STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	PETITION NO. ____
D/B/A VERIZON WIRELESS FOR A	:	
DECLARATORY RULING ON THE NEED	:	
TO OBTAIN A SITING COUNCIL	:	
CERTIFICATE FOR THE INSTALLATION	:	
OF TWO PORTABLE WIRELESS	:	
TELECOMMUNICATIONS FACILITIES ON	:	
PROPERTY AT 139 NORTH MAIN STREET,	:	
WEST HARTFORD, CONNECTICUT	:	MAY 2, 2014

PETITION FOR A DECLARATORY RULING:
INSTALLATION OF A TEMPORARY TOWER HAVING NO
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A."), Cellco Partnership d/b/a Verizon Wireless ("Cellco") and New Cingular Wireless PCS, LLC ("AT&T") (collectively the "Petitioners") hereby petition the Connecticut Siting Council (the "Council") for a declaratory ruling ("Petition") that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under Section 16-50k(a) of the Connecticut General Statutes ("C.G.S.") for the temporary installation of a ballast tower and related wireless equipment on property owned by the American School for the Deaf ("ASD") at 139 North Main Street, West Hartford, Connecticut (the "Property"). Included in Attachment 1 is a letter from ASD authorizing the Petitioners to make this filing. The Petitioners anticipate that the temporary tower will be needed for a period of approximately five (5) months, from June 1, 2014 to October 1, 2014, while construction of the "clock tower" wireless facility, approved in Docket No. 434, is completed.

II. Factual Background

The Petitioners currently maintain wireless telecommunication facilities at the Property. The facilities consist of antennas attached to the cupola of Gallaudet Hall and equipment located inside the same building on the ASD campus. As discussed in the Docket No. 434 Application, ASD is moving forward with significant renovations to its campus which includes the demolition of Gallaudet Hall. The new "clock tower" wireless facility approved in Docket No. 434, will replace the Petitioners' wireless facilities currently located at Gallaudet Hall.

Construction of the clock tower commenced on or about February 3, 2014 and, due to conditions this past winter, is currently behind schedule. At the same time, ASD's scheduled demolition of Gallaudet Hall has been accelerated, requiring the Petitioners to remove their existing antennas and related equipment before construction of the clock tower site will be completed.

In order to maintain critical wireless services in the area without interruption, Cellco and AT&T intend to install a temporary ballast tower and associated equipment to the north of the approved clock tower structure. Cellco will install three (3) antennas on the temporary tower at a centerline height of approximately 72 feet above ground level ("AGL"). AT&T will install three (3) antennas on the temporary tower at a centerline height of approximately 82 feet AGL. (See Temporary Tower Install – Project Plans included in Attachment 2). Power and telephone services to the temporary cell site will extend overhead from existing service on the Property. Four (4) temporary utility poles will be installed to support this service. Once the bell tower is constructed and wireless services are activated, all improvements and structures associated with the temporary facility will be removed.

III. Discussion

A. The Installation of the Temporary Wireless Facility Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the "Act"), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications towers in the state to avoid "a significant impact on the environment and ecology of the State of Connecticut." C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction or modification of telecommunication towers "that may, as determined by the council, have a substantial adverse environmental effect". C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the installation of a temporary ballast tower, associated wireless equipment and related improvements described herein will not have a significant impact in the physical and environmental characteristics of the Property or the surrounding area. The temporary ballast tower and wireless equipment will be installed adjacent to, and north of, the approved clock tower construction area. Use of this area will require minor regarding and no tree removal.

2. Visual Effects

Visual effects of the temporary wireless facilities will be minimal, temporary and limited, to a large extend, to the Property. (*See* Attachment 3).

3. FCC Compliance

Radio Frequency (RF) emissions from the Cellco and AT&T antennas on the temporary tower will not exceed the standards adopted by the Federal Communications Commission (FCC). RF emissions calculations for the AT&T and Cellco antennas are included in Attachment 4).

4. FAA Summary Report

Included in Attachment 5 of this filing is a Federal Airways and Airspace Summary Report for the 85-foot temporary tower. According to this report, the temporary tower would not constitute an obstruction or hazard to air navigation.

5. Structural Analysis Report

The 85-foot ballast tower described above is capable of supporting both Cellco's and AT&T's antennas and related improvements. A complete Structural Analysis Report is included in Attachment 6.

In sum, the effect of the temporary tower and related improvements on the environment would be minimal, limited and temporary, rather than significant. The proposed temporary towers would, therefore, not present a substantial adverse environmental effect, and is not a facility for which the General Assembly intended to require a Certificate under C.G.S. § 16-50k(a).

B. Notice to Government Officials, the Property Owner and Abutting Landowners

On May 2,2014, a copy of this Petition was sent to West Hartford's Mayor Scott Slifka, and Jeffrey S. Bravin, Chief Operating Office and Assistant Executive Director for ASD. Notice of the filing of this Petition was also sent to the appropriate federal, State and municipal officials as referenced in R.C.S.A. Section 16-50j-40 and the owners of land abutting the Property. Included in Attachment 7 is a copy of the notice letters sent to government officials and abutting land owners and certifications verifying that the notices were sent.

IV. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination in the form of a declaratory ruling that the placement of a temporary

telecommunications facility at the Property will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By _____

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

AMERICAN SCHOOL FOR THE DEAF
Edward F. Peltier, Executive Director
FOUNDED IN 1817

March 19, 2014

Melanie Bachman, Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06

Re: Docket No. 434 - Proposed Temporary Installation of Two Cell on Wheels (COW) on Property of the American School for the Deaf at 139 North Main Street, West Hartford, CT

Dear Ms. Bachman:

The American School for the Deaf ("ASD") is the owner of the property at 139 North Main Street in West Hartford, the host property for the wireless telecommunications "clock tower" facility approved by the Siting Council in Docket No. 434.

This letter authorizes Verizon Wireless and AT&T to file for all necessary federal, state or local permits and approvals for the temporary installation of two portable wireless telecommunication facilities on the ASD campus.

Sincerely,

Jeffrey S. Bravin
Chief Operating Officer/Assistant Executive Director

139 North Main Street, West Hartford, Connecticut 06107-1269
860-570-2300 (Voice) • 860-570-2222 (TTY) • 860-570-2301 (Fax)
www.asd-1817.org

ATTACHMENT 2

Cellco Partnership

d.b.a. verizon wireless

WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST

TEMPORARY TOWER INSTALL

139 NORTH MAIN STREET

WEST HARTFORD, CT 06107

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE, EAST HARTFORD, CONNECTICUT **TO:** 139 NORTH MAIN STREET, WEST HARTFORD, CT

1.	Start out going EAST on EAST RIVER DRIVE toward DARLIN STREET.	0.3 MI
2.	Turn LEFT to stay on E RIVER DRIVE.	0.07 MI
3.	Take 1st LEFT onto CONNECTICUT BLVD/US-44.	0.2 MI
4.	Merge onto I-84 W/US-8 W via the ramp on the left toward Hartford.	4.8 MI
5.	Take the PARK ROAD Exit, EXIT 43, toward W. Hartford Center.	0.5 MI
6.	Turn LEFT onto PARK ROAD.	0.4 MI
7.	Turn RIGHT onto S. MAIN STREET.	1.3 MI
8.	End at 139 N. MAIN STREET, on the left.	

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP AND AT&T.

SITE INFORMATION

THE SCOPE OF WORK SHALL INCLUDE:

1. THE INSTALLATION OF A SHARED WIRELESS COMMUNICATION TEMPORARY BALLAST TOWER, CELLCO PARTNERSHIP RADIO EQUIPMENT TRAILER, & AN AT&T RADIO EQUIPMENT SHELTER ADJACENT TO EXISTING CONSTRUCTION SITE OF THE AMERICAN SCHOOL FOR THE DEAF CLOCK TOWER WITHIN A FENCED AREA.
2. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.

VICINITY MAP

SCALE: 1" = 1000'

PROJECT SUMMARY

SITE NAME:	WEST HARTFORD WEST
SITE ADDRESS:	139 NORTH MAIN STREET WEST HARTFORD, CT 06107
PROPERTY OWNER:	AMERICAN SCHOOL FOR THE DEAF 139 NORTH MAIN STREET WEST HARTFORD, CT 06107
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 99 EAST RIVER DRIVE, EAST HARTFORD, CT 06108
CONTACT PERSON:	SANDY CARTER CELLCO PARTNERSHIP (860) 803-8219
ENGINEER:	CENTEK ENGINEERING 63-2 NORTH BRANFORD ROAD, BRANFORD, CT 06405 (203) 488-0580
TEMPORARY TOWER COORDINATES:	LATITUDE: 41°-46'-15.307" LONGITUDE: 72°-44'-58.840" GROUND ELEVATION: 180.7'± A.M.S.L. COORDINATES AND GROUND ELEVATION BASED ON FAA 1-A SURVEY CERTIFICATION PREPARED BY MARTINEZ COUCH AND ASSOCIATES DATED APRIL 24, 2014.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
C-1.0	PARTIAL SITE SURVEY PLAN	1
C-2.0	SITE DEVELOPMENT PLAN AND MISC. SITE DETAILS	1
C-3.0	SITE CONSTRUCTION, SAC CONTROL NOTES AND DETAILS	1
C-4.0	ELEVATION AND ANTENNA CONFIGURATIONS	1

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CLF	CFS	ISSUED FOR CSC
0	04/29/14	CLF	CFS	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d.b.a. Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

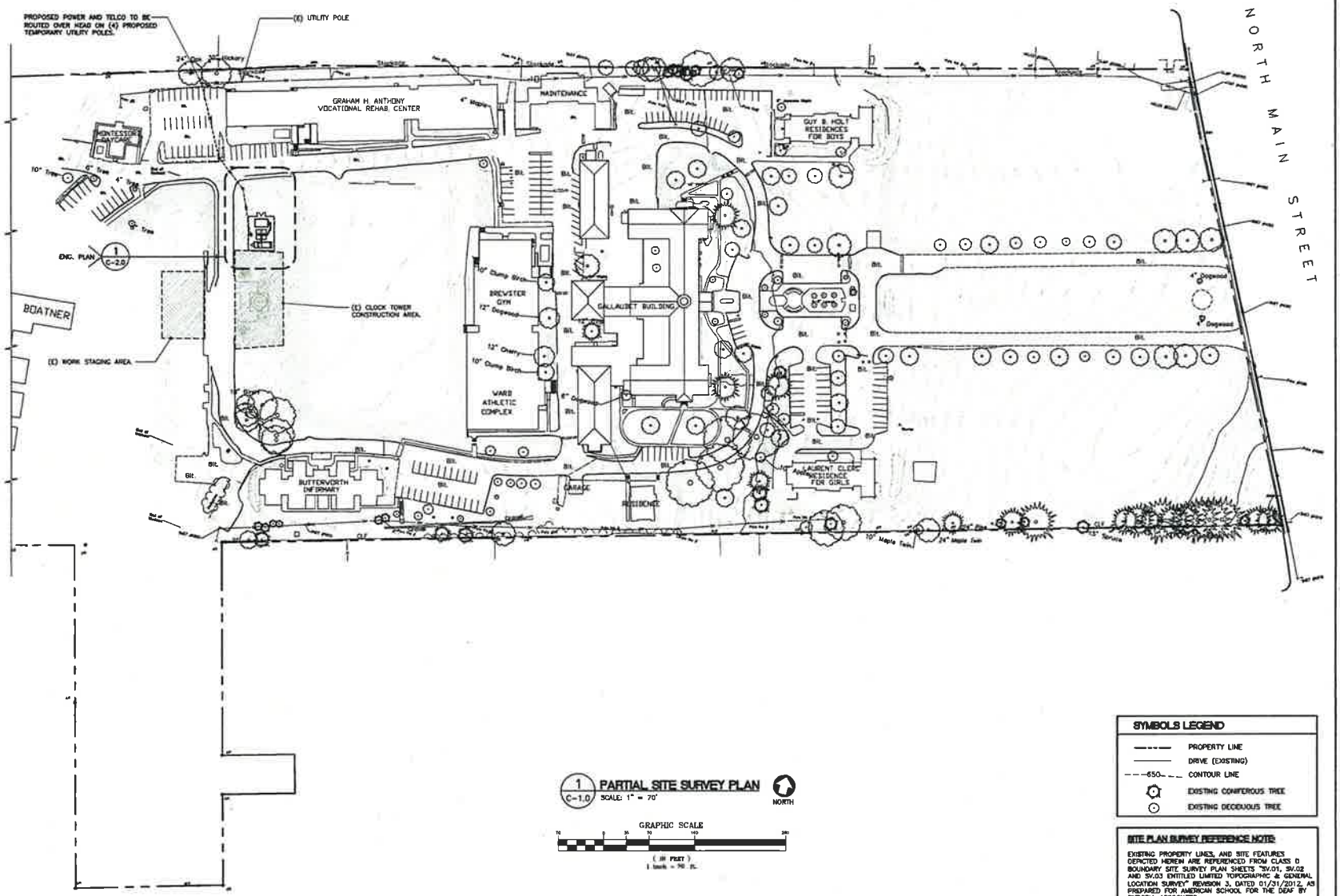
Cellco Partnership d.b.a. Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
139 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

TITLE SHEET

T-1

Sheet No. 1 of 5



REV.	DATE	DRAWN BY	CHK'D BY	ISSUED FOR
1	04/30/14	CLT	DFC	ISSUED FOR CSC
0	04/28/14	CLT	DFC	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d.b.a Verizon Wireless

CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d.b.a Verizon Wireless

WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
130 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

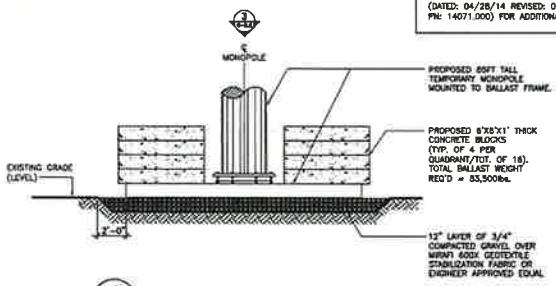
PARTIAL SITE SURVEY PLAN

C-1.0

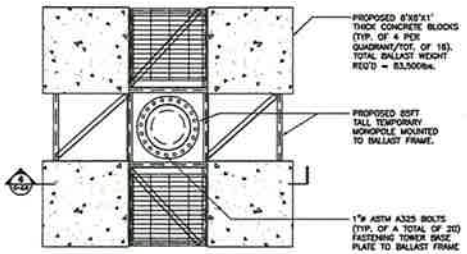
Sheet No. 2 of 3

NOTE:

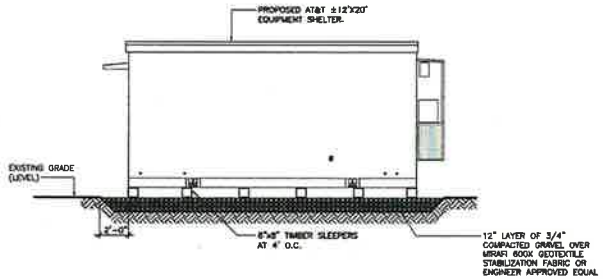
REFER TO STRUCTURAL ANALYSIS REPORT AS PREPARED BY CENTEK ENGINEERING (DATED: 04/28/14 REVISED: 04/29/14 FN: 14071.000) FOR ADDITIONAL INFORMATION.



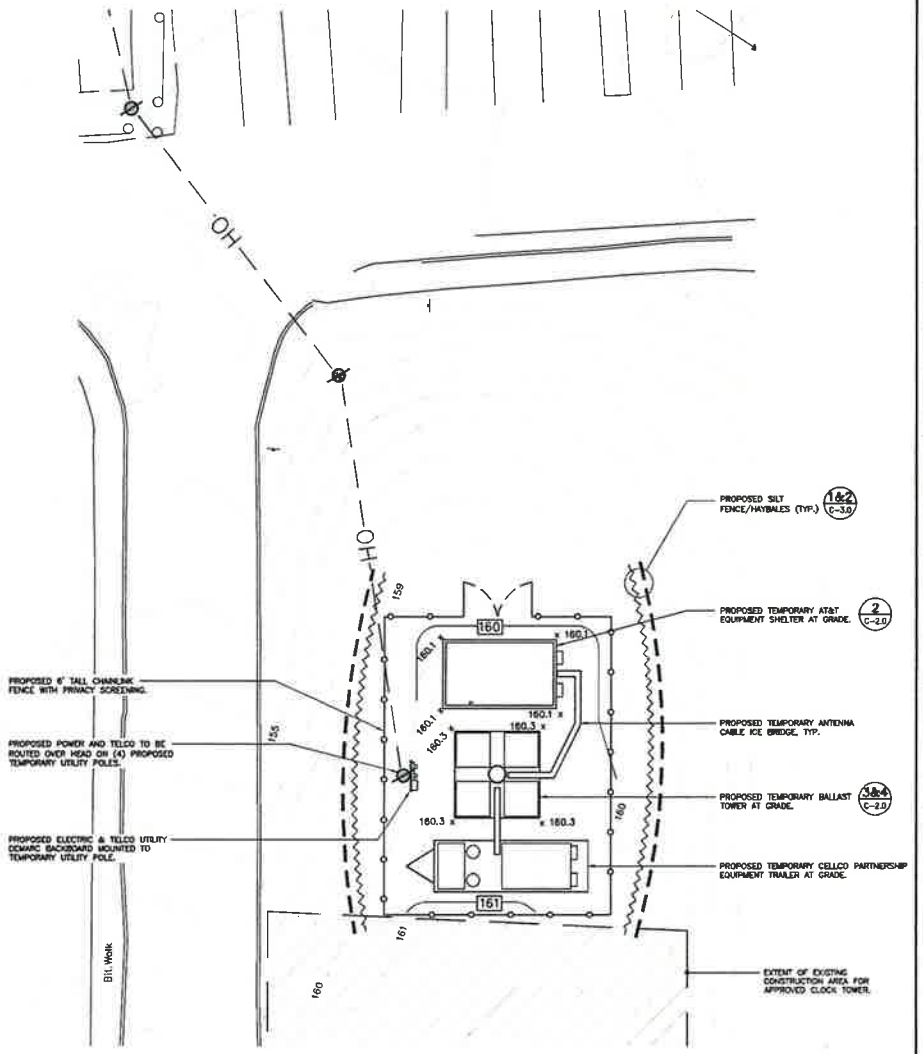
4 C-2.0 **TEMP. BALLAST TOWER SECTION**
SCALE: 1/4" = 1'-0"



3 C-2.0 **TEMP. BALLAST TOWER PLAN**
SCALE: 1/4" = 1'-0"



2 C-2.0 **EQUIPMENT SHELTER ELEVATION**
SCALE: 1/4" = 1'-0"



1 C-2.0 **SITE ENGINEERING PLAN**
SCALE: 1"=10'

NORTH

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

SYMBOLS LEGEND

- DRIVE (EXISTING)
- 650 CONTOUR LINE
- 650 GRADING LINE
- SILTATION FENCE/ STRAW BALES/ SILTATION FENCE "SANDWICH"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CLJ	DFC	ISSUED FOR CSC
0	04/28/14	CLJ	DFC	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
100 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

SITE DEVELOPMENT PLAN AND MISC. SITE DETAILS

C-2.0
Sheet No. 3 of 5

GENERAL CONSTRUCTION / PRE-CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES, A MANDATORY ON-SITE PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED WITH THE VERIZON WIRELESS CONSTRUCTION MANAGER, AT&T CONSTRUCTION MANAGER, CONTRACTOR'S CONSTRUCTION MANAGER, THE PROJECT EROSION AND SEDIMENTATION CONTROL/ENVIRONMENTAL MONITOR AND THE ENGINEER OF RECORD.
2. THE SOUTHERN PROPERTY LINE ADJACENT TO THE PROPOSED ACCESS DRIVE IS STAKED IN FIELD. THE CONTRACTOR SHALL MAINTAIN THE PROPERTY LINE STAKE LOCATIONS DURING THE ENTIRE PERIOD OF CONSTRUCTION. ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED ON THE SUBJECT PROPERTY.

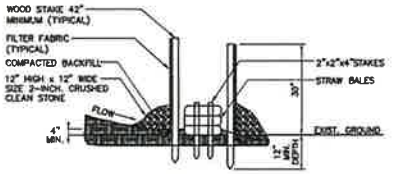
GENERAL CONSTRUCTION SEQUENCE

THIS IS A GENERAL CONSTRUCTION SEQUENCE OUTLINE SOME ITEMS OF WHICH MAY NOT APPLY TO PARTICULAR SITES.

1. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
2. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
3. REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED WITH WINTER RYE OR ANNUAL RYE TO PREVENT EROSION.
4. CONSTRUCT CLOSED DRAINAGE SYSTEM. PRECAST CULVERT INLETS AND CATCH BASINS WITH SEDIMENTATION BARRIERS.
5. CONSTRUCT ROADWAYS AND PERFORM SITE GRADING, PLACING STRAW BALES AND SILTATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
6. INSTALL UNDERGROUND UTILITIES.
7. BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
8. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
9. BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWERS AND PLATFORMS.
10. FINISH PAVING ALL ROADWAYS, DRIVES, AND PARKING AREAS.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING. AREA OF DISTURBED SOIL SHALL BE SOWN WITH NEW ENGLAND CONSERVATION/WILDLIFE SEED MIX (NEW ENGLAND WETLAND PLANTS, INC. (413) 548-8000, OR APPROVED EQUIVALENT) AT THE MANUFACTURER'S RECOMMENDED SEEDING RATE.
12. NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGARDED AREAS.
13. AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

SOIL EROSION AND SEDIMENT CONTROL SEQUENCE

1. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS CONSTRUCTION ENTRANCE / ANTI TRACKING PAD, SILTATION FENCE, AND SILTATION FENCE / STRAW BALE SHALL BE IN PLACE PRIOR TO ANY GRADING ACTIVITY. INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. MEASURES SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR AREA IS STABILIZED.
2. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. 2" CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
3. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. 2" CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM AND RESTABILIZATIONS WILL BE SCHEDULED AS SOON AS PRACTICAL.
5. ALL SOIL EROSION AND SEDIMENT CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL INCLUDING THE LATEST DATE FROM THE COUNCIL ON SOIL AND WATER CONSERVATION.
6. ANY ADDITIONAL EROSION/SEDIMENTATION CONTROL DEEMED NECESSARY BY TOWN STAFF DURING CONSTRUCTION, SHALL BE INSTALLED BY THE DEVELOPER. IN ADDITION, THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE TOWN STAFF.
7. IN ALL AREAS, REMOVAL OF TREES, BUSHES AND OTHER VEGETATION AS WELL AS DISTURBANCE OF THE SOIL IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE. DURING CONSTRUCTION, EXPOSE AS SMALL AN AREA OF SOIL AS POSSIBLE FOR AS SHORT A TIME AS POSSIBLE.
8. SILTATION FENCE SHALL BE PLACED AS INDICATED BEFORE A CUT SLOPE HAS BEEN CREATED. SEDIMENT DEPOSITS SHOULD BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDES OF SILTATION FENCE. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR TO BE USED IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. SILTATION FENCE IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE FENCE IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.
9. SWALE DISCHARGE AREA WILL BE PROTECTED WITH RIP RAP SPLASH PAD/ ENERGY DISSIPATER.
10. ALL FILL AREAS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
11. THE SOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
12. AFTER CONSTRUCTION IS COMPLETE AND GROUND IS STABLE, REMOVE SILTS IN THE RIP RAP ENERGY DISSIPATERS. REMOVE OTHER EROSION AND SEDIMENT DEVICES.



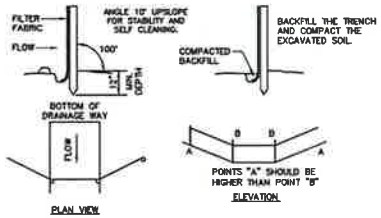
1 C-3.0 **SILTATION FENCE/STRAW BALE SILTATION FENCE "SANDWICH" EROSION CONTROL**
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS - SILT FENCE

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BUILD UP IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE - SILT FENCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.



SOURCE: U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, STORRS, CONNECTICUT

2 C-3.0 **PLACEMENT AND CONSTRUCTION OF SILTATION FENCE**
NOT TO SCALE

NO.	DATE	DRAWN BY	CHK'D BY	REVISED PER CSC - QUICK REVIEW
1	04/30/14	GLT	DFC	
0	04/14/14	GLT	DFC	ISSUED FOR CSC - QUICK REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

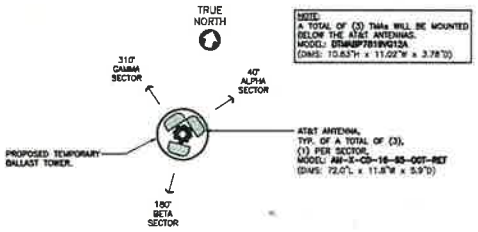
CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
189 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

SITE CONSTRUCTION, S&E CONTROL NOTES AND DETAILS

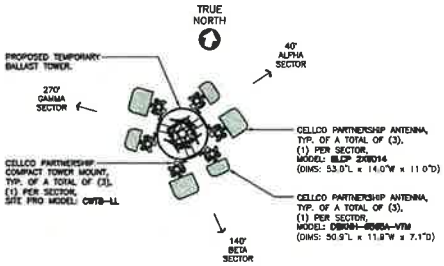
C-3.0
Sheet No. 4 of 5



ANTENNA ± EL.: 82'± A.G.L.

3 / C-4.0 AT+T ANTENNA MOUNTING CONFIGURATION

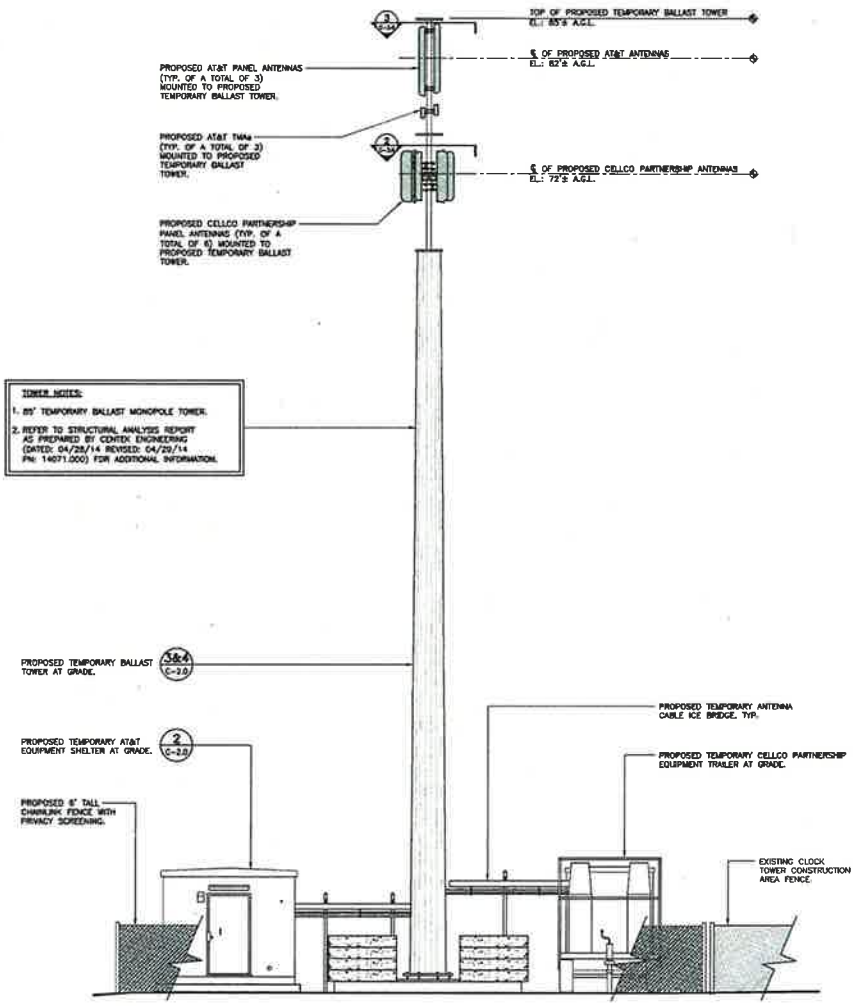
NOT TO SCALE



ANTENNA ± EL.: 72'± A.G.L.

2 / C-4.0 CELLCO PARTNERSHIP ANTENNA MOUNTING CONFIGURATION

NOT TO SCALE



1 / C-4.0 EAST ELEVATION

SCALE: 1" = 5'

GRAPHIC SCALE

(IN FEET)
1 inch = 5 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CLT	DFC	REVISED PER CSC - CLIENT REVIEW
0	04/28/14	CLT	DFC	ISSUED FOR CSC

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
139 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

ELEVATION AND ANTENNA CONFIGURATIONS

C-4.0

Sheet No. 3 of 3

ATTACHMENT 3

ALL-POINTS
TECHNOLOGY CORPORATION

MEMORANDUM

Date: April 30, 2014

To: Ms. Alexandria Carter
Verizon Wireless
99 East River Drive
East Hartford CT 06108

From: Michael Libertine

Re: Visibility of Temporary Tower
American School for the Deaf
139 North Main Street
West Hartford, Connecticut

In its Decision and Order for Docket 434 (dated June 27, 2013), the Connecticut Siting Council approved an application submitted by Cellco Partnership (d/b/a "Verizon Wireless") for a Certificate of Environmental Compatibility and Public Need in association with the construction, maintenance and operation of a replacement wireless communications facility on the campus of the American School for the Deaf at 139 North Main Street in West Hartford, Connecticut. The approved facility would include a clock tower structure measuring approximately 29 feet by 29 feet in length and width, and rising to a height of 90 feet above ground level ("AGL"), with a 6-foot tall spire affixed to the top of the structure's cupola. The facility has been designed to accommodate Verizon Wireless and New Cingular Wireless PCS LLC (d/b/a "AT&T") both of which are currently located at the campus in a building soon to be razed. The new facilities within the approved clock tower are anticipated to be on air by October of this year.

To accommodate construction sequencing while maintaining existing wireless services at this site, Verizon Wireless requires the installation and operation of a temporary facility. Based on site drawings prepared by Centek Engineering (dated April 28, 2014), the temporary facility would include an 85± foot tall ballast monopole affixed with antennas and tower mounted amplifiers ("TMAs"). The antennas and TMAs would be flush-mounted to the monopole at heights between approximately 70 feet above ground level AGL and 84 feet AGL. The temporary facility would also include equipment shelters for Verizon Wireless and AT&T. The entire temporary facility would be surrounded by a 6-foot tall chain-link fence (with privacy screening) enclosure measuring approximately 40 feet by 60 feet. The temporary facility would be located immediately north of the approved clock tower construction area.

At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") has evaluated the potential views associated with the proposed temporary tower at the referenced property. The temporary facility is comparable in height and located at similar ground elevation as that of the approved clock tower, but its profile will be much slimmer (diameter of approximately 4 feet at base tapering to about 2.5 feet at top).

Given these characteristics, we anticipate that the view shed of the temporary facility would be comparable to that as presented for the approved clock tower in our Visibility Analysis report (dated November 2012). Views of the temporary facility would be limited to a modest geographic footprint of less than 1,500 feet surrounding the school campus. Since the construction schedule window will occur during the time of year when leaves are on the trees, any views would be substantially obstructed by the intervening mature vegetation in the immediate area, further limiting that footprint. Other than views from immediately in front of the school entrance along North Main Street (looking east), the majority of views would be of the uppermost portion of the temporary tower (above the trees). In addition, with construction apparatus on various portions of the campus for the school's renovation activities (including cranes and man-lifts), the presence of the temporary facility is not likely to be any more noticeable than other similarly tall pieces of equipment.

ATTACHMENT 4

General Power Density

Site Name: W HARTFORD W RELO CT COW
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	2	511	1021	72	0.0708	1.0	7.08%
VZW Cellular	869	8	389	3109	72	0.2157	0.579333333	37.23%
VZW 700	746	1	475	475	72	0.0330	0.497333333	6.63%

Total Percentage of Maximum Permissible Exposure 50.94%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

AT&T Wireless – MPE Calculation

American School for the Deaf
139 North Main Street
West Hartford, CT

Transmission Mode	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
AT&T UMTS	82	800 Band	2	500	0.0535	0.5867	9.11
AT&T UMTS	82	1900 Band	2	500	0.0535	1.0000	5.35
AT&T LTE	82	700 Band	1	500	0.0267	0.4667	5.73
AT&T GSM	82	1900 Band	0	427	0.0000	1.0000	0.00
AT&T GSM	82	800 Band	1	296	0.0158	0.5867	2.70
Total							**22.9%**

ATTACHMENT 5

W_HARTFORD_W_TEMP_COW.TXT

****
* Federal Airways & Airspace *
* Summary Report: New Construction *
* Antenna Structure *
****

Airspace User: Your Name

File: W_HARTFORD_W_TEMP_COW

Location: Hartford, CT
Distance: 3.4 Statute Miles
Direction: 96° (true bearing)

Latitude: 41°-46'-15.31" Longitude: 72°-44'-58.84"

SITE ELEVATION AMSL.....161 ft.
STRUCTURE HEIGHT..... 85 ft.
OVERALL HEIGHT AMSL.....246 ft.

NOTICE CRITERIA
FAR 77.9(a): NNR (DNE 200 ft AGL)
FAR 77.9(b): NNR (DNE Notice Slope)
FAR 77.9(c): NNR (Not a Traverse Way)
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for HFD
FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for 4B8
FAR 77.9(d): NNR (Off Airport Construction)

NR = Notice Required
NNR = Notice Not Required
PNR = Possible Notice Required (depends upon actual IFR procedure)
For new construction review Air Navigation Facilities at bottom of this report.

Notice to the FAA is not required at the analyzed location and height for slope, height or Straight-In procedures. Please review the 'Air Navigation' section for notice requirements for offset IFR procedures and EMI.

OBSTRUCTION STANDARDS
FAR 77.17(a)(1): DNE 499 ft AGL
FAR 77.17(a)(2): DNE - Airport Surface
FAR 77.19(a): DNE - Horizontal Surface
FAR 77.19(b): DNE - Conical Surface
FAR 77.19(c): DNE - Primary Surface
FAR 77.19(d): DNE - Approach Surface
FAR 77.19(e): DNE - Transitional Surface

VFR TRAFFIC PATTERN AIRSPACE FOR: HFD: HARTFORD-BRAINARD
Type: A RD: 28473.03 RE: 13.9
FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Height No Greater Than 200 feet AGL.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE
VFR Approach Slope: DNE
VFR Transitional Slope: DNE

VFR TRAFFIC PATTERN AIRSPACE FOR: 4B8: ROBERTSON FIELD
Type: A RD: 41874.55 RE: 201.6
FAR 77.17(a)(1): DNE
FAR 77.17(a)(2): DNE - Greater Than 5.99 NM.
VFR Horizontal Surface: DNE
VFR Conical Surface: DNE

VFR Approach Slope: DNE
VFR Transitional Slope: DNE

TERPS DEPARTURE PROCEDURE (FAA Order 8260.3, Volume 4)
FAR 77.17(a)(3) Departure Surface Criteria (40:1)
DNE Departure Surface

MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)
FAR 77.17(a)(4): DNE - No Airway Found

PRIVATE LANDING FACILITIES

FACIL IDENT	TYP	NAME	BEARING To FACIL	RANGE IN NM	DELTA ARP ELEVATION	FAA IFR
0CT5	HEL	ST FRANCIS HOSPITAL	84.69	2.29	+62	
No Impact to Private Landing Facility Structure is beyond notice limit by 8914 feet.						
0CT9	HEL	HARTFORD HOSPITAL	107.23	3.34	+35	
No Impact to Private Landing Facility Structure is beyond notice limit by 15294 feet.						
CT06	HEL	DELTA ONE	74.89	4.14	+225	
No Impact to Private Landing Facility Structure is beyond notice limit by 20155 feet.						
CT88	HEL	RENTSCHLER	101	5.55	+198	
No Impact to Private Landing Facility Structure is beyond notice limit by 28722 feet.						
CT73	HEL	SOUTH MEADOWS	239.88	5.73	+46	
No Impact to Private Landing Facility Structure is beyond notice limit by 29816 feet.						
CT05	HEL	KAMAN AEROSPACE CORP	22.3	5.9	+82	
No Impact to Private Landing Facility Structure is beyond notice limit by 30849 feet.						

AIR NAVIGATION ELECTRONIC FACILITIES

FAC IDNT	TYPE	ST AT	FREQ	VECTOR	DIST (ft)	DELTA ELEVA	ST	LOCATION	GRND APCH BEAR	ANGLE
HFD	ATCT	Y	A/G	116.11	29825	+171	CT	HARTFORD-BRAINARD		.33
HFD	LOCALIZER	I	109.7	117.47	30210	+235	CT	RWY 02 HARTFORD-B	2	.45
BDL	RADAR	ON		16.66	63771	+10	CT	BRADLEY INTL		.01
No Impact. This structure does not require Notice based upon EMI. The studied location is within 20 NM of a Radar facility. The calculated Radar Line-Of-Sight (LOS) distance is: 38 NM. This location and height is within the Radar Line-Of-Sight.										
HFD	VOR/DME	R	114.9	130.65	72724	-603	CT	HARTFORD		-.48
BAF	VORTAC	R	113.0	3.65	142782	-21	MA	BARNES		-.01
CEF	VORTAC	R	114.0	21.26	166901	+5	MA	WESTOVER		0.00
MAD	VOR/DME	R	110.4	174.62	167294	+26	CT	MADISON		.01

HVN	VOR/DME	R	109.8	191.28	189005	+240	CT NEW HAVEN	.07
CTR	VOR/DME	I	115.1	344.1	197243	-1354	MA CHESTER	-.39

FCC AM PROOF-OF-PERFORMANCE
NOT REQUIRED: Structure is not near a FCC licensed AM radio station Proof-of-Performance is not required. Please review AM Station Report for details.

Nearest AM Station: WTIC @ 4678 meters.

Airspace® Summary Version 14.3.352

04-29-2014
09:41:32

ATTACHMENT 6

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

85-ft Ballast Monopole

Proposed Temporary Antenna Installation

Verizon Site Ref: West Hartford West

AT&T Site Ref: CT1173

139 North Main Street
West Hartford, CT

Centek Project No. 14071.000

~~Date: April 28, 2014~~

Rev 1: April 29, 2014

Prepared for:

at&t

AT&T Mobility
500 Enterprise Drive,
Suite 3A
Rocky Hill, CT 06067

verizonwireless

Verizon Wireless
99 East River Road,
9th Floor
East Hartford, CT 06108

Table of Contents

CENTEK Engineering, Inc.
Structural Analysis - 85-ft Ballast Monopole
Verizon Wireless – West Hartford West
AT&T Site Ref – CT1173
West Hartford, CT
Rev 1 ~ April 29, 2014

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the temporary antenna installation proposed by Verizon Wireless and AT&T Mobility on the ballast monopole (tower) located in West Hartford, CT.

The host tower is a 85-ft tall, three-section, ballasted monopole. Original design information was unavailable for use in this report. The tower geometry was obtained from a previous structural analysis prepared by Advanced Engineering Group dated September 19, 2013.

Antenna and appurtenance information were obtained from Verizon and a AT&T RF data sheet.

The tower consists of three (3) vertical steel pipe sections conforming to ASTM A53 Grade B (35ksi). The diameter of the pole (flat-flat) is 6.00-in at the top and 24.00-in at the base.

Verizon proposes the installation of six (6) panel antennas on a temporary ballast monopole. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

AT&T proposes the installation of three (3) panel antennas and three (3) TMA's on a temporary ballast monopole. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The tower was designed to support several communication antennas. The existing, proposed and future loads considered in this analysis consist of the following:

- **AT&T (Proposed):**
  Antennas: Three (3) KMW AM-X-CD-16-65-00T panel antennas and three (3) CCI DTMABP7819VG12A TMA's flush mounted with a RAD center elevation of 82-ft above grade level.
  Coax Cables: Six (6) 7/8" Ø coax cables running on the inside of the monopole.
- **VERIZON (Proposed):**
  Antennas: Three (3) Swedcom SLCP 2X6014 and three (3) Andrew DBXNH-6565A panel antennas mounted on three (3) Site Pro WiMax Compact Tower Mounts p/n CWT8-LL with a RAD center elevation of 72-ft above grade level.
  Coax Cables: Six (6) 7/8" Ø coax cables running on the inside of the monopole and twelve (12) 7/8" Ø coax cables running on the exterior of the monopole. (Note: Contractor to install maximum number of cables permissible within monopole and band remainder to exterior of pole.)

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- **All coax cables routed as specified in Section 3 of this report.**

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC[1] and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice on the tower structure and its components.

Basic Wind Speed:	Hartford; v = 80 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	West Hartford; v = 95 mph (3 second gust) equivalent to v = 77.5 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA wind speed controls.	
Load Cases:	Load Case 1; 80 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 69 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 69 mph wind speed velocity represents 75% of the wind pressure generated by the 80 mph wind speed.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

[1] The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

- Calculated stresses were found to be within allowable limits. In Load Case 1, per tnxTower "Section Capacity Table", this tower was found to be at **83.6%** of its total capacity.

Tower Section	Elevation (AGL)	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L1)	66.5'-86.5'	83.6%	**PASS**
Pole Shaft (L2)	36.5'-66.5'	32.9%	**PASS**
Pole Shaft (L3)	1.5'-36.5'	76.5%	**PASS**

Anchors and Ballast

The base of the tower is connected to the ballast frame by means of (20) 1.00"∅, ASTM A325 anchor bolts on a 27" ∅ bolt circle.

- The tower reactions developed from the governing Load Case 1 were used in the verification of the foundation:

Reactions	Vector	Proposed Base Reactions
Base	Shear	6 kips
	Compression	9 kips
	Moment	313 kip-ft

- The anchor bolts were found to be within allowable limits.

Tower Component	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Combined Compression and Shear	83.8%	**PASS**
Base Plate	Bending	73.2%	**PASS**

- The ballast frame was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS)[1]	Proposed Loading (FS)[1]	Result
Ballast frame w/ 83,500 lbs of conc. blocks	OTM[2]	2.0	2.22	**PASS**

Note 1: FS denotes Factor of Safety.
Note 2: OTM denotes Overturning Moment

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed temporary antenna configuration.

