



Daniel F. Caruso
Chairman

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/csc

July 20, 2009

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-126-090612** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 219 Nell's Rock Road, Shelton, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The 18 vertical runs of 2.25 inch dia. coaxial cable associated with Verizon Wireless' panel antennas shall be stacked in two rows with one row of nine cables directly in front of the second row of nine cables. The vertical cables must be installed on leg mounted brackets instead of on a cable ladder;
- The proposed Verizon Wireless antennas and transmission lines shall be installed in accordance with the structural analysis report dated June 6, 2009 and sealed by James Boltz, P.E.; and
- Not more than 45 days after completion of construction, the Council shall be notified in writing that the antennas and coax cables were installed as specified.

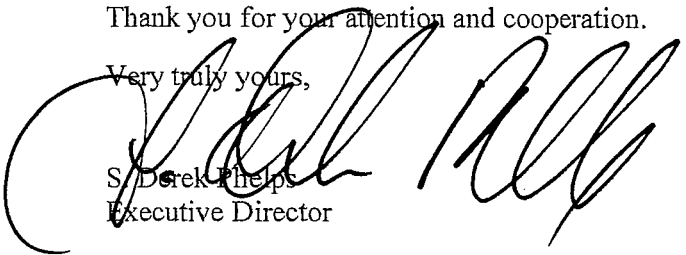
The proposed modifications are to be implemented as specified here and in your notice dated June 12, 2009, including the placement of all necessary equipment and shelters within the tower compound. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such

notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,


S/ Derek Phelps
Executive Director

SDP/MP/laf

c: The Honorable Mark A. Lauretti, Mayor, City of Shelton
Richard Schultz, Planning Administrator, City of Shelton
Christopher B. Fisher, Esq., Cuddy & Feder LLP



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Chairman

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

Internet: ct.gov/esc

June 15, 2009

The Honorable Mark A. Lauretti
Mayor
City of Shelton
54 Hill Street
P. O. Box 364
Shelton, CT 06484

RE: **EM-VER-126-090612** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 219 Nell's Rock Road, Shelton, Connecticut.

Dear Mayor Lauretti:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by June 29, 2009.

Thank you for your cooperation and consideration.

Very truly yours,

S. Derek Phelps
Executive Director

SDP/jb

Enclosure: Notice of Intent

c: Richard Schultz, Planning Administrator, City of Shelton

EM-VER-126-090612

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

ORIGINAL

June 12, 2009

Via Hand Delivery

RECEIVED
JUN 12 2009
CONNECTICUT
SITING COUNCIL

S. Derek Phelps
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification**
219 Nell's Rock Road, Shelton, Connecticut

Dear Mr. Phelps:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") intends to install antennas on the existing 162-foot lattice tower owned by AT&T located at 219 Nell's Rock Road in Shelton, Connecticut. Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mark A. Lauretti, Mayor of the City of Shelton. AT&T is the owner of the property on which the tower is located.

The facility consists of a 162-foot lattice tower capable of supporting multiple carriers. The tower is currently shared by several unidentified users with antennas attached to a platform at the top of the tower. AT&T maintains antennas at the 165-foot level; Sprint Nextel maintains antennas at the 149-foot level; and T-Mobile maintains antennas at the 133-foot level.

Cellco intends to install six (6) DB846F65ZAXY; six (6) LPA-185080/12CF; and three (3) BXA70063/6CF antennas at the 122-foot level on the tower. Equipment associated with Cellco's antennas, including a propane-fueled back-up generator, will be located inside a 12' x 30' equipment shelter on the ground within the existing fenced compound. A 1000 gallon propane tank will also be installed within the existing fenced compound. Attached behind Tab 1 are Project Plans for the proposed Cellco facility.



Law Offices

BOSTON

HARTFORD

NEW LONDON

STAMFORD

WHITE PLAINS

NEW YORK CITY

SARASOTA

www.rc.com

HART1-1548519-1

ROBINSON & COLE_{LLP}

S. Derek Phelps
June 12, 2009
Page 2

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

1. The proposed modifications will not increase the overall height of the existing tower. Cellco's antennas will be mounted with their centerline at the 122-foot level on the 162-foot tower.
2. The proposed installation of Cellco's equipment shelter and propane tank will not require an extension of the existing fenced compound area.
3. The proposed installation will not increase the noise levels at the facility by six decibels or more.
4. The operation of the antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. The RF power density calculations for Cellco's antennas would be 25.74% of the FCC standard. Information regarding the RF emissions of carriers on the existing tower, was compiled from existing Council records and provided to Cellco for use in this filing. Using this additional information, a cumulative power density calculations table was produced and is attached behind Tab 2.

Included behind Tab 3 is a Structural Analysis Report confirming that the tower and foundation can support the existing and Cellco antennas, and associated equipment.

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

Sincerely,



Kenneth C. Baldwin

Attachments
Copy to:

Mark A. Lauretti, Shelton Mayor
Sandy M. Carter
Michelle Kababik



Cellco Partnership

d.b.a. **verizon** wireless

SHELTON NORTH 2

219 NELLS ROCK ROAD
SHELTON, CT 06484

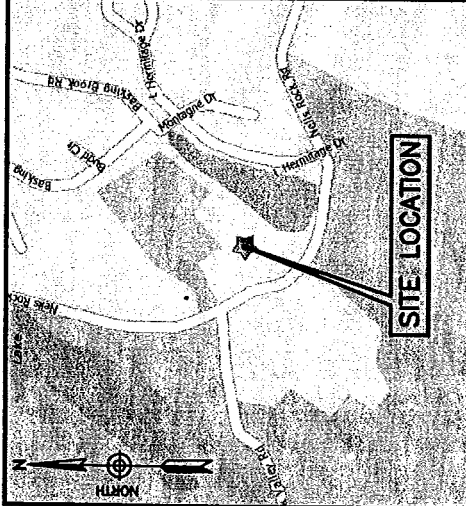
NOTE:
THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

THE INSTALLATION OF THE PROPOSED ANTENNAS, MOUNTS, CABLES AND ASSOCIATED HARDWARE SHOWN IN THESE PLANS IS PREDICATED ON THE TOWER HAVING SUFFICIENT STRUCTURAL CAPACITY AS INDICATED BY THE STRUCTURAL ANALYSIS REPORT PREPARED ON JUNE 6, 2009 BY "COMMUNICATION STRUCTURES ENGINEERING, INC", ENTITLED "STRUCTURAL CALCULATIONS FOR AT&T OWNED 162'-6" SELF SUPPORTED TOWER, SHELTON, CT, VERIZON WIRELESS INSTALLATION, FAIRFIELD COUNTY, CT," CERTIFIED BY JAMES E. BOLTZ P.E.

DIRECTIONS (FROM HARTFORD, CT):

TAKE I-91 SOUTH TOWARD NEW HAVEN.
MERGE ONTO CT-15 S VIA EXIT 17.
MERGE ONTO CT-34 W VIA EXIT 58 TOWARD DERBY.
TURN LEFT ONTO BRIDGE ST.
TURN RIGHT ONTO HOWE AVE/CT-110.
TURN LEFT ONTO WHITE ST/CT-108.
TURN RIGHT ONTO PERRY AVE/CT-108.
CONTINUE TO FOLLOW CT-108.
TURN LEFT ONTO NELLS ROCK RD.



LOCATION MAP
SHELTON, CT

PROJECT SUMMARY

SITE NAME: SHELTON NORTH 2
SITE ADDRESS: 219 NELLS ROCK ROAD
SHELTON, CT 06484
TOWER OWNER: AT&T
310 ORANGE STREET
NEW HAVEN, CT 06511
APPLICANT: CELCO PARTNERSHIP
d.b.a. VERIZON WIRELESS
99 EAST RIVER DRIVE
EAST HARTFORD, CT 06108
CONTACT PERSON: SANDY CARTER
CELCO PARTNERSHIP
(860) 803-8219
COORDINATES: LATITUDE: 41° 18' 15.3" N (NAD 83)
LONGITUDE: 73° 07' 5.7" W (NAD 83)
COORDINATES TAKEN USING
HAND HELD GPS

SHEET INDEX	
SHEET NO.	DESCRIPTION
T-1	TITLE SHEET
S-1	PARTIAL SITE PLAN
S-2	TOWER ELEVATION

NOTE:

DRAWINGS FOR SITING COUNCIL ONLY.
NOT TO BE USED FOR CONSTRUCTION.

