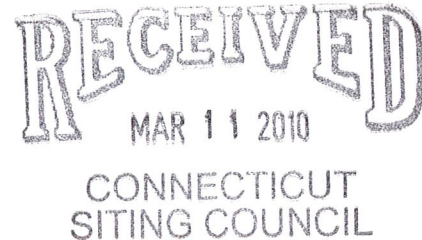


THOMAS J. REGAN  
Direct Dial: (860) 509-6522  
tregan@brownrudnick.com*Via Hand Delivery*

February 29, 2010

Daniel F. Caruso, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051**RE: Clear Wireless, LLC – Tower Sharing Application**

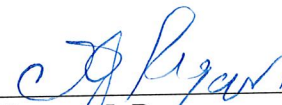
Dear Mr. Caruso:

On behalf of Clear Wireless, LLC, enclosed for filing you will find an original and twenty (20) copies of a “*Tower Sharing Application*” regarding a tower located at 38 Kaechele Place, Bridgeport. The \$500.00 filing fee is also enclosed.

I would appreciate it if you could please date stamp the copy of this transmittal letter and return it to the courier delivering this package.

If you have any questions, please feel free to contact me.

Very truly yours,

**BROWN RUDNICK LLP**By:   
Thomas J. Regan

Enclosures

cc/encl: The Honorable Bill Finch, Mayor  
# 40270448 v1 - REGANTJ - 025064/0017



Daniel F. Caruso, Chairman  
March 11, 2010  
RE: Clear Wireless, LLC – Tower Sharing Application  
Page 2

cc/encls: via 1<sup>st</sup> Class Mail

The Honorable Bill Finch  
City Hall  
45 Lyon Terrace  
Bridgeport, CT 06604-4062



To: HPC  
From: Julius De La Cruz – Radio Frequency Engineer  
Cc: Micah Hawthorne  
Subject: Power Density Report for CT-BDR0047  
Date: March 09, 2010

---

**1. Introduction:**

This report is the result of Electromagnetic Field Intensities (EMF – Power Densities) study for the Clearwire broadband antenna installation on a self-support tower at 2 Kaechele Place, Bridgeport, CT 06610. This study incorporates the most conservative consideration for determining the practical combined worst case power density levels that would be theoretically encountered from locations surrounding the transmitting location:

**2: Discussion:**

The following assumptions were used in the calculations:

- 1) The emissions from Clearwire transmitters are in the (2496 – 2690) Frequency Band
- 2) The emissions from the Clearwire Microwave dishes are in the 18 GHz Frequency Band
- 3) The model number for Clearwire Antenna is Argus LLPX310R
- 4) The model number for the Microwave dish is Dragonwave A-ANT-23G-2-C
- 5) The Clearwire Panel antenna centerline is 110 feet.
- 6) The Clearwire Microwave dish centerline is 110 feet.
- 7) The Maximum Transmit power from any Clearwire panel antenna is 251 Watts Effective Isotropic Radiated Power (EiRP) assuming 2 channels per sector.
- 8) The Maximum Transmit power from any Clearwire Microwave Dish is 346 Watts Effective Isotropic Radiated Power (EiRP) assuming 1 channel per dish.
- 9) All antennas are simultaneously transmitting and receiving 24 hours per day.
- 10) The average ground level of the studied area does not change significantly with respect to the transmitting location.

Equations given in “FCC OET Bulletin 65, Edition 97-01” were used with the above information to perform the calculations.

**3: Conclusion:**

Based on the above worst case assumptions, the power density calculation from the Clearwire antenna installation on a Self Support Tower at 2 Kaechele Place, Bridgeport, CT 06610 is 0.000017 mW/cm<sup>2</sup>. This value represents 0.000171% of the Maximum Permissible Exposure (MPE) standard of 1 milliwatt per square centimeter (mW/cm<sup>2</sup>) set forth in the FCC/ANSI/IEEE C95-1-1991. Furthermore, the proposed antenna location for Clearwire will not interfere with existing public safety communications, AM or FM radio broadcasts, TV, Police Communications, HAM Radio communications or any other signals in the area.

The combined Power Density from all other carriers is 35.08 %. The combined Power Density for this site is 35.080171% of the M.P.E. standard.

ORIGINAL

CONNECTICUT SITING COUNCIL

In re:

Request of Clear Wireless LLC for the Approval :  
of the Shared Use of an Existing Tower Located :  
at 2 Kaechele Place, Bridgeport, Connecticut. :

March 11, 2010

RECEIVED  
MAR 11 2010

TOWER SHARING APPLICATION

CONNECTICUT  
SITING COUNCIL

TS-CLEARWIRE-015-100311

Clear Wireless LLC ("Clearwire") proposes herein to share an existing monopole telecommunications tower (the "Tower") located at 2 Kaechele Place, Bridgeport, Connecticut (the "Facility"). Pursuant to Connecticut General Statutes §16-50aa (the "Statute"), Clearwire requests a finding from the Connecticut Siting Council (the "Council") that the shared use of this Facility is technically, legally, environmentally, and economically feasible, will meet public safety concerns, will avoid the unnecessary proliferation of towers and is in the public interest.

Clearwire further requests an order approving the shared use of this Facility.

The purpose of this request is to use an existing telecommunications tower to develop Clearwire's 4G wireless broadband network to provide high-speed wireless data and to develop VoIP service within the State of Connecticut and in this area of Bridgeport. Therefore, this application avoids the construction of an additional tower in Bridgeport.

A. The Facility

The Facility is located at a latitude of 41°13' 24" N and longitude of 73° 13' 0.407" W. The Tower is a 156-foot monopole tower. Multiple carriers are currently located on the Tower. A site plan is attached.

B. Proposed Project

Clearwire will install three (3) WiMAX antennas (Model No. LLPX310R), three (3) Remote Radio Heads (Model No. FDD R6 RRH), five (5) Dragonwave dishes (Model No. A-ANT-23G-2-C) and five (5) Dragaonwave Horizon DUOs ("DUO") on the Tower. Clearwire

plans to mount the antennas at a centerline of 110 feet and mount the dishes at 106 feet and 114 feet. Six (6) cables, 5/16" in diameter, will run to the new WiMAX antennas (two per panel). Additionally, five (5) coax cables, 1/2" in diameter, will run to the new dishes (one per dish).

Within the existing compound Clearwire plans to add a 10-foot by 10-foot (approximately) concrete pad and locate its equipment on that pad. Clearwire plans to install an ice bridge to connect its equipment to the tower and locate one GPS antenna on its proposed ice bridge. No upgrades to the access road or parking area will be necessary.

#### C. Technical Feasibility

Consistent with the requirements of the Statute, it is technically feasible for Clearwire to collocate at this Facility. To analyze whether the Tower can support Clearwire's proposed modifications, Clearwire commissioned GPD Associates to perform a structural analysis of the Tower with Clearwire's proposed modifications. The structural analysis is attached. According to the Structural Analysis Report, dated February 10, 2010, "...the modified tower and its foundation are sufficient for the proposed, existing and reserved loadings ..." (Page 1, Structural Analysis Report, emphasis in original).

#### D. Legal Feasibility

The Council has the authority, pursuant to the Statute, to issue an order approving the shared use of this Tower. By issuing an order approving Clearwire's use of the Tower, Clearwire will be able to proceed with obtaining a building permit for its proposed installation on the Tower. Therefore, consistent with the Statute, Clearwire's proposal is legally feasible.

#### E. Economic Feasibility

Clearwire is a wireless telecommunications provider licensed by the Federal Communications Commission to provide service in areas of Connecticut, including but not limited

to Fairfield County. Clearwire has entered into a Site Lease Agreement, dated February 24, 2010, with New Cingular Wireless PCS, LLC for the purpose of locating its antennas, remote radio heads, dishes, DUOs and associated equipment at the Facility so that it may provide wireless telecommunications service to this area of Bridgeport. A redacted copy of the Agreement is attached. Therefore, the shared use of this Facility is economically feasible.

#### F. Environmental Feasibility

Pursuant to the Statute, the proposal will be environmentally feasible for the following reasons:

- The overall impact on the City of Bridgeport will be decreased with the sharing of a single tower versus the proliferation of towers.
- The proposal will not increase the height of the Tower.
- There will be little increase in the visibility of the Tower with the addition of Clearwire's antennas, Remote Radio Heads and dishes.
- There will be no impact on any wetlands or water resources as a result of Clearwire's modifications.
- There will be no increased impact on air quality because no air pollutants will be generated during the normal operation of the Facility.
- There will only be a brief, slight increase in noise pollution while the antennas are attached and the equipment cabinet is installed.

- During construction, the proposed project will generate a small amount of traffic as workers arrive and depart and materials are delivered. Upon completion, traffic will be limited to an average of one monthly maintenance/inspection visit.

#### G. Public Safety Concerns / Benefits

There will be no adverse impact to the health and safety of the surrounding community or the workers at the Facility due to the addition of Clearwire's antennas to the Tower. Clearwire performed an analysis of the radio frequency fields emanating from the transmitting antennas on the Tower to ensure compliance with the National Council on Radiation Protection and Measurements' ("NCRP") standard for maximum permissible exposure (MPE) adopted by the Federal Communications Commission ("FCC"). The analysis, dated March 9, 2010, indicates that Clearwire's antennas will emit 0.000171% of the NCRP's standard for maximum permissible exposure. A cumulative power density analysis indicates that together, all of the antennas on the Tower will cumulatively emit 35.08% of the NCRP's standard for maximum permissible exposure. The power density analysis is attached. Therefore, the analysis demonstrates that the maximum level of radio-frequency energy emitted from the Tower will be well below the FCC's mandated radio frequency exposure limits.


Moreover, Clearwire expects to enhance safety in the Bridgeport area by improving wireless communications for local residents and travelers. Clearwire is currently developing its 4G wireless broadband network to provide high-speed wireless data and its VoIP service within the State of Connecticut. Clearwire's 4G service leverages the WiMAX technology to enable enhanced wireless data communications. In order to provide reliable coverage to residents and travelers in this area of Bridgeport and fulfill their coverage goals to comply with their FCC license, this site is a necessary part of Clearwire's network development.

Specifically, this proposal is designed to provide reliable wireless service for 1.2 miles along Main Street, 1.24 miles along Old Town Road and .06 miles along U.S. Highway 15. Clearwire's proposal will also provide a reliable service level for surrounding commercial and residential areas.