The analysis is based, in part, on the information provided to this office by Verizon Wireless and AT&T Mobility. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer

STATE OF CONNECTICUT
CARLO F. CENTORE
No. 16884
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide to CENTEK engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. CENTEK engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

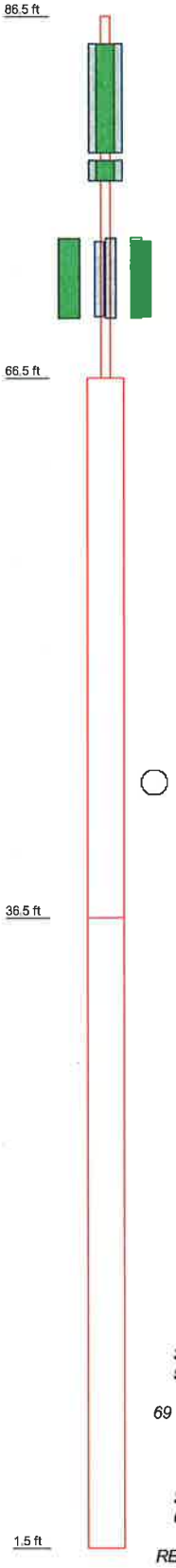
General Description of Structural Analysis Program

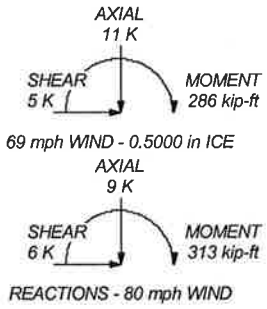
tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section	Size	Length (ft)	Grade	Weight (K)
1	P6x.432	20.00	A53-B-35	0.6
2	P24x3/8	30.00		2.8
3	P24x3/8	35.00		3.3
				6.7





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AM-X-CD-16-65-00T-RET(72") (AT⌶ Proposed)	82	DBXNH-6565A-VTM (Verizon Proposed)	72
AM-X-CD-16-65-00T-RET(72") (AT⌶ Proposed)	82	SLCP 2x6014 (Verizon Proposed)	72
AM-X-CD-16-65-00T-RET(72") (AT⌶ Proposed)	82	DBXNH-6565A-VTM (Verizon Proposed)	72
Valmont Uni-Tri Bracket (AT⌶ Proposed)	82	SLCP 2x6014 (Verizon Proposed)	72
DTMABP7819VG12A TMA (AT⌶ Proposed)	78	DBXNH-6565A-VTM (Verizon Proposed)	72
DTMABP7819VG12A TMA (AT⌶ Proposed)	78	Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	72
DTMABP7819VG12A TMA (AT⌶ Proposed)	78	Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	72
SLCP 2x6014 (Verizon Proposed)	72	Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	72

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 83.6%

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job:	14071.000 - West Hartford West		
Project:	85-ft Temporary Monopole - West Hartford, CT		
Client: Verizon Wireless	Drawn by: TJL		App'd:
Code: TIA/EIA-222-F	Date: 04/29/14		Scale: NTS
Path:			Dwg No. E-1

tnxTower	Job	Page
	14071.000 - West Hartford West	1 of 17
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	**Project** 85-ft Temporary Monopole - West Hartford, CT	**Date** 13:19:43 04/29/14
	Client Verizon Wireless	**Designed by** TJL

Tower Input Data

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

Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	86.50-66.50	20.00	P6x.432	A53-B-35 (35 ksi)	
L2	66.50-36.50	30.00	P24x3/8	A53-B-35 (35 ksi)	
L3	36.50-1.50	35.00	P24x3/8	A53-B-35 (35 ksi)	

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 86.50-66.50				1	1	1		
L2 66.50-36.50				1	1	1		
L3 36.50-1.50				1	1	1		

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
7/8 (Verizon Proposed)	C	No	Inside Pole	73.50 - 4.50	6	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
7/8 (AT&T Proposed)	C	No	Inside Pole	83.50 - 4.50	6	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
7/8 (Verizon Proposed)	C	No	CaAa (Out Of Face)	73.50 - 4.50	4	No Ice	0.11	0.54
						1/2" Ice	0.21	1.52
7/8 (Verizon Proposed)	C	No	CaAa (Out Of Face)	73.50 - 4.50	8	No Ice	0.00	0.54
						1/2" Ice	0.00	1.52

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 K
L1	86.50-66.50	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	3.108	0.12
L2	66.50-36.50	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	13.320	0.39
L3	36.50-1.50	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	14.208	0.41

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 K
L1	86.50-66.50	A	0.500	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	5.908	0.21
L2	66.50-36.50	A	0.500	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	25.320	0.74
L3	36.50-1.50	A	0.500	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	27.007	0.79

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
AM-X-CD-16-65-00T-RET(72") (AT&T Proposed)	A	From Face	0.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
AM-X-CD-16-65-00T-RET(72") (AT&T Proposed)	B	From Face	0.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
AM-X-CD-16-65-00T-RET(72") (AT&T Proposed)	C	From Face	0.50 0.00 0.00	0.0000	82.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
DTMABP7819VG12A TMA (AT&T Proposed)	A	From Face	0.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.59 1.76	0.58 0.70	0.02 0.03
DTMABP7819VG12A TMA (AT&T Proposed)	B	From Face	0.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.59 1.76	0.58 0.70	0.02 0.03
DTMABP7819VG12A TMA (AT&T Proposed)	C	From Face	0.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.59 1.76	0.58 0.70	0.02 0.03
Valmont Uni-Tri Bracket (AT&T Proposed)	C	None		0.0000	82.00	No Ice 1/2" Ice	1.75 1.94	1.75 1.94	0.29 0.31
SLCP 2x6014 (Verizon Proposed)	A	From Face	0.50 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	7.21 7.65	5.67 6.09	0.02 0.07
DBXNH-6565A-VTM (Verizon Proposed)	A	From Face	0.50 -2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	5.89 6.30	3.53 3.89	0.04 0.07
SLCP 2x6014 (Verizon Proposed)	B	From Face	0.50 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	7.21 7.65	5.67 6.09	0.02 0.07
DBXNH-6565A-VTM (Verizon Proposed)	B	From Face	0.50 -2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	5.89 6.30	3.53 3.89	0.04 0.07
SLCP 2x6014 (Verizon Proposed)	C	From Face	0.50 2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	7.21 7.65	5.67 6.09	0.02 0.07
DBXNH-6565A-VTM (Verizon Proposed)	C	From Face	0.50 -2.00 0.00	0.0000	72.00	No Ice 1/2" Ice	5.89 6.30	3.53 3.89	0.04 0.07
Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	A	None		0.0000	72.00	No Ice 1/2" Ice	2.85 4.05	2.85 4.05	0.15 0.20
Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	B	None		0.0000	72.00	No Ice 1/2" Ice	2.85 4.05	2.85 4.05	0.15 0.20
Site Pro Compact Tower Mount CWT8 (Verizon Proposed)	C	None		0.0000	72.00	No Ice 1/2" Ice	2.85 4.05	2.85 4.05	0.15 0.20

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 86.50-66.50	76.50	1.272	21	11.042	A	0.000	11.042	11.042	100.00	0.000	0.000
					B	0.000	11.042		100.00	0.000	0.000
					C	0.000	11.042		100.00	0.000	3.108
L2 66.50-36.50	51.50	1.136	19	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	13.320
L3 36.50-1.50	19.00	1	16	70.000	A	0.000	70.000	70.000	100.00	0.000	0.000
					B	0.000	70.000		100.00	0.000	0.000
					C	0.000	70.000		100.00	0.000	14.208

Tower Pressure - With Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 86.50-66.50	76.50	1.272	16	0.5000	12.708	A	0.000	12.708	12.708	100.00	0.000	0.000
						B	0.000	12.708		100.00	0.000	0.000
						C	0.000	12.708		100.00	0.000	5.908
L2 66.50-36.50	51.50	1.136	14	0.5000	62.500	A	0.000	62.500	62.500	100.00	0.000	0.000
						B	0.000	62.500		100.00	0.000	0.000
						C	0.000	62.500		100.00	0.000	25.320
L3 36.50-1.50	19.00	1	12	0.5000	72.917	A	0.000	72.917	72.917	100.00	0.000	0.000
						B	0.000	72.917		100.00	0.000	0.000
						C	0.000	72.917		100.00	0.000	27.007

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 86.50-66.50	76.50	1.272	8	11.042	A	0.000	11.042	11.042	100.00	0.000	0.000
					B	0.000	11.042		100.00	0.000	0.000
					C	0.000	11.042		100.00	0.000	3.108
L2 66.50-36.50	51.50	1.136	7	60.000	A	0.000	60.000	60.000	100.00	0.000	0.000
					B	0.000	60.000		100.00	0.000	0.000
					C	0.000	60.000		100.00	0.000	13.320
L3 36.50-1.50	19.00	1	6	70.000	A	0.000	70.000	70.000	100.00	0.000	0.000
					B	0.000	70.000		100.00	0.000	0.000
					C	0.000	70.000		100.00	0.000	14.208

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	0.808	1	1	1	11.042	0.42	21.18	C
86.50-66.50			B	1	0.808	1	1	1	11.042			
			C	1	0.808	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	1.53	51.06	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	1.54	43.91	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	135.26 kip-ft	3.49		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	0.808	1	1	1	11.042	0.42	21.18	C
86.50-66.50			B	1	0.808	1	1	1	11.042			
			C	1	0.808	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	1.53	51.06	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	1.54	43.91	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	135.26 kip-ft	3.49		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	0.808	1	1	1	11.042	0.42	21.18	C
86.50-66.50			B	1	0.808	1	1	1	11.042			
			C	1	0.808	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	1.53	51.06	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	1.54	43.91	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	135.26 kip-ft	3.49		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	0.808	1	1	1	11.042	0.42	21.18	C
86.50-66.50			B	1	0.808	1	1	1	11.042			
			C	1	0.808	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	1.53	51.06	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	1.54	43.91	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	135.26 kip-ft	3.49		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.21	0.66	A	1	0.974	1	1	1	12.708	0.48	24.15	C
86.50-66.50			B	1	0.974	1	1	1	12.708			
			C	1	0.974	1	1	1	12.708			
L2	0.74	3.29	A	1	0.59	1	1	1	62.500	1.47	48.89	C
66.50-36.50			B	1	0.59	1	1	1	62.500			
			C	1	0.59	1	1	1	62.500			
L3 36.50-1.50	0.79	3.84	A	1	0.59	1	1	1	72.917	1.45	41.55	C
			B	1	0.59	1	1	1	72.917			
			C	1	0.59	1	1	1	72.917			
Sum Weight:	1.74	7.79						OTM	135.01 kip-ft	3.40		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.21	0.66	A	1	0.974	1	1	1	12.708	0.48	24.15	C
86.50-66.50			B	1	0.974	1	1	1	12.708			
			C	1	0.974	1	1	1	12.708			
L2	0.74	3.29	A	1	0.59	1	1	1	62.500	1.47	48.89	C
66.50-36.50			B	1	0.59	1	1	1	62.500			
			C	1	0.59	1	1	1	62.500			
L3 36.50-1.50	0.79	3.84	A	1	0.59	1	1	1	72.917	1.45	41.55	C
			B	1	0.59	1	1	1	72.917			
			C	1	0.59	1	1	1	72.917			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
Sum Weight:	1.74	7.79						OTM	135.01 kip-ft	3.40		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.21	0.66	A	1	0.974	1	1	1	12.708	0.48	24.15	C
86.50-66.50			B	1	0.974	1	1	1	12.708			
			C	1	0.974	1	1	1	12.708			
L2	0.74	3.29	A	1	0.59	1	1	1	62.500	1.47	48.89	C
66.50-36.50			B	1	0.59	1	1	1	62.500			
			C	1	0.59	1	1	1	62.500			
L3 36.50-1.50	0.79	3.84	A	1	0.59	1	1	1	72.917	1.45	41.55	C
			B	1	0.59	1	1	1	72.917			
			C	1	0.59	1	1	1	72.917			
Sum Weight:	1.74	7.79						OTM	135.01 kip-ft	3.40		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.21	0.66	A	1	0.974	1	1	1	12.708	0.48	24.15	C
86.50-66.50			B	1	0.974	1	1	1	12.708			
			C	1	0.974	1	1	1	12.708			
L2	0.74	3.29	A	1	0.59	1	1	1	62.500	1.47	48.89	C
66.50-36.50			B	1	0.59	1	1	1	62.500			
			C	1	0.59	1	1	1	62.500			
L3 36.50-1.50	0.79	3.84	A	1	0.59	1	1	1	72.917	1.45	41.55	C
			B	1	0.59	1	1	1	72.917			
			C	1	0.59	1	1	1	72.917			
Sum Weight:	1.74	7.79						OTM	135.01 kip-ft	3.40		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	1.2	1	1	1	11.042	0.22	11.25	C
86.50-66.50			B	1	1.2	1	1	1	11.042			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	1	1.2	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	0.60	19.95	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	0.60	17.15	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	57.30 kip-ft	1.42		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	1.2	1	1	1	11.042	0.22	11.25	C
86.50-66.50			B	1	1.2	1	1	1	11.042			
			C	1	1.2	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	0.60	19.95	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	0.60	17.15	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	57.30 kip-ft	1.42		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	1.2	1	1	1	11.042	0.22	11.25	C
86.50-66.50			B	1	1.2	1	1	1	11.042			
			C	1	1.2	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	0.60	19.95	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	0.60	17.15	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	57.30 kip-ft	1.42		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
L1	0.12	0.57	A	1	1.2	1	1	1	11.042	0.22	11.25	C
86.50-66.50			B	1	1.2	1	1	1	11.042			
			C	1	1.2	1	1	1	11.042			
L2	0.39	2.84	A	1	0.59	1	1	1	60.000	0.60	19.95	C
66.50-36.50			B	1	0.59	1	1	1	60.000			
			C	1	0.59	1	1	1	60.000			
L3 36.50-1.50	0.41	3.31	A	1	0.59	1	1	1	70.000	0.60	17.15	C
			B	1	0.59	1	1	1	70.000			
			C	1	0.59	1	1	1	70.000			
Sum Weight:	0.93	6.73						OTM	57.30 kip-ft	1.42		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	6.73					
Bracing Weight	0.00					
Total Member Self-Weight	6.73			0.00	0.00	
Total Weight	8.78			0.00	0.00	
Wind 0 deg - No Ice		0.00	-5.82	-307.52	0.00	0.00
Wind 30 deg - No Ice		2.91	-5.04	-266.32	-153.76	0.00
Wind 45 deg - No Ice		4.11	-4.11	-217.45	-217.45	0.00
Wind 60 deg - No Ice		5.04	-2.91	-153.76	-266.32	0.00
Wind 90 deg - No Ice		5.82	0.00	0.00	-307.52	0.00
Wind 120 deg - No Ice		5.04	2.91	153.76	-266.32	0.00
Wind 135 deg - No Ice		4.11	4.11	217.45	-217.45	0.00
Wind 150 deg - No Ice		2.91	5.04	266.32	-153.76	0.00
Wind 180 deg - No Ice		0.00	5.82	307.52	0.00	0.00
Wind 210 deg - No Ice		-2.91	5.04	266.32	153.76	0.00
Wind 225 deg - No Ice		-4.11	4.11	217.45	217.45	0.00
Wind 240 deg - No Ice		-5.04	2.91	153.76	266.32	0.00
Wind 270 deg - No Ice		-5.82	0.00	0.00	307.52	0.00
Wind 300 deg - No Ice		-5.04	-2.91	-153.76	266.32	0.00
Wind 315 deg - No Ice		-4.11	-4.11	-217.45	217.45	0.00
Wind 330 deg - No Ice		-2.91	-5.04	-266.32	153.76	0.00
Member Ice	1.06					
Total Weight Ice	11.24			0.00	0.00	
Wind 0 deg - Ice		0.00	-5.36	-279.82	0.00	0.00
Wind 30 deg - Ice		2.68	-4.64	-242.33	-139.91	0.00
Wind 45 deg - Ice		3.79	-3.79	-197.86	-197.86	0.00
Wind 60 deg - Ice		4.64	-2.68	-139.91	-242.33	0.00
Wind 90 deg - Ice		5.36	0.00	0.00	-279.82	0.00
Wind 120 deg - Ice		4.64	2.68	139.91	-242.33	0.00
Wind 135 deg - Ice		3.79	3.79	197.86	-197.86	0.00
Wind 150 deg - Ice		2.68	4.64	242.33	-139.91	0.00
Wind 180 deg - Ice		0.00	5.36	279.82	0.00	0.00
Wind 210 deg - Ice		-2.68	4.64	242.33	139.91	0.00
Wind 225 deg - Ice		-3.79	3.79	197.86	197.86	0.00
Wind 240 deg - Ice		-4.64	2.68	139.91	242.33	0.00
Wind 270 deg - Ice		-5.36	0.00	0.00	279.82	0.00
Wind 300 deg - Ice		-4.64	-2.68	-139.91	242.33	0.00
Wind 315 deg - Ice		-3.79	-3.79	-197.86	197.86	0.00
Wind 330 deg - Ice		-2.68	-4.64	-242.33	139.91	0.00

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Total Weight	8.78			0.00	0.00	
Wind 0 deg - Service		0.00	-2.33	-124.59	0.00	0.00
Wind 30 deg - Service		1.17	-2.02	-107.90	-62.29	0.00
Wind 45 deg - Service		1.65	-1.65	-88.10	-88.10	0.00
Wind 60 deg - Service		2.02	-1.17	-62.29	-107.90	0.00
Wind 90 deg - Service		2.33	0.00	0.00	-124.59	0.00
Wind 120 deg - Service		2.02	1.17	62.29	-107.90	0.00
Wind 135 deg - Service		1.65	1.65	88.10	-88.10	0.00
Wind 150 deg - Service		1.17	2.02	107.90	-62.29	0.00
Wind 180 deg - Service		0.00	2.33	124.59	0.00	0.00
Wind 210 deg - Service		-1.17	2.02	107.90	62.29	0.00
Wind 225 deg - Service		-1.65	1.65	88.10	88.10	0.00
Wind 240 deg - Service		-2.02	1.17	62.29	107.90	0.00
Wind 270 deg - Service		-2.33	0.00	0.00	124.59	0.00
Wind 300 deg - Service		-2.02	-1.17	-62.29	107.90	0.00
Wind 315 deg - Service		-1.65	-1.65	-88.10	88.10	0.00
Wind 330 deg - Service		-1.17	-2.02	-107.90	62.29	0.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp

Comb. No.	Description
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	86.5 - 66.5	Pole	Max Tension	19	0.00	0.00	-0.00
			Max. Compression	18	-2.58	0.00	0.00
			Max. Mx	6	-1.75	-25.94	0.00
			Max. My	2	-1.75	0.00	25.94
			Max. Vy	6	2.80	-25.94	0.00
			Max. Vx	2	-2.80	0.00	25.94
			Max. Torque	5			0.00
L2	66.5 - 36.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-6.61	0.00	0.00
			Max. Mx	6	-4.97	-133.73	0.00
			Max. My	2	-4.97	0.00	133.73
			Max. Vy	6	4.38	-133.73	0.00
			Max. Vx	2	-4.38	0.00	133.73
			Max. Torque	5			0.00
L3	36.5 - 1.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	18	-11.24	0.00	0.00
			Max. Mx	6	-8.78	-312.96	0.00
			Max. My	2	-8.78	0.00	312.96
			Max. Vy	6	5.82	-312.96	0.00
			Max. Vx	2	-5.82	0.00	312.96
			Max. Torque	5			0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	19	11.24	0.00	5.36
	Max. H_x	14	8.78	5.82	0.00
	Max. H_z	2	8.78	0.00	5.82
	Max. M_x	2	312.96	0.00	5.82
	Max. M_z	6	312.96	-5.82	0.00
	Max. Torsion	5	0.00	-5.04	2.91

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	1	8.78	0.00	0.00
	Min. H_x	6	8.78	-5.82	0.00
	Min. H_z	10	8.78	0.00	-5.82
	Min. M_x	10	-312.96	0.00	-5.82
	Min. M_z	14	-312.96	5.82	0.00
	Min. Torsion	7	-0.00	-5.04	-2.91