NO.	DATE	BY	DESCRIPTION
4	06/12/09	DU	REVISED SITING COUNCIL
3	06/09/09	BAD	REVISED SITING COUNCIL
2	11/21/07	CMS	REVISED SITING COUNCIL
1	08/23/07	DQ	REVISED SITING COUNCIL
0	08/20/07	CMS	SITING COUNCIL

Dewberry
Dewberry-Goodkind, Inc.
59 ELIZABETH STREET
NEW HAVEN, CT 06510
203.776.2277 PHONE
203.776.2287 FAX

SCALE: AS SHOWN
DESIGNED BY: CKD
DATE: 06/09/09
DGI PROJECT NO.: 50018755

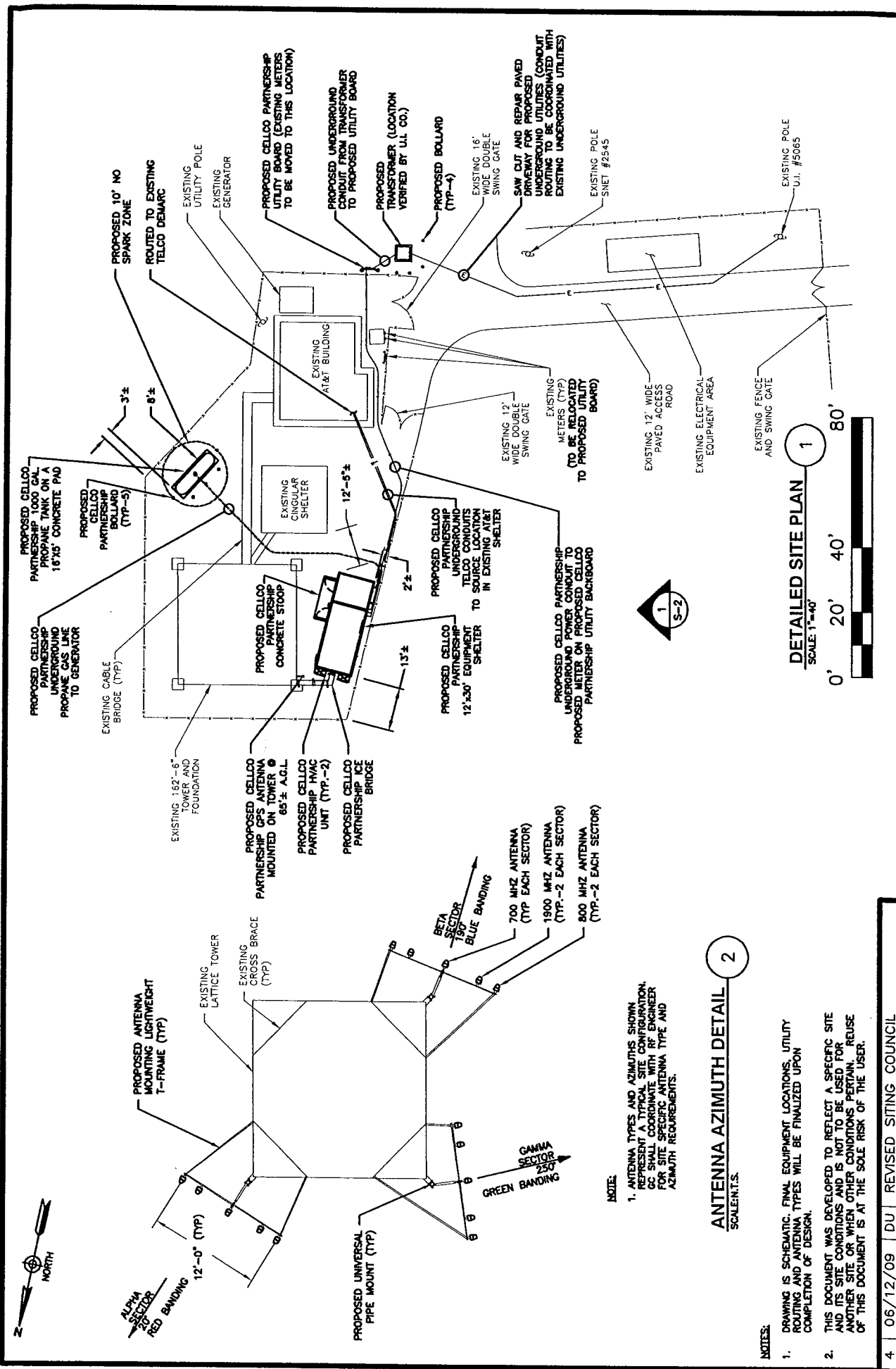
TITLE SHEET

SITE NAME: SHELTON NORTH 2
219 NELLS ROCK ROAD
SHELTON, CT 06484

Cellco Partnership
d.b.a. **verizon** wireless

PROJECT: 2003033374
LOCATION CODE: 118090

SHEET NO. T-1



NOTE:
1. ANTENNA TYPES AND AZIMUTHS SHOWN ARE TENTATIVE AND COORDINATE WITH THE ENGINEER FOR SITE SPECIFIC ANTENNA TYPE AND AZIMUTH REQUIREMENTS.

ANTENNA AZIMUTH DETAIL
SCALE: 1"=10'

- NOTES:**
- DRAWING IS SCHEMATIC. FINAL EQUIPMENT LOCATIONS, UTILITY ROUTING AND ANTENNA TYPES WILL BE FINALIZED UPON COMPLETION OF DESIGN.
 - THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

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3	06/09/09	BAD	REVISED SITING COUNCIL
2	11/21/07	CMS	REVISED SITING COUNCIL
1	08/23/07	DQ	REVISED SITING COUNCIL
0	08/20/07	CMS	SITING COUNCIL

Dewberry
Dewberry-Goodkind, Inc.
98 ELM STREET
SLATE 101
NEW HAVEN, CT 06510
203.776.2277 PHONE
203.776.6289 FAX