Conclusion

For the reasons stated above, the attachment of Clearwire's antennas, remote radio heads and dishes to the Tower would meet all the requirements set forth in the Statute. This proposal is technically, legally, environmentally and economically feasible and meets all public safety concerns. Therefore, Clearwire respectfully requests that the Council approve this request for the shared use of the Tower located at 2 Kaechele Place in Bridgeport, Connecticut.

Clear Wireless LLC

By:   
Thomas J. Regan  
Brown Rudnick LLP  
185 Asylum Street, CityPlace I  
Hartford, CT 06103-3402  
Email - tregan@brownrudnick.com  
Phone - 860.509.6522  
Fax - 860.509.6501



**Certificate of Service**

This is to certify that on this 11<sup>th</sup> day of March, 2010, the foregoing Tower Sharing

Proposal was sent, via first class mail, to the following:

City of Bridgeport  
Mayor William Finch  
Office of the Mayor  
999 Broad Street  
Bridgeport, CT 06604

By:   
Thomas J. Regan

# 40270411 v1 - 025064/0017



**at&t**

Glynn Walker  
AT&T Mobility  
5405 Windward Parkway  
Alpharetta, GA 30004  
(770) 708-6122



GPD ASSOCIATES

Kevin Clements  
520 South Main St., Suite 2531  
Akron, Ohio 44311  
(330) 572-2195  
[kclements@gpdgroup.com](mailto:kclements@gpdgroup.com)

**GPD# 2010262.25**  
February 10, 2010

**STRUCTURAL ANALYSIS REPORT**

AT&T DESIGNATION: Site USID: 60393  
Site FA: 10034977  
Site Name: BRIDGEPORT NORTH

CLEARWIRE DESIGNATION: Site Number: CT-BDR0047

ANALYSIS CRITERIA: Codes: TIA/EIA-222-F & 2003 IBC  
85-mph with 0" ice  
74-mph with 1/2" ice

SITE DATA: 2 Kaechele Place, Bridgeport, CT 06606, Fairfield County  
Latitude 41° 13' 23.951"N, Longitude 73° 13' 0.407"W  
150' Modified Monopole

Mr. Walker,

GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the following proposed loading configuration:

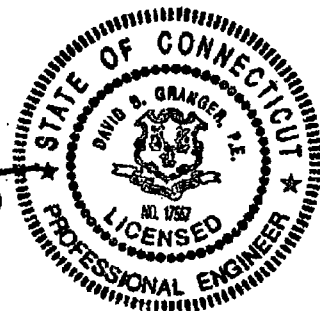
- Elev. 110' (3) Argus LLPX310R Antennas, pipe mounted w/ (6) 5/16" internal coax
- (3) Samsung FDD R6 RRH tower mounted amplifiers on the same mounts
- (5) Dragonwave A-ANT-23G-2-C dishes on the same mounts w/ (5) 1/2" internal coax
- (5) Dragonwave Horizon DUO's mounted behind the dishes

Based on our analysis we have determined the modified tower and its foundation are sufficient for the proposed, existing and reserved loadings as referenced in Appendix A.

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T. If you have any questions please do not hesitate to call.

Respectfully submitted,

David B. Granger, P.E.  
Connecticut #: 17557



## SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by Clearwire to AT&T. This report was commissioned by Mr. Glynn Walker of AT&T.

The tower has been previously modified with (8) 2-1/2" diameter threaded rods from 0' – 50', (4) 2-1/2" diameter threaded rods from 50' – 95' and 5" x 3/4" mod plates from 95' – 115'. In addition, triangular stiffener plates have been installed on the base plate and bridge stiffeners on the flange plate at 109'. Additional concrete has also been poured atop the existing foundation.

### TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	93.6%	Pass
Flange Plate	74.8%	Pass
Flange Bolts	59.7%	Pass
Mod Plate Connection	99.7%	Pass
Base Plate	39.5%	Pass
Anchor Rods	84.6%	Pass
Foundation	93.1%	Pass

## ANALYSIS METHOD

RISA Tower (Version 5.3.1.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information.

### DOCUMENTS PROVIDED

Document	Remarks	Source
Preliminary Tower Summary	Clearwire Co-location document	Siterra
Site Lease Application	Clearwire Application, dated 10/6/2009	Siterra
Previous Structural Analysis	GPD Associates Job #: 2008264.38 Rev. 1, dated 9/28/2009	Siterra
Tower Mapping	GPD Associates & Patriot Towers, Inc., dated 4/11/2008	Siterra
Foundation Exploration	FDH Engineering Project #: 08-09065E N1, dated 9/23/2008	Siterra
Geotechnical Report	FDH Engineering Project #: 08-09065E G1, dated 9/23/2008	Siterra
Modification Drawings	GPD Associates Job #: 2008264.38, dated 10/16/2008	Siterra
Previous Structural Analysis	GPD Associates Job #: 2010260.78, dated 1/18/2010	Siterra

## ASSUMPTIONS

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

1. The monopole shaft sizes and shape are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations. If no data is available, the foundation system is not verified.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
8. Tower Mounted Amplifiers are assumed to be installed behind the antennas.
9. All existing loading was obtained from the previous structural analysis by GPD Associates, Job #: 2010260.78, dated 1/18/2010, site photos and the provided preliminary tower summary and is assumed to be accurate.
10. No steel grade information was provided, therefore, steel grades are assumed based on previous engineering experience.
11. The threaded rod modifications are assumed to be installed through the base plate into the foundation, carrying forces directly into the foundation.
12. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
13. Future coax to 150' level is assumed to be internal to the monopole.
14. All proposed coax is assumed to be internal to the monopole.

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

## DISCLAIMER OF WARRANTIES

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

The engineering services rendered by GPD ASSOCIATES in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

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

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

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

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

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

## APPENDIX A

### Tower Analysis Summary Form

# Tower Analysis Summary Form

<b>General Info</b>	
Site Name	BRIDGEPORT NORTH
Site Number	60393
PA Number	10034977
Date of Analysis	2/19/2010
Company Performing Analysis	GPD

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

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	150'	
Tower Manufacturer	n/a	
Tower Model	n/a	
Tower Design	n/a	
Foundation Investigation	FDH Engineering Project #: 08-09068E N1	9/23/2008
Geotech Report	FDH Engineering Project #: 08-09068E G1	9/23/2008
Modification Drawings	GPD Associates Job #: 2008264.38	10/16/2008
Previous Structural Analysis	GPD Associates Job #: 2008013.14	9/23/2008
Previous Structural Analysis	GPD Associates Job #: 2008264.38 Rev. 1	9/28/2009
Previous Structural Analysis	GPD Associates Job #: 2010260.78	1/18/2010
Foundation Mapping	GPD Associates & Patriot Towers, Inc.	4/11/2008

Design Parameters	TIA/EIA-222-F
Design Code Used	Fairfield, Connecticut
Location of Tower (County, State)	
Basic Wind Speed (mph)	85-Fastest
Ice Thickness (in)	0.5
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)	Existing/Reserved + Future + Proposed Condition
Tower	99.7%
Foundation	93.1%
Guy Wire	n/a

Steel Yield Strength (ksi)	
Pole	60
Anchor Rods	75
Base Plate	50
Modification Rods	60

Note: Steel grades were taken from previous analyses.

### Existing / Reserved Loading

Antenna				Mount				Transmission Line							
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Quantity	Model	Size	Attachment Internal/External
AT&T Mobility	149.5	154	6	Panel	Powerwave	7770.00		1	Unknown	10' Platform on the same mount	Internal	12	Unknown	1-5/8"	Internal
AT&T Mobility	149.5	154	6	TMA	Powerwave	LGP21401		3	Unknown	10' T-Arms	External	12	Unknown	1-5/8"	External
Metro PCS	120	120	6	Panel	Kathrein	800 18504		3	Unknown	12' T-Arms on the same mounts behind the antennas	Internal	6	Unknown	1-5/8"	Internal
Verizon Wireless	96	100	6	Panel	Antel	LPD 8513		3	Unknown		External	6	Unknown	1-5/8"	External
Verizon Wireless	96	100	6	Panel	Antel	BSA 18506510						6	Unknown	1-5/8"	External
Verizon Wireless	96	100	6	TMA	Unknown	TMA									

### Proposed Loading

Antenna				Mount				Transmission Line							
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Quantity	Model	Size	Attachment Internal/External
Cleantel	110	110	3	Panel	Algor	LLPX310R	50.150.260	6		pipe mounted	Internal	6	9207	5/16"	Internal
Cleantel	110	110	3	TMA	Samsung	FDD R6 RRH	50.150.260			on same mounts					
Cleantel	110	110	5	Dish	Dragonwave	A-ANT-23G-2-C	2,108,185,264,310	5		on the same mounts	Internal	5	LDF4-50A	1/2"	Internal
Cleantel	110	110	5	ODU	Dragonwave	Horizon DUO	2,108,185,264,310			behind dishes					

### Future Loading

Antenna				Mount				Transmission Line							
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Quantity	Model	Size	Attachment Internal/External
AT&T Mobility	149.5	154	3	Panel	Powerwave	7770.00		6		on the existing mount behind the antennas	Internal	6	LDF7-50A	1-5/8"	Internal
AT&T Mobility	149.5	154	3	TMA	Powerwave	LGP21401									

Note: Future loading is in addition to the existing loading at the same elevation.

Revision: 3  
Date: 2/18/09

## APPENDIX B

### RISA Tower Output File



<b>RISATower</b>  <b>GPD Associates</b> 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	<b>Job</b> 60393 - BRIDGEPORT NORTH	<b>Page</b> 1 of 5
	<b>Project</b> 2010262.25	<b>Date</b> 14:51:11 02/10/10
	<b>Client</b> AT&T Mobility	<b>Designed by</b> CRoesink

## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

TOWER RATING: 93.6%.

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.

## Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>AA</sub>		Weight
						No Ice	1/2" Ice	plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	150.00 - 8.00	18	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	120.00 - 8.00	11	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF7-50A (1-5/8 FOAM)	A	No	CaAa (Out Of Face)	120.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	99.00 - 8.00	3	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	99.00 - 8.00	3	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
2.5" threaded rod	A	No	CaAa (Out Of Face)	98.00 - 0.00	2	No Ice	0.25	15.58
						1/2" Ice	0.35	17.41
2.5" threaded rod	A	No	CaAa (Out Of Face)	52.00 - 0.00	2	No Ice	0.25	15.58
						1/2" Ice	0.35	17.41
2.5" threaded rod	B	No	CaAa (Out Of Face)	98.00 - 0.00	1	No Ice	0.00	15.58
						1/2" Ice	0.00	17.41
2.5" threaded rod	B	No	CaAa (Out Of Face)	52.00 - 0.00	1	No Ice	0.00	15.58
						1/2" Ice	0.00	17.41
2.5" threaded rod	C	No	CaAa (Out Of Face)	98.00 - 0.00	1	No Ice	0.00	15.58
						1/2" Ice	0.00	17.41
2.5" threaded rod	C	No	CaAa (Out Of Face)	52.00 - 0.00	1	No Ice	0.00	15.58
						1/2" Ice	0.00	17.41
5" x 0.5" Mod Plate	A	No	CaAa (Out Of Face)	115.00 - 95.00	1	No Ice	0.08	8.49
						1/2" Ice	0.19	9.18
5" x 0.5" Mod Plate	B	No	CaAa (Out Of Face)	115.00 - 95.00	1	No Ice	0.00	8.49
						1/2" Ice	0.00	9.18
5" x 0.5" Mod Plate	C	No	CaAa (Out Of Face)	115.00 - 95.00	1	No Ice	0.00	8.49
						1/2" Ice	0.00	9.18
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	110.00 - 8.00	5	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
9207 (5/16 FOEM)	A	No	Inside Pole	110.00 - 8.00	6	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06

<b>RISA Tower</b>  <b>GPD Associates</b> 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	<b>Job</b> 60393 - BRIDGEPORT NORTH	<b>Page</b> 2 of 5
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	<b>Client</b> AT&T Mobility	<b>Designed by</b> CRoesink

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
(3) 7770.00	A	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.04 0.07
(3) 7770.00	B	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.04 0.07
(3) 7770.00	C	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	0.04 0.07
(3) LGP21401	A	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	0.00 0.00	0.23 0.31	0.01 0.02
(3) LGP21401	B	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	0.00 0.00	0.23 0.31	0.01 0.02
(3) LGP21401	C	From Centroid-Le g	4.00	0.00	0.0000	149.50	No Ice 1/2" Ice	0.00 0.00	0.23 0.31	0.01 0.02
10'-8" Central Platform w/ 42" tower extension	C	None			0.0000	149.50	No Ice 1/2" Ice	43.32 46.28	43.32 46.28	2.50 3.25
(2) 800 10504	A	From Leg	4.00	0.00	0.0000	120.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	0.02 0.04
(2) 800 10504	B	From Leg	4.00	0.00	0.0000	120.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	0.02 0.04
(2) 800 10504	C	From Leg	4.00	0.00	0.0000	120.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	0.02 0.04
10' T-arms (3)	C	None			0.0000	120.00	No Ice 1/2" Ice	11.70 13.00	11.70 13.00	0.75 0.90
(2) LPD 6513	A	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	6.42 6.83	5.14 5.52	0.03 0.07
(2) LPD 6513	B	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	6.42 6.83	5.14 5.52	0.03 0.07
(2) LPD 6513	C	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	6.42 6.83	5.14 5.52	0.03 0.07
(2) BSA-185065/10CF	A	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	3.91 4.29	1.67 2.17	0.01 0.03
(2) BSA-185065/10CF	B	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	3.91 4.29	1.67 2.17	0.01 0.03
(2) BSA-185065/10CF	C	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	3.91 4.29	1.67 2.17	0.01 0.03
(2) TMA	A	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	0.00 0.00	0.12 0.17	0.00 0.00
(2) TMA	B	From Face	4.00	0.00	0.0000	100.00	No Ice 1/2" Ice	0.00 0.00	0.12 0.17	0.00 0.00

<b>RISATower</b>  <b>GPD Associates</b> 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	<b>Job</b>	60393 - BRIDGEPORT NORTH	<b>Page</b>	3 of 5
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	<b>Client</b>	AT&T Mobility	<b>Designed by</b>	CRoesink

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
(2) TMA	C	From Face	0.00							
			4.00	0.0000	100.00	No Ice	0.00	0.12	0.00	
			0.00			1/2" Ice	0.00	0.17	0.00	
12' T-arms (3)	C	None	0.00							
			0.00	0.0000	98.00	No Ice	14.10	14.10	1.00	
			0.00			1/2" Ice	16.00	16.00	1.20	
LLPX310R w/ Mount Pipe	A	From Leg	0.50	50.0000	110.00	No Ice	5.06	2.98	0.05	
			0.00			1/2" Ice	5.48	3.52	0.08	
			0.00							
LLPX310R w/ Mount Pipe	B	From Leg	0.50	30.0000	110.00	No Ice	5.06	2.98	0.05	
			0.00			1/2" Ice	5.48	3.52	0.08	
			0.00							
LLPX310R w/ Mount Pipe	C	From Leg	0.50	20.0000	110.00	No Ice	5.06	2.98	0.05	
			0.00			1/2" Ice	5.48	3.52	0.08	
			0.00							
FDD R6 RRH	A	From Leg	0.50	50.0000	110.00	No Ice	1.80	0.78	0.03	
			0.00			1/2" Ice	1.99	0.92	0.04	
			0.00							
FDD R6 RRH	B	From Leg	0.50	30.0000	110.00	No Ice	1.80	0.78	0.03	
			0.00			1/2" Ice	1.99	0.92	0.04	
			0.00							
FDD R6 RRH	C	From Leg	0.50	20.0000	110.00	No Ice	1.80	0.78	0.03	
			0.00			1/2" Ice	1.99	0.92	0.04	
			0.00							
Horizon DUO	A	From Leg	0.50	2.0000	110.00	No Ice	0.55	0.34	0.01	
			0.00			1/2" Ice	0.65	0.43	0.01	
			0.00							
Horizon DUO	B	From Leg	0.50	-12.0000	110.00	No Ice	0.55	0.34	0.01	
			0.00			1/2" Ice	0.65	0.43	0.01	
			0.00							
Horizon DUO	C	From Leg	0.50	8.0000	110.00	No Ice	0.55	0.34	0.01	
			0.00			1/2" Ice	0.65	0.43	0.01	
			0.00							
Horizon DUO	C	From Leg	0.50	24.0000	110.00	No Ice	0.55	0.34	0.01	
			0.00			1/2" Ice	0.65	0.43	0.01	
			0.00							
Horizon DUO	A	From Leg	0.50	10.0000	110.00	No Ice	0.55	0.34	0.01	
			0.00			1/2" Ice	0.65	0.43	0.01	
			0.00							

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz	Lateral Vert						
			ft	ft	°	°	ft	ft	ft <sup>2</sup>	K	
A-ANT-23G-2-C	A	Paraboloid w/o Radome	From Leg	0.50	2.0000	110.00	2.17	No Ice	3.72	0.01	
				0.00				1/2" Ice	4.01	0.02	
				0.00							
A-ANT-23G-2-C	B	Paraboloid w/o Radome	From Leg	0.50	-12.0000	110.00	2.17	No Ice	3.72	0.01	
				0.00				1/2" Ice	4.01	0.02	
				0.00							
A-ANT-23G-2-C	C	Paraboloid w/o Radome	From Face	0.50	8.0000	110.00	2.17	No Ice	3.72	0.01	
				0.00				1/2" Ice	4.01	0.02	
				0.00							

<b>RISATower</b>  <b>GPD Associates</b> 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	60393 - BRIDGEPORT NORTH	Page	4 of 5
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	Client	AT&T Mobility	Designed by	CRoesink

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft <sup>2</sup>	K	
A-ANT-23G-2-C	C	Paraboloid w/o Radome	From Leg	0.00 0.50 0.00	24.0000		110.00	2.17	No Ice 1/2" Ice	3.72 4.01	0.01 0.02
A-ANT-23G-2-C	A	Paraboloid w/o Radome	From Face	0.00 0.50 0.00	10.0000		110.00	2.17	No Ice 1/2" Ice	3.72 4.01	0.01 0.02

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

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
149.50	(3) 7770.00	29	82.883	4.8959	0.0014	9955
120.00	(2) 800 10504	29	53.934	4.3658	0.0013	2036
110.00	A-ANT-23G-2-C	29	45.121	4.0537	0.0012	1817
100.00	(2) LPD 6513	29	36.971	3.7320	0.0011	1678
98.00	12' T-arms (3)	29	35.424	3.6623	0.0011	1630