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	8.78	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice	8.78	0.00	-5.82	-312.96	0.00	0.00
Dead+Wind 30 deg - No Ice	8.78	2.91	-5.04	-271.03	-156.48	0.00
Dead+Wind 45 deg - No Ice	8.78	4.11	-4.11	-221.29	-221.29	0.00
Dead+Wind 60 deg - No Ice	8.78	5.04	-2.91	-156.48	-271.03	-0.00
Dead+Wind 90 deg - No Ice	8.78	5.82	0.00	0.00	-312.96	0.00
Dead+Wind 120 deg - No Ice	8.78	5.04	2.91	156.48	-271.03	0.00
Dead+Wind 135 deg - No Ice	8.78	4.11	4.11	221.29	-221.29	0.00
Dead+Wind 150 deg - No Ice	8.78	2.91	5.04	271.03	-156.48	-0.00
Dead+Wind 180 deg - No Ice	8.78	0.00	5.82	312.96	0.00	0.00
Dead+Wind 210 deg - No Ice	8.78	-2.91	5.04	271.03	156.48	0.00
Dead+Wind 225 deg - No Ice	8.78	-4.11	4.11	221.29	221.29	0.00
Dead+Wind 240 deg - No Ice	8.78	-5.04	2.91	156.48	271.03	-0.00
Dead+Wind 270 deg - No Ice	8.78	-5.82	0.00	0.00	312.96	0.00
Dead+Wind 300 deg - No Ice	8.78	-5.04	-2.91	-156.48	271.03	0.00
Dead+Wind 315 deg - No Ice	8.78	-4.11	-4.11	-221.29	221.29	0.00
Dead+Wind 330 deg - No Ice	8.78	-2.91	-5.04	-271.03	156.48	-0.00
Dead+Ice+Temp	11.24	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp	11.24	0.00	-5.36	-286.38	0.00	0.00
Dead+Wind 30 deg+Ice+Temp	11.24	2.68	-4.64	-248.02	-143.19	0.00
Dead+Wind 45 deg+Ice+Temp	11.24	3.79	-3.79	-202.50	-202.50	0.00
Dead+Wind 60 deg+Ice+Temp	11.24	4.64	-2.68	-143.19	-248.02	-0.00
Dead+Wind 90 deg+Ice+Temp	11.24	5.36	0.00	0.00	-286.38	0.00
Dead+Wind 120 deg+Ice+Temp	11.24	4.64	2.68	143.19	-248.02	0.00
Dead+Wind 135 deg+Ice+Temp	11.24	3.79	3.79	202.50	-202.50	0.00
Dead+Wind 150 deg+Ice+Temp	11.24	2.68	4.64	248.02	-143.19	-0.00
Dead+Wind 180 deg+Ice+Temp	11.24	0.00	5.36	286.38	0.00	0.00
Dead+Wind 210 deg+Ice+Temp	11.24	-2.68	4.64	248.02	143.19	0.00
Dead+Wind 225 deg+Ice+Temp	11.24	-3.79	3.79	202.50	202.50	0.00
Dead+Wind 240 deg+Ice+Temp	11.24	-4.64	2.68	143.19	248.02	-0.00
Dead+Wind 270 deg+Ice+Temp	11.24	-5.36	0.00	0.00	286.38	0.00
Dead+Wind 300 deg+Ice+Temp	11.24	-4.64	-2.68	-143.19	248.02	0.00
Dead+Wind 315 deg+Ice+Temp	11.24	-3.79	-3.79	-202.50	202.50	0.00
Dead+Wind 330 deg+Ice+Temp	11.24	-2.68	-4.64	-248.02	143.19	-0.00
Dead+Wind 0 deg - Service	8.78	0.00	-2.33	-126.82	0.00	0.00
Dead+Wind 30 deg - Service	8.78	1.17	-2.02	-109.83	-63.41	0.00
Dead+Wind 45 deg - Service	8.78	1.65	-1.65	-89.68	-89.68	0.00
Dead+Wind 60 deg - Service	8.78	2.02	-1.17	-63.41	-109.83	-0.00
Dead+Wind 90 deg - Service	8.78	2.33	0.00	0.00	-126.82	0.00
Dead+Wind 120 deg - Service	8.78	2.02	1.17	63.41	-109.83	0.00
Dead+Wind 135 deg - Service	8.78	1.65	1.65	89.68	-89.68	0.00
Dead+Wind 150 deg - Service	8.78	1.17	2.02	109.83	-63.41	-0.00
Dead+Wind 180 deg - Service	8.78	0.00	2.33	126.82	0.00	0.00
Dead+Wind 210 deg - Service	8.78	-1.17	2.02	109.83	63.41	0.00
Dead+Wind 225 deg - Service	8.78	-1.65	1.65	89.68	89.68	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 240 deg - Service	8.78	-2.02	1.17	63.41	109.83	-0.00
Dead+Wind 270 deg - Service	8.78	-2.33	0.00	0.00	126.82	0.00
Dead+Wind 300 deg - Service	8.78	-2.02	-1.17	-63.41	109.83	0.00
Dead+Wind 315 deg - Service	8.78	-1.65	-1.65	-89.68	89.68	0.00
Dead+Wind 330 deg - Service	8.78	-1.17	-2.02	-109.83	63.41	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-8.78	0.00	0.00	8.78	0.00	0.000%
2	0.00	-8.78	-5.82	0.00	8.78	5.82	0.000%
3	2.91	-8.78	-5.04	-2.91	8.78	5.04	0.000%
4	4.11	-8.78	-4.11	-4.11	8.78	4.11	0.000%
5	5.04	-8.78	-2.91	-5.04	8.78	2.91	0.000%
6	5.82	-8.78	0.00	-5.82	8.78	0.00	0.000%
7	5.04	-8.78	2.91	-5.04	8.78	-2.91	0.000%
8	4.11	-8.78	4.11	-4.11	8.78	-4.11	0.000%
9	2.91	-8.78	5.04	-2.91	8.78	-5.04	0.000%
10	0.00	-8.78	5.82	0.00	8.78	-5.82	0.000%
11	-2.91	-8.78	5.04	2.91	8.78	-5.04	0.000%
12	-4.11	-8.78	4.11	4.11	8.78	-4.11	0.000%
13	-5.04	-8.78	2.91	5.04	8.78	-2.91	0.000%
14	-5.82	-8.78	0.00	5.82	8.78	0.00	0.000%
15	-5.04	-8.78	-2.91	5.04	8.78	2.91	0.000%
16	-4.11	-8.78	-4.11	4.11	8.78	4.11	0.000%
17	-2.91	-8.78	-5.04	2.91	8.78	5.04	0.000%
18	0.00	-11.24	0.00	0.00	11.24	0.00	0.000%
19	0.00	-11.24	-5.36	0.00	11.24	5.36	0.000%
20	2.68	-11.24	-4.64	-2.68	11.24	4.64	0.000%
21	3.79	-11.24	-3.79	-3.79	11.24	3.79	0.000%
22	4.64	-11.24	-2.68	-4.64	11.24	2.68	0.000%
23	5.36	-11.24	0.00	-5.36	11.24	0.00	0.000%
24	4.64	-11.24	2.68	-4.64	11.24	-2.68	0.000%
25	3.79	-11.24	3.79	-3.79	11.24	-3.79	0.000%
26	2.68	-11.24	4.64	-2.68	11.24	-4.64	0.000%
27	0.00	-11.24	5.36	0.00	11.24	-5.36	0.000%
28	-2.68	-11.24	4.64	2.68	11.24	-4.64	0.000%
29	-3.79	-11.24	3.79	3.79	11.24	-3.79	0.000%
30	-4.64	-11.24	2.68	4.64	11.24	-2.68	0.000%
31	-5.36	-11.24	0.00	5.36	11.24	0.00	0.000%
32	-4.64	-11.24	-2.68	4.64	11.24	2.68	0.000%
33	-3.79	-11.24	-3.79	3.79	11.24	3.79	0.000%
34	-2.68	-11.24	-4.64	2.68	11.24	4.64	0.000%
35	0.00	-8.78	-2.33	0.00	8.78	2.33	0.000%
36	1.17	-8.78	-2.02	-1.17	8.78	2.02	0.000%
37	1.65	-8.78	-1.65	-1.65	8.78	1.65	0.000%
38	2.02	-8.78	-1.17	-2.02	8.78	1.17	0.000%
39	2.33	-8.78	0.00	-2.33	8.78	0.00	0.000%
40	2.02	-8.78	1.17	-2.02	8.78	-1.17	0.000%
41	1.65	-8.78	1.65	-1.65	8.78	-1.65	0.000%
42	1.17	-8.78	2.02	-1.17	8.78	-2.02	0.000%
43	0.00	-8.78	2.33	0.00	8.78	-2.33	0.000%
44	-1.17	-8.78	2.02	1.17	8.78	-2.02	0.000%
45	-1.65	-8.78	1.65	1.65	8.78	-1.65	0.000%
46	-2.02	-8.78	1.17	2.02	8.78	-1.17	0.000%
47	-2.33	-8.78	0.00	2.33	8.78	0.00	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
48	-2.02	-8.78	-1.17	2.02	8.78	1.17	0.000%
49	-1.65	-8.78	-1.65	1.65	8.78	1.65	0.000%
50	-1.17	-8.78	-2.02	1.17	8.78	2.02	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00049960
4	Yes	4	0.00000001	0.00057402
5	Yes	4	0.00000001	0.00049960
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00049960
8	Yes	4	0.00000001	0.00057402
9	Yes	4	0.00000001	0.00049960
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00049960
12	Yes	4	0.00000001	0.00057402
13	Yes	4	0.00000001	0.00049960
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00049960
16	Yes	4	0.00000001	0.00057402
17	Yes	4	0.00000001	0.00049960
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00093381
20	Yes	5	0.00000001	0.00003883
21	Yes	5	0.00000001	0.00004228
22	Yes	5	0.00000001	0.00003883
23	Yes	4	0.00000001	0.00093381
24	Yes	5	0.00000001	0.00003883
25	Yes	5	0.00000001	0.00004228
26	Yes	5	0.00000001	0.00003883
27	Yes	4	0.00000001	0.00093381
28	Yes	5	0.00000001	0.00003883
29	Yes	5	0.00000001	0.00004228
30	Yes	5	0.00000001	0.00003883
31	Yes	4	0.00000001	0.00093381
32	Yes	5	0.00000001	0.00003883
33	Yes	5	0.00000001	0.00004228
34	Yes	5	0.00000001	0.00003883
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00004465
37	Yes	4	0.00000001	0.00005149
38	Yes	4	0.00000001	0.00004465
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00004465
41	Yes	4	0.00000001	0.00005149
42	Yes	4	0.00000001	0.00004465
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00004465
45	Yes	4	0.00000001	0.00005149
46	Yes	4	0.00000001	0.00004465
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00004465

49	Yes	4	0.00000001	0.00005149
50	Yes	4	0.00000001	0.00004465

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	86.5 - 66.5	9.239	35	1.0434	0.0000
L2	66.5 - 36.5	5.302	35	0.5938	0.0000
L3	36.5 - 1.5	1.901	35	0.4569	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
82.00	AM-X-CD-16-65-00T-RET(72")	35	8.289	0.9240	0.0000	10676
78.00	DTMABP7819VG12A TMA	35	7.461	0.8226	0.0000	6280
72.00	SLCP 2x6014	35	6.282	0.6881	0.0000	3681

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	86.5 - 66.5	22.610	2	2.5342	0.0000
L2	66.5 - 36.5	13.033	2	1.4569	0.0000
L3	36.5 - 1.5	4.679	2	1.1235	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
82.00	AM-X-CD-16-65-00T-RET(72")	2	20.302	2.2481	0.0000	4470
78.00	DTMABP7819VG12A TMA	2	18.290	2.0051	0.0000	2629
72.00	SLCP 2x6014	2	15.420	1.6828	0.0000	1541

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	F_a	A	Actual P	Allow. P_a	Ratio $\frac{P}{P_a}$
	ft		ft	ft		ksi	in^2	K	K	
L1	86.5 - 66.5 (1)	P6x.432	20.00	0.00	0.0	21.000	8.4049	-1.75	176.50	0.010
L2	66.5 - 36.5 (2)	P24x3/8	30.00	0.00	0.0	21.000	27.8325	-4.97	584.48	0.009
L3	36.5 - 1.5 (3)	P24x3/8	35.00	0.00	0.0	21.000	27.8325	-8.78	584.48	0.015

Pole Bending Design Data

Section No.	Elevation	Size	Actual M_x	Actual f_{bx}	Allow. F_{bx}	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y	Actual f_{by}	Allow. F_{by}	Ratio $\frac{f_{by}}{F_{by}}$
	ft		kip-ft	ksi	ksi		kip-ft	ksi	ksi	
L1	86.5 - 66.5 (1)	P6x.432	25.94	25.467	23.100	1.102	0.00	0.000	23.100	0.000
L2	66.5 - 36.5 (2)	P24x3/8	133.73	9.915	23.100	0.429	0.00	0.000	23.100	0.000
L3	36.5 - 1.5 (3)	P24x3/8	312.96	23.202	23.100	1.004	0.00	0.000	23.100	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V	Actual f_v	Allow. F_v	Ratio $\frac{f_v}{F_v}$	Actual T	Actual f_{vt}	Allow. F_{vt}	Ratio $\frac{f_{vt}}{F_{vt}}$
	ft		K	ksi	ksi		kip-ft	ksi	ksi	
L1	86.5 - 66.5 (1)	P6x.432	2.80	0.666	14.000	0.048	0.00	0.000	14.000	0.000
L2	66.5 - 36.5 (2)	P24x3/8	4.38	0.315	14.000	0.022	0.00	0.000	14.000	0.000
L3	36.5 - 1.5 (3)	P24x3/8	5.82	0.419	14.000	0.030	0.00	0.000	14.000	0.000

Pole Interaction Design Data

Section No.	Elevation	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft								
L1	86.5 - 66.5 (1)	0.010	1.102	0.000	0.048	0.000	1.115 ✔	1.333	H1-3+VT ✔
L2	66.5 - 36.5 (2)	0.009	0.429	0.000	0.022	0.000	0.438 ✔	1.333	H1-3+VT ✔
L3	36.5 - 1.5 (3)	0.015	1.004	0.000	0.030	0.000	1.020 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	86.5 - 66.5	Pole	P6x.432	1	-1.75	235.28	83.6	Pass
L2	66.5 - 36.5	Pole	P24x3/8	2	-4.97	779.12	32.9	Pass
L3	36.5 - 1.5	Pole	P24x3/8	3	-8.78	779.12	76.5	Pass
							Summary	
						Pole (L1)	83.6	Pass
						RATING =	**83.6**	**Pass**

CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Subject:		Anchor Bolt and Base Plate Anlaysis
Location:		85-ft Temporary Ballast Monopole West Hartford, CT
Rev. 1: 4/29/14		Prepared by: T.J.L. Checked by: C.F.C. Job No. 14071.000

Anchor Bolt and Base Plate Analysis:

Input Data:

Tower Reactions:

Overturning Moment =	OM := 313·ft·kips	(Input From tnxTower)
Shear Force =	Shear := 6·kips	(Input From tnxTower)
Axial Force =	Axial := 9·kips	(Input From tnxTower)

Anchor Bolt Data:

Use ASTM A325

Number of Anchor Bolts =	N := 20	(User Input)
Diameter of Bolt Circle =	D_{bc} := 27.00·in	(User Input)
Bolt "Column" Distance =	l := 3.0·in	(User Input)
Bolt Ultimate Strength =	F_u := 120·ksi	(User Input)
Bolt Yield Strength =	F_y := 92·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.0·in	(User Input)
Threads per Inch =	n := 8	(User Input)

Base Plate Data:

Use ASTM A572-50

Plate Yield Strength =	Fy_{bp} := 50·ksi	(User Input)
Base Plate Thickness =	t_{bp} := 1.00·in	(User Input)
Base Plate Diameter =	D_{bp} := 30·in	(User Input)
Outer Pole Diameter =	D_{pole} := 24·in	(User Input)

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 13.5 \cdot in$

Distance to Bolts = $i := 1 .. N$

$$d_i := \left| \begin{array}{l} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) \\ d \leftarrow R_{bc} \cdot \sin(\theta) \end{array} \right.$$

$d_1 = 4.17 \cdot in$ $d_7 = 10.92 \cdot in$

$d_2 = 7.94 \cdot in$ $d_8 = 7.94 \cdot in$

$d_3 = 10.92 \cdot in$ $d_9 = 4.17 \cdot in$

$d_4 = 12.84 \cdot in$ $d_{10} = 0.00 \cdot in$

$d_5 = 13.50 \cdot in$ $d_{11} = -4.17 \cdot in$

$d_6 = 12.84 \cdot in$ etc.

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 12 \cdot in$

Moment Arms of Bolts about Neutral Axis = $MA_i := if\left(d_i \geq R_{pole}, d_i - R_{pole}, 0in\right)$

$MA_1 = 0.00 \cdot in$ $MA_7 = 0.00 \cdot in$

$MA_2 = 0.00 \cdot in$ $MA_8 = 0.00 \cdot in$

$MA_3 = 0.00 \cdot in$ $MA_9 = 0.00 \cdot in$

$MA_4 = 0.84 \cdot in$ $MA_{10} = 0.00 \cdot in$

$MA_5 = 1.50 \cdot in$ $MA_{11} = 0.00 \cdot in$

$MA_6 = 0.84 \cdot in$ etc

Effective Width of Baseplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 14.4 \cdot in$

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i \left(d_i\right)^2 = 1.822 \times 10^3 \cdot in^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 0.785 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n}\right)^2 = 0.606 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 0.878 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.22 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.066 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 27.4 \cdot kips$

Allowable Tensile Force = $T_{ALL.Gross} := 1.333 \cdot \left(0.33 \cdot A_g \cdot F_u\right) = 41.5 \cdot kips$ (1.333 increase allowed per TIA/EIA)

$T_{ALL.Net} := 1.333 \cdot \left(0.60 \cdot A_n \cdot F_y\right) = 44.572 \cdot kips$ (1.333 increase allowed per TIA/EIA)

Bolt Tension % of Capacity = $\frac{T_{Max}}{T_{ALL.Net}} \cdot 100 = 61$ Bolts are "upset bolts". Use net area per AISC

Condition1 = $Condition1 := if\left(\frac{T_{Max}}{T_{ALL.Net}} \le 1.00, "OK", "Overstressed"\right)$

Condition1 = "OK"

Check Anchor Bolt Bending Stress:

Maximum Bending Moment = $M_x := \left(\frac{Shear}{N}\right) \cdot l = 0.075 \cdot ft \cdot kips$

Maximum Bending Stress = $f_{bx} := \frac{M_x}{S_x} = 13.5 \cdot ksi$

Allowable Bending Stress = $F_{bx} := 1.333 \cdot 0.6 \cdot F_y = 73.6 \cdot ksi$ (1.333 increase allowed per TIA/EIA)

Check Combined Stress Requirement:

Per ASCE Manual 72: "If the clearance between the base plate and concrete does not exceed two times the bolt diameter a bending stress analysis of the bolts is NOT normally required.

$$l := \begin{cases} l & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 3 \cdot in$$

$$f_{bx} := \begin{cases} f_{bx} & \text{if } l > 2 \cdot D_n \\ 0 & \text{otherwise} \end{cases} = 13.5 \cdot ksi$$

Check Anchor Bolt Compression/Combined Stress:

Maximum Compressive Force =

$$C_{Max} := OM \cdot \frac{R_{bc}}{I_p} + \frac{Axial}{N} = 28.3 \cdot kips$$

Maximum Compressive Stress =

$$f_a := \frac{C_{Max}}{A_n} = 46.7 \cdot ksi$$

$$K := 0.65$$

$$C_c := \sqrt{\frac{2 \cdot \pi^2 \cdot E}{F_y}} = 78.881$$

$$F_a := \begin{cases} \dfrac{\left[1 - \dfrac{\left(\frac{K \cdot l}{r}\right)^2}{2 \cdot C_c^2}\right] \cdot F_y}{\dfrac{5}{3} + \dfrac{3 \cdot \left(\frac{K \cdot l}{r}\right)}{8 \cdot C_c} - \dfrac{\left(\frac{K \cdot l}{r}\right)^3}{8 \cdot C_c^3}} & \text{if } \dfrac{K \cdot l}{r} \le C_c \\ \dfrac{12 \cdot \pi^2 \cdot E}{23 \cdot \left(\frac{K \cdot l}{r}\right)^2} & \text{if } \dfrac{K \cdot l}{r} > C_c \end{cases} = 53.5 \cdot ksi$$

Allowable Compressive Stress =

$$F_a := 1.333 \cdot F_a = 71.3 \cdot ksi$$

(1.333 increase allowed per TIA/EIA)

Combined Stress % of Capacity =

$$\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}}\right) \cdot 100 = 83.8$$

Condition 2 =

$$Condition2 := if\left(\frac{f_a}{F_a} + \frac{f_{bx}}{F_{bx}} \le 1.00, \text{"OK"}, \text{"Overstressed"}\right)$$

Condition2 = "OK"

Base Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 9.0 \cdot kips$ $C_7 = 23.0 \cdot kips$

$C_2 = 16.8 \cdot kips$ $C_8 = 16.8 \cdot kips$

$C_3 = 23.0 \cdot kips$ $C_9 = 9.0 \cdot kips$

$C_4 = 26.9 \cdot kips$ $C_{10} = 0.5 \cdot kips$

$C_5 = 28.3 \cdot kips$ $C_{11} = -8.1 \cdot kips$

$C_6 = 26.9 \cdot kips$ etc.