SCALE: AS SHOWN
DESIGNED BY: CKD
DATE: 06/09/09
DGI PROJECT NO. 50018755

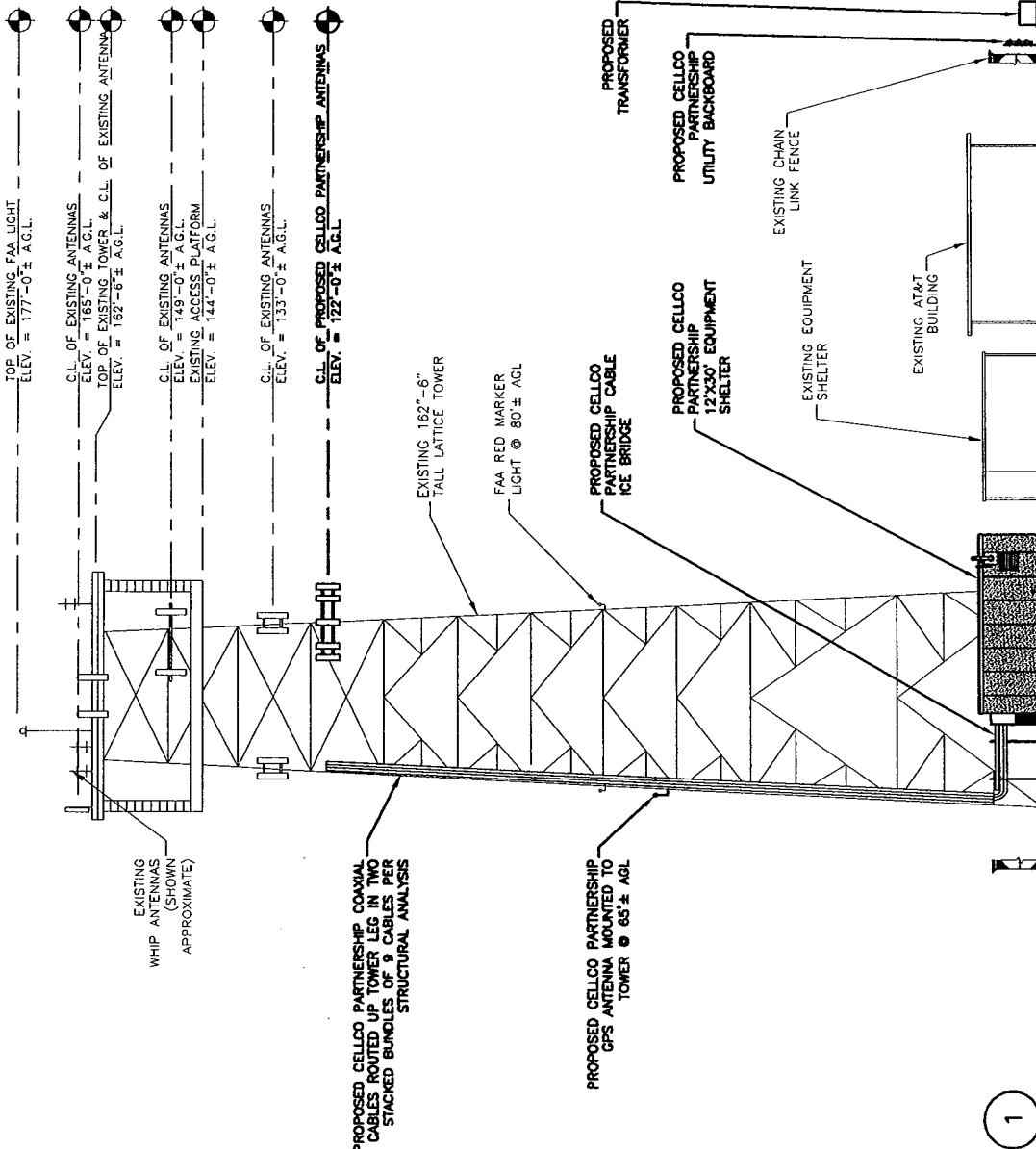
PARTIAL SITE PLAN

Cellco Partnership
d.b.a. **verizon wireless**

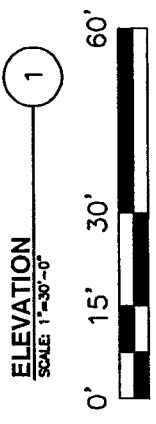
SITE NAME: SHELTON NORTH 2
219 NELLS ROCK ROAD
SHELTON, CT 06484

PROJECT: 2003033374
LOCATION CODE: 118090

SHEET NO. S-1



- NOTES:**
- DRAWING IS SCHEMATIC. FINAL EQUIPMENT LOCATIONS, UTILITY ROUTING AND ANTENNA TYPES WILL BE FINALIZED UPON COMPLETION OF DESIGN.
 - THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.
 - EXISTING PANEL ANTENNA ELEVATIONS ARE TAKEN FROM STRUCTURAL ANALYSIS PREPARED BY COMMUNICATION STRUCTURES ENGINEERING, INC. DATED 6/06/09 (SEE STRUCTURAL NOTE ON SHEET T-1)



NO.	DATE	BY	DESCRIPTION
4	06/12/09	DU	REVISED SITING COUNCIL
3	06/09/09	BAD	REVISED SITING COUNCIL
2	11/21/07	CMS	REVISED SITING COUNCIL
1	08/23/07	DQ	REVISED SITING COUNCIL
0	08/20/07	CMS	SITING COUNCIL

Dewberry
Dewberry-Goodkind, Inc.
59 ELM STREET
SHELTON, CT 06484
203.776.5284 FAX

SCALE:
AS SHOWN
DESIGNED BY: CKD
DATE: 06/09/09
DGI PROJECT NO. 50018755

TOWER ELEVATION

Cellco Partnership
d.b.a. **verizon wireless**

SHEET NO. S - 2

PROJECT: 2003033374
LOCATION CODE: 118090

SITE NAME: SHELTON NORTH 2
219 NELS ROCK ROAD
SHELTON, CT 06484

	General		Power	Density						
Site Name: Shelton N 2										
Tower Height: Verizon @ 122 ft										
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total		
*Cingular	2	296	162	0.0081	880	0.5867	1.38%			
*Cingular	2	427	162	0.0117	1930	1.0000	1.17%			
*SNET	19	40	167	0.0098	825	0.5500	1.78%			
*Sprint			155	0.02008	1962.5	1.0000	2.01%			
*PageNet			181	0.017	931	0.6207	2.74%			
*VoiceStream			140	0.012	1930	1.0000	1.20%			
*Arrow Bus			160	0.0038		0.2	1.90%			
*Metricom			171.5	0.0024		1	0.02%			
Verizon	7	446	122	0.0754	1970	1.0000	7.54%			
Verizon	9	383	122	0.0833	869	0.5793	14.37%			
Verizon	1	787	122	0.0190	757	0.4973	3.82%			
								37.95%		
* Source: Siting Council										



Mr. Larry Montee
AT&T Corporation National Tower Engineering
1200 Peachtree Street, Atlanta, GA 30309

June 06, 2009

Re: Structural Review of AT&T's Existing 162'-6" Lattice Steel Tower at Shelton, CT
AT&T Corporate Site I.D: **Shelton, CT**
Location: 219 Nells Rock Road, Shelton, CT 06484
Latitude N 41° 18' 15", Longitude W 73° 07' 06", Fairfield County, CT

Dear Mr. Montee,

Communication Structures Engineering, Inc. has completed a structural review of the existing 162'-6 Type 'A' tower located at this AT&T Corporation site known as Shelton, CT. In accordance with your request, we have performed a structural analysis of this tower to check its capability to support the existing loads as well as the new loads from the proposed **Verizon Wireless** antennas & transmission line additions. In accordance with AT&T's Requirements the specific loading criteria that we utilized were those prescribed by "2003 International Building Code" and "ANSI/TIA/EIA-222-F", "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures." In accordance with the above Standards the wind speed that we utilized for the analysis of this structure was the "3 second gust wind speed" of 105-mph (equivalent to a "fastest-mile wind speed" of 85-mph) as specified for Fairfield County, CT. A description of the existing tower, our structural analysis procedure, and the results of CSEI's structural analysis follow.

EXISTING TOWER INFORMATION & DATA

The 162'-6" Type 'A' tower at this site was originally built in 1966 for Southern New England Telephone (SNET) to support four KS15676 Horn Antennas. The tower was later modified several times. All of the original Horn Antennas have now been removed from this tower.

CSEI utilized the original 1966 tower design, & tower foundation drawings, to conduct our structural review of this tower. The available modification drawings were also used for our analysis. The existing antenna information that was provided to us by AT&T Corporation was used to determine the existing tower & equipment loads for this analysis. AT&T's Tenant Specification Document, which was submitted by Verizon Wireless, was utilized to determine the new Verizon Wireless antenna and cable requirements for this tower.

DESIGN CRITERIA

See the attached page for the applicable Design Criteria and Antenna Configuration that were used for this structural analysis.

STRUCTURAL ANALYSIS PROCEDURE

The referenced design criteria combined with wind tunnel test data from tests conducted on AT&T towers, antennas and antenna platforms were utilized to determine the applicable loads for this structure. A frame analysis was performed utilizing the stated wind loads and a computer model of the tower framing modeled on Power Line Systems' "Tower Program". The load carrying frame members of this structure were then checked for compliance with the AISC ASD "Specification for Structural Steel Buildings", which is a reference specification accepted by ANSI/TIA/EIA-222-F as well as by the 2003 International Building Code.

RESULTS OF STRUCTURAL ANALYSIS

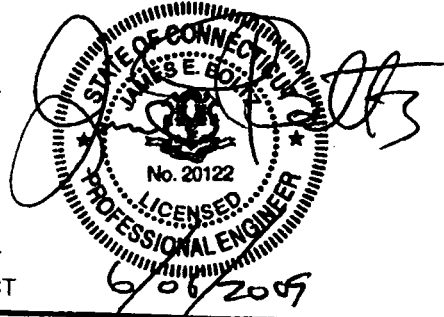
CSEI's analysis found that all of the existing tower members had maximum stress levels that were less than the allowable stresses permitted by the AISC Specification. The tower foundation was also found to be in compliance with "ANSI/TIA/EIA-222-F" design criteria. We have therefore concluded that this existing tower is capable of supporting the existing loads as well as the proposed Verizon Wireless additions in compliance with the "2003 International Building Code" & "ANSI/TIA/EIA-222-F" design criteria. This tower will not require any structural modifications or changes to support the listed equipment provided that the following conditions are satisfied. However, if the conditions that follow are not upheld, the results of our structural analysis will be invalid:

- 1.) The Eighteen (18) vertical runs of 2.25 inch dia. coaxial cable associated with the above Verizon panel antennas must be stacked in two rows with one row of nine cables located directly in front of the second row of nine cables. The vertical cables must be installed on leg mounted brackets instead of on a cable ladder.
- 2.) The proposed Verizon Wireless antennas & transmission lines shall be installed in accordance with the CSEI drawing that will be prepared for this project.