### Section Capacity Table

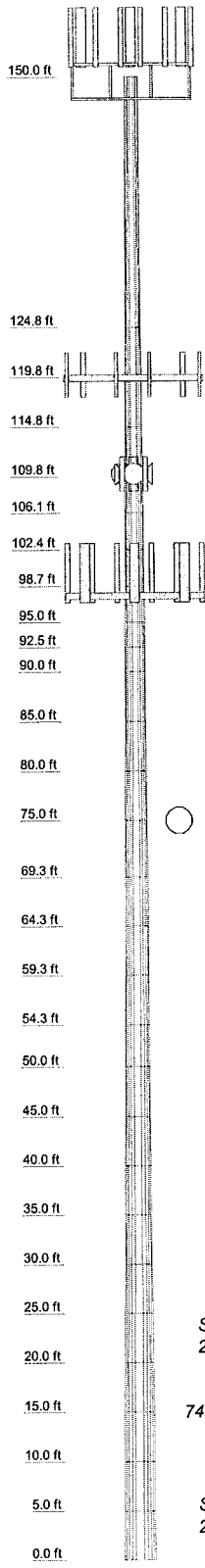
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail
L1	150 - 124.75	Pole	TP18.764x15x0.2188	1	-2.94	626.86	63.0	Pass
L2	124.75 - 119.75	Pole	TP19.5093x18.764x0.2188	2	-3.78	652.05	71.8	Pass
L3	119.75 - 114.75	Pole	TP20.2547x19.5093x0.2188	3	-4.11	677.25	82.3	Pass
L4	114.75 - 109.75	Pole	TP21x20.2547x0.2188	4	-4.57	702.44	65.7	Pass
L5	109.75 - 106.06	Pole	TP21.5497x21x0.25	5	-4.95	822.81	66.5	Pass
L6	106.06 - 102.37	Pole	TP22.0994x21.5497x0.25	6	-5.35	844.05	72.5	Pass
L7	102.37 - 98.68	Pole	TP22.6491x22.0994x0.25	7	-5.60	865.28	78.9	Pass
L8	98.68 - 95	Pole	TP23.1988x22.6491x0.25	8	-7.11	886.52	86.5	Pass
L9	95 - 92.5	Pole	TP23.5714x23.1988x0.25	9	-7.52	900.91	90.8	Pass
L10	92.5 - 90	Pole	TP23.944x23.5714x0.25	10	-7.94	915.31	59.3	Pass
L11	90 - 85	Pole	TP24.6894x23.944x0.25	11	-8.81	944.10	65.7	Pass
L12	85 - 80	Pole	TP25.4348x24.6894x0.25	12	-9.71	972.90	71.9	Pass
L13	80 - 75	Pole	TP26.1801x25.4348x0.25	13	-10.64	1001.69	77.9	Pass
L14	75 - 69.25	Pole	TP27.0373x26.1801x0.25	14	-11.75	1034.80	84.5	Pass
L15	69.25 - 64.25	Pole	TP27.7826x27.0373x0.3125	15	-12.81	1326.47	81.0	Pass
L16	64.25 - 59.25	Pole	TP28.528x27.7826x0.3125	16	-13.89	1362.47	85.6	Pass
L17	59.25 - 54.25	Pole	TP29.2733x28.528x0.3125	17	-15.00	1398.46	90.0	Pass
L18	54.25 - 50	Pole	TP29.9068x29.2733x0.3125	18	-16.08	1429.04	93.6	Pass
L19	50 - 45	Pole	TP30.6522x29.9068x0.3125	19	-17.55	1465.05	67.4	Pass
L20	45 - 40	Pole	TP31.3975x30.6522x0.3125	20	-19.05	1501.02	70.5	Pass
L21	40 - 35	Pole	TP32.1429x31.3975x0.3125	21	-20.58	1537.03	73.5	Pass
L22	35 - 30	Pole	TP32.8882x32.1429x0.3125	22	-22.13	1573.01	76.4	Pass
L23	30 - 25	Pole	TP33.6335x32.8882x0.4063	23	-23.83	2085.81	70.9	Pass
L24	25 - 20	Pole	TP34.3789x33.6335x0.4063	24	-25.55	2132.61	73.2	Pass
L25	20 - 15	Pole	TP35.1242x34.3789x0.4063	25	-27.30	2179.40	75.5	Pass
L26	15 - 10	Pole	TP35.8696x35.1242x0.4063	26	-29.07	2226.19	77.7	Pass
L27	10 - 5	Pole	TP36.6149x35.8696x0.4063	27	-30.76	2272.98	79.8	Pass
L28	5 - 0	Pole	TP37.3602x36.6149x0.4063	28	-32.40	2319.75	81.7	Pass

Summary  
Pole (L22) 93.6 Pass  
RATING = 93.6 Pass

## APPENDIX C

### Tower Elevation Drawing

Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	25.25	12	0.2188	15.0000	18.7640	A572-60	1.0
2	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
3	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
4	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
5	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
6	3.69	12	0.2188	15.0000	18.7640	A572-60	0.2
7	3.69	12	0.2188	15.0000	18.7640	A572-60	0.2
8	3.68	12	0.2188	15.0000	18.7640	A572-60	0.2
9	3.68	12	0.2188	15.0000	18.7640	A572-60	0.2
10	2.50	12	0.2188	15.0000	18.7640	A572-60	0.2
11	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
12	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
13	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
14	5.75	12	0.2188	15.0000	18.7640	A572-60	0.2
15	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
16	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
17	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
18	4.25	12	0.2188	15.0000	18.7640	A572-60	0.2
19	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
20	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
21	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
22	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
23	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
24	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
25	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
26	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
27	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2
28	5.00	12	0.2188	15.0000	18.7640	A572-60	0.2



### DESIGNED APPURTENANCE LOADING

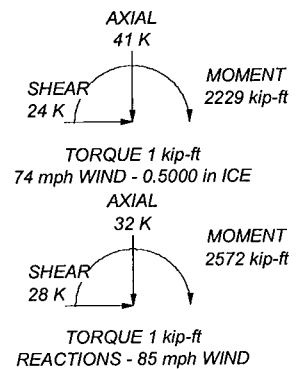
TYPE	ELEVATION	TYPE	ELEVATION
(3) 7770.00	149.5	Horizon DUO	110
(3) 7770.00	149.5	Horizon DUO	110
(3) 7770.00	149.5	Horizon DUO	110
(3) LGP21401	149.5	Horizon DUO	110
(3) LGP21401	149.5	A-ANT-23G-2-C	110
(3) LGP21401	149.5	A-ANT-23G-2-C	110
10'-8" Central Platform w/ 42" tower extension	149.5	A-ANT-23G-2-C	110
(2) 800 10504	120	A-ANT-23G-2-C	110
(2) 800 10504	120	(2) TMA	100
(2) 800 10504	120	(2) TMA	100
10' T-arms (3)	120	(2) TMA	100
LLPX310R w/ Mount Pipe	110	(2) LPD 6513	100
LLPX310R w/ Mount Pipe	110	(2) LPD 6513	100
LLPX310R w/ Mount Pipe	110	(2) LPD 6513	100
FDD R6 RRH	110	(2) BSA-185065/10CF	100
FDD R6 RRH	110	(2) BSA-185065/10CF	100
FDD R6 RRH	110	(2) BSA-185065/10CF	100
Horizon DUO	110	12' T-arms (3)	98

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.6%

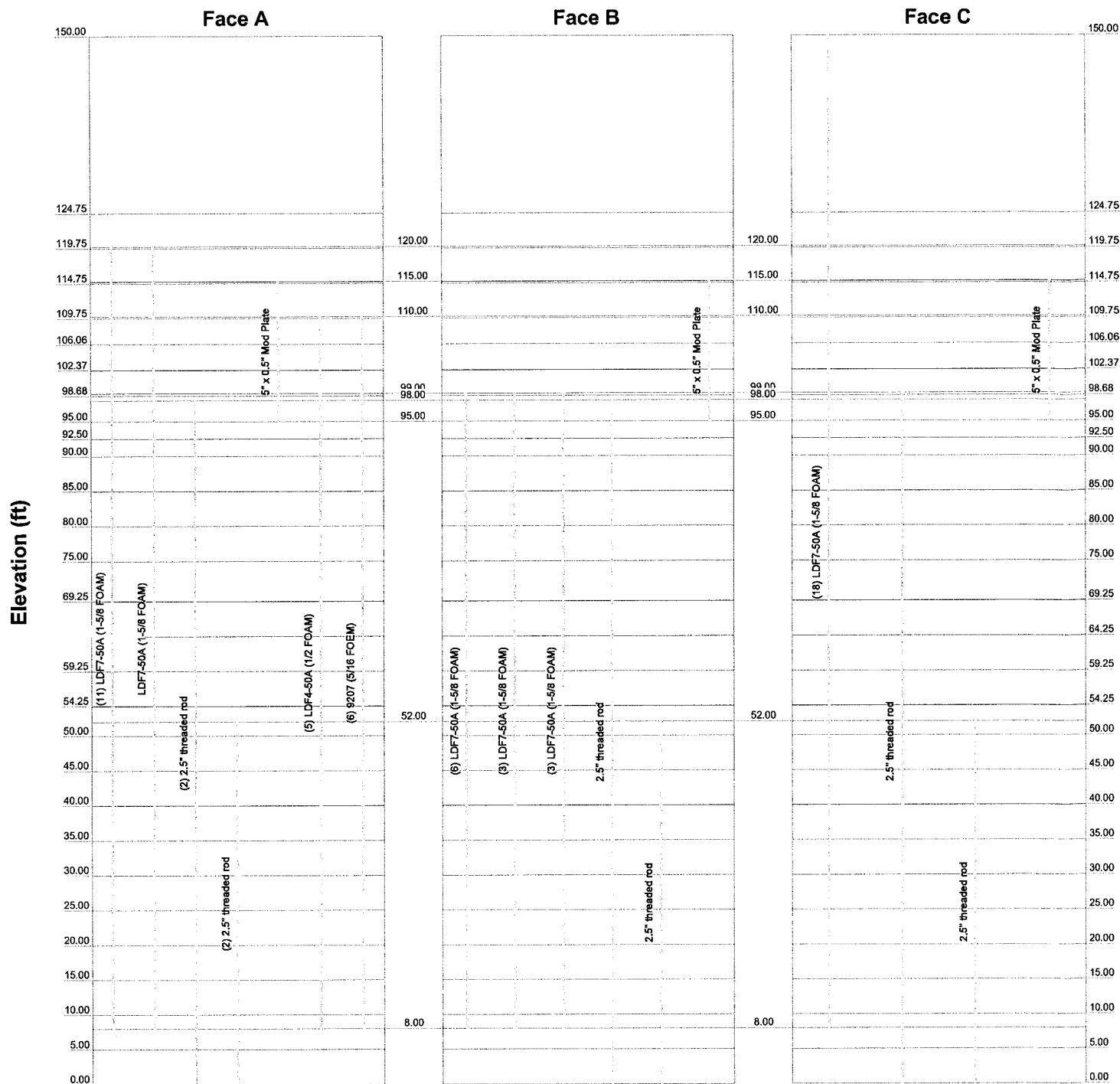


 <b>GPD Associates</b> Consulting Engineers	520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101		Job: <b>60393 - BRIDGEPORT NORTH</b>
	Project: <b>2010262.25</b>		
	Client: <b>AT&amp;T Mobility</b>	Drawn by: <b>CRoesink</b>	App'd:
Code: <b>TIA/EIA-222-F</b>	Date: <b>02/10/10</b>	Scale: <b>NTS</b>	
Path:	N:\2010\2010262\25\RA\S\G0393.dwg		Dwg No. <b>E-1</b>

# Feedline Distribution Chart

## 0' - 150'

Round
Flat
App In Face
App Out Face
Truss Leg



 <b>GPD GROUP</b> Consulting Engineers	<b>GPD Associates</b>		Job: <b>60393 - BRIDGEPORT NORTH</b>		
	520 South Main Street, Suite 2531		Project: <b>2010262.25</b>		
	Akron, OH 44311		Client: <b>AT&amp;T Mobility</b>	Drawn by: <b>CRoesink</b>	App'd:
	Phone: (330) 572-2100		Code: <b>TIA/EIA-222-F</b>	Date: <b>02/10/10</b>	Scale: <b>NTS</b>
FAX: (330) 572-2101		Path: <b>N:\2010\2010262\25\RISA\60393.dwg</b>		Dwg No. <b>E-7</b>	