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{6 \cdot C_i \cdot MA_i}{\left(B_{eff} \cdot t_{bp}^2\right)} = 36.5 \cdot ksi$

Allowable Bending Stress in Plate = $F_{bp} := 1.33 \cdot 0.75 \cdot Fy_{bp} = 49.9 \cdot ksi$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} \cdot 100 = 73.2$

Condition3 = $Condition3 := if\left(\frac{f_{bp}}{F_{bp}} < 1.00, "Ok", "Overstressed"\right)$

Condition3 = "Ok"

CENTEK engineering
Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

	Subject:	Ballast Calculation
	Location:	85-ft Temporary Ballast Monopole West Hartford, CT
	Rev. 1: 4/29/14	Prepared by: T.J.L. Checked by: C.F.C. Job No. 14071.000

Ballast Calculation:

Input Data:

Tower Reactions:

Overturning Moment =	$OM := 313 \cdot ft \cdot kips$	(Input From tnxTower)
Shear Force =	$Shear := 6 \cdot kips$	(Input From tnxTower)
Axial Force =	$Axial := 9 \cdot kips$	(Input From tnxTower)
Overturning Factor of Safety Required =	$FS_{req} := 2.0$	(User Input)

Ballast Data:

Weight of Base Frame =	$WT_{frame} := 3kips$	(User Input)
Distance From Center of Monopole to Extreme Edge of Base Frame =	$c := 7.5 \cdot ft$	(User Input)
Distance From Frame Toe to Front Ballast String =	$d_1 := 3.0 \cdot ft$	(User Input)
Distance From Frame Toe to Back Ballast String =	$d_2 := 12 \cdot ft$	(User Input)
Depth of Ballast Frame =	$d_f := 1.50 \cdot ft$	(User Input)
Weight of Concrete =	$\gamma_c := 145 \cdot pcf$	(User Input)
Block Width =	$w_b := 6 \cdot ft$	(User Input)
Block Length =	$l_b := 6 \cdot ft$	(User Input)
Block Thickness =	$t_b := 1 \cdot ft$	(User Input)
Individual Block Weight =	$W_b := w_b \cdot l_b \cdot t_b \cdot \gamma_c = 5220 \cdot lb$	
Total Overturning Moment About Toe of Base Frame =	$M_{tot} := OM + Shear \cdot d_f = 322 \cdot ft \cdot kips$	
Total Dead Weight =	$P_{tot} := Axial + WT_{frame} = 12 \cdot kips$	
Net Resisting Moment Required =	$M_{rnet} := (FS_{req} \cdot M_{tot}) - (P_{tot} \cdot c) = 554 \cdot kip \cdot ft$	
Ballast Required Per Side of Base Frame =	$W_{req} := \frac{M_{rnet}}{(d_1 + d_2)} = 36.93 \cdot kips$	
Total Ballast Weight Required =	$W_{totreq} := W_{req} \cdot 2 = 73.87 \cdot kips$	
Ballast Weight Required Per Quadrant =	$W_{reqquad} := \frac{W_{req}}{2} = 18.47 \cdot kips$	
Number of Blocks Required per Quadrant =	$N_b := \frac{W_{totreq}}{W_b \cdot (4) \cdot (0.9)} = 3.93$	
	$N_{buse} := 4$	

Resisting Moment =

$$M_r := \left[\left(W_b\right)\cdot N_{buse}\cdot 2.0\cdot\left(d_1 + d_2\right)\right] + \left(P_{tot}\cdot c\right) = 716.4\cdot kip\cdot ft$$

Actual Factor of Safety =

$$FS := \frac{M_r}{M_{tot}} = 2.22$$

$$FOS\_Check := if\left(FS \geq FS_{req}, "Okay", "No\ Good"\right)$$

FOS_Check = "Okay"

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

DBXNH-6565A-VTM

Andrew® Dual Band Teletilt® Antenna, 698–896 MHz and 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- The RF connectors are designed for IP67 rating and the radome for IP56 rating
- The values presented on this datasheet have been calculated based on N-P-BASTA White Paper version 9.6 by the NGMN Alliance

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**	**1710–1880**	**1850–1990**	**1920–2180**
Gain by all Beam Tilts, average, dBi	13.3	13.3	16.8	17.0	17.0
Gain by all Beam Tilts Tolerance, dB	±0.7	±0.4	±0.5	±0.3	±0.7
Gain by Beam Tilt, average, dBi	0 ° | 13.5 8 ° | 13.4 15 ° | 12.9	0 ° | 14.1 8 ° | 14.0 15 ° | 13.4	0 ° | 16.7 4 ° | 16.8 8 ° | 16.7	0 ° | 17.1 4 ° | 17.1 8 ° | 16.8	0 ° | 17.3 4 ° | 17.1 8 ° | 16.5
Beamwidth, Horizontal, degrees	69	66	62	57	59
Beamwidth, Horizontal Tolerance, degrees	±2.9	±1.7	±5.7	±2.1	±6.4
Beamwidth, Vertical, degrees	18.8	16.9	7.4	7.0	6.6
Beamwidth, Vertical Tolerance, degrees	±1.5	±0.8	±0.4	±0.3	±0.4
Beam Tilt, degrees	0–15	0–15	0–8	0–8	0–8
USLS, dB	17	15	16	17	18
Front-to-Back Total Power at 180° ± 30°, dB	18	21	28	28	28
CPR at Boresight, dB	15	14	21	22	25
CPR at Sector, dB	5	5	11	9	7
Isolation, dB	30	28	30	30	30
Isolation, Intersystem, dB	35	33	40	40	40
VSWR | Return Loss, dB	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
Input Power per Port, maximum, watts	400	400	300	300	300
Polarization	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® dual band
Band	Multiband
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz | 698 – 896 MHz
Number of Ports, all types	4

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4

Product Specifications

DBXNH-6565A-VTM

Wind Loading, maximum	403.0 N @ 150 km/h 90.6 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1293.0 mm | 50.9 in
Width	301.0 mm | 11.9 in
Net Weight	15.5 kg | 34.2 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 1.1 Actuator	DBXNH-6565A-R2M
Model with Factory Installed AISG 2.0 Actuator	DBXNH-6565A-A2M
RET System	Teletilt®

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

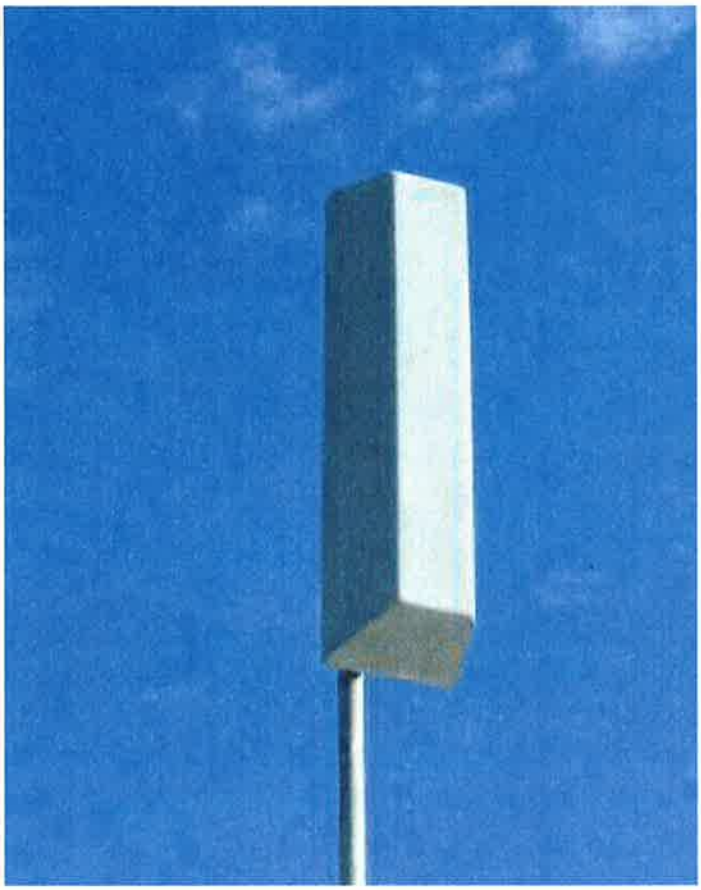
Swedcom

SLCP 2x6014

Dual (2x) Circularly Polarized log-periodic antenna

Features

- **Transmit Diversity Gain**
- **Can be configured to combine space & polarization diversity**
- **Outstanding performance over the entire band (700 - 800 MHz)**
- **Excellent Axial Ratio**
- **Optimized for 4G & 3G systems**
- **Low intermodulation**
- **Improved Side-to-side rejection**
- **Fading reduction**
- **Excellent isolation between ports**



Electrical specifications

Frequency range:	**700-800 MHz**
Impedance:	**50 ohm**
Connector type:	**7/16 Din**
Return loss:	**18 dB**
Polarization:	**Circular**
Gain ea. port [Circular]:	**2x14 dBdC**
Gain ea. port [Linear]:	**2x11 dBdL**
Axial Ratio:	**2 dB**
Isolation between ports (TX band):	**30 dB**
Front-to-back ratio:	**30 dB**
Intermodulation (2x20W):	**IM3 150 dB**
	IM5 160 dB
	IM7/9 170 dB
Power rating:	**2x 500 W**
H-plane (-3 dB point):	**2x 55°**
V-plane (-3 dB point):	**2x 16°**
Lightning protection:	**DC grounded**

Mechanical specifications

Overall height:	**53 in**	**[1346 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**11 in**	**[279 mm]**
Weight (excluding brackets):	**20 lbs**	**[9 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**5.15 sq. ft.**	**[0.48 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**263 lbs**	**[1171 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SLCP 2x6014 is made in the U.S.A.

Section 1 - RFDS GENERAL INFORMATION

RFDS NAME:	CT1173	DATE:	3/5/2013 15:50	RF DESIGN ENG:	Evan Thibodeau	RF PERF ENG:
ISSUE:	Final	Approved? (Y/N):	Y	RF DESIGN PHONE:	(603) 320-8556	RF PERF PHONE:
REVISION:	V04	RF MANAGER:	Cameron Syme	RF DESIGN EMAIL:	et2267@att.com	RF PERF EMAIL:
INITIATIVE / PROJECT:	LTE Wave 3					TRIDENT:
						GSM FREQUENCY:
						UMTS FREQUENCY:
						LTE FREQUENCY:
						U-PLAN JOB # 1:
						U-PLAN JOB # 2:
						U-PLAN JOB # 3:
						U-PLAN JOB # 4:

Section 2 - LOCATION INFORMATION

USID:	TBD	FA LOCATION CODE:	10117167	LOCATION NAME:	N Main Street	ORACLE PRJT # 1:
REGION:	NORTHEAST	MARKET CLUSTER:	NEW ENGLAND	MARKET:	CT	ORACLE PRJT # 2:
ADDRESS:	139 N Main Street	CITY:	West Hartford	STATE:	CT	ORACLE PRJT # 3:
ZIP CODE:	06107	COUNTY:	Hartford	MSA/RSA:	TBD	ORACLE PRJT # 4:
LAT/LONG (D-M-S):	41° 46' 17.05"	LONG/LONG (D-M-S):	-72° 44' 49.93"	LAT (DEC. DEG.):	41.771403	SEARCH RING NAME:
DIRECTIONS, ACCESS AND EQUIPMENT LOCATION:	TBD					SEARCH RING ID:
						RTA:
						LONG (DEC. DEG.):
						BORDER CELL WITH CONT
						AM STUDY REQ'D (Y/N):
						FAFO CODES:

Section 3 - LICENSE COVERAGE/FILING INFORMATION

CGSA - NO FILING TRIGGERED:	TBD	CGSA LOS):	TBD	PCS REDUCED - UP1 ZIP:	TBD
CGSA - MINOR FILING NEEDED:	TBD	CGSA EXT AGMT NEEDED:	TBD	PCS POPS REDUCED:	TBD
CGSA - MAJOR FILING NEEDED:	TBD	CGSA SCORECARD UPDATED:	TBD		

Section 4 - TOWER/REGULATORY INFORMATION

STRUCTURE AT&T OWNED?:	TBD	GROUND ELEVATION (ft):		STRUCTURE TYPE:	MONOPOLE	MKT LOCATION 850 MHZ CALL SIGN(S):
ADDITIONAL REGULATORY?:	TBD	HEIGHT OVERALL (ft):		FCC ASR NUMBER:	TBD	MKT LOCATION 1900 MHZ CALL SIGN(S):
SUB-LEASE RIGHTS?:	TBD	STRUCTURE HEIGHT (ft):				MKT LOCATION 700 MHZ CALL SIGN(S):
LIGHTING TYP:	TBD					MKT LOCATION 3GHz MHZ CALL SIGN(S):

Section 5 - E-911 INFORMATION

	PSAP NAME:	PSAP ID:	E911 PHASE:	MPC/SVC PROVIDER:	LMU REQUIRED:	ESRK:
ALPHA	TBD	TBD	TBD	TBD	TBD	TBD
BETA	TBD	TBD	TBD	TBD	TBD	TBD
GAMMA	TBD	TBD	TBD	TBD	TBD	TBD
DELTA						
EPSILON						
PSI						

Section 6 - RBS GENERAL INFORMATION

8-DIGIT S/IT ID:	1173	COW OR TOT?	NO	CELLULAR NETWORK:	GO
CELL S/TE TYPE:	SECTORIZED	SITE TYPE:	MACRO	OPS DISTRICT:	TB
RTS LOCATION ID:	TBD	ORIGINATING CO:	ATT	RF DISTRICT:	TB

Section 7 - RBS SPECIFIC INFORMATION

	GSM RBSs	UMTS 1ST CARRIER RBSs	UMTS 2ND CARRIER RBSs	UMTS 3RD CARRIER RBSs	UMTS 4TH CARRIER RBSs
MSC	TBD	TBD	TBD	TBD	N/A
BSC/RNC	TBD	MDTWCTNICR0R03	MDTWCTNICR0R03	MDTWCTNICR0R03	N/A
LAC	TBD	5994	5994	5994	N/A
RAC	TBD	255	255	255	N/A
EQUIPMENT VENDOR	NOKIA	ERICSSON	ERICSSON	ERICSSON	N/A
EQUIPMENT TYPE	TBD	RBS3206	1900 Radio Kit	850 RRUW OBIF	N/A
LOCATION	TBD	TBD	TBD	TBD	N/A
CABINET LOCATION	TBD	TBD	TBD	N/A	N/A

Section 8 - RBS INDIVIDUAL INFORMATION

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS
CELL ID/BCF	184G1173	NA	CTV1173	NA	NA	CTU1173	CTV0173	N/A	N/A	N/A
CTS COMMON ID	184G1173	NA	CTV1173	NA	NA	CTU1173	CTV0173	N/A	N/A	N/A

Section 9 - SOFT SECTOR ID

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS
ALPHA (OR OMNI)	184G11731	TBD	CTV11731	NA	NA	CTU11737	CTV01731	N/A	N/A	N/A
BETA	184G11732	TBD	CTV11732	NA	NA	CTU11738	CTV01732	N/A	N/A	N/A
GAMMA	184G11733	TBD	CTV11733	NA	NA	CTU11739	CTV01733	N/A	N/A	N/A
DELTA										
EPSILON										
PSI										

Section 10 - CID/SAC

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS
ALPHA (OR OMNI)	11731	TBD	11731	NA	NA	11737	1731	N/A	NA	NA
BETA	11732	TBD	11732	NA	NA	11738	1732	N/A	NA	NA
GAMMA	11733	TBD	11733	NA	NA	11739	1733	N/A	NA	NA
DELTA										
EPSILON										
PSI										

Section 11 - CURRENT RADIO COUNTS (Existing)

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS
ALPHA (OR OMNI)	3	NA	1	NA	NA	1	NA	NA	NA	NA
BETA	2	NA	1	NA	NA	1	NA	NA	NA	NA
GAMMA	2	NA	1	NA	NA	1	NA	NA	NA	NA
DELTA										
EPSILON										
PSI										

Section 12 - CURRENT BASE BAND CONFIGURATION (Existing)

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet
# T1s	TBD	TBD	TBD	N/A	
LINK PROFILE	TBD	TBD	TBD	TBD	
RF Combining					
Fiber or Ethernet?	TBD	TBD	TBD	TBD	
Tx Board Model					
Tx Board QTY					
RAX/ECU Board Model					
RAX/ECU Board QTY					
RBU Board Model					
RBU Board QTY					
RRU - Type/Qty-Model#					
Fiber Jumper					
DC Cable					
DC/Fiber Distr. Box					
Bundled Fiber Cable					
Bundled DC Cable					

Section 13 - NEW/PROPOSED RADIO COUNTS

	GSM 850 RBS	GSM 1900 RBS	UMTS 850 RBS	UMTS 1900 RBS	UMTS 2ND 850 RBS	UMTS 2ND 1900 RBS	UMTS 3RD 850 RBS	UMTS 3RD 1900 RBS	UMTS 4TH 850 RBS	UMTS 4TH 1900 RBS
ALPHA (OR OMNI)	3	NA	1	NA	NA	1	1	N/A	N/A	N/A
BETA	2	NA	1	NA	NA	1	1	N/A	N/A	N/A
GAMMA	2	NA	1	NA	NA	1	1	N/A	N/A	N/A
DELTA										
EPSILON										
PSI										

Section 14 - NEW/PROPOSED BASE BAND CONFIGURATION

	GSM 1st Cabinet	GSM 2nd Cabinet	UMTS 1st Cabinet	UMTS 2nd Cabinet	UMTS 3rd Cabinet
# T1s	TBD	TBD	TBD	N/A	
LINK PROFILE					
RF Combining					
Fiber or Ethernet?					
Tx Board Model					
Tx Board QTY					
RAX/ECU Board Model					
RAX/ECU Board QTY					
RBU Board Model					
RBU Board QTY					
RRU - Type/Qty-Model#					
Fiber Jumper					
DC Cable					
DC/Fiber Distr. Box					
Bundled Fiber Cable					
Bundled DC Cable					

Section 15A - CURRENT SECTOR/CELL INFORMATION - ALPHA (OR OMNI)

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TBD	TBD					TBD	TBD
TECHNOLOGY	MTS / 850 - GSM / 85	UMTS / 1900					UMTS / 850 - GSM / 85	UMTS / 1900
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew
Feeder Length (feet)	82'	82'					82'	82'
ANTENNA AZGL:	N/A	N/A					N/A	N/A
ANTENNA MAKE - MODEL	BXA-80090-4CF						BXA-80090-4CF	
ANTENNA VENDOR	Antel International Inc.						Antel International Inc.	
ANTENNA SIZE (H x W x D)	TBD						TBD	
ANTENNA WEIGHT	TBD						TBD	
ANTENNA GAIN								
AZIMUTH	30 °						30 °	
RADIATION CENTER (feet)	62'						62'	
ANTENNA TIP HEIGHT	62'						62'	
ELECTRICAL TILT (700/850/1900/AWS)	N/A	N/A					N/A	N/A
MECHANICAL DOWNTILT	N/A						N/A	
FEEDER AMOUNT	1						1	
Antenna RET Motor (QTY/MODEL)	N/A						N/A	
Antenna RET Splitter (QTY/MODEL)	N/A						N/A	
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A						N/A	
Antenna RET Surge Arrestor (QTY/MODEL)	N/A						N/A	
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A						N/A	
DC BLOCK (QTY/MODEL)	N/A						N/A	
TMA/LNA (TYPE/MODEL)	[illegible]						[illegible]	
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860	
PSU FOR TMAS (QTY/MODEL) (usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)	
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A	
DIPLEXER (QTY/MODEL)	1 + N/A / Powerwave / LGP 13519						1 + N/A / Powerwave / LGP 13519	
HYBRID COMBINER (QTY/MODEL)	N/A						N/A	
DUPLEXER (QTY/MODEL)	N/A						N/A	
FILTER (QTY/MODEL)	N/A						N/A	
RAYCAT KIT MODULE?	N/A	N/A					N/A	N/A
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A	N/A					N/A	N/A
DCPA/MCPA MODULE?	N/A	N/A					N/A	N/A
Additional Component1	N/A						N/A	
Additional Component2	N/A						N/A	
Additional Component3	N/A						N/A	
MAGNETIC DECLINATION	-14 °						-14 °	
HATCHPLATE POWER (Watts)	N/A	N/A					N/A	N/A
ERP (Watts)	N/A	N/A					N/A	N/A
Local Market Note1	N/A						N/A	
Local Market Note2	N/A						N/A	
Local Market Note3	N/A						N/A	

Section 15B - CURRENT SECTOR/CELL INFORMATION - BETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TBD	TBD					TBD	TBD
TECHNOLOGY	MTS / 850 - GSM / 85	UMTS / 1900					UMTS / 850 - GSM / 85	UMTS / 1900
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew
Feeder Length (feet)	82'	82'					82'	82'
ANTENNA AZGL:	N/A	N/A					N/A	N/A
ANTENNA MAKE - MODEL	BXA-80090-4CF						BXA-80090-4CF	
ANTENNA VENDOR	Antel International Inc.						Antel International Inc.	
ANTENNA SIZE (H x W x D)	TBD						TBD	
ANTENNA WEIGHT	TBD						TBD	
ANTENNA GAIN								
AZIMUTH	150 °						150 °	
RADIATION CENTER (feet)	62'						62'	
ANTENNA TIP HEIGHT	62'						62'	
ELECTRICAL TILT (700/850/1900/AWS)	N/A	N/A					N/A	N/A
MECHANICAL DOWNTILT	N/A						N/A	
FEEDER AMOUNT	1						1	
Antenna RET Motor (QTY/MODEL)	N/A						N/A	
Antenna RET Splitter (QTY/MODEL)	N/A						N/A	
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A						N/A	
Antenna RET Surge Arrestor (QTY/MODEL)	N/A						N/A	
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A						N/A	
DC BLOCK (QTY/MODEL)	N/A						N/A	
TMA/LNA (TYPE/MODEL)	[illegible]						[illegible]	
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860	
PSU FOR TMAS (QTY/MODEL) (usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)	
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A	
DIPLEXER (QTY/MODEL)	1 + N/A / Powerwave / LGP 13519						1 + N/A / Powerwave / LGP 13519	
HYBRID COMBINER (QTY/MODEL)	N/A						N/A	
DUPLEXER (QTY/MODEL)	N/A						N/A	
FILTER (QTY/MODEL)	N/A						N/A	
RAYCAT KIT MODULE?	N/A	N/A					N/A	N/A
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A	N/A					N/A	N/A
DCPA/MCPA MODULE?	N/A	N/A					N/A	N/A
Additional Component1	N/A						N/A	
Additional Component2	N/A						N/A	
Additional Component3	N/A						N/A	
MAGNETIC DECLINATION	-14 °						-14 °	
HATCHPLATE POWER (Watts)	N/A	N/A					N/A	N/A
ERP (Watts)	N/A	N/A					N/A	N/A
Local Market Note1	N/A						N/A	
Local Market Note2	N/A						N/A	
Local Market Note3	N/A						N/A	