If Verizon Wireless or any other carriers add any future additional equipment to this tower, this structure should be re-analyzed at that time. CSEI would be happy to respond to any questions regarding this structural analysis.

Sincerely,

James E. Boltz
James E. Boltz, P.E. (CT P.E. #20122)



- Attachments: 1.) Design Criteria for Existing 162'-6" AT&T Tower at Shelton, CT
2.) Structural Calculations for Existing AT&T Tower at Shelton, CT

DESIGN CRITERIA

AT&T Tower Site: Shelton, CT

LOCATION: 219 Nells Rock Road, Shelton, CT 06484
Latitude N 41° 18' 15", Longitude W 73° 07' 06"
Fairfield County, CT

DESIGN STANDARDS

2003 INTERNATIONAL BUILDING CODE
105 MPH (3 Second Gust Wind Speed)
&
ANSI/TIA/EIA-222-F
85 MPH (Fastest Mile Wind Speed)

In addition to the loads from the existing tower framing and platforms the loads from the following antennas and their associated transmission lines were considered in the analysis.

ANTENNA CONFIGURATION (Used for Structural Analysis)

Existing Antennas - To Remain on Tower

- 1.) Six miscellaneous omni & directional antennas located on the antenna platform at 162'-6" above tower base plate and six associated transmission lines.
- 2.) (SNET) Six Panel Antennas at 165-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 3.) (Sprint/Nextel) Two Allgon ALL7182.07 and four Allgon ALL7184.05 Panel antennas at 149-ft above tower base plate and six associated runs of 1.625 inch diameter coaxial cable.
- 4.) (Sprint/Nextel) One GPS Antenna at 75-ft above tower base plate and one associated run of 0.50 inch diameter coaxial cable.

Existing T-Mobile Antennas & Cables (Includes pending Installation of 12 additional cables)

Six (6) RFS APX16DWV-16DWVS-A2 panel antennas located at a centerline of approx. 133-ft above tower base plate and Eighteen (18) runs of 1.625 inch dia. coaxial cable and one (1) run of .375 inch dia. cable (RET Cable). *(The vertical runs of these cables to be stacked in two rows of nine cables.)*

New (Proposed) Verizon Wireless Antennas - To Be Added on Tower

- 1.) Fifteen (15) Panel Antennas to be located at a centerline of approx. 122-ft above tower base plate: {These Panel Antenna to be: Six (6) DB846F65ZAXY Panel Antennas; Six (6) LPA185080/12CF Panel Antennas and Three (3) BXA 70063/6CF Panel Antennas}
- 2.) Eighteen (18) runs of 2.25 inch diameter coaxial cable associated with the above panel antennas. *The vertical runs of these cables to be stacked in two rows with one row of nine cables located directly in front of the second row of nine cables. The vertical cables must be installed on leg mounted brackets. The additional loads from a cable ladder were not included in this analysis.*



DESIGN CRITERIA

AT&T Tower Site: Shelton, CT

LOCATION: 219 Nells Rock Road, Shelton, CT 06484

Latitude N 41° 18' 15", Longitude W 73° 07' 06"

Fairfield County, CT

DESIGN STANDARDS

2003 INTERNATIONAL BUILDING CODE

105 MPH (3 Second Gust Wind Speed)

&

ANSI/TIA/EIA-222-F

85 MPH (Fastest Mile Wind Speed)

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- 2.) (SNET) Six Panel Antennas at 165-ft above tower base plate and twelve associated runs of 1.625 inch diameter coaxial cable.
- 3.) (Sprint/Nextel) Two Allgon ALL7182.07 and four Allgon ALL7184.05 Panel antennas at 149-ft above tower base plate and six associated runs of 1.625 inch diameter coaxial cable.
- 4.) (Sprint/Nextel) One GPS Antenna at 75-ft above tower base plate and one associated run of 0.50 inch diameter coaxial cable.

Existing T-Mobile Antennas & Cables (Includes pending installation of 12 additional cables)

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COMMUNICATION STRUCTURES ENGINEERING, INC.
 5579-B Chamblee Dunwoody Rd. /Suite 517
 Dunwoody, GA 30338 (770) 951-8080

STRUCTURAL CALCULATIONS
FOR
AT&T Owned 162'-6" Self Supported Tower
Shelton, CT
Verizon Wireless Installation

Fairfield County, CT

Issue Date: June 06, 2009

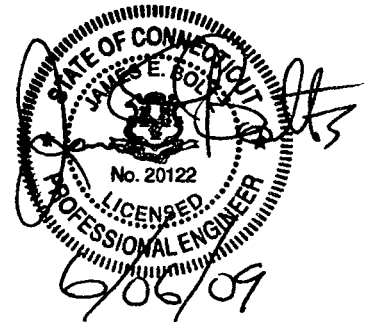
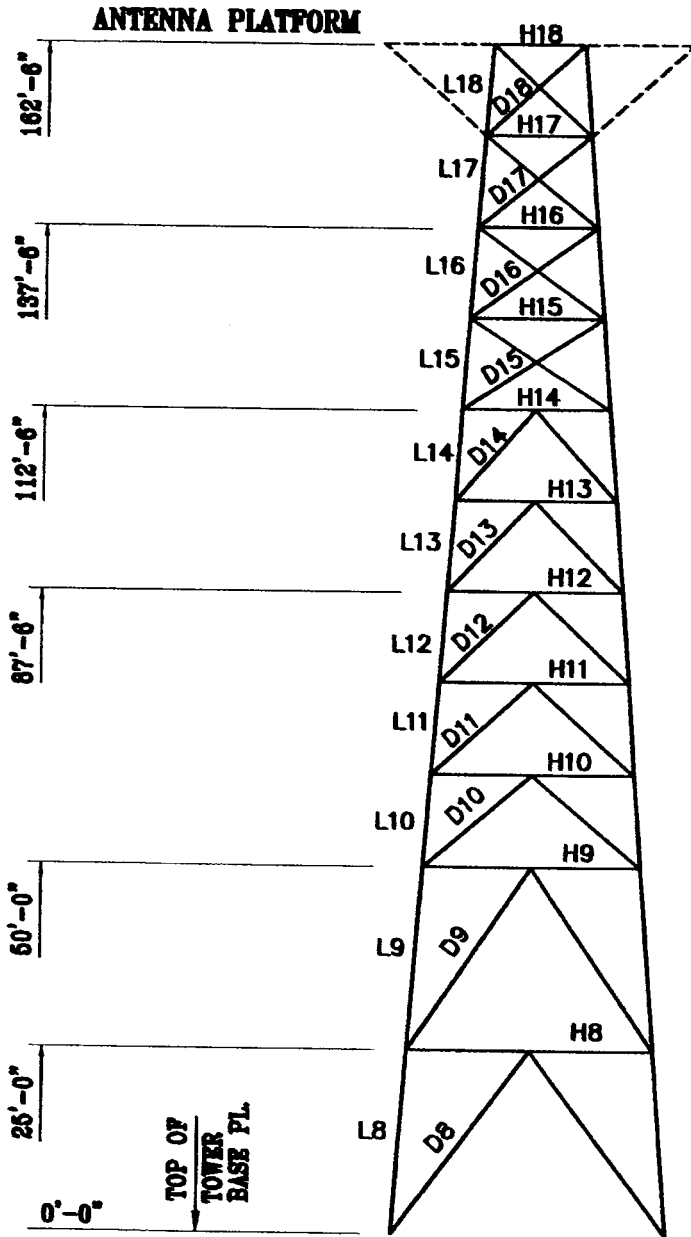


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162'-6" SELF SUPPORTED TOWER
ANALYSIS MODEL FOR
SHELTON, CT



Communication Structures Engineering, Inc.
5578-B Chamblee Dunwoody Rd. / Suite 517
Dunwoody, Georgia 30338
(770) 951-9898

 * TOWER - Analysis and Design - Copyright Power Line Systems, Inc. 1986-2006 *

Project Name : Shelton, CT
 Project Notes: 162'-6" Self Supported Tower, Verizon Wireless Installation
 Project File : c:\analysis\2009\shelton ct 051009\shelton ct.tow
 Date Run : 5:39:47 PM Sunday, May 10, 2009
 by : Tower Version 9.23
 Licensed to : Communication Structures Engineering Inc.