# Feedline Plan 10'

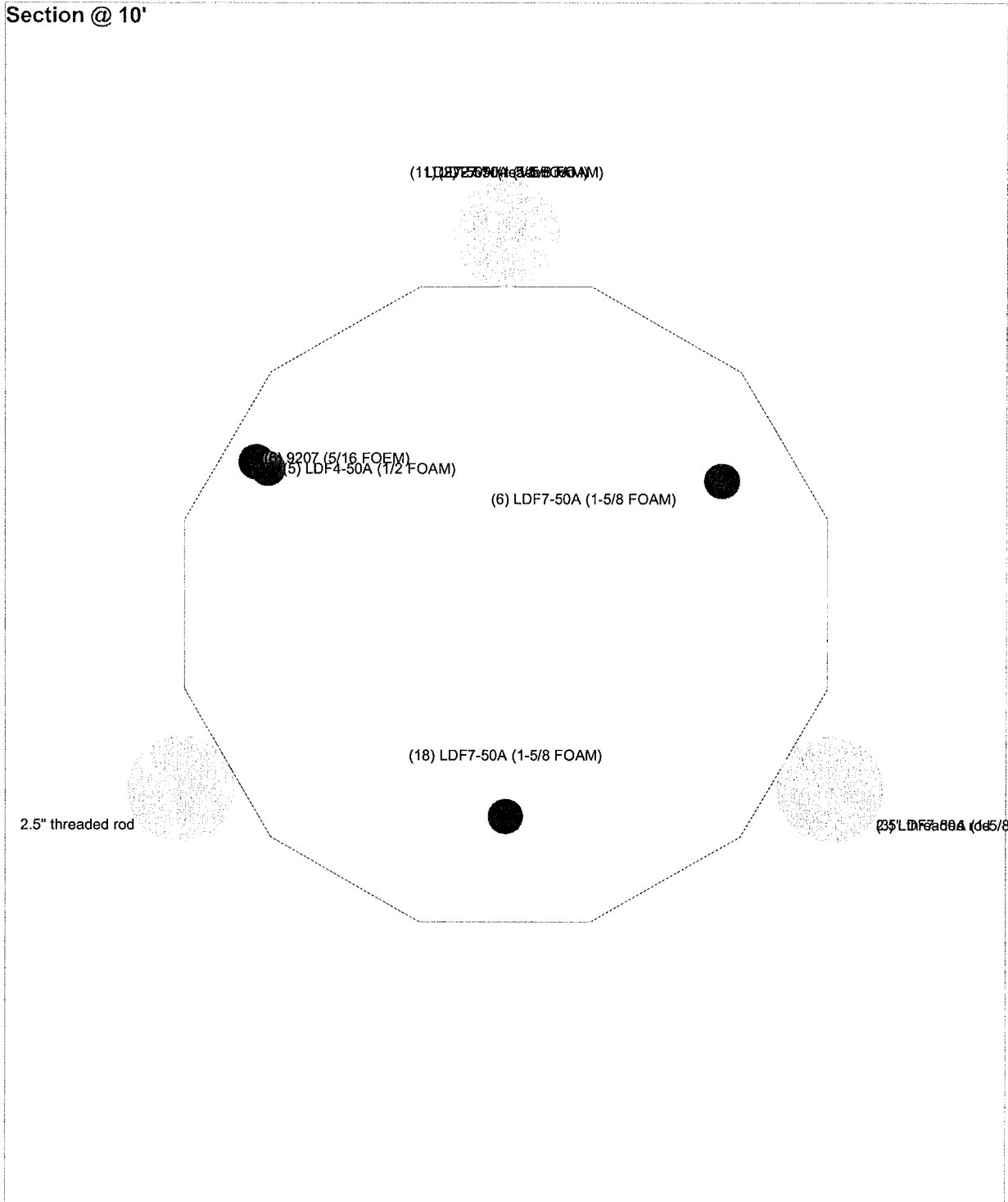
Round


Flat

App In Face

App Out Face

## Section @ 10'



 <b>GPD GROUP</b> Consulting Engineers	<b>GPD Associates</b>	Job: <b>60393 - BRIDGEPORT NORTH</b>		
	520 South Main Street, Suite 2531		Project: <b>2010262.25</b>	
	Akron, OH 44311		Client: <b>AT&amp;T Mobility</b>	Drawn by: <b>CRoesink</b>
	Phone: (330) 572-2100		Code: <b>TIA/EIA-222-F</b>	Date: <b>02/10/10</b>
FAX: (330) 572-2101		Scale: <b>NTS</b>	App'd:	
		Path: <b>N:\2010\2010262\FRISA\60393.dwg</b>	Dwg No. <b>E-7</b>	



## APPENDIX D

### Base Plate and Anchor Rod Analysis

# Anchor Rod and Base Plate Stresses

60393 - BRIDGEPORT NORTH

GPD Job Number: 2010262.25

Anchor Rods		
Pole Diameter =	37.36	in
Number of Rods =	8	
Rod Grade (Fy) =	75	ksi
Rod Circle =	43	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in <sup>2</sup>
Force on Rod =	164.87	klps
Allow. Rod Force =	195.00	klps
Anchor Rod Capacity =	84.6%	<b>OK</b>

Base Plate		
Plate Strength (Fy) =	50	ksi
Plate Thickness =	2.75	in
Plate Width =	41	in
Est. Dist. b/w Rods =	18	in
$w_{calc}$ =	24.78	in
e =	1.695	in
$w_{max}$ =	20.6228	in
w =	20.6228	in
l =	4.31	in
b =	6	in
l/b =	0.718	
$M_x$ =	14.296	kip-in
$M_y$ =	24.880	kip-in
$M_{max}$ =	24.880	kip-in
fc =	6.37562	ksi
fb =	19.74	ksi
Fb =	50	ksi
Base Plate Capacity =	39.5%	<b>OK</b>



Project	60393 - BRIDGEPORT NORTH
Engineer	CGR
Date	2/10/2010

**FORCE ON BOLTS**

$$M = n \cdot P \cdot d_1 = P[(n_2 d_2^2 / d_1) + (n_3 d_3^2 / d_1) + \dots]$$

**SECTION X-X**

M (k-ft)                      2572.11                      30865.32 M (k-in)

					$n_1 d_1$	$n_x d_x^2 / d_1$
d <sub>1</sub>	21.2897	in	n <sub>1</sub>	4	85.1588	
d <sub>2</sub>	20.0514	in	n <sub>2</sub>	4		75.5405
d <sub>3</sub>	7.88	in	n <sub>3</sub>	4		11.66656
d <sub>4</sub>	3	in	n <sub>7</sub>	4		1.690959
				Total	85.1588	88.89802

P max=                      177.329 k

**SECTION Y-Y**

M (k-ft)                      2572.11                      30865.32 M (k-in)

					$n_1 d_1$	$n_x d_x^2 / d_1$
d <sub>1</sub>	21.5	in	n <sub>1</sub>	2	43	
d <sub>2</sub>	21.2897	in	n <sub>2</sub>	2		42.16291
d <sub>3</sub>	20.9547	in	n <sub>3</sub>	2		40.84646
d <sub>4</sub>	18.7557	in	n <sub>4</sub>	2		32.72338
d <sub>5</sub>	10.6008	in	n <sub>5</sub>	2		10.45367
d <sub>6</sub>	5.9413	in	n <sub>6</sub>	2		3.283632
d <sub>7</sub>	5.0051	in	n <sub>7</sub>	2		2.330328
				Total	43	131.8004

P max=                      176.5747 k

**SECTION Z-Z**

M (k-ft)                      2572.11                      30865.32 M (k-in)

					$n_1 d_1$	$n_x d_x^2 / d_1$
d <sub>1</sub>	19.7505	in	n <sub>1</sub>	4	79.002	
d <sub>2</sub>	17.1754	in	n <sub>2</sub>	4		59.74418
d <sub>3</sub>	12.9327	in	n <sub>3</sub>	4		33.87352
d <sub>4</sub>	8.6064	in	n <sub>7</sub>	4		15.00116
				Total	79.002	108.6189

P max=                      164.509 k

Anchor Bolt Dia.            2.25 in                      Max force (Bolt)    164.8736  
 # of Anchor Bolts            8  
 Area                            3.976078 sq in

Threaded Rod Dia.           2.414 in                    Max force (Rod)    189.7844  
 # of Rods                        8  
 Area                            4.576826 sq in

## APPENDIX E

### Flange Bolt and Flange Plate Analysis

**Existing Flange Connection @**  
**60393 - BRIDGEPORT NORTH**  
 GPD Job Number: 2010262.25



*O.T. Moment =	181.1 K*ft
Axial =	4.57 kips
Shear =	11.04 kips

\*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of flange bolt forces used in the analysis.

<b>Flange Bolts</b>	
# Bolts =	12
Bolt Type =	A325
F <sub>t</sub> =	44 ksi
ASIF =	1.333
Bolt Circle =	26 in
Bolt Diameter =	1 in

<b>Tension &amp; Shear (ASD, Section J3.5)</b>	
F <sub>v</sub> =	21 ksi
Nominal Area =	0.79 in <sup>2</sup>
f <sub>v</sub> =	1.17 ksi
Applied Shear =	0.92 kips
Allowable Shear =	21.99 kips
F <sub>t</sub> /2 - 4.39(f <sub>v</sub> /2) <sup>1/2</sup> =	43.93 ksi
Allowable Bolt Stress =	58.57633 ksi
B =	46.00 kips

**Prying Action Check**  
 N/A for stiffened flange

Max Comp. on Bolt =	28.22 kips
Max Tension on Bolt =	27.46 kips
Shear Capacity =	4.2%
Tensile Capacity =	59.7%
Bolt Capacity =	59.7% <b>OK</b>

<b>Pole Information</b>	
Shaft Diam. (Upper) =	21 in
Thickness (Upper) =	0.21875 in
# of Sides (Upper) =	12
F <sub>y</sub> (Upper) =	60 ksi
Shaft Diam. (Lower) =	21 in
Thickness (Lower) =	0.23 in
# of Sides (Lower) =	12
F <sub>y</sub> (Lower) =	60 ksi

<b>Upper Flange Plate</b>	
Location =	External
Plate Strength (F <sub>p</sub> ) =	36 ksi
Plate Thickness =	1 in
Outer Diameter =	28.5 in
b =	6.31 in
Le =	3.00 in
f <sub>b</sub> =	26.92 ksi
F <sub>b</sub> =	36 ksi
Upper Plate Capacity =	74.8% <b>OK</b>