Section 15C - CURRENT SECTOR/CELL INFORMATION - GAMMA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TBD	TBD					TBD	TBD
TECHNOLOGY	MTS / 850 - GSM / 85	UMTS / 1900					UMTS / 850 - GSM / 85	UMTS / 1900
RRH LOCATION (Top/Bottom/None)	N/A	N/A					N/A	N/A
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew					1 5/8" - Andrew	1 5/8" - Andrew
Feeder Length (feet)	82'	82'					82'	82'
ANTENNA AZGL:	N/A	N/A					N/A	N/A
ANTENNA MAKE - MODEL	BXA-80090-4CF						BXA-80090-4CF	
ANTENNA VENDOR	Antel International Inc.						Antel International Inc.	
ANTENNA SIZE (H x W x D)	TBD						TBD	
ANTENNA WEIGHT	TBD						TBD	
ANTENNA GAIN								
AZIMUTH	270 °						270 °	
RADIATION CENTER (feet)	62'						62'	
ANTENNA TIP HEIGHT	62'						62'	
ELECTRICAL TILT (700/850/1900/AWS)	N/A	N/A					N/A	N/A
MECHANICAL DOWNTILT	N/A						N/A	
FEEDER AMOUNT	1						1	
Antenna RET Motor (QTY/MODEL)	N/A						N/A	
Antenna RET Splitter (QTY/MODEL)	N/A						N/A	
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A						N/A	
Antenna RET Surge Arrestor (QTY/MODEL)	N/A						N/A	
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A						N/A	
DC BLOCK (QTY/MODEL)	N/A						N/A	
TMA/LNA (TYPE/MODEL)	[illegible]						[illegible]	
CURRENT INJECTORS FOR TMA (QTY/MODEL)	Polyphaser / 1000860						Polyphaser / 1000860	
PSU FOR TMAS (QTY/MODEL) (usually per site	LGP 12104 (1900 AND 850 Bypass TMA)						LGP 12104 (1900 AND 850 Bypass TMA)	
SURGE ARRESTOR (QTY/MODEL)	N/A						N/A	
DIPLEXER (QTY/MODEL)	1 + N/A / Powerwave / LGP 13519						1 + N/A / Powerwave / LGP 13519	
HYBRID COMBINER (QTY/MODEL)	N/A						N/A	
DUPLEXER (QTY/MODEL)	N/A						N/A	
FILTER (QTY/MODEL)	N/A						N/A	
RAYCAT KIT MODULE?	N/A	N/A					N/A	N/A
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	N/A	N/A					N/A	N/A
DCPA/MCPA MODULE?	N/A	N/A					N/A	N/A
Additional Component1	N/A						N/A	
Additional Component2	N/A						N/A	
Additional Component3	N/A						N/A	
MAGNETIC DECLINATION	-14 °						-14 °	
HATCHPLATE POWER (Watts)	N/A	N/A					N/A	N/A
ERP (Watts)	N/A	N/A					N/A	N/A
Local Market Note1	N/A						N/A	
Local Market Note2	N/A						N/A	
Local Market Note3	N/A						N/A	

Section 15D - CURRENT SECTOR/CELL INFORMATION - DELTA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA #/COLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAAT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCNA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 15E - CURRENT SECTOR/CELL INFORMATION - EPSILON

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA #/COLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAAT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCNA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 15F - CURRENT SECTOR/CELL INFORMATION - ZETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA #/COLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAAT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCNA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16A - NEW/PROPOSED SECTOR/CELL INFORMATION - ALPHA (OR OMNI)

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx						
TECHNOLOGY	LTE / UMTS / GSM	UMTS / GSM						
RRH LOCATION (Top/Bottom/None)	BOTTOM	N/A						
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew						
Feeder Length (feet)	82 '	82 '						
ANTENNA ATOLL								
ANTENNA MAKE - MODEL	AM-X-CD-16-65-00T-RET							
ANTENNA VENDOR	KMW							
ANTENNA SIZE (H x W x D)	72.0 x 11.8 x 5.9							
ANTENNA WEIGHT	48.5							
ANTENNA GAIN	17.1 dBi							
AZIMUTH	40 °							
RADIATION CENTER (feet)	76 '							
ANTENNA TIP HEIGHT	79 '							
ELECTRICAL TILT (700/850/1900/AWS)	0 °	0 °						
MECHANICAL DOWNTILT	0 °							
FEEDER AMOUNT	2							
Antenna RET Motor (QTY/MODEL)	N/A / KMW / Built-in RET Equipment							
Antenna RET Splitter (QTY/MODEL)	N/A							
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A							
Antenna RET Surge Arrestor (QTY/MODEL)	N/A							
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A							
DC BLOCK (QTY/MODEL)	N/A							
TMA/LNA (TYPE/MODEL)	1 / CCI / DTMABP7819VG12A							
CURRENT INJECTORS (ON TMA (QTY/MODEL))	Andrew / APTDC-BDFDM-DBW							
PDU FOR TMAS (QTY/MODEL) (usually per site	Kathrein / 860-10006							
SURGE ARRESTOR (QTY/MODEL)	1 / Kathrein / 782-11055							
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901							
HYBRID COMBINER (QTY/MODEL)	N/A							
DUPLEXER (QTY/MODEL)	Dual Duplexer / CCI / DUP-850-2 & DUP-							
FILTER (QTY/MODEL)	N/A							
RAAT KIT MODULE?	RxAIT - 850 Band	RxAIT - 1900 Band						
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	2 / LLC - 850 Band	PCS-AWS Triplexer, DC through to PCS-AWS Port, CCI						
LCPA/MCPA MODULE?	N/A	N/A						
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION	-14 °							
HATCHPLATE POWER (Watts)	N/A	N/A						
ERP (Watts)	N/A	N/A						
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16B - NEW/PROPOSED SECTOR/CELL INFORMATION - BETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx						
TECHNOLOGY	LTE / UMTS / GSM	UMTS / GSM						
RRH LOCATION (Top/Bottom/None)	BOTTOM	N/A						
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew						
Feeder Length (feet)	82 '	82 '						
ANTENNA ATOLL								
ANTENNA MAKE - MODEL	AM-X-CD-16-65-00T-RET							
ANTENNA VENDOR	KMW							
ANTENNA SIZE (H x W x D)	72.0 x 11.8 x 5.9							
ANTENNA WEIGHT	48.5							
ANTENNA GAIN	17.1 dBi							
AZIMUTH	180 °							
RADIATION CENTER (feet)	76 '							
ANTENNA TIP HEIGHT	79 '							
ELECTRICAL TILT (700/850/1900/AWS)	0 °	0 °						
MECHANICAL DOWNTILT	0 °							
FEEDER AMOUNT	2							
Antenna RET Motor (QTY/MODEL)	N/A / KMW / Built-in RET Equipment							
Antenna RET Splitter (QTY/MODEL)	N/A							
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A							
Antenna RET Surge Arrestor (QTY/MODEL)	N/A							
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A							
DC BLOCK (QTY/MODEL)	N/A							
TMA/LNA (TYPE/MODEL)	1 / CCI / DTMABP7819VG12A							
CURRENT INJECTORS (ON TMA (QTY/MODEL))	Andrew / APTDC-BDFDM-DBW							
PDU FOR TMAS (QTY/MODEL) (usually per site	Kathrein / 860-10006							
SURGE ARRESTOR (QTY/MODEL)	1 / Kathrein / 782-11055							
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901							
HYBRID COMBINER (QTY/MODEL)	N/A							
DUPLEXER (QTY/MODEL)	Dual Duplexer / CCI / DUP-850-2 & DUP-							
FILTER (QTY/MODEL)	N/A							
RAAT KIT MODULE?	RxAIT - 850 Band	RxAIT - 1900 Band						
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	2 / LLC - 850 Band	PCS-AWS Triplexer, DC through to PCS-AWS Port, CCI						
LCPA/MCPA MODULE?	N/A	N/A						
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION	-14 °							
HATCHPLATE POWER (Watts)	N/A	N/A						
ERP (Watts)	N/A	N/A						
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16C - NEW/PROPOSED SECTOR/CELL INFORMATION - GAMMA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?	TxRx-TxRx	TxRx-TxRx						
TECHNOLOGY	LTE / UMTS / GSM	UMTS / GSM						
RRH LOCATION (Top/Bottom/None)	BOTTOM	N/A						
FEEDERS TYPE	1 5/8" - Andrew	1 5/8" - Andrew						
Feeder Length (feet)	82 '	82 '						
ANTENNA ATOLL								
ANTENNA MAKE - MODEL	AM-X-CD-14-65-00T-RET							
ANTENNA VENDOR	KMW							
ANTENNA SIZE (H x W x D)	48.0 x 11.8 x 5.9							
ANTENNA WEIGHT	36.4							
ANTENNA GAIN	16.0 dBi							
AZIMUTH	310 °							
RADIATION CENTER (feet)	76 '							
ANTENNA TIP HEIGHT	78 '							
ELECTRICAL TILT (700/850/1900/AWS)	0 °	0 °						
MECHANICAL DOWNTILT	0 °							
FEEDER AMOUNT	2							
Antenna RET Motor (QTY/MODEL)	N/A / KMW / Built-in RET Equipment							
Antenna RET Splitter (QTY/MODEL)	N/A							
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)	N/A							
Antenna RET Surge Arrestor (QTY/MODEL)	N/A							
Antenna RET CONTROL UNIT (QTY/MODEL) (usually per site	N/A							
DC BLOCK (QTY/MODEL)	N/A							
TMA/LNA (TYPE/MODEL)	1 / CCI / DTMABP7819VG12A							
CURRENT INJECTORS (ON TMA (QTY/MODEL))	Andrew / APTDC-BDFDM-DBW							
PDU FOR TMAS (QTY/MODEL) (usually per site	Kathrein / 860-10006							
SURGE ARRESTOR (QTY/MODEL)	1 / Kathrein / 782-11055							
DIPLEXER (QTY/MODEL)	0 + 2 / Powerwave / LGP 21901							
HYBRID COMBINER (QTY/MODEL)	N/A							
DUPLEXER (QTY/MODEL)	Dual Duplexer / CCI / DUP-850-2 & DUP-							
FILTER (QTY/MODEL)	N/A							
RAAT KIT MODULE?	RxAIT - 850 Band	RxAIT - 1900 Band						
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)	2 / LLC - 850 Band	PCS-AWS Triplexer, DC through to PCS-AWS Port, CCI						
LCPA/MCPA MODULE?	N/A	N/A						
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION	-14 °							
HATCHPLATE POWER (Watts)	N/A	N/A						
ERP (Watts)	N/A	N/A						
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16D - NEW/PROPOSED SECTOR/CELL INFORMATION - DELTA

ANTENNA CONFIG (FROM BACK)	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA ATOLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAUT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCPA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16E - NEW/PROPOSED SECTOR/CELL INFORMATION - EPSILON

ANTENNA CONFIG (FROM BACK)	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA ATOLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAUT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCPA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

Section 16F - NEW/PROPOSED SECTOR/CELL INFORMATION - ZETA

ANTENNA CONFIG (FROM BACK):	ANTENNA 1 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 2 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 3 GSM, UMTS (850 / 1900) or LTE (700 / AWS)		ANTENNA 4 GSM, UMTS (850 / 1900) or LTE (700 / AWS)	
TX/RX?								
TECHNOLOGY								
RRH LOCATION (Top/Bottom/None)								
FEEDERS TYPE								
Feeder Length (feet)								
ANTENNA ATOLL								
ANTENNA MAKE - MODEL								
ANTENNA VENDOR								
ANTENNA SIZE (H x W x D)								
ANTENNA WEIGHT								
ANTENNA GAIN								
AZIMUTH								
RADIATION CENTER (feet)								
ANTENNA TIP HEIGHT								
ELECTRICAL TILT (700/850/1900/AWS)								
MECHANICAL DOWNTILT								
FEEDER AMOUNT								
Antenna RET Motor (QTY/MODEL)								
Antenna RET Splitter (QTY/MODEL)								
Antenna RET Earth (Grounding) Clamp (QTY/MODEL)								
Antenna RET Surge Arrestor (QTY/MODEL)								
Antenna RET CONTROL UNIT (QTY/MODEL) ; usually per site								
DC BLOCK (QTY/MODEL)								
TMA/LNA (TYPE/MODEL)								
CURRENT INJECTORS FOR TMA (QTY/MODEL)								
PDU FOR TMAS (QTY/MODEL) ; usually per site								
SURGE ARRESTOR (QTY/MODEL)								
DIPLEXER (QTY/MODEL)								
HYBRID COMBINER (QTY/MODEL)								
DUPLEXER (QTY/MODEL)								
FILTER (QTY/MODEL)								
RAUT KIT MODULE?								
TRIPLEXER or NARROW BAND LLC (QTY/MODEL)								
SCPA/MCPA MODULE?								
Additional Component1								
Additional Component2								
Additional Component3								
MAGNETIC DECLINATION								
HATCHPLATE POWER (Watts)								
ERP (Watts)								
Local Market Note1								
Local Market Note2								
Local Market Note3								

AM-X-CD-16-65-00T-RET(6' 65° Dual Broadband Antenna)

Dual Band Electrical DownTilt Antenna

698 ~ 894MHz, X-pol., H65° / V12°

1710 ~ 2170MHz, X-pol., H65° / V6.0°

Electrical Specification

Frequency Range		698~894MHz	1710~2170MHz
Impedance		50Ω	
Polarization		Dual, Slant ±45°	
Gain		15.5dBi / 13.35dBd @ 698-806MHz 16.0dBi / 13.85dBd @ 824-894MHz	17.3dBi / 15.15dBd @ 1710-1755MHz 17.4dBi / 15.25dBd @ 1850-1900MHz 17.1dBi / 14.95dBd @ 2110-2155MHz
Beamwidth	Horizontal	65° @ 698-806MHz 63° @ 824-894MHz	65° @ 1710-1755MHz 67° @ 1850-1900MHz 69° @ 2110-2155MHz
	Vertical	12.3° @ 698-806MHz 11.5° @ 824-894MHz	6.5° @ 1710-1755MHz 6.0° @ 1850-1900MHz 5.7° @ 2110-2155MHz
VSWR		≤1.5:1	
Front-to-Back Ratio		≥27 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 10° from Boresight)	> 16 dB @ 0-6° Tilt > 18 dB @ 7-10° Tilt (Up to 10° 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)	11.8×5.9×72 inches (300×150×1829mm)
Weight (Without clamp)	48.5 lbs (22.0 kg)
Connector	4 x 7/16 DIN(F), Long Neck
Max Wind Speed	150 mph
Wind Load (@150 mph)	1891 N

300

Twin Triple Band "Active PCS with 700 and 850 Band Pass-thru" Dual Duplexed TMA

Tel: 201-342-3338 Fax: 201-342-3339 www.cciproducts.com

General Information

CCI's Twin Triple Band (700 Band, Cellular and PCS) TMA contains two triple band TMA's in a single housing. The PCS TMA is full band and fully duplexed, while the 700 Band and Cellular RF is bypassed and combined (Diplexed) with the PCS RF signal. High linearity improves the uplink sensitivity and the receive performance of base stations. The TMA is fully compliant with the latest AISG 2.0 specification. The TMA supports EDGE/GSM, UMTS and LTE BTS equipment. It provides a convenient package for sites upgraded to triple or quad antenna configurations. The twin TMA package reduces tower loading, leasing, and installation costs. Unit count on the tower is cut in half. An excellent match for two branch receive diversity applications using triple polarization antennas. The input and output connectors are located inline for ease of installation in space constrained areas such as uni-pole structures and stealth antennas.

Model
DTMABP7819VG12A

Contents:

Features:

- Small, lightweight, twin unit
- Triple Band Dual Duplexed (PCS with 700 Band & Cellular Bypass)
- Optional AISG 2.0 compatible unit
- AISG TMA detects BTS port that DC voltage and AISG sampling is applied to, and automatically switches to utilize that port
- AISG TMA operates at constant power
- AISG TMA may be powered by a standard PDU
- High linearity
- Lightning protected
- Fail-safe bypass mode
- High reliability

Technical Description

The TMA system consists of a twin outdoor triple band tower mount unit which combine separate PCS, 700 Band & Cellular antennas onto a single BTS port. The PCS path of the tower mount unit is dual duplexed to separate the low-power uplink signals from the high-power downlink signals at the antenna port, amplifies the low-level uplink signals using an ultra-low noise amplifier (LNA), and recombines the two paths at the BTS port. The 700 Band & Cellular path is ultra low loss and passive. Both paths are diplexed at the BTS port. The tower mount units consist of eight band-pass filters, two redundant low-noise amplifiers, bypass failure circuitry, and bias tee's which are all housed in an IP65 moisture proof enclosure, with IP68 Immersion proof connectors suited to long-life masthead mounting. The unit provides protection against lightning strikes via a multi-stage surge protection circuit. DC power and control is provided via the feeder cable from the BTS or a Power Distribution Unit (PDU). Optional AISG 2.0 DC power and control is provided via the feeder cable from the BTS using the AISG 2.0 and 3GPP standard. The optional AISG TMA detects which BTS port has DC Voltage/AISG Sampling applied and automatically switches to utilize that port. Additionally the AISG TMA operates at constant power when powered by an AISG 2.0 Compatible Site Control Unit, but may be powered by a "Standard Power distribution Unit. A separate AISG connector is also provided to allow direct AISG connection or "Daisy Chaining" to multiple AISG products at the top of the tower.

An optional indoor site control unit (SCU) is available to power up to up to 32 AISG modules per sector and to provide the all the monitoring and alarm functions for the system. The SCU is housed in a single (1U) 1.75" x 19" rack and contains triple redundant power supplies capable of being "hot swapped" that provide a regulated DC supply voltage on the RF coax for the tower mount amplifiers.

Twin Triple Band "Active AWS with 700 and 850 Band Pass-thru" TMA Typical Specifications

Description	Typical Specifications
Electrical Specifications	
700 Band & Cellular Frequency Range	698 to 894 MHz
PCS Receive Frequency Range	1850 – 1910 MHz
PCS Transmit Frequency Range	1930 - 1990 MHz
PCS Amplifier Gain	6 to 12 dB Adjustable in 0.25 dB steps via AISG
PCS Gain Variation	±1.0 dB
PCS System Noise Figure	1.4 dB (@ +25°C),1.6 dB (@ +65°C), At 1910 MHz: 1.7 dB (@ +25°C), 1.9 dB (@ +65°C)
PCS Input Third Order Intercept Point	+12 dBm Min @ Max. Gain
Input/Output Return Loss	18 dB Min. all ports, 15 dB Min. Bypass Mode
Insertion Loss	
700 Band & Cellular Passband	< 0.2 dB, 0.1 dB typical
PCS Transmit Passband	0.4 dB Typical
PCS Transmit Passband Ripple	±0.2 dB
PCS Bypass Mode, Rx Passband	1.6 dB (@ +25°C),1.8 dB (@ +65°C), At 1910 MHz: 2.3 dB (@ +25°C), 2.5 dB (@ +65°C)
PCS Bypass Mode, Rx Passband Ripple	±1 dB
Filter Characteristics	
700 Band & Cellular Path Rejection	70 dB @ 1850 - 1990 MHz
PCS Path Rejection	80 dB @ 698 - 894 MHz
Continuous Average Power	200 Watts max
Peak Envelope Power	2 kW max
Intermodulation Performance	
IMD at ANT port in Rx Band	-112 dBm Min. (2 x +43 dBm tones)
Operating Voltage	+10V to +30V DC provided via coax or AISG
Power Consumption	≤2.1 Watts
Mechanical Specifications	
Connectors	DIN 7-16 Female (Long Neck) x 6, AISG x 1
Dimensions (Body Only)	10.63" (H) x 11.02" (W) x 3.78" (D); (270 (H) x 280 (W) x 96 (D) mm)
Dimensions (with Bracket)	14.25" (H) x 11.46" (W) x 4.17" (D); (362 (H) x 291 (W) x 106 (D) mm)
Weight (w/o Bracket)	19.18 Lbs. (8.7 Kg)
Mounting	Pole/Wall Mounting Bracket
Environmental Specifications	
Operating Temperature	-40° C to +65°C
Lightning Protection	8/20us, ±2KA max, 10 strikes each, IEC61000-4-5
Enclosure	IP65 (Unit Body), IP68 (Connector)
MTBF	>500,000 hours

All specifications are subject to change. The latest specifications are available at www.cciproducts.com

ATTACHMENT 7

ADJACENT PROPERTY OWNERS

SITE NAME: WEST HARTFORD WEST RELOCATION – TEMPORARY TOWER

OWNER NAME: AMERICAN SCHOOL FOR THE DEAF

OWNER ADDRESS: 139 NORTH MAIN STREET, WEST HARTFORD, CONNECTICUT

ASSESSOR'S REFERENCE: MAP: F7 LOT: 3836

THE FOLLOWING INFORMATION WAS COLLECTED FROM THE TAX ASSESSOR'S RECORDS AND LAND RECORDS OF WEST HARTFORD TOWN HALL. THE INFORMATION IS CURRENT AS OF APRIL 25, 2014.