Successfully performed linear analysis

The model has 0 warnings.

Maximum element usage is 92.28% for Angle "g62p" in load case "WIND 0"

XIA Sections Information:

Section Label	Top Z (ft)	Bottom Z (ft)	Joint Count	Member Count	Top Width (ft)	Bottom Width (ft)	Gross Area (ft^2)	Face Area (ft^2)	Adjust Factor	Ar Factor	Dead Load
1	162.500	137.500	12	42	12.50	16.25	359.38	1.2000	1.0000	1.0000	1.300
2	137.500	112.500	16	43	16.25	20.00	453.12	1.2000	1.0000	1.0000	1.300
3	112.500	87.500	24	50	20.00	23.75	546.88	1.2000	1.0000	1.0000	1.300
4	87.500	62.500	24	50	23.75	27.50	640.62	1.2400	1.0000	1.0000	1.500
5	62.500	50.000	16	25	27.50	29.38	355.48	1.2400	1.0000	1.0000	1.500
6	50.000	25.000	16	25	29.38	33.13	781.28	1.2400	1.0000	1.0000	1.500
7	25.000	0.000	12	12	33.13	36.88	875.02	1.2400	1.0000	1.0000	1.500

Equipment Library:

Property Label Number	Equipment Stock Weight (lbs)	Wind Area (ft^2)	Ice Area (ft^2)	XIA Antenna Type Coef.	Shape or Drag Diameter Height (ft)
ANTENNA PLATFORM	8000.0	30.00	0.00	1.00	0.00 0.00
MILK STOOL	1500.0	10.00	0.00	1.00	0.00 0.00
OMNI ANTENNAS	200.0	15.00	0.00	1.00	0.00 0.00
SNET INSTALLATION	350.0	15.00	0.00	1.00	0.00 0.00
SPRINT INSTALLATION	400.0	25.00	0.00	1.00	0.00 0.00
TWOBILE INSTALLATION	200.0	10.00	0.00	1.00	0.00 0.00
VERIZON INSTALLATION	600.0	40.00	0.00	1.00	0.00 0.00

Equipment Connectivity:

Equipment Attach Label	Equipment EIA Antenna Property Orientation Set	Angle (deg)
AP-1	67P ANTENNA PLATFORM	0.00
AP-2	67X ANTENNA PLATFORM	0.00
AP-3	67XY ANTENNA PLATFORM	0.00
AP-4	67Y ANTENNA PLATFORM	0.00
MS-1	66P MILK STOOL	0.00
MS-2	66X MILK STOOL	0.00
MS-3	66XY MILK STOOL	0.00
MS-4	66Y MILK STOOL	0.00
MS-5	65P MILK STOOL	0.00
MS-6	65X MILK STOOL	0.00
MS-7	65XY MILK STOOL	0.00
MS-8	65Y MILK STOOL	0.00
OMNI-1	67P OMNI ANTENNAS	0.00
OMNI-2	67X OMNI ANTENNAS	0.00
OMNI-3	67XY OMNI ANTENNAS	0.00
OMNI-4	67Y OMNI ANTENNAS	0.00
SNET-1	67P SNET INSTALLATION	0.00
SNET-2	67X SNET INSTALLATION	0.00
SNET-3	67XY SNET INSTALLATION	0.00
SNET-4	67Y SNET INSTALLATION	0.00
SPRINT-1	66P SPRINT INSTALLATION	0.00
SPRINT-2	66X SPRINT INSTALLATION	0.00
SPRINT-3	66XY SPRINT INSTALLATION	0.00
SPRINT-4	66Y SPRINT INSTALLATION	0.00
TMOBILE-1	65P TMOBILE INSTALLATION	0.00
TMOBILE-2	65X TMOBILE INSTALLATION	0.00
TMOBILE-3	65XY TMOBILE INSTALLATION	0.00
TMOBILE-4	65Y TMOBILE INSTALLATION	0.00
VERIZON-1	64P VERIZON INSTALLATION	0.00
VERIZON-2	64X VERIZON INSTALLATION	0.00
VERIZON-3	64XY VERIZON INSTALLATION	0.00
VERIZON-4	64Y VERIZON INSTALLATION	0.00

Linear Appurtenances:

Description From (ft)	To (ft)	Quantity	Shape	Width or Diameter (in)	Perimeter (in)	Unit Weight (lbs/ft)	Incl. in Wind Load Zone
CLIMBING LADDER	0 162.5	1	Flat	6	20	10	No
OMNI ANT COAX	5 162.5	5	Round	2	0	1	No
SNET COAX BUNDLED	5 162.5	6	Round	2	0	2	No
SPRINT COAX 1 BUNDLED	5 150	6	Round	2	0	2	No
SPRINT COAX 2	5 75	1	Round	0.63	0	0.15	No
TMOBILE COAX BUNDLED	5 135	9	Round	2	0	1	No
VERIZON COAX BUNDLED	5 125	9	Round	2.35	0	2.44	No
SNET COAX LADDER	5 162.5	1	Flat	4	0	6	No

SPRINT COAX LADDER 5 150 1 Flat 3 0 6 No Yes
 TMOBILE COAX LADDER 5 135 1 Flat 3 0 6 No Yes

*** Loads Data

Loads from file: c:\analysis\2009\shelton ct 051009\shelton ct.eia

Structure Height Summary (used for calculating wind/ice adjust with height):
 Structure height above ground 162.50 (ft)
 Elevation of structure bottom for wind height adjustment: 0.00 (ft)
 Structure height for structure gust response factor: 162.50 (ft)
 Structure gust response factor, Gh: 1.1278
 Guy installation temperature: 32.00 (deg F)
 Tower Type: Rectangular Latticed

IZA Rev. F Load Cases:

Description	Factor	Wind Factor	Ice Load Strength Allowable Increase Factor	Basic Wind Speed (mph)	Basic Wind Dir. (Deg)	Ice Thick. (in)	Ice Density (lbs/ft ³)	Ice Temperature (deg F)	Point Loads	Joint Displ.
WIND 0	1.0000	1.0000	1.3300	85.000	0	0.0000	0.0000	60.0		
WIND 45	1.0000	1.0000	1.3300	85.000	45	0.0000	0.0000	60.0		
WIND 0 W ICE	1.0000	1.0000	1.3300	74.000	0	0.5000	56.0000	30.0		
WIND 45 W ICE	1.0000	1.0000	1.3300	74.000	45	0.5000	56.0000	30.0		

Equipment Load Case Information for "WIND 0":

