Property is not depicted within the bounds of a Connecticut Department of Energy and Environmental Protection ("CT DEEP") Natural Diversity Data Base polygon representing potential rare, threatened or endangered species. The western boundary of a nearby inland wetland complex is located approximately 12 feet from the proposed construction area. In order to ensure protection of this resource, proper erosion and sedimentation ("E&S") controls should be installed and maintained during construction in accordance with the CT DEEP Bulletin 34 *2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control*. In addition, a wetland protection plan would be developed that includes contractor environmental awareness training and periodic environmental monitoring during construction. Provided these protective measures are implemented during construction, no adverse impact to wetlands is anticipated. An Environmental Resources Screen map is provided in the attachment to this memorandum.

The Host Property lies within the coastal resource boundary ("Coastal Boundary") pursuant to the Connecticut Coastal Management Act ("CCMA"). Construction activities would take place in previously developed areas and would have no effect on coastal resources.

The CCMA identifies eight potential adverse impacts to coastal resources defined below. The following discussion summarizes why the proposed Facility would not result in, or contribute to, an adverse impact on these resources.

1. *Degrading **water quality** of coastal waters by introducing significant amounts of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.*

   During construction, E&S controls would be established and maintained in accordance with the CT DEEP Bulletin 34 *Connecticut Guidelines for Soil and Erosion and Sediment Control*, dated 2002. Construction activities are temporary and, with the appropriate E&S measures in place and maintained, are not expected to impact water quality. Post-construction, stormwater generated at Host Property would not change substantially from existing conditions and therefore would not result in degradation of coastal water quality.

2. *Degrading **existing circulation patterns of coastal waters** by impacting tidal exchange or flushing rates, freshwater input, or existing basin characteristics and channel contours.*

   The Host Property is currently developed and outside of tidally influenced areas. The proposed Facility would result in minimal impervious surfaces and would not generate significant stormwater runoff or change existing drainage patterns. Therefore, it would not impact current drainage or circulation patterns of coastal waters.

3. *Degrading **natural erosion** patterns by significantly altering littoral transport of sediments in terms of deposition or source reduction.*

   The proposed Facility will not affect natural erosion patters or littoral transports of sediments.

4. *Degrading natural or existing drainage patterns by significantly altering groundwater flow and recharge and volume of runoff.*

   Drainage patterns would not be significantly altered by the construction and operation of the proposed Facility. The proposed Facility site currently consists of a compacted surface covered in lawn. Construction of the Facility would replace this area with gravel. As a result, there would be no substantive change to existing stormwater drainage patterns, alteration of groundwater flow and recharge, or increase in the volume of runoff experienced today.

5. *Increasing the hazard of **coastal flooding** by significantly altering shoreline configurations or bathymetry, particularly within high velocity flood zones.*

   The Host Property lies outside of the 100-year and 500-year flood zones. Therefore, development and operation of the Facility would not increase coastal flooding.

6. *Degrading **visual quality** by significantly altering the natural features of vistas and viewpoints.*

   The visibility of the proposed Facility would be primarily limited to neighboring areas where the existing water tower can be seen today. The combination of relatively flat terrain and dense, mature tree canopy assist in limiting views to these visual receptor locations. The character of near-range views would change due to the addition of the Facility. The overall footprint of visibility is anticipated to increase slightly when compared to that of the existing water tower. However, the proposed monopole's narrow profile would also assist in decreasing visual impacts, especially at distances beyond ±0.5 mile. The proposed installation of the Facility will have a minimal and short-term visual impact on existing views. Therefore, the project would not degrade the visual quality or significantly alter the natural features of vistas and viewpoints within the coastal zone.

7. *Degrading or destroying* ***essential wildlife, finfish or shellfish habitat*** *by significantly altering the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significantly altering the natural components of the habitat.*

    No open water habitat exists on or proximate to the Host Property that would support finfish or shellfish habitat. No essential wildlife habitat is supported by the Host Property, which is currently developed with a water tower facility that includes compacted surfaces and areas of cleared vegetation immediately adjacent to Route 1.