	Map/Lot	Property Address	Property Owner
1.	E8/2021/27	27 Fernridge Road	John S. and Carrie L. Benyei 27 Fernridge Road West Hartford, CT 06107
2.	E8/2021/29	29 Fernridge Road	Matthew and Jill Kenyon 29 Fernridge Road West Hartford, CT 06107
3.	E8/2021/31	31 Fernridge Road	Nancy Bernaiche 31 Fernridge Road West Hartford, CT 06107
4.	E8/2021/35	35 Fernridge Road	Anna-Mae F. Maglaty 35 Fernridge Road West Hartford, CT 06107
5.	E8/1981/572	572 Fern Street	The American School for the Deaf of Hartford 139 North Main Street West Hartford, CT 06107
6.	E8/1131/36	36 Cobbs Road	Patricia A. Farquhar 36 Cobbs Road West Hartford, CT 06107
7.	E8/1131/34	34 Cobbs Road	Paula M. Anderson 34 Cobbs Road West Hartford, CT 06107

8.	E7/1131/32	32 Cobbs Road	James A. Siegel and Holly C. Van Deusen 32 Cobbs Road West Hartford, CT 06107
9.	E7/1131/30	30 Cobbs Road	James A. Kammerer 30 Cobbs Road West Hartford, CT 06107
10.	E7/1131/24	24 Cobbs Road	Robert L. Martin and Angela M. Guadagno 24 Cobbs Road West Hartford, CT 06107
11.	E7/1131/22	22 Cobbs Road	Francis P. and Cathleen F. Laffin 22 Cobbs Road West Hartford, CT 06107
12.	E7/1131/20	20 Cobbs Road	Wendy L. Smith 20 Cobbs Road West Hartford, CT 06107
13.	E7/1131/18	18 Cobbs Road	Milbrey E. Ewing 18 Cobbs Road West Hartford, CT 06107
14.	E7/1131/16	16 Cobbs Road	Martin Murphy, Jr. 16 Cobbs Road West Hartford, CT 06107
15.	E7/1131/14	14 Cobbs Road	Robert E. Bell and Justine Fallon 14 Cobbs Road West Hartford, CT 06107
16.	E8/1131/12	12 Cobbs Road	Steven J. and Rosemary A. Dacunha 12 Cobbs Road West Hartford, CT 06107
17.	E8/1131/10	10 Cobbs Road	Estate of Marion S. Gebelein c/o Edward F. Gebelein, Jr., Exr P.O. Box 52 Winchester Center, Ct 06094-0052
18.	E8/1131/8	8 Cobbs Road	Pamela B. Ponichtera 8 Cobbs Road West Hartford, CT 06107

19.	E8/1981/534	534 Fern Street	Christopher and Nancy Schwartz 534 Fern Street West Hartford, CT 06107
20.	E8/1981/532	532 Fern Street	Kevin C. Quiros and Joyce M. Chung 532 Fern Street West Hartford, CT 06107
21.	E8/1981/528	528 Fern Street	Noel E. Cyr 528 Fern Street West Hartford, CT 06107
22.	E8/2741/73	73 Hilltop Drive	The American School for the Deaf of Hartford 139 North Main Street West Hartford, CT 06107
23.	E7/2741/69	69 Hilltop Drive	Peter C. and Karen M. Lavoie 69 Hilltop Drive West Hartford, CT 06107
24.	E7/2741/67	67 Hilltop Drive	David Ryan Polgar 67 Hilltop Drive West Hartford, CT 06107
25.	E7/2741/65	65 Hilltop Drive	Dorrance E. and Cynthia C. Goodwin 65 Hilltop Drive West Hartford, CT 06107
26.	E7/2741/62	62 Hilltop Drive	Mary Pat Hagar 62 Hilltop Drive West Hartford, CT 06107
27.	E7/2741/60	60 Hilltop Drive	Ethan F. Loiselle 60 Hilltop Drive West Hartford, CT 06107
28.	E7/2741/58	58 Hilltop Drive	Lisa Davidson Nelte 58 Hilltop Drive West Hartford, CT 06107
29.	E7/2741/56	56 Hilltop Drive	Robert E. and Ann K. Tuthill 56 Hilltop Drive West Hartford, CT 06107

30.	E7/2741/54	54 Hilltop Drive	Brian Venable and Raminder J. Singh 54 Hilltop Drive West Hartford, CT 06107
31.	E7/2741/52	52 Hilltop Drive	Robert A. and Stephanie H. Schenkel 52 Hilltop Drive West Hartford, CT 06107
32.	E7/2741/50	50 Hilltop Drive	Nancy Hudson 50 Hilltop Drive West Hartford, CT 06107
33.	E7/2741/46	46 Hilltop Drive	Pamela J. Rosin 46 Hilltop Drive West Hartford, CT 06107
34.	E7/2741/44	44 Hilltop Drive	NICDAN, LLC 250-30 41st Road Littleneck, NY 11363
35.	E7/2741/42	42 Hilltop Drive	Shane Mulready 42 Hilltop Drive West Hartford, CT 06107
36.	E7/2741/40	40 Hilltop Drive	Kimberly J. Wisner 40 Hilltop Drive West Hartford, CT 06107
37.	F7/2741/38	38 Hilltop Drive	Barbara A. Jarosz and Michael R. Leahy 38 Hilltop Drive West Hartford, CT 06107
38.	F7/2741/34	34 Hilltop Drive	Alexandra F. Zrakas 34 Hilltop Drive West Hartford, CT 06107
39.	F7/2741/32	32 Hilltop Drive	Brian D. Healy 32 Hilltop Drive West Hartford, CT 06107
40.	F7/2741/30	30 Hilltop Drive	Susanne D. Spargo 30 Hilltop Drive West Hartford, CT 06107

41.	F7/2741/28	28 Hilltop Drive	Kristen J. Noone 28 Hilltop Drive West Hartford, CT 06107
42.	F7/2741/26	26 Hilltop Drive	Daniel Tavelli and Elizabeth Murray 26 Hilltop Drive West Hartford, CT 06107
43.	F7/2741/22	22 Hilltop Drive	Carol J. Dingelday 22 Hilltop Drive West Hartford, CT 06107
44.	F7/2741/20	20 Hilltop Drive	Deborah L. Hutton 20 Hilltop Drive West Hartford, CT 06107
45.	F7/2741/18	18 Hilltop Drive	Martha J. Taylor 18 Hilltop Drive West Hartford, CT 06107
46.	F7/2741/16	16 Hilltop Drive	Lei Wang 16 Hilltop Drive West Hartford, CT 06107
47.	F7/2741/14	14 Hilltop Drive	Joseph A. Galluccio 14 Hilltop Drive West Hartford, CT 06107
48.	F7/2741/10	10 Hilltop Drive	Douglas E. and Elaine C. McIntyre c/o Robert and Medora Charette 10 Hilltop Drive West Hartford, CT 06107
49.	F7/2741/8	8 Hilltop Drive	NICDAN 1 LLC 250-30 41st Road Little Neck, NY 11363
50.	F7/2741/6	6 Hilltop Drive	Elsie J. Rickard 6 Hilltop Drive West Hartford, CT 06107
51.	F7/3836/125	125 North Main Street	Sharon Ashley Roberts 125 North Main Street West Hartford, CT 06107

52.	F7/3836/126	126 North Main Street	Guy L. and Sheryl Cusano 126 North Main Street West Hartford, CT 06107
53.	F7/3836/128	128 North Main Street	Fernando S. and Maria C. Ferreira 128 North Main Street West Hartford, CT 06107
54.	F7/3836/132	132 North Main Street	Jennifer G. Searls 132 North Main Street West Hartford, CT 06107
55.	F7/3836/134	134 North Main Street	David A. and Karen M. Walsh 134 North Main Street West Hartford, CT 06107
56.	F7/3836/136	136 North Main Street	Ryan P. Brown 136 North Main Street West Hartford, CT 06107
57.	F7/3836/138	138 North Main Street	Isaac A. Kamola and Serena Laws 138 North Main Street West Hartford, CT 06107
58.	F7/3836/142	142 North Main Street	Christopher J. Baran and Rebecca Bucha 142 North Main Street West Hartford, CT 06107
59.	F7/3836/144	144 North Main Street	Richard M. and Mary E. Carotenuti 144 North Main Street West Hartford, CT 06107
60.	F7/3261/73	73 Linnard Road	Douglas and Janice N. Larson 73 Linnard Road West Hartford, CT 06107
61.	F7/3836/152	152 North Main Street	Dean G. and Margaret H. Monos 152 North Main Street West Hartford, CT 06107
62.	F7/3836/154	154 North Main Street	Ruby O. Durian 154 North Main Street West Hartford, CT 06107

63.	F7/3836/156	156 North Main Street	Renee Rovelli 156 North Main Street West Hartford, CT 06107
64.	F7/3836/160	160 North Main Street	Anne E. and Peter W. Dehertogh III 160 North Main Street West Hartford, CT 06107
65.	F7/3836/160	160 North Main Street (acct # 3836 2 160 201)	Town of West Hartford 50 South Main Street West Hartford, CT 06107
66.	F7/6361/3	3 Wyndwood Road	Jeffrey E. Balboni 3 Wyndwood Road West Hartford, CT 06107
67.	F7/6361/7	7 Wyndwood Road	Scott C. Merrell 7 Wyndwood Road West Hartford, CT 06107
68.	F7/6361/11	11 Wyndwood Road	Edward J. Raftery 11 Wyndwood Road West Hartford, CT 06107
69.	F7/6361/15	15 Wyndwood Road	Mary Ellen Thibodeau 15 Wyndwood Road West Hartford, CT 06107
70.	F7/6361/17	17 Wyndwood Road	William E. and Brigitte H. Stiles 17 Wyndwood Road West Hartford, CT 06107
71.	F7/6361/21	21 Wyndwood Road	C. Randall Schmidt and Linda B. Domenitz 21 Wyndwood Road West Hartford, CT 06107
72.	E7/6361/25	25 Wyndwood Road	Leo B. Harrington and Karen Libertoff Herrington 25 Wyndwood Road West Hartford, CT 06107
73.	E7/6361/27	27 Wyndwood Road	Robert John and Joan P. Zinky 27 Wyndwood Road West Hartford, CT 06107

74.	E7/6361/31	31 Wyndwood Road	Anne M. Danaher 31 Wyndwood Road West Hartford, CT 06107
75.	E7/6361/33	33 Wyndwood Road	Jonathan and Allison Mason 33 Wyndwood Road West Hartford, CT 06107
76.	E7/6361/37	37 Wyndwood Road	James D. and Elizabeth A. Kuhn 37 Wyndwood Road West Hartford, CT 06107
77.	E7/6361/39	39 Wyndwood Road	Richard R. Phillips and Sylvia Dehaas-Phillips 39 Wyndwood Road West Hartford, CT 06107
78.	E7/6361/43	43 Wyndwood Road	Timothy J. Holsbeke and Stacey H. Rubin 43 Wyndwood Road West Hartford, CT 06107
79.	E7/6361/45	45 Wyndwood Road	Scott and Susan Mangini 45 Wyndwood Road West Hartford, CT 06107
80.	E7/6361/47	47 Wyndwood Road	Joan W. Grenham 47 Wyndwood Road West Hartford, CT 06107
81.	E7/6361/51	51 Wyndwood Road	Handa Xi and Chao Liu 51 Wyndwood Road West Hartford, CT 06107
82.	E7/6361/55	55 Wyndwood Road	Garrett Griffiths and Katherine Leduc 55 Wyndwood Road West Hartford, CT 06107
83.	E7/6361/59	59 Wyndwood Road	Vicki Melchiorre 59 Wyndwood Road West Hartford, CT 06107
84.	E7/6361/63	63 Wyndwood Road	Matthew F. and Leigh C. Eppinger 63 Wyndwood Road West Hartford, CT 06107

85.	E7/6361/67	67 Wyndwood Road	Sally Speer 67 Wyndwood Road West Hartford, CT 06107
86.	E7/1081/115	115 Cliffmore Road	Elton P. and Rosalind S. Katz 115 Cliffmore Road West Hartford, CT 06107
87.	E7/1081/111	111 Cliffmore Road	David N. and Elizabeth N. Sankar 111 Cliffmore Road West Hartford, CT 06107
88.	E7/1081/107	107 Cliffmore Road	George Keith and Rose S. Bernhardt 107 Cliffmore Road West Hartford, CT 06107
89.	E7/4731/20	20 Rustic Lane	James R. and Joanne Farrell 20 Rustic Lane West Hartford, CT 06107
90.	E7/4731/16	16 Rustic Lane	Jesse Delaney 16 Rustic Lane West Hartford, CT 06107
91.	E7/4731/12	12 Rustic Lane	Dorothy F. Elsner 12 Rustic Lane West Hartford, CT 06107
92.	E7/4731/10	10 Rustic Lane	Quang A. and Mai T. Chu 10 Rustic Lane West Hartford, CT 06107
93.	E7/4731/6	6 Rustic Lane	Timothy J. Tierney 6 Rustic Lane West Hartford, CT 06107
94.	E7/4731/2	2 Rustic Lane	Tamika T. Brierley 2 Rustic Lane West Hartford, CT 06107
95.	E7/1626/61	61 East Maxwell Drive	Emiliya Prokopets and Sam Razumnuy 61 East Maxwell Drive West Hartford, CT 06107

CERTIFICATION OF SERVICE

I hereby certify that a copy of the attached letter was sent by first class mail, postage prepage, to each of the parties on the attached list of abutting landowners.

5-2-14
Date

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

Attorneys for CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

CERTIFICATION OF SERVICE

I hereby certify that on this 2nd day of May, 2014, a copy of the attached notice letter was sent first class mail, postage prepaid, to the following:

STATE OFFICIALS:

The Honorable George Jepsen
Attorney General
Office of the Attorney General
55 Elm Street
Hartford, CT 06106

Dora B. Schriro, Commissioner
Department of Emergency Services and Public Protection
Emergency Management and Homeland Security Division
25 Sigourney Street, 6th Floor
Hartford, CT 06106-5042

Rob Klee, Commissioner
Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106

Jewel Mullen, M.D., M.P.H., M.P.A., Commissioner
Department of Public Health
410 Capitol Avenue
P.O. Box 340308, MS 13COM
Hartford, CT 06134-0308

Karl J. Wagener, Executive Director
Council on Environmental Quality
79 Elm Street
Hartford, CT 06106

Arthur House, Chairman
Public Utilities Regulatory Authority
Ten Franklin Square
New Britain, CT 06051

Benjamin Barnes, Secretary
Office of Policy and Management
450 Capitol Avenue
Hartford, CT 06106

Catherine Smith, Commissioner
Department of Economic and Community Development
505 Hudson Street
Hartford, CT 06106

James P. Redeker, Commissioner
Department of Transportation
P.O. Box 317546
2800 Berlin Turnpike
Newington, CT 06131-7546

Daniel T. Forrest
Deputy State Historic Preservation Officer
Connecticut Commission on Culture & Tourism
Historic Preservation and Museum Division
One Constitution Plaza, 2nd Floor
Hartford, CT 06103

Steven K. Reviczky, Commissioner
Department of Agriculture
165 Capital Avenue
Hartford, CT 06106

Capitol Region Council of Governments
241 Main Street, 4th Floor
Hartford, CT 06106-5310

WEST HARTFORD TOWN OFFICIALS:

Scott Slifka
Mayor
Town of West Hartford
50 South Main Street
West Hartford, CT 06107
(Received copy of full Petition)

Ron Van Winkle
Town Manager
Town of West Hartford
50 South Main Street, Room 310
West Hartford, CT 06107

The Honorable Brian Becker
Representative – 19th District
Legislative Office Building
Room 4009
Hartford, CT 06106

The Honorable Beth Bye
Senator – 5th District
Legislative Office Building
Room 3100
Hartford, CT 06106

Kevin Ahern, Chairman
Town Plan & Zoning Commission and
Inland Wetlands and Watercourses Agency
Town of West Hartford
50 South Main Street, Room 214
West Hartford, CT 06107

Todd Dumais, Town Planner
Planning and Zoning Division
Town of West Hartford
50 South Main Street, Room 214
West Hartford, CT 06107

FEDERAL OFFICIALS:

The Honorable Richard Blumenthal
United States Senator
702 Hart Senate Office Building
Washington, DC 20510

The Honorable Christopher Murphy
United States Senator
B40A Dirksen Senate Office Building
Washington, DC 20510

The Honorable John B. Larson
Congressman
221 Main Street, 2nd Floor
Hartford, CT 06106

Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103
Telephone: (860) 275-8200
Attorneys for Cellco Partnership d/b/a Verizon Wireless

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

May 2, 2014

«Name_and_Address»

Re: **Cellco Partnership d/b/a Verizon Wireless**
Petition for the Installation of a Temporary Wireless Facility at the American School for the Deaf Property, 139 North Main Street, West Hartford, Connecticut

Dear «Salutation»:

On June 27, 2013, the Connecticut Siting Council ("Council") approved an application by Cellco Partnership d/b/a Verizon Wireless ("Cellco") for the installation of a new wireless telecommunications facility on property owned by the American School for the Deaf ("ASD"), 139 North Main Street, West Hartford, Connecticut (Council Docket No. 434). This new facility would replace the existing wireless facilities that both Cellco and AT&T Wireless currently maintain on the Gallaudet Hall cupola on the ASD campus.

ASD plans to demolish Gallaudet Hall prior to the completion and activation of the new wireless facility. In order to maintain critical wireless services in the area, Cellco and AT&T Wireless will be installing a temporary telecommunications tower and related equipment immediately north of the approved replacement telecommunications facility, currently under construction.

Today, Cellco and AT&T have filed a Petition for Declaratory Ruling with the Council seeking its approval for this temporary wireless facility. The temporary facility would consist of an 85-foot ballast tower and two small equipment shelters. (See attached plans). The temporary facility would be in place for approximately five (5) months from June 1, 2014 to October 1, 2014, and would be removed once the wireless facility approved in Docket No. 434 is completed and activated.

If you have any questions regarding the above-referenced Petition for Declaratory Ruling please feel free to contact me or the Siting Council directly. The Siting Council can be reached at 860-827-2935.

Very truly yours,

Kenneth C. Baldwin

KCB/kmd

Cellco Partnership

d.b.a. verizon wireless

WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST

TEMPORARY TOWER INSTALL

139 NORTH MAIN STREET

WEST HARTFORD, CT 06107

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE, EAST HARTFORD, CONNECTICUT **TO:** 139 NORTH MAIN STREET, WEST HARTFORD, CT

1.	Start out going EAST on EAST RIVER DRIVE toward DARLIN STREET.	0.3 MI
2.	Turn LEFT to stay on E RIVER DRIVE.	0.07 MI
3.	Take 1st LEFT onto CONNECTICUT BLVD/US-44.	0.2 MI
4.	Merge onto I-84 W/US-6 W via the ramp on the left toward Hartford.	4.6 MI
5.	Take the PARK ROAD Exit, EXIT 43, toward W. Hartford Center.	0.5 MI
6.	Turn LEFT onto PARK ROAD.	0.4 MI
7.	Turn RIGHT onto S. MAIN STREET.	1.3 MI
8.	End at 139 N. MAIN STREET, on the left.	

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP AND AT&T.

SITE INFORMATION

THE SCOPE OF WORK SHALL INCLUDE:

1. THE INSTALLATION OF A SHARED WIRELESS COMMUNICATION TEMPORARY BALLAST TOWER, CELLCO PARTNERSHIP RADIO EQUIPMENT TRAILER, & AN AT&T RADIO EQUIPMENT SHELTER ADJACENT TO EXISTING CONSTRUCTION SITE OF THE AMERICAN SCHOOL FOR THE DEAF CLOCK TOWER WITHIN A FENCED AREA.
2. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.

VICINITY MAP

SCALE: 1" = 1000'

PROJECT SUMMARY

SITE NAME:	WEST HARTFORD WEST
SITE ADDRESS:	139 NORTH MAIN STREET WEST HARTFORD, CT 06107
PROPERTY OWNER:	AMERICAN SCHOOL FOR THE DEAF 139 NORTH MAIN STREET WEST HARTFORD, CT 06107
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 99 EAST RIVER DRIVE, EAST HARTFORD, CT 06108
CONTACT PERSON:	SANDY CARTER CELLCO PARTNERSHIP (860) 803-8210
ENGINEER:	CENTEK ENGINEERING 63-2 NORTH BRANFORD ROAD, BRANFORD, CT 06405 (203) 488-0580
TEMPORARY TOWER COORDINATES:	LATITUDE: 41°-46'-15.307" LONGITUDE: 72°-44'-58.840" GROUND ELEVATION: 160.7'± A.M.S.L. COORDINATES AND GROUND ELEVATION BASED ON FAA 1-A SURVEY CERTIFICATION PREPARED BY MARTINEZ COUCH AND ASSOCIATES DATED APRIL 24, 2014.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
C-1.0	PARTIAL SITE SURVEY PLAN	1
C-2.0	SITE DEVELOPMENT PLAN AND MISC. SITE DETAILS	1
C-3.0	SITE CONSTRUCTION, S&E CONTROL NOTES AND DETAILS	1
C-4.0	ELEVATION AND ANTENNA CONFIGURATIONS	1

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CJT	GPC	REVISED PER CSC
0	04/28/14	CJT	GPC	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d.b.a. Verizon Wireless

CENTEK engineering

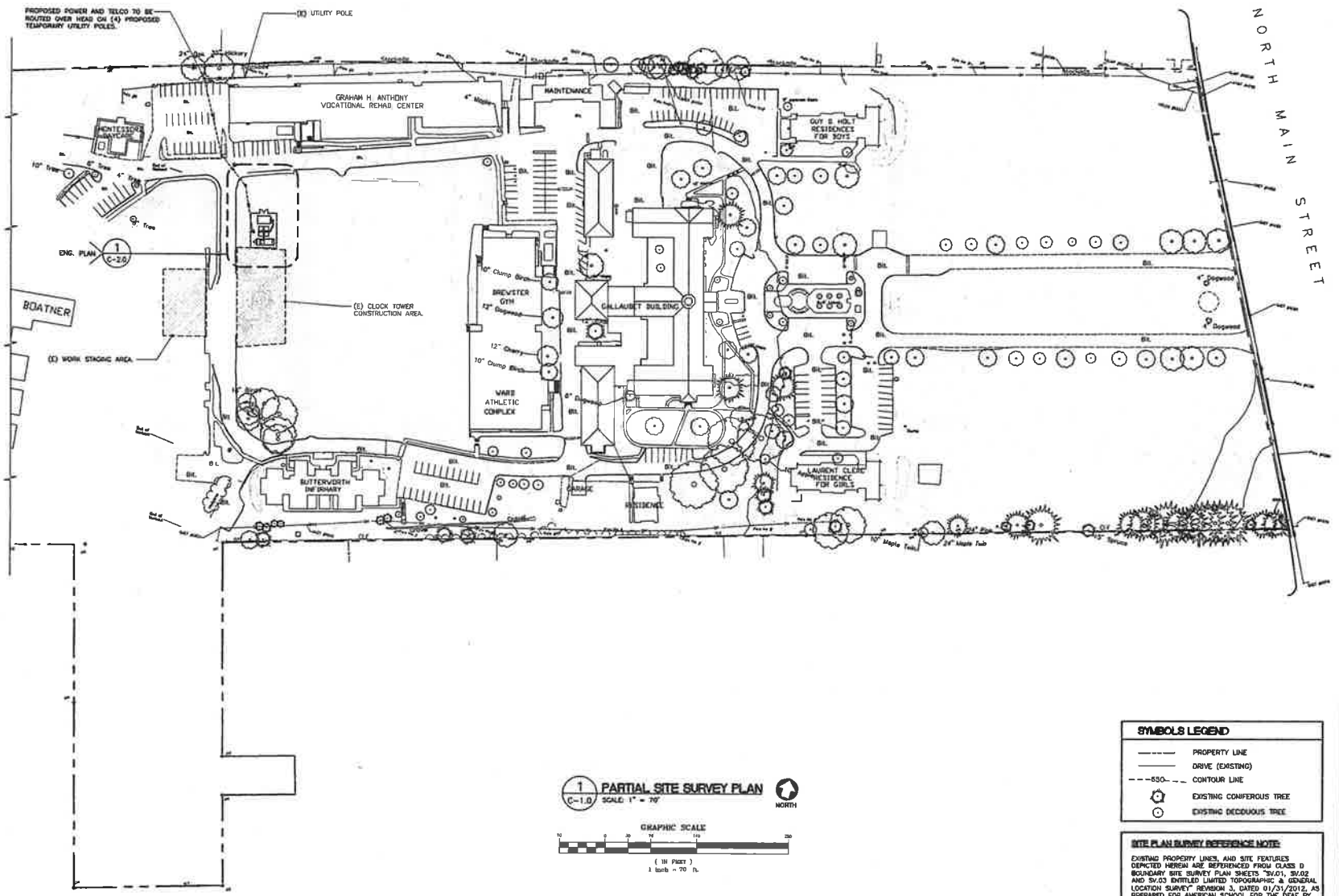
Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
139 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO.: 14071.000

TITLE SHEET

T-1

Sheet No. 1 of 5



1 C-1.0 PARTIAL SITE SURVEY PLAN
SCALE: 1" = 70'

NORTH

GRAPHIC SCALE

(IN FEET)
1 inch = 70 ft.