Equipment Label	Equipment Property Set	Elevation Above Ground (ft)	qsch (psf)	Ice Thick. (in)	Total Wind Area (ft ²)	Wind Incidence Angle (deg)	222-G CA	222-G CB	222-G CM	Antenna Axial Load (lbs)	Antenna Side Load (lbs)	Antenna Moment (ft-lbs)	Long. Trans. Load (lbs)	Vert. Load (lbs)
AP-1	ANTENNA PLATFORM	162.50	32.88	0.00	30.00	0.00				986.28	0.00	8000.00	0.00	8000.00
AP-2	ANTENNA PLATFORM	162.50	32.88	0.00	30.00	0.00				986.28	0.00	8000.00	0.00	8000.00
AP-3	ANTENNA PLATFORM	162.50	32.88	0.00	30.00	0.00				986.28	0.00	8000.00	0.00	8000.00
AP-4	ANTENNA PLATFORM	162.50	32.88	0.00	30.00	0.00				986.28	0.00	8000.00	0.00	8000.00
MS-1	MILK STOOL	150.00	32.13	0.00	10.00	0.00				321.33	0.00	1500.00	0.00	1500.00
MS-2	MILK STOOL	150.00	32.13	0.00	10.00	0.00				321.33	0.00	1500.00	0.00	1500.00
MS-3	MILK STOOL	150.00	32.13	0.00	10.00	0.00				321.33	0.00	1500.00	0.00	1500.00
MS-4	MILK STOOL	150.00	32.13	0.00	10.00	0.00				321.33	0.00	1500.00	0.00	1500.00
MS-5	MILK STOOL	137.50	31.34	0.00	10.00	0.00				313.44	0.00	1500.00	0.00	1500.00
MS-6	MILK STOOL	137.50	31.34	0.00	10.00	0.00				313.44	0.00	1500.00	0.00	1500.00
MS-7	MILK STOOL	137.50	31.34	0.00	10.00	0.00				313.44	0.00	1500.00	0.00	1500.00
MS-8	MILK STOOL	137.50	31.34	0.00	10.00	0.00				313.44	0.00	1500.00	0.00	1500.00
OMNI-1	OMNI ANTENNAS	162.50	32.88	0.00	15.00	0.00				493.14	0.00	200.00	0.00	200.00
OMNI-2	OMNI ANTENNAS	162.50	32.88	0.00	15.00	0.00				493.14	0.00	200.00	0.00	200.00
OMNI-3	OMNI ANTENNAS	162.50	32.88	0.00	15.00	0.00				493.14	0.00	200.00	0.00	200.00
OMNI-4	OMNI ANTENNAS	162.50	32.88	0.00	15.00	0.00				493.14	0.00	200.00	0.00	200.00
SNET-1	SNET INSTALLATION	162.50	32.88	0.00	15.00	0.00				493.14	0.00	200.00	0.00	200.00

SNET-2	SNET INSTALLATION	162.50	24.92	0.50	15.00	315.00	264.29	264.29	350.00
SNET-3	SNET INSTALLATION	162.50	24.92	0.50	15.00	315.00	264.29	264.29	350.00
SNET-4	SNET INSTALLATION	162.50	24.92	0.50	15.00	315.00	264.29	264.29	350.00
SPRINT-1	SPRINT INSTALLATION	150.00	24.35	0.50	25.00	315.00	430.52	430.52	400.00
SPRINT-2	SPRINT INSTALLATION	150.00	24.35	0.50	25.00	315.00	430.52	430.52	400.00
SPRINT-3	SPRINT INSTALLATION	150.00	24.35	0.50	25.00	315.00	430.52	430.52	400.00
SPRINT-4	SPRINT INSTALLATION	150.00	24.35	0.50	25.00	315.00	430.52	430.52	400.00
TMOBILE-1	TMOBILE INSTALLATION	137.50	23.76	0.50	10.00	315.00	167.98	167.98	200.00
TMOBILE-2	TMOBILE INSTALLATION	137.50	23.76	0.50	10.00	315.00	167.98	167.98	200.00
TMOBILE-3	TMOBILE INSTALLATION	137.50	23.76	0.50	10.00	315.00	167.98	167.98	200.00
TMOBILE-4	TMOBILE INSTALLATION	137.50	23.76	0.50	10.00	315.00	167.98	167.98	200.00
VERIZON-1	VERIZON INSTALLATION	125.00	23.12	0.50	40.00	315.00	653.87	653.87	600.00
VERIZON-2	VERIZON INSTALLATION	125.00	23.12	0.50	40.00	315.00	653.87	653.87	600.00
VERIZON-3	VERIZON INSTALLATION	125.00	23.12	0.50	40.00	315.00	653.87	653.87	600.00
VERIZON-4	VERIZON INSTALLATION	125.00	23.12	0.50	40.00	315.00	653.87	653.87	600.00

EIA Section Load Case Information for "WIND 45 W ICE":

Section Label	Z of Top (ft)	Z of Bottom (ft)	Ave. Elev. Above Gnd. (ft)	Ice Thick. (in)	Ice (ft ²)	AF (ft ²)	AR (ft ²)	AR ² AR (ft ²)	AG (ft ²)	Face CT	Face DR	Face RR	Face CT	Face AE (ft ²)	Face WT (lbs)	MotF AAF (ft ²)	MotF CAF (ft ²)	MotF AAR (ft ²)	MotF CAR (ft ²)	MotF AAR*CAR (lbs)	MotF WA (lbs)	Total Wind Weight (lbs)	Total Weight (lbs)	
1	162.50	137.50	150.00	24.35	0.50	83.56	14.14	8.60	359.4	0.27	1.20	1.20	0.61	2.69	110.6	7249	23.96	2.00	92.71	1.20	111.25	3876	11126	13763
2	137.50	112.50	125.00	23.12	0.50	68.06	14.72	8.64	453.1	0.18	1.14	1.14	0.59	3.06	87.2	6160	32.71	2.00	196.41	1.20	235.69	6961	13121	14031
3	112.50	87.50	100.00	21.69	0.50	58.53	13.64	7.90	546.9	0.13	1.10	1.10	0.58	3.29	73.0	5211	33.33	2.00	233.65	1.20	280.38	7527	12738	15835
4	87.50	62.50	75.00	19.98	0.50	65.19	14.71	8.50	640.6	0.12	1.09	1.09	0.58	3.33	80.6	5355	33.33	2.00	235.34	1.20	282.41	6974	12329	19245
5	62.50	50.00	56.25	18.40	0.50	39.87	7.76	4.50	355.5	0.13	1.10	1.10	0.58	3.28	48.8	2948	16.87	2.00	118.52	1.20	142.23	3231	6178	10649
6	50.00	25.00	37.50	16.39	0.50	73.57	11.96	6.89	781.3	0.11	1.08	1.08	0.58	3.40	87.1	4854	33.33	2.00	237.04	1.20	284.45	5754	10609	20258
7	25.00	0.00	12.50	15.80	0.50	64.08	9.38	5.38	875.0	0.08	1.06	1.06	0.57	3.53	73.8	4121	29.17	2.00	190.05	1.20	228.06	4525	8647	18326

*** Analysis Results:

Summary of Joint Support Reactions For All Load Cases:

Load Case Label	Joint Label	Long. Force (kips)	Trans. Force (kips)	Vert. Force (kips)	Shear Force (kips)	Trans. Moment (ft-k)	Long. Moment (ft-k)	Vert. Moment (ft-k)	Bending Moment (ft-k)	Found. Usage %
WIND 0	40P	-27.33	-12.82	162.00	30.19	-0.00	-0.00	-0.00	0.00	0.00
WIND 0	40X	-27.33	12.82	162.00	30.19	-0.00	-0.00	-0.00	0.00	0.00
WIND 0	40Y	-20.79	-6.28	-92.56	21.72	-0.00	-0.00	-0.00	0.00	0.00
WIND 45	40P	-28.01	-28.01	222.42	39.62	-0.00	-0.00	-0.00	0.00	0.00
WIND 45	40X	-13.94	-7.39	34.80	15.78	-0.00	-0.00	-0.00	0.00	0.00
WIND 45	40Y	-21.48	-21.48	-153.14	30.38	-0.00	-0.00	-0.00	0.00	0.00
WIND 0 W ICE	40P	-25.36	-12.18	151.65	28.14	-0.00	-0.00	-0.00	0.00	0.00
WIND 0 W ICE	40X	-25.36	12.18	151.65	28.14	-0.00	-0.00	-0.00	0.00	0.00
WIND 0 W ICE	40Y	-17.83	-4.45	-70.09	18.18	-0.00	-0.00	-0.00	0.00	0.00
WIND 45 W ICE	40P	-25.89	-25.89	204.91	36.61	-0.00	-0.00	-0.00	0.00	0.00
WIND 45 W ICE	40X	-13.59	-5.83	40.84	14.78	-0.00	-0.00	-0.00	0.00	0.00
WIND 45 W ICE	40Y	-18.15	-18.15	-123.48	25.67	-0.00	-0.00	-0.00	0.00	0.00
WIND 45 W ICE	40Y	-5.83	-13.58	40.84	14.78	-0.00	-0.00	-0.00	0.00	0.00

*** Overall summary for all load cases - Usage = Maximum Stress / Allowable Stress
 Printed capacities do not include EIR allowable stress increase for wind load cases.
 Printed capacities do not include the strength factor entered for each loadcase.