8. *Degrading* ***tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments*** *by significantly altering their natural characteristics or function.*

    Development and operation of the proposed Facility would not alter the natural characteristics of any coastal resources as none exist on, adjacent or proximate to the proposed construction area. The nearest coastal resources to the Host Property appear to be tidal wetlands located ±0.1 mile to the southwest.

Based on the results of this screening, it is APT's opinion that the proposed Facility would have no likely adverse effects on environmental resources in the project area.

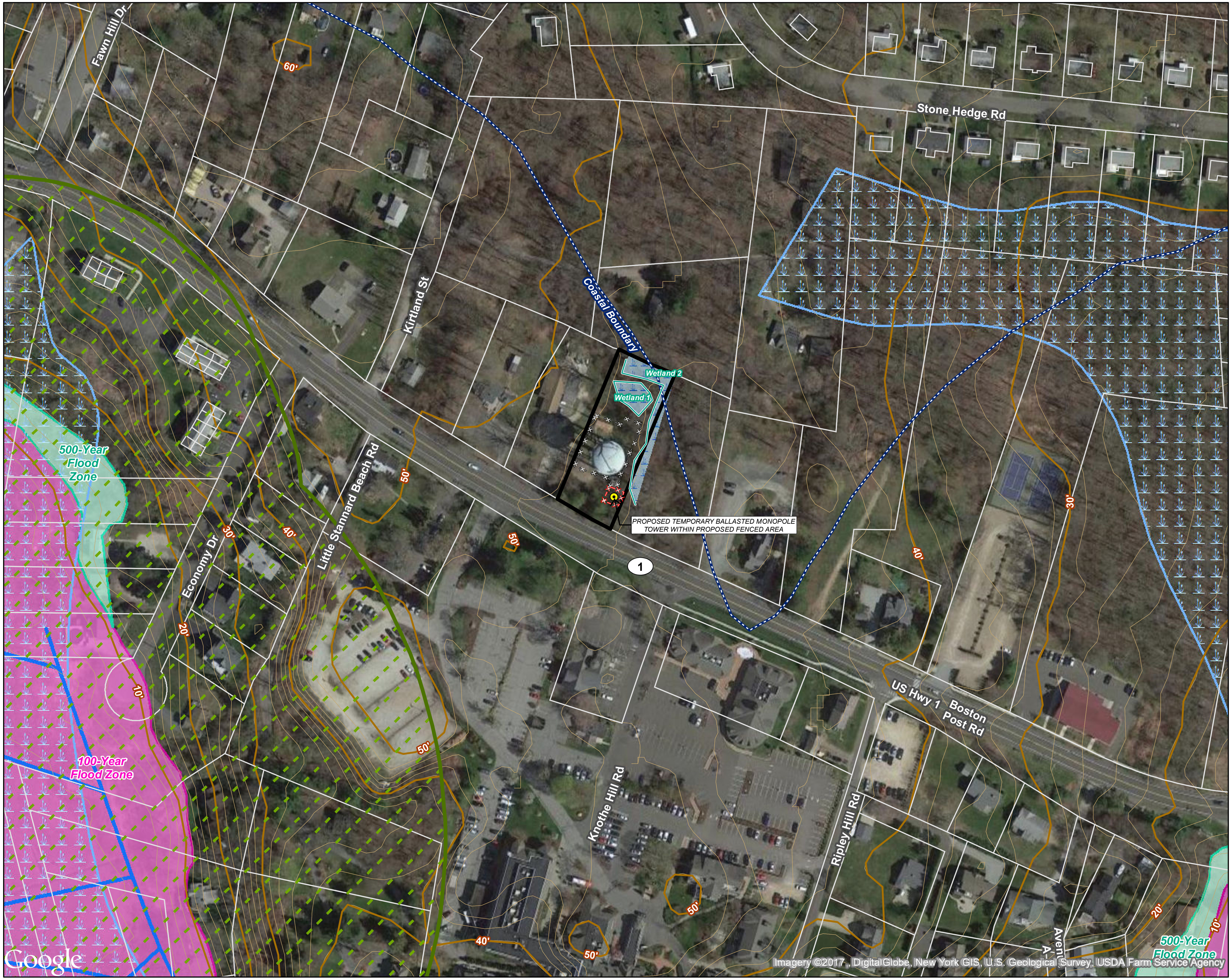
Sincerely,

Michael Libertine

Michael Libertine,
Director of Siting and Permitting

Attachments

Environmental Resources Screen Map



PROPOSED TEMPORARY BALLASTED MONOPOLE TOWER WITHIN PROPOSED FENCED AREA

Imagery ©2017 , DigitalGlobe, New York GIS, U.S. Geological Survey, USDA Farm Service Agency