<b>Lower Flange Plate</b>	
Location =	External
Plate Strength (F <sub>p</sub> ) =	36 ksi
Plate Thickness =	1 in
Outer Diameter =	28.5 in
b =	6.31 in
Le =	3.00 in
f <sub>b</sub> =	26.92 ksi
F <sub>b</sub> =	36 ksi
Lower Plate Capacity =	74.8% <b>OK</b>

<b>Upper Stiffeners</b>	
Configuration =	Every Bolt
Thickness =	0.5 in
Width =	3 in
Notch =	0.75 in
Height =	5 in
Stiffener Strength (F <sub>y</sub> ) =	70 ksi
Weld Info. Known? =	No
Stiffener Vertical Force =	18.05 kips
Vert. Weld Capacity =	Not Verified kips
Horz. Weld Capacity =	Not Verified kips
Stiffener Capacity =	60.5% kips
Controlling Capacity =	60.5% <b>OK</b>

<b>Lower Stiffeners</b>	
Configuration =	Every Bolt
Thickness =	0.5 in
Width =	3 in
Notch =	0.75 in
Height =	5 in
Stiffener Strength (F <sub>y</sub> ) =	70 ksi
Weld Info. Known? =	No
Stiffener Vertical Force =	16.93 kips
Vert. Weld Capacity =	Not Verified kips
Horz. Weld Capacity =	Not Verified kips
Stiffener Capacity =	56.8% kips
Controlling Capacity =	56.8% <b>OK</b>

# Strain Compatability (Flange @ 109')

60393 - BRIDGEPORT NORTH

GPD Job Number: 2010262.25

	Number	Area (in <sup>2</sup> )	Distance (in)	Unbraced Length(in)		
	1	2	16.25	4	stiffener	M= 271.02 k-ft
	2	0.785	13	2	bolt	
	3	0.785	11.2583	2	bolt	
	4	0.785	6.5	2	bolt	
	5	2	8.125	4	stiffener	

## OUTPUT

M=	73.35886839	*P <sub>1</sub>
P <sub>1</sub> =	44.33329019	Maximum flange bolt force
P <sub>2</sub> =	27.84130624	
P <sub>3</sub> =	24.11121369	
P <sub>4</sub> =	13.92065312	
P <sub>5</sub> =	22.16664509	

## APPENDIX F

### Modification Calculations

**MODIFICATION CALCULATIONS (0° - 95° OF EXISTING 150' MONOPOLE)**

Project 60393 - BRIDGEPORT NORTH



Steel Strength 60 ksi

60 ksi

# of Reinforcing Plates 4/8

Elevation	Existing Tower w/o mods				Tower Modifications				Top OD	Bottom OD				
	OD	thick	ID	Area	Inertia	C	S	Pole Slend.			Stress	Number	Dia.	Inertia
95	23.95	0.25	23.4453	5.88	1366.79	12.40	110.20	182.192	53.24	4	2.5	3327.6323	23.2	37.36
85	24.69	0.25	24.1905	6.08	1499.88	12.79	117.28	188.379	52.69	4	2.5	3560.1272		
80	25.44	0.25	24.9358	6.28	1641.33	13.18	124.58	194.566	52.13	4	2.5	3806.7524		
75	26.18	0.25	25.6811	6.48	1791.41	13.56	132.10	200.754	51.58	4	2.5	4061.1841		0.1490526
69.25	27.04	0.25	26.5381	6.71	2451.51	14.01	175.04	207.869	50.94	4	2.5	4371.0535		95
64.25	27.78	0.3125	27.1584	6.77	2662.40	14.39	185.00	167.924	54.52	4	2.5	5168.782		
59.25	28.53	0.3125	27.9036	6.97	2839	14.78	195.23	172.874	54.08	4	2.5	5507.7895		
54.25	29.27	0.3125	28.6489	7.17	3119.77	15.16	205.74	177.824	53.63	4	2.5	5856.8026		
50	29.91	0.3125	29.2824	7.34	3329.03	15.49	214.89	182.031	53.26	4	2.5	6170.5291		
45	30.65	0.3125	30.0276	7.54	3586.94	15.88	225.91	186.981	52.81	8	2.5	9503.2842		
40	31.40	0.3125	30.7729	7.74	3857.85	16.26	237.20	191.931	52.37	8	2.5	10025.29		12
35	32.14	0.3125	31.5182	7.94	4142.06	16.65	248.77	196.880	51.92	8	2.5	10558.606		240
30	32.89	0.3125	32.2634	8.14	4426.27	17.04	260.30	201.830	51.48	8	2.5	11117.968		
25	33.63	0.40625	32.8212	8.14	4347	17.42	271.57	155.230	55.66	8	2.5	13064.156		
20	34.38	0.40625	33.5664	8.34	4444	17.81	282.62	159.037	55.32	8	2.5	13758.345		
15	35.12	0.40625	34.3117	8.54	4542	18.19	293.84	162.845	54.98	8	2.5	14467.111		
10	35.87	0.40625	35.057	8.74	4639	18.58	305.29	166.652	54.64	8	2.5	15210.029		
5	36.61	0.40625	35.8022	8.94	4737	18.97	316.84	170.460	54.30	8	2.5	15967.698		
0	37.36	0.40625	36.5475	9.14	4834	19.35	328.59	174.268	53.95	8	2.5	16761.015		

from ERI  
recalculate based on geometry

Elevation	Tower w/ Modifications				Tower Modifications				Interaction						
	M (k-ft)	M (k-in)	S	Fb (ksi)	Fb (ksi)	fb/Fb	P (k)	fa (ksi)		Fa (ksi)	fa/Fa	V (k)	N	Fv	Fv/Fv
95	540.29	6483.48	268.29	24.17	48.00	0.503	-7.94	-0.115	48.0	0.002	16.57	0.570	32.000	0.018	50.6%
85	624.90	7498.80	278.37	26.94	48.00	0.561	-8.81	-0.126	48.0	0.003	17.31	0.583	32.000	0.018	56.4%
80	713.14	8557.68	288.93	29.62	48.00	0.617	-9.71	-0.138	48.0	0.003	18.03	0.596	32.000	0.019	62.0%
75	804.93	9659.16	299.47	32.25	48.00	0.672	-10.64	-0.150	48.0	0.003	18.73	0.607	32.000	0.019	67.5%
69.25	914.73	10976.76	312.10	35.17	48.00	0.733	-11.75	-0.164	48.0	0.003	19.51	0.618	32.000	0.019	73.6%
64.25	1013.86	12166.32	359.16	33.87	48.00	0.706	-12.81	-0.165	48.0	0.003	20.19	0.536	32.000	0.017	70.9%
59.25	1116.38	13396.56	372.71	35.94	48.00	0.749	-13.89	-0.177	48.0	0.004	20.86	0.543	32.000	0.017	75.3%
54.25	1222.17	14666.04	386.24	37.97	48.00	0.791	-15.00	-0.190	48.0	0.004	21.50	0.549	32.000	0.017	79.5%
50	1314.65	15775.80	398.31	39.61	48.00	0.825	-16.08	-0.202	48.0	0.004	22.08	0.555	32.000	0.017	82.9%
45	1426.59	17119.08	598.53	28.60	48.00	0.896	-17.55	-0.134	48.0	0.003	22.78	0.451	32.000	0.014	59.9%
40	1541.94	18503.28	616.41	30.02	48.00	0.925	-19.05	-0.145	48.0	0.003	23.44	0.457	32.000	0.014	62.8%
35	1660.47	19925.64	634.15	31.42	48.00	0.955	-20.58	-0.156	48.0	0.003	24.05	0.462	32.000	0.014	65.8%
30	1781.96	21363.52	652.61	32.77	48.00	0.983	-22.13	-0.167	48.0	0.003	24.63	0.467	32.000	0.015	68.6%
25	1906.41	22876.92	749.86	30.51	48.00	0.936	-23.83	-0.166	48.0	0.003	25.24	0.398	32.000	0.012	63.9%
20	2033.88	24406.56	772.58	31.59	48.00	0.958	-25.55	-0.177	48.0	0.004	25.84	0.401	32.000	0.013	66.2%
15	2164.40	25972.80	795.15	32.66	48.00	0.981	-27.30	-0.188	48.0	0.004	26.39	0.403	32.000	0.013	68.4%
10	2297.83	27573.96	818.61	33.68	48.00	0.702	-29.07	-0.199	48.0	0.004	26.96	0.406	32.000	0.013	70.6%
5	2433.86	29206.32	841.89	34.69	48.00	0.723	-30.76	-0.209	48.0	0.004	27.44	0.407	32.000	0.013	72.7%
0	2572.11	30865.32	866.09	35.64	48.00	0.742	-32.40	-0.218	48.0	0.005	27.86	0.408	32.000	0.013	74.7%



Elevation	Fy (ksi)		60 Fb (ksi)		48		Modification Steel		Allowable Buckling (ksi)		48.3047	
	M (k-ft)	M (k-in)	V (in)	I (in <sup>4</sup> )	M <sub>y</sub> /I (ksi)	Capacity of Mod.	Buckling Capacity of Mod.	Maximum Usage of Mod.	Maximum Usage of Mod.	Total Usage		
90	540.29	6483.48	14.6	3327.63	28.45	59.3%	58.9%	59.3%	59.3%	59.3%		
85	624.90	7488.80	14.97	3560.13	31.53	65.7%	65.3%	65.7%	65.7%	65.7%		
80	713.14	8557.68	15.345	3806.75	34.50	71.9%	71.4%	71.9%	71.9%	71.9%		
75	804.93	9659.16	15.715	4061.18	37.38	77.9%	77.4%	77.9%	77.9%	77.9%		
69.25	914.73	10976.76	16.145	4371.05	40.54	84.5%	83.9%	84.5%	84.5%	84.5%		
64.25	1013.86	12166.32	16.515	5168.78	38.87	81.0%	80.5%	81.0%	81.0%	81.0%		
59.25	1116.38	13396.56	16.89	5507.79	41.08	85.6%	85.0%	85.6%	85.6%	85.6%		
54.25	1222.17	14666.04	17.26	5856.80	43.22	90.0%	89.5%	90.0%	90.0%	90.0%		
50	1314.65	15775.80	17.58	6170.53	44.95	93.6%	93.0%	93.6%	93.6%	93.6%		
45	1426.59	17119.08	17.95	9503.28	32.33	67.4%	66.9%	67.4%	67.4%	67.4%		
40	1541.94	18503.28	18.325	10025.29	33.82	70.5%	70.0%	70.5%	70.5%	70.5%		
35	1660.47	19925.64	18.695	10558.61	35.28	73.5%	73.0%	73.5%	73.5%	73.5%		
30	1781.96	21383.52	19.07	11117.97	36.68	76.4%	75.9%	76.4%	76.4%	76.4%		
25	1906.41	22876.92	19.44	13064.16	34.04	70.9%	70.5%	70.9%	70.9%	70.9%		
20	2033.88	24406.56	19.815	13758.34	35.15	73.2%	72.8%	73.2%	73.2%	73.2%		
15	2164.40	25972.80	20.185	14467.11	36.24	75.5%	75.0%	75.5%	75.5%	75.5%		
10	2297.83	27573.96	20.56	15210.03	37.27	77.7%	77.2%	77.7%	77.7%	77.7%		
5	2433.86	29206.32	20.93	15967.70	38.28	79.8%	79.3%	79.8%	79.8%	79.8%		
0	2572.11	30865.32	21.305	16761.01	39.23	81.7%	81.2%	81.7%	81.7%	81.7%		