Group Summary (Compression Portion):

Group Label	Group Desc.	Angle Type	Angle Size	Steel Strength (ksi)	Max Usage %	Max Use in Control Comp. Member	Comp. Force (kips)	Comp. Load Case	L/R Comp. Capacity (kips)	Comp. Shear Capacity (kips)	Comp. Conn. Bearing Capacity (kips)	R1X	R1Y	R2Z	L/R Length Member (ft)	Curve No.	No. Bolts	Of Comp.	
L8	LEG	SAE	8X8X1	36.0	55.83	55.83	967X -189.346	WIND 45	254.996	0.000	0.000	0.000	0.333	0.333	0.333	64.40	25.140	1	0
L9	LEG	SAE	8X8X0.875	36.0	51.40	51.40	960X -154.127	WIND 45	225.445	0.000	0.000	0.000	0.333	0.333	0.333	63.99	25.140	1	0
L10	LEG	SAE	8X8X0.75	36.0	47.99	47.99	957X -135.434	WIND 45	212.189	0.000	0.000	0.000	0.500	0.500	0.500	47.73	12.570	1	0
L11	LEG	SAE	6X6X0.875	36.0	53.63	53.63	9244X -117.945	WIND 45	165.345	0.000	0.000	0.000	0.500	0.500	0.500	64.46	12.570	1	0
L12	LEG	SAE	6X6X0.875	36.0	45.29	45.29	9269X -99.607	WIND 45	165.345	0.000	0.000	0.000	0.500	0.500	0.500	64.46	12.570	1	0
L13	LEG	SAE	6X6X0.75	36.0	43.05	43.05	9294X -82.120	WIND 45	143.424	0.000	0.000	0.000	0.500	0.500	0.500	64.46	12.570	1	0
L14	LEG	SAE	6X6X0.75	36.0	33.41	33.41	9319X -63.722	WIND 45	143.424	0.000	0.000	0.000	0.500	0.500	0.500	64.46	12.570	1	0
L15	LEG	SAE	6X6X0.625	36.0	38.82	38.82	9344X -62.575	WIND 45	121.208	0.000	0.000	0.000	0.500	0.500	0.500	63.92	12.570	1	0
L16	LEG	SAE	6X6X0.625	36.0	23.60	23.60	9362X -38.037	WIND 45	121.208	0.000	0.000	0.000	0.500	0.500	0.500	63.92	12.570	1	0
L17	LEG	SAE	6X6X0.5	36.0	18.13	18.13	9380X -23.632	WIND 45	98.024	0.000	0.000	0.000	0.500	0.500	0.500	63.92	12.570	1	0
L18	LEG	SAE	6X6X0.5	36.0	8.98	8.98	9398X -11.708	WIND 45	98.024	0.000	0.000	0.000	0.500	0.500	0.500	63.92	12.570	1	0
D8	DIA	DAS	3.5X3X0.375	36.0	56.82	56.82	969P -27.280	WIND 0	36.101	0.000	0.000	0.000	0.316	0.316	0.316	148.93	31.120	6	0
D9	DIA	DAS	3.5X2.5X0.25	36.0	92.28	92.28	962P -26.350	WIND 0	21.468	0.000	0.000	0.000	0.316	0.316	0.316	155.02	30.047	6	0

Group Label	Group Desc.	Angle Type	Steel Strength	Max Usage	Max In Tens.	Control Member	Tension Force	Section Capacity	Shear Capacity	Conn. Tens. Capacity	Bearing Capacity	Conn. Tens. Capacity	Rupture Capacity	Length Member	No. of Holes	Hole Diameter	
D10	DIA	DAE 2.5X2.5X0.25	36.0	87.91	87.91	959P	-17.527	WIND 0	14.990	0.000	0.000	0.500	0.900	0.500	175.25	19.310	6
D11	DIA	DAE 2.5X2.5X0.25	36.0	77.11	77.11	9246P	-16.188	WIND 0	15.785	0.000	0.000	0.500	0.900	0.500	168.86	18.606	6
D12	DIA	DAE 2.5X2.5X0.25	36.0	75.87	75.87	9273P	-16.768	WIND 0	16.617	0.000	0.000	0.500	0.900	0.500	162.68	17.925	6
D13	DIA	DAE 2.5X2.5X0.25	36.0	74.65	74.65	9298P	-15.019	WIND 0	15.126	0.000	0.000	0.500	1.000	0.500	174.12	17.267	6
D14	DIA	DAE 2.5X2.5X0.25	36.0	74.43	74.43	9323P	-15.768	WIND 0	15.929	0.000	0.000	0.500	1.000	0.500	167.76	16.636	6
D15	DIA	SAS 4X3X0.25	36.0	37.00	23.27	9345P	-2.191	WIND 0	7.078	0.000	0.000	0.500	0.750	0.500	210.27	22.815	5
D16	DIA	SAS 4X3X0.25	36.0	90.94	90.94	9366P	-9.634	WIND 0	7.965	0.000	0.000	0.500	0.750	0.500	196.06	21.273	5
D17	DIA	SAB 3.5X3X0.25	36.0	61.55	61.55	9384P	-6.447	WIND 0	11.267	0.000	0.000	0.500	0.750	0.500	188.17	19.789	5
D18	DIA	SAE 3.5X3X0.375	36.0	31.68	31.68	9402P	-4.747	WIND 0	19.432	0.000	0.000	0.500	0.750	0.500	158.87	18.376	5
H9	HOR	DAE 2.5X2.5X0.25	36.0	52.58	52.58	971Y	-13.590	WIND 0	15.169	0.000	0.000	0.500	1.000	1.000	217.70	16.563	6
H8	HOR	DAE 2.5X2.5X0.25	36.0	51.96	51.96	964Y	-12.416	WIND 0	16.651	0.000	0.000	0.500	1.000	1.000	186.51	14.688	6
H10	HOR	DAL 3X2.5X0.25	36.0	64.24	64.24	9231Y	-11.507	WIND 0	12.420	0.000	0.000	1.000	1.000	1.000	174.60	13.750	6
H11	HOR	DAE 2.5X2.5X0.25	36.0	55.47	55.47	9281Y	-10.611	WIND 0	13.855	0.000	0.000	1.000	1.000	1.000	199.93	12.813	6
H12	HOR	DAE 2.5X2.5X0.25	36.0	44.18	44.18	9306Y	-9.139	WIND 0	15.553	0.000	0.000	1.000	1.000	1.000	170.68	10.938	6
H13	HOR	DAL 3X2.5X0.25	36.0	46.54	46.54	9331Y	-15.723	WIND 0	25.402	0.000	0.000	1.000	1.000	1.000	126.98	10.000	6
H14	HOR	DAL 3X2.5X0.25	36.0	29.58	29.58	9357P	-5.705	WIND 0	14.501	0.000	0.000	0.500	1.000	0.500	132.48	18.125	6
H15	HOR	DAL 3X2.5X0.25	36.0	2.83	1.20	9370Y	-0.528	WIND 0	33.064	0.000	0.000	0.500	1.000	0.500	103.17	16.250	1
H16	HOR	DAL 3X2.5X0.25	36.0	1.54	0.00	9392X	0.000	WIND 0	37.100	0.000	0.000	0.500	1.000	0.500	127.78	14.375	6
H17	HOR	DAL 3.5X3X0.3125	36.0	0.09	0.06	9406Y	-0.126	WIND 0	149.620	0.000	0.000	0.500	0.500	0.500	82.96	12.500	1
H18	HOR	CHN C15 x 33.9	36.0	13.90	13.90	9235Y	-1.024	WIND 45	5.536	0.000	0.000	0.500	0.500	0.500	197.08	19.445	4
R1	RUD	SAE 3X3X0.25	36.0	13.90	13.90	9235Y	-1.024	WIND 45	5.536	0.000	0.000	0.500	0.500	0.500	197.08	19.445	4

Group Summary (Tension Portion):