C:\Users\NicoleCastro\Dropbox (APT GIS)\APT GIS Team Folder\Projects\MCM\Westbrook WT\mxd\EVResourcesScreen_11x17Layout.mxd

Environmental Resources
Proposed Wireless Telecommunications Facility
Westbrook H2O
1542 Boston Post Road, Westbrook, CT

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Legend

- ● Proposed Temporary Ballasted Monopole Tower
- Proposed Fenced Compound
- Existing Fenced Compound
- Approximate Subject Property
- 10-foot Contour Line
- 2-foot Contour Line
- Delineated Wetland Boundary
- Delineated Wetland Area
- Wetlands (CTDEEP)
- Open Water (CTDEEP)*
- Watercourse (CTDEEP)
- Coastal Boundary (CTDEEP)
- Natural Diversity Database Area (June 2017)
- Critical Habitat (CTDEEP; July 2009)*
- Approximate Parcel Boundary (CTDEEP)

Aquifer Protection Area (CTDEEP, Dec 2015)*

- Final Adopted Aquifer Protection Area
- Final Aquifer Protection Area
- Preliminary Aquifer Protection Area

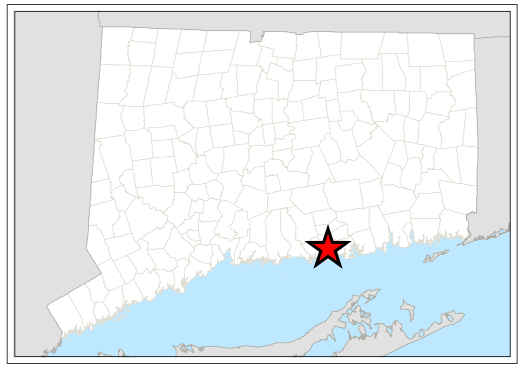
FEMA Flood Zones

- 100-Year Flood Zone
- 500-Year Flood Zone
- Floodway*

N
W E
S

150 75 0 150
Feet

1 in = 150 ft



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Map Sources:

*Legend item not in mapped area

Ortho Base Map: Google Imagery

Elevation contours derived from 2000 LiDAR data provided by CTECO

Flood Zones obtained from FEMA National Flood Hazard Layer(NFHL) dataset.

CTDEEP's data library (http://www.ct.gov/deep)
Data layers are maintained and updated by CTDEEP and represent the most recent publications.

Map Date: September 2017

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TECHNOLOGY CORPORATION

Tree Inventory

September 28, 2017

Cuddy & Feder, LLP
Attn: Christopher Fisher, Esq.
445 Hamilton Avenue
14th Floor
White Plains, NY 10601

RE: Tree Inventory
Site: Westbrook CT H2O Tank
1542 Boston Post Road
Westbrook, CT 06498

Dear Attorney Fisher:

A Tree Inventory was completed at the subject site on January 18, 2017 to determine the size and quantity of existing trees that will need to be removed for the installation of the proposed temporary facility expansion and proposed ballasted tower. It is determined that 3 trees will need to be removed for the proposed improvements.

6" – 10" dbh	- 0 trees
10" – 14"dbh	- 0 trees
14" or greater dbh	- 3 trees

The area to be disturbed for construction of the expanded compound area will be approximately 702 square feet of existing grass and brush/wooded area. The area to be cleared is located on the interior of the site. The total combined area of disturbance for compound, parking, and driveway expansion and proposed ballasted tower installation is 1,600 sf.

Sincerely,

ALL-POINTS TECHNOLOGY CORPORATION, P.C.

Scott M. Chasse, P.E.
Principal

SCOTT M. CHASSE
No.19728