60393-BRIDGEPORT NORTH

$F_c$  polygon (ksi) 60  $F_c$  mod plate (ksi) 50

Elevation (ft)	Moment M (k-ft)	Shear Force V (k)	Adial Force P (k)	Moment of Inertia (in <sup>4</sup> )	Cross Section Area (in <sup>2</sup> )	Diameter Across Flats (in)	Thickness of polygon (in)	Thickness of mod plate (in)	c-polygon (in)	(r <sup>2</sup> /y <sup>2</sup> ) <sub>o</sub> (in <sup>2</sup> /in <sup>4</sup> )	Polygon flat Compact?	Allowable Stress $F_u$ on polygon (ksi)	Allowable Stress $F_u$ on mod plate (ksi)	Bending Stress $f_b$ on polygon (ksi)	Bending Stress $f_b$ on mod plate (ksi)	Ratio $f_b/F_u$ (polygon)	Ratio $f_b/F_u$ (mod plate)	Actual Stress $f_a$	Ratio $f_a/F_u$ on polygon	Ratio $f_a/F_u$ on mod plate	Combined Stress Ratio on polygon	Combined Stress Ratio on mod plate	Allowable Stress Ratio	% Capacity
92.5 - 95	459.38	16.20	7.52	2062.1888	29.6973	23.1988	0.25000	0.75	12.2484	17.0086	192.5988	36.0000	30.0000	34.6869	36.8873	0.9684	1.1962	0.2552	0.0070	0.0084	0.9764	1.2047	1.3350	90.4%
95 - 98.68	459.40	15.82	7.11	1958.3029	29.5554	22.6481	0.25000	0.75	12.0746	17.7240	188.0951	36.0000	30.0000	33.3448	34.3417	0.9542	1.1447	0.2430	0.0068	0.0081	0.9390	1.1528	1.3350	86.5%
98.68 - 102.37	402.82	14.47	5.60	1818.4869	28.8136	22.0994	0.25000	0.75	11.7897	11.4395	183.4715	36.0000	30.0000	30.3912	31.3482	0.8442	1.0449	0.1944	0.0054	0.0065	0.8496	1.0514	1.3350	78.3%
102.37 - 106.06	355.46	11.85	5.35	1705.6169	28.1717	21.5497	0.25000	0.75	11.5249	11.1548	178.9078	36.0000	30.0000	27.8970	28.8271	0.7749	0.9907	0.1886	0.0052	0.0063	0.7802	0.8920	1.3350	64.5%
106.06 - 109.75	312.49	11.46	4.95	1595.5584	27.9298	21.0000	0.25000	0.75	11.2500	10.8704	174.3443	36.0000	30.0000	25.3516	26.4532	0.7082	0.8868	0.172	0.0049	0.0059	0.7182	1.3350	65.7%	
109.75 - 114.75	271.02	11.04	4.57	1386.5931	25.2426	20.2547	0.23875	0.75	10.8743	10.6846	152.1790	36.0000	30.0000	23.1354	25.0759	0.6882	0.8682	0.1609	0.0050	0.0060	0.6752	1.3350	65.7%	

End Connection Capacity

Elevation (ft)	Allowable Strength-Tensile Rupture (k)	Allowable Strength-Block Shear (k)	Allowable Strength-Bearing on mod plate (k)	Allowable Strength-Bolt Group (k)	Max Tensile Force on connection (k)	Max Compressive Force on connection (k)	% Capacity-Tensile Rupture	% Capacity-Block Shear	% Capacity-Bearing on polygon	% Capacity-Bearing on mod plate	% Capacity-Bolts
95	134.00	250.00	179.00	459.00	133.63	135.53	89.7%	51.6%	75.7%	29.5%	87.4%
98	134.00	250.00	179.00	459.00	98.42	99.75	73.4%	38.0%	55.7%	21.7%	64.4%
115	134.00	250.00	179.00	459.00	97.11	98.46	72.5%	37.5%	55.0%	21.5%	63.5%

## APPENDIX G

### Foundation Calculations

**PAD & PIER DESIGN - Monopole**  
**60393 - BRIDGEPORT NORTH**  
**GPD Job Number: 2010261.78**

**TOWER REACTIONS**

total overturning moment = 2577.1 Kip-ft  
 total shear = 97.8 Kip  
 axial = 3.7 Kip  
 ground water table = 2.8 ft

**PAD DIMENSIONS**

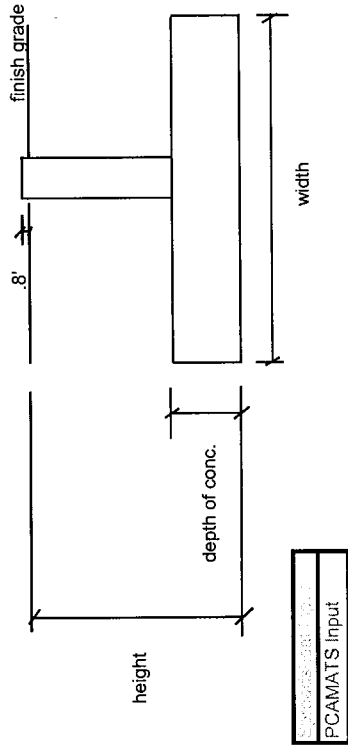
width = 3.33 ft  
 height = 3.7 ft  
 depth of conc = 3.7 ft  
 $\gamma_{soil} = 0.403$  kcf  
 $\gamma_{conc} = 1.500$  kcf

$M_r = 4427.86$  k-ft  
 $M_{ot} = 2747.628$  k-ft  
 $P = 339.3$  k  
 $W_{wedge} = 9.51$  k  
 Allowable Bearing = 10 ksf

**LOAD PERPENDICULAR TO PAD**

$Q_{max} = P/A+M/S = 2.908971$   
 $Q_{min} = P/A-M/S = -1.212471$   
 $Q_{max} = P/A+M/S = 3.76760475$   
 $Q_{min} = P/A-M/S = -2.07110475$

$M_x = 1942.867$   
 $M_y = 1942.867$   
 $e_x = 5.726$   
 $e_y = 5.726$   
 $e_x/W = 0.286$  NG ( $e/W > 1/6$ ) use  $Q_{max}$   
 $e_y/W = 0.286$  NG ( $e/W > 1/6$ ) use  $Q_{max}$



F.S. OVERTURNING / F.S. ALLOWABLE  
 93.1%

F.S. OVERTURNING = 1.61152228

1.5

$Q_{max}/Q_{all}$   
 59.5% OK

**IF  $M/P > width/6$**

$Q_{max} = 5.946$  ksf  
 $Q_{min} = 0.000$  ksf

width/6

M/P

3.33

8.10

NG ( $width/6 < M/P$ ), use  $Q_{max}$

Verify max pressure in PCAMATS for this load case

$B_1 = 12.82$  ft  
 $L_1 = 12.82$  ft

IF  $e/W > 1/6$   
 $Q_{all} = 821.98$  kips  
 $Q_{max} = 309.69$  kips  
 $Q_{max}/Q_{all} = 37.7\%$  OK

Foundation Capacity: 93.1% OK

REDACTED

Lease No. \_\_\_\_\_

Structure No. 10034977

**SITE LEASE**

to the Master Lease Agreement as amended between New Cingular Wireless PCS, LLC, a Delaware limited liability company, successor in interest to New Cingular Wireless Headquarters LLC and together with its wireless communications affiliates which elect to participate (collectively "Landlord") and Clearwire US LLC, a Nevada limited liability company f/k/a Clearwire LLC, and together with its wireless communications affiliates which elect to participate (collectively "Tenant").

1. Site No./Name: Landlord: FA 10034977 USID 60393 BRIDGEPORT-NORTH  
Tenant: CT-BDR0047
2. Name of Tenant Affiliates: Clear Wireless LLC
3. Site Address (street address and legal description – attach if necessary): 2 KAEICHELE PLACE, BRIDGEPORT, CT 06606. As to legal description, see Exhibit 1.
4. Site Latitude and Longitude: 41° 13' 23.951" N 73° 13' 0.407" W
5. Commencement Date: The earlier of: (i) the date Tenant commences construction of its Facilities as specified on Landlord's written NTP or (ii) one hundred and twenty (120) days after the execution of this Site Lease by both Landlord and Tenant.
6. Monthly Rent: [REDACTED]
7. Term: Five (5) years, with Four (4) renewal terms of Five (5) years each.
8. Site Landlord-Owned: X or Landlord-Leased:     .  
If Leased, Term of Underlying Lease: \_\_\_\_\_
9. Special Access Requirements: N/A
10. Existing Mortgages, etc.: N/A
11. Existing Environmental Issues: N/A
12. Landlord Contact for Access for Emergency: NOC (800) 638-2822
13. Tenant Contact for Emergency: NOC (888) 859-1400
14. Tenant Address for Notice Purposes:  
Clear Wireless LLC  
Attn: Site Leasing  
4400 Carillon Point  
Kirkland, WA 98033

With a Copy to:

Clear Wireless LLC  
Attn: Legal Department  
4400 Carillon Point  
Kirkland, WA 98033

15. Landlord Address for Notice Purposes:

AT&T Mobility  
Attn: Network Real Estate Administration  
Re: Site#: 60393 Site Name: BRIDGEPORT-NORTH (CT)  
FA#: 10034977  
12555 Cingular Way, Suite 1300  
Alpharetta, GA 30004