Group Label	Group Desc.	Angle Type	Steel Strength	Max Usage	Max In Tens.	Control Member	Tension Force	Section Capacity	Shear Capacity	Conn. Tens. Capacity	Bearing Capacity	Conn. Tens. Capacity	Rupture Capacity	Length Member	No. of Holes	Hole Diameter
L8	LEG	SAE 8X8X1	36.0	55.83	29.45	967Y	126.915	WIND 45	323.999	0.000	0.000	0.000	0.000	25.140	0	0.000
L9	LEG	SAE 8X8X0.875	36.0	51.40	26.17	960Y	99.475	WIND 45	285.768	0.000	0.000	0.000	0.000	25.140	0	0.000
L10	LEG	SAE 8X8X0.75	36.0	47.99	26.24	957Y	86.246	WIND 45	247.104	0.000	0.000	0.000	0.000	12.570	0	0.000
L11	LEG	SAE 6X6X0.875	36.0	53.63	25.91	9244Y	72.415	WIND 45	210.168	0.000	0.000	0.000	0.000	12.570	0	0.000
L12	LEG	SAE 6X6X0.875	36.0	45.29	20.65	9269Y	57.725	WIND 45	210.168	0.000	0.000	0.000	0.000	12.570	0	0.000
L13	LEG	SAE 6X6X0.75	36.0	43.05	18.00	9294Y	43.641	WIND 45	182.304	0.000	0.000	0.000	0.000	12.570	0	0.000
L14	LEG	SAE 6X6X0.75	36.0	33.41	11.75	9319Y	28.494	WIND 45	182.304	0.000	0.000	0.000	0.000	12.570	0	0.000
L15	LEG	SAE 6X6X0.625	36.0	38.82	7.01	9344Y	14.318	WIND 45	153.576	0.000	0.000	0.000	0.000	12.570	0	0.000
L16	LEG	SAE 6X6X0.625	36.0	23.60	4.89	9322Y	9.980	WIND 45	153.576	0.000	0.000	0.000	0.000	12.570	0	0.000
L17	LEG	SAE 6X6X0.5	36.0	18.13	0.48	9380Y	0.786	WIND 45	124.200	0.000	0.000	0.000	0.000	12.570	0	0.000
L18	LEG	SAE 6X6X0.5	36.0	8.98	0.00	9388Y	0.000	WIND 45	124.200	0.000	0.000	0.000	0.000	12.570	0	0.000
D8	DIA	DAS 3.5X3X0.375	36.0	56.82	18.51	969Y	24.412	WIND 0	99.144	0.000	0.000	0.000	0.000	31.120	0	0.000
D9	DIA	DAS 3.5X2.5X0.25	36.0	92.28	29.61	962Y	24.497	WIND 0	62.208	0.000	0.000	0.000	0.000	30.047	0	0.000
D10	DIA	DAE 2.5X2.5X0.25	36.0	87.91	23.04	959Y	15.753	WIND 0	51.408	0.000	0.000	0.000	0.000	19.310	0	0.000
D11	DIA	DAE 2.5X2.5X0.25	36.0	77.11	22.31	9248Y	15.236	WIND 0	51.408	0.000	0.000	0.000	0.000	18.606	0	0.000
D12	DIA	DAE 2.5X2.5X0.25	36.0	75.87	22.17	9273Y	15.159	WIND 0	51.408	0.000	0.000	0.000	0.000	17.925	0	0.000
D13	DIA	DAE 2.5X2.5X0.25	36.0	74.65	20.96	9298Y	14.334	WIND 0	51.408	0.000	0.000	0.000	0.000	17.267	0	0.000
D14	DIA	DAE 2.5X2.5X0.25	36.0	74.43	20.84	9323Y	14.250	WIND 0	51.408	0.000	0.000	0.000	0.000	16.636	0	0.000
D15	DIA	SAS 4X3X0.25	36.0	37.00	37.00	9348Y	17.965	WIND 0	36.504	0.000	0.000	0.000	0.000	22.815	0	0.000
D16	DIA	SAB 3.5X3X0.25	36.0	90.94	11.57	9366Y	5.615	WIND 0	36.504	0.000	0.000	0.000	0.000	21.273	0	0.000
D17	DIA	SAS 3.5X3X0.25	36.0	61.55	10.72	9384Y	4.806	WIND 0	33.696	0.000	0.000	0.000	0.000	19.789	0	0.000
D18	DIA	SAE 3.5X3X0.375	36.0	31.68	5.62	9402Y	2.731	WIND 0	36.504	0.000	0.000	0.000	0.000	18.376	0	0.000
H8	HOR	DAE 3X3X0.375	36.0	52.58	11.67	971P	14.150	WIND 0	91.152	0.000	0.000	0.000	0.000	16.563	0	0.000
H9	HOR	DAL 3X2.5X0.25	36.0	61.54	17.80	964P	13.450	WIND 0	56.808	0.000	0.000	0.000	0.000	14.668	0	0.000

H10	HOR	DAL	3X2.5X0.25	36.0	51.96	15.85	9231P	11.974	WIND 0	56.808	0.000	0.000	13.750	0	0.000	0
H11	HOR	DAE	2.5X2.5X0.25	36.0	64.24	16.94	9257P	11.583	WIND 0	51.408	0.000	0.000	12.813	0	0.000	0
H12	HOR	DAE	2.5X2.5X0.25	36.0	55.47	15.34	9281P	10.487	WIND 0	51.408	0.000	0.000	11.875	0	0.000	0
H13	HOR	DAE	2.5X2.5X0.25	36.0	44.18	14.59	9306P	9.977	WIND 0	51.408	0.000	0.000	10.938	0	0.000	0
H14	HOR	DAL	3X2.5X0.25	36.0	46.54	2.19	9327P	1.655	WIND 0	56.808	0.000	0.000	10.000	0	0.000	0
H15	HOR	DAL	3X2.5X0.25	36.0	29.58	4.80	9356P	3.624	WIND 0	56.808	0.000	0.000	18.125	0	0.000	0
H16	HOR	DAL	3X2.5X0.25	36.0	2.83	2.83	9374P	2.142	WIND 45	56.808	0.000	0.000	16.250	0	0.000	0
H17	HOR	DAL	3.5X3X0.3125	36.0	1.54	1.54	9388P	1.708	WIND 0	83.592	0.000	0.000	14.375	0	0.000	0
H18	HOR	CHN	C15 x 33.9	36.0	0.09	0.09	9406P	0.452	WIND 0	215.136	0.000	0.000	12.500	0	0.000	0
R1	RUD	SAE	3X3X0.25	36.0	13.90	4.15	9399X	1.715	WIND 45	31.104	0.000	0.000	14.142	0	0.000	0

*** End of Report



$$\text{MAXIMUM DOWNWARD LOAD} = 222.42\text{K}$$

$$\text{MAXIMUM UPLIFT LOAD} = 153.14\text{K}$$

$$\text{WT. OF SLAB} = 16^2 (2.5') (0.15) = 96\text{K}$$

$$\text{WT. OF PIER} = (3.5^2 + (3.5' \times 7.0') + 7^2) \left(\frac{2'}{3}\right) = 200.08 \text{ FT}^3$$

$$200.08 (0.15) = 30.01\text{K}$$

$$\frac{4}{3} \text{ CONCRETE WT.} = 96\text{K} + 30\text{K} = \boxed{126\text{K}}$$

WT. OF SOIL

$$(23.51^2 + (23.51 \times 16) + 16^2) \left(\frac{6.5'}{3}\right) = 2567.24 \text{ FT}^3$$

$$(2567.24 - 200.08) (0.12) = \boxed{284\text{K}}$$

CASE 1

$$\frac{126\text{K}}{1.25} + \frac{284\text{K}}{2.0} = 242.8\text{K} > 153.14\text{K} \text{ O.K.}$$

CASE 2

$$\frac{126\text{K} + 284\text{K}}{1.5} = 273.33\text{K} > 153.14\text{K} \text{ O.K.}$$

PIER STEEL

$$1.7 (187.78\text{K}) - 0.9 (34.64\text{K}) = 288.05\text{K}$$

$$\frac{288.05\text{K}}{0.85 \times 40} = 8.47 \text{ in}^2, 16 \# 9 \text{ BARS} = 15.90 \text{ in}^2 \text{ O.K.}$$

ANCHOR BOLTS

$$4 - 2\frac{1}{4} \times 4 = 15.90 \text{ in}^2 (19 \text{ KSI}) = 302.1\text{K} > 153.14\text{K} \text{ O.K.}$$