SYMBOLS LEGEND

- PROPERTY LINE
- DRIVE (EXISTING)
- 530 CONTOUR LINE
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE

SITE PLAN SURVEY REFERENCE NOTE:

EXISTING PROPERTY LINES, AND SITE FEATURES DEPICTED HEREIN ARE REFERENCED FROM CLASS D BOUNDARY SITE SURVEY PLAN SHEETS "SV.01, SV.02 AND SV.03 ENTITLED LIMITED TOPOGRAPHIC & GENERAL LOCATION SURVEY" REVISION 3, DATED 01/31/2012, AS PREPARED FOR AMERICAN SCHOOL FOR THE DEAF BY PURCELL ASSOCIATES.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CLT	CPC	ISSUED FOR CSC
0	04/28/14	CLT	CPC	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST

TEMPORARY TOWER INSTALL

539 NORTH MAIN STREET
WEST HARTFORD, CT

DATE:	04/14/14
SCALE:	AS NOTED
JOB NO.	14071.000

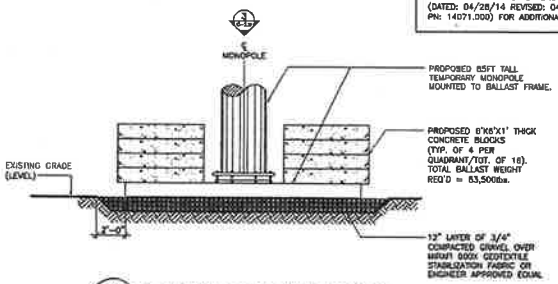
PARTIAL SITE SURVEY PLAN

C-1.0

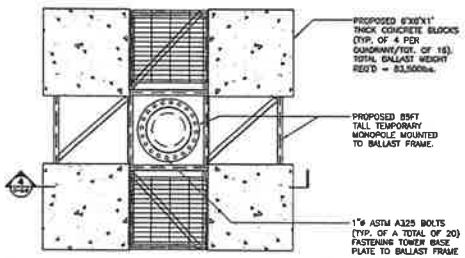
Sheet No. 2 of 3

NOTE:

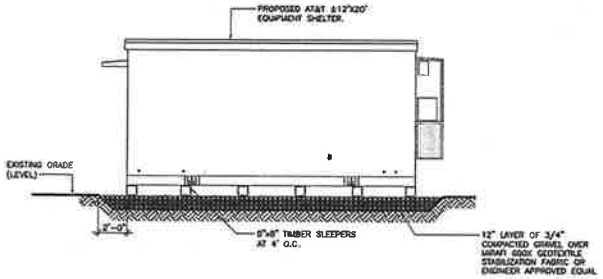
REFER TO STRUCTURAL ANALYSIS REPORT AS PREPARED BY CENTEK ENGINEERING (DATED: 04/28/14 REVISED: 04/29/14 PN: 14071.000) FOR ADDITIONAL INFORMATION.



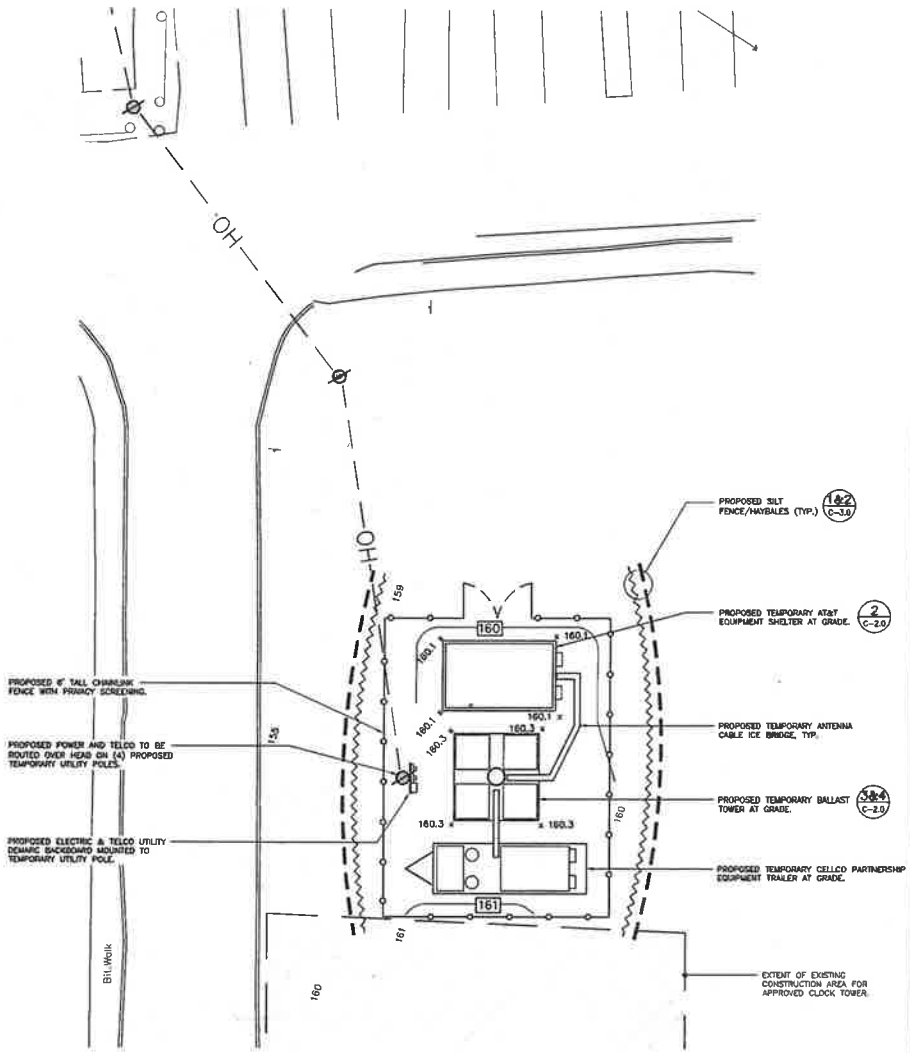
4 C-2.0 **TEMP. BALLAST TOWER SECTION**
SCALE: 1/4" = 1'-0"



3 C-2.0 **TEMP. BALLAST TOWER PLAN**
SCALE: 1/4" = 1'-0"



2 C-2.0 **EQUIPMENT SHELTER ELEVATION**
SCALE: 1/4" = 1'-0"



1 C-2.0 **SITE ENGINEERING PLAN**
SCALE: 1"=10'

NORTH

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

SYMBOLS LEGEND

- DRIVE (EXISTING)
- 650 CONTOUR LINE
- 650 GRADING LINE
- SILTATION FENCE/ STRAW BALES/ SILTATION FENCE "SANDWICH"

REV.	DATE	MARK BY CHK'D BY	DESCRIPTION
1	04/25/14	CLT	GFC ISSUED FOR DSC
0	04/28/14	CLT	GFC ISSUED FOR DSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d.b.a. Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d.b.a. Verizon Wireless

WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
150 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

SITE DEVELOPMENT PLAN AND MISC. SITE DETAILS

C-2.0

Sheet No. 3 of 5

GENERAL CONSTRUCTION / PRE-CONSTRUCTION NOTES

1. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES, A MANDATORY ON-SITE PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED WITH THE VERIZON WIRELESS CONSTRUCTION MANAGER, AT&T CONSTRUCTION MANAGER, CONTRACTOR'S CONSTRUCTION MANAGER, THE PROJECT EROSION AND SEDIMENTATION CONTROL/ENVIRONMENTAL MONITOR AND THE ENGINEER OF RECORD.
2. THE SOUTHERN PROPERTY LINE ADJACENT TO THE PROPOSED ACCESS DRIVE IS STAKED IN FIELD. THE CONTRACTOR SHALL MAINTAIN THE PROPERTY LINE STAKE LOCATIONS DURING THE ENTIRE PERIOD OF CONSTRUCTION. ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED ON THE SUBJECT PROPERTY.

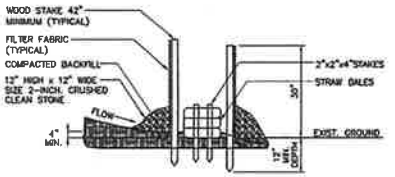
GENERAL CONSTRUCTION SEQUENCE

THIS IS A GENERAL CONSTRUCTION SEQUENCE OUTLINE SOME ITEMS OF WHICH MAY NOT APPLY TO PARTICULAR SITES.

1. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
2. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
3. REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED WITH WINTER RYE OR ANNUAL RYE TO PREVENT EROSION.
4. CONSTRUCT CLOSED DRAINAGE SYSTEM. PRECEPT CULVERT INLETS AND CATCH BASINS WITH SEDIMENTATION BARRIERS.
5. CONSTRUCT ROADWAYS AND PERFORM SITE GRADING, PLACING STRAW BALES AND SILTATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
6. INSTALL UNDERGROUND UTILITIES.
7. BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION. NO AREA SHALL BE LEFT UNSTABILIZED FOR A TIME PERIOD OF MORE THAN 30 DAYS.
8. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING.
9. BEGIN EXCAVATION FOR AND CONSTRUCTION OF TOWERS AND PLATFORMS.
10. FINISH PAVING ALL ROADWAYS, DRIVES, AND PARKING AREAS.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING. AREA OF DISTURBED SOIL SHALL BE SOWN WITH NEW ENGLAND CONSERVATION/WILDLIFE SEED MIX (NEW ENGLAND WETLAND PLANTS, INC. (413) 548-8000, OR APPROVED EQUIVALENT) AT THE MANUFACTURER'S RECOMMENDED SEEDING RATE.
12. NO FLOW SHALL BE DIVERTED TO ANY WETLANDS UNTIL A HEALTHY STAND OF GRASS HAS BEEN ESTABLISHED IN REGARDED AREAS.
13. AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.

SOIL EROSION AND SEDIMENT CONTROL SEQUENCE

1. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS CONSTRUCTION ENTRANCE / ANTI TRACKING PAD, SILTATION FENCE, AND SILTATION FENCE / STRAW BALE SHALL BE IN PLACE PRIOR TO ANY GRADING ACTIVITY. INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES. MEASURES SHALL BE LEFT IN PLACE AND MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR AREA IS STABILIZED.
2. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. 2" CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
3. THE ENTRANCE TO THE PROJECT SITE IS TO BE PROTECTED BY STONE ANTI TRACKING PAD OF ASTM C-33, SIZE NO. 2 OR 3, OR D.O.T. 2" CRUSHED GRAVEL. THE STONE ANTI TRACKING PAD IS TO BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
4. LAND DISTURBANCE WILL BE KEPT TO A MINIMUM AND RESTABILIZATIONS WILL BE SCHEDULED AS SOON AS PRACTICAL.
5. ALL SOIL EROSION AND SEDIMENT CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL INCLUDING THE LATEST DATE FROM THE COUNCIL ON SOIL AND WATER CONSERVATION.
6. ANY ADDITIONAL EROSION/SEDIMENTATION CONTROL DEEMED NECESSARY BY TOWN STAFF DURING CONSTRUCTION, SHALL BE INSTALLED BY THE DEVELOPER. IN ADDITION, THE DEVELOPER SHALL BE RESPONSIBLE FOR THE REPAIR/REPLACEMENT/MAINTENANCE OF ALL EROSION CONTROL MEASURES UNTIL ALL DISTURBED AREAS ARE STABILIZED TO THE SATISFACTION OF THE TOWN STAFF.
7. IN ALL AREAS, REMOVAL OF TREES, BUSHES AND OTHER VEGETATION AS WELL AS DISTURBANCE OF THE SOIL IS TO BE KEPT TO AN ABSOLUTE MINIMUM WHILE ALLOWING PROPER DEVELOPMENT OF THE SITE. DURING CONSTRUCTION, EXPOSE AS SMALL AN AREA OF SOIL AS POSSIBLE FOR AS SHORT A TIME AS POSSIBLE.
8. SILTATION FENCE SHALL BE PLACED AS INDICATED BEFORE A CUT SLOPE HAS BEEN CREATED. SEDIMENT DEPOSITS SHOULD BE PERIODICALLY REMOVED FROM THE UPSTREAM SIDES OF SILTATION FENCE. THIS MATERIAL IS TO BE SPREAD AND STABILIZED IN AREAS NOT SUBJECT TO EROSION, OR TO BE USED IN AREAS WHICH ARE NOT TO BE PAVED OR BUILT ON. SILTATION FENCE IS TO BE REPLACED AS NECESSARY TO PROVIDE PROPER FILTERING ACTION. THE FENCE IS TO REMAIN IN PLACE AND BE MAINTAINED TO INSURE EFFICIENT SILTATION CONTROL UNTIL ALL AREAS ABOVE THE EROSION CHECKS ARE STABILIZED AND VEGETATION HAS BEEN ESTABLISHED.
9. SWALE DISCHARGE AREA WILL BE PROTECTED WITH RIP RAP SPLASH PAD/ ENERGY DISSIPATER.
10. ALL FILL AREAS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
11. THE SOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
12. AFTER CONSTRUCTION IS COMPLETE AND GROUND IS STABLE, REMOVE SILTS IN THE RIP RAP ENERGY DISSIPATERS. REMOVE OTHER EROSION AND SEDIMENT DEVICES.



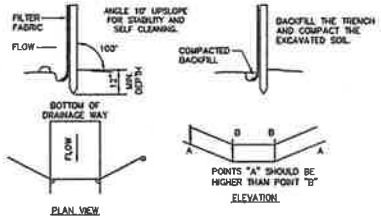
1 C-3.0 **SILTATION FENCE/STRAW BALE SILTATION FENCE "SANDWICH" EROSION CONTROL**
NOT TO SCALE

CONSTRUCTION SPECIFICATIONS - SILT FENCE

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BUILD UP IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE - SILT FENCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.



SOURCE: U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, STORRS, CONNECTICUT

2 C-3.0 **PLACEMENT AND CONSTRUCTION OF SILTATION FENCE**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	04/30/14	CLT	CFC	REVISED PER CSC
0	03/28/14	CLT	CFC	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

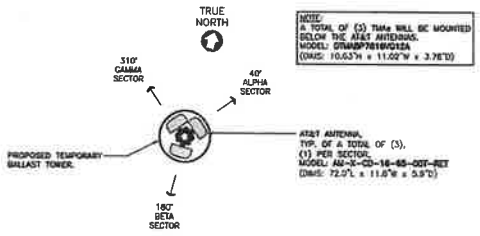
Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST
TEMPORARY TOWER INSTALL
190 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO. 14071.000

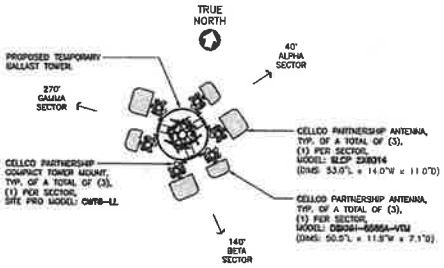
SITE CONSTRUCTION, S&E CONTROL NOTES AND DETAILS

C-3.0
Sheet No. 6 of 8



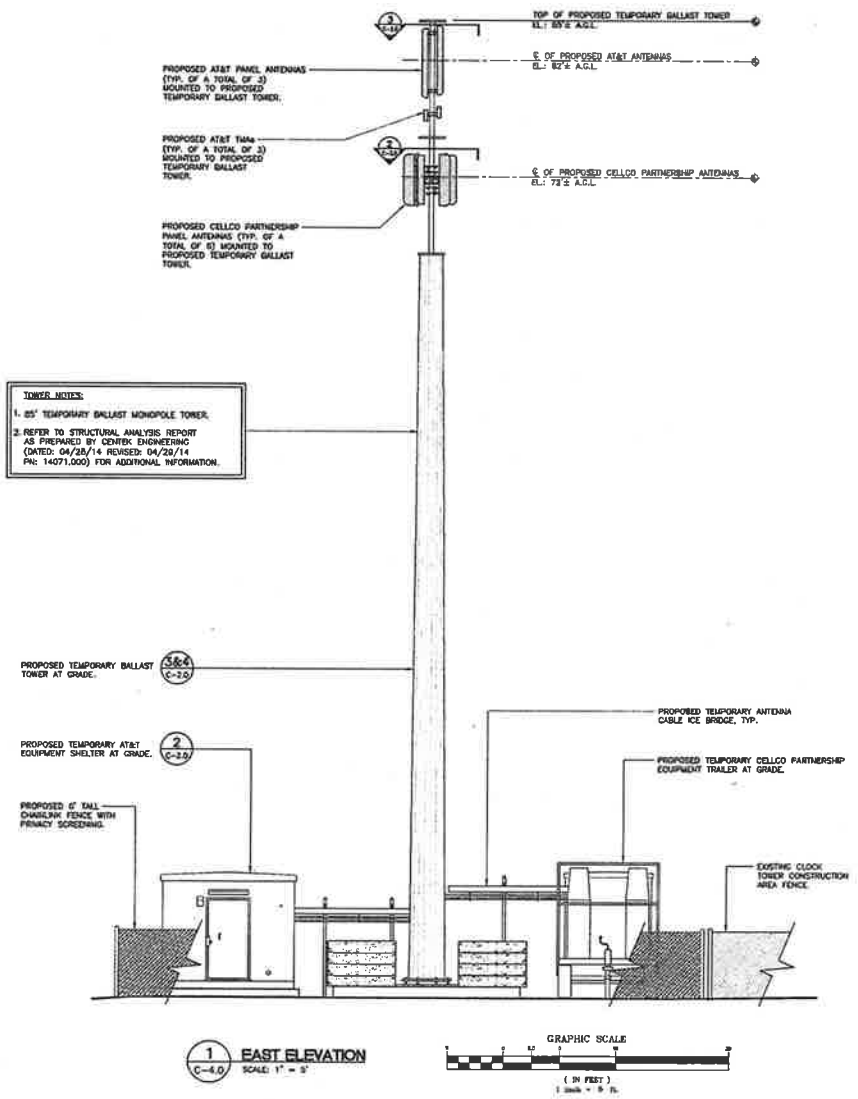
ANTENNA ℄ EL.: 82'± A.G.L.

3 / C-4.0 AT+T ANTENNA MOUNTING CONFIGURATION
NOT TO SCALE



ANTENNA ℄ EL.: 72'± A.G.L.

2 / C-4.0 CELLCO PARTNERSHIP ANTENNA MOUNTING CONFIGURATION
NOT TO SCALE



1 / C-4.0 EAST ELEVATION
SCALE: 1" = 5'

GRAPHIC SCALE
(IN FEET)
1 inch = 5 ft.

REV.	DATE	DESCRIPTION
1	04/25/14	GFC	ISSUED FOR CSC
0	04/14/14	GFC	ISSUED FOR CSC - TOWER REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership d/b/a Verizon Wireless

CENTEK engineering
Centered on Solutions
(203) 488-0580
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

Cellco Partnership d/b/a Verizon Wireless

WIRELESS COMMUNICATIONS FACILITY

WEST HARTFORD WEST

TEMPORARY TOWER INSTALL

159 NORTH MAIN STREET
WEST HARTFORD, CT

DATE: 04/14/14
SCALE: AS NOTED
JOB NO.: 14071.000

ELEVATION AND ANTENNA CONFIGURATIONS

C-4.0

Sheet No. 5 of 5