With a Copy to:

AT&T Mobility  
Attn: Legal Department  
Re: Site#: 60393 Site Name: BRIDGEPORT-NORTH (CT)  
FA#: 10034977  
340 Mt. Kemble Avenue  
Morristown, NJ 07960

16. Landlord Address for Rent Payments:

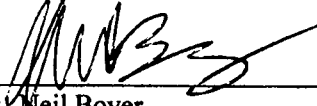
AT&T Mobility  
Attn: Co-Lo A/R  
P.O. Box 97079  
Redmond, WA 98073-9779  
FA#: 10034977

[SIGNATURES ON NEXT PAGE]

[REMAINDER OF THIS PAGE LEFT BLANK]


Landlord:

New Cingular Wireless PCS, LLC,  
a Delaware limited liability company  
By: AT&T Mobility Corporation  
Its: Manager

By:   
Name: Neil Boyer  
Title: Director - Network  
Date: 2-24-10

Tenant:

Clear Wireless LLC,  
a Nevada limited liability company

By:   
Name: Erik R. Hase  
Title: NY Market Director  
Date: 2/12/10  
Clearwire

Attachments:

- Exhibit 1: Legal Description
- Exhibit 2: Description of Antennas/Dishes  
Location(s)
- Exhibit 3: Plans and Specifications
- Exhibit 4: Existing Underlying (Prime) Lease, Existing Liens,  
Rights of Way, Easements and Mortgages
- Exhibit 5: Current Wireless  
Communications Uses of Site

## EXHIBIT 1

### Legal Description

A certain piece or parcel of land known as Lots 9, 10 and 11 of "Oakhill" situated on the westerly side of Kaechels Place in the City of Bridgeport, County of Fairfield, and State of Connecticut, being more particularly bounded and described as follows:

Commencing at a point in the westerly line of Kaechels Place marked by an iron pin; said part being located 85.41 feet southeasterly of the southwesterly intersection of Hillview Street and Kaechels Place.

Thence proceeding S 23° 48' 13" E along the westerly line of Kaechels Place a distance of 63.27 feet to an iron pin and land now or formerly of Mary Lou Moran;

Thence proceeding S 84° 41' 27" W along land now or formerly of said Mary Lou Moran a distance of 124.93 ft. to an iron pin and other land now or formerly of Louise DeSimone Mulloy et als;

Thence proceeding N 5° 18' 33" W a distance of 53.20 feet to the southerly line of land now or formerly Andrew M. Zudle, Edythe B. Zudle and Emma Lucas;

Thence proceeding N 80° 58' 46" E along land now or formerly of said Andrew M. Zudle, Edyth B. Zudle and Emma Lucas, a distance of 105.08 feet to point and place of commencement.

Said piece or parcel contains 6,537 square feet and is more particularly shown and depicted on a certain map entitled "Property of Louise DeSimons Mulloy et als to be conveyed to Southern New England Telephone Co., 38 Kaechels Place, Bridgeport, Connecticut, Scale 1" = 20', June 24, 1982" prepared by Michael H. Norbal, RLS.

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**EXHIBIT 2**

**Description of Antennas / Dishes Location(s)**  
**(including description of the antenna location, and location of ground equipment on the ground portion of the Premises)**

Number of Antennas: Three (3)

Antenna Manufacturer and Type-Number: Argus LLPX310R

Weight and Dimensions of Antennas (LxWxD): 28.66 lbs.; 3.51" x 11.81" x 4.52"

Location of Antenna(s) on Tower (Approved RAD Center): 110 ft AGL

Number of MW Dishes: Five (5)

MW Dish Manufacturer and Type-Number: Dragonwave A-ANT-23G-2-C

MW Diameter and Approved RAD Center: 26.1"; 110 ft AGL

Number of Transmission Lines: Eleven (11)

Diameter and Length of Transmission Line: (6) 5/16"; (5) 1/2"; +/- 130'

Dimensions of TENANT's Ground Space: 10' x 10'

Direction of Radiation (Azimuth): Antennas: 50°, 150°, 260°;  
MW: 2°, 108°, 188°, 264°, 310°

Frequencies/Max. Power Output: Tx/Rx: 23 GHz; 2496-2596 MHz  
100, 450 W

Other equipment to be Placed on Tower: Three (3) Samsung FDD R6 RRH BTS  
Five (5) Dragonwave Horizon DUO ODU

Weight & Dimensions of add'l Equipment: BTS: 33 lbs; 16" x 11.6" x 5"  
ODU: 12 lbs; 15.7" x 7.7" x 3.2"

**EXHIBIT 3**

**Site Plans and Specifications**

(See attached pages)

**clearwire**  
4400 CARROLL POINT  
ROCKY HILL, CT 06865

TRANSCEND WIRELESS, LLC  
10 INDUSTRIAL AVENUE  
MAYWAH, NJ 07450

AGE FIRM

**JRS CORPORATION AES**

500 ENTERPRISE DRIVE, SUITE 3B  
ROCKY HILL, CONNECTICUT  
1-(860)-528-8882

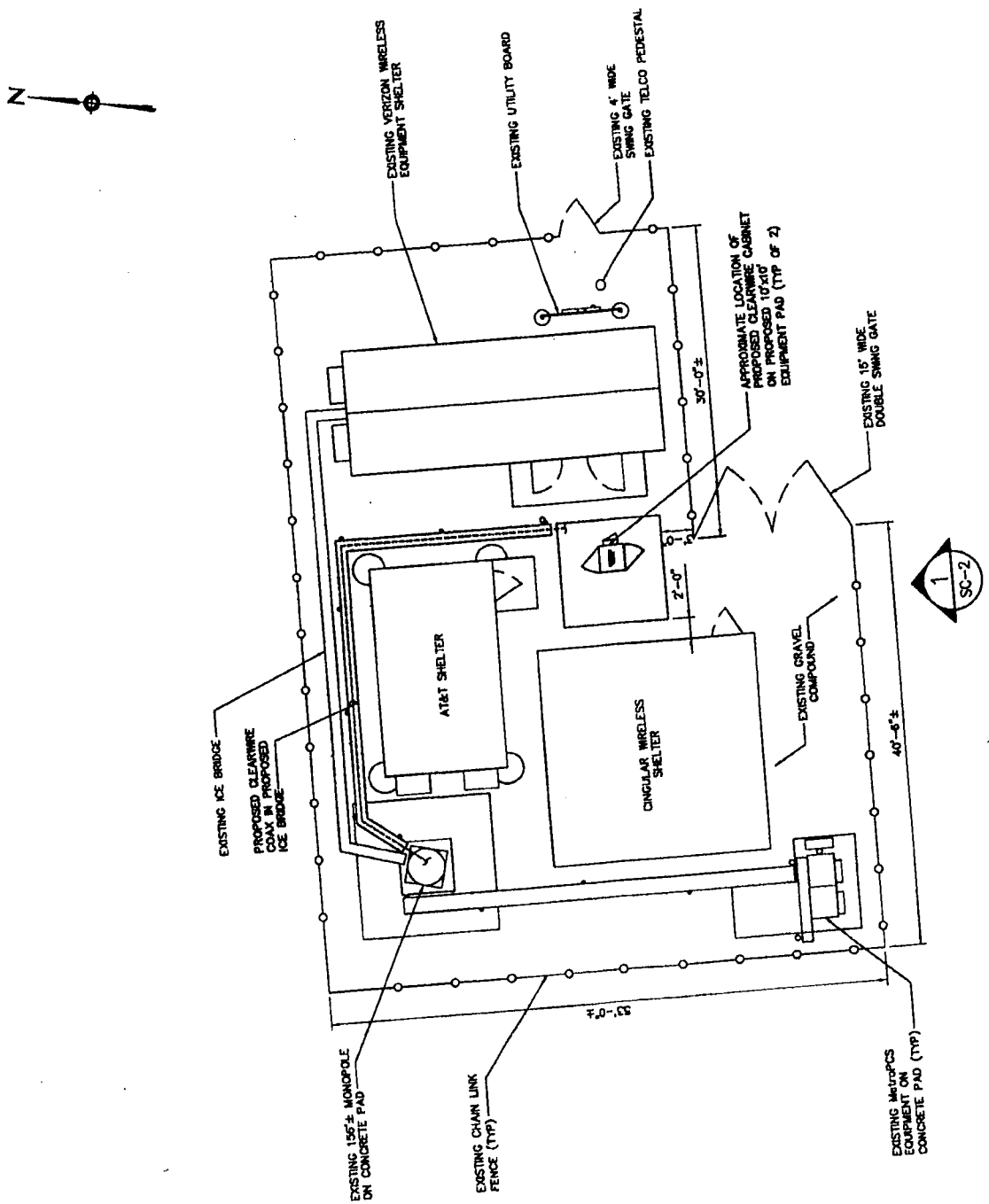
NO.	DATE	REVISIONS	BY	CHK/APPD
1	12/18/13	REVIEW	PD	JCF/ICA
2	01/29/14	REVIEW	PD	JCF/ICA
3	01/29/14	REVIEW	KAP	JCF/ICA
4	01/29/14	REVIEW	BT	CHK/APPD

NOT TO SCALE  
DESIGNED BY: JCF  
DRAWN BY: PD  
AGE SEAL

LATITUDE: 41-13-24.06"  
LONGITUDE: 73-13-00.37"

**KAECHELE PLACE  
BRIDGEPORT  
CT-BDR0047**  
  
**38 KAECHELE PLACE  
BRIDGEPORT, CT 06606**

PROJECT NO.	DRAWING NAME	DATE	SHEET NO./REV
1WS-043	SC-1	12/14/08	1 OF 2
36924371			C



**1**  
SC-1  
**COMPOUND PLAN**  
SCALE: 1" = 15'-0"

**clearw're**

4400 CARLETON POINT  
KINGSLAND, WA 98023

TRANSCEND WIRELESS, LLC  
10 INDUSTRIAL AVENUE  
MAHWAH, NJ 07430

AAE FRM

**MS CORPORATION A/E/S**

500 ENTERPRISE DRIVE, SUITE 3B  
ROCKY HILL, CONNECTICUT  
1-(866)-528-8882

NO.	DATE	REVISIONS	BY	CHK/APP'D
A	02/18/10	REVIEW	PD	JCF/ICA
A	01/28/10	REVIEW	PD	JCF/ICA
A	01/21/10	REVIEW	PD	JCF/ICA
A	01/14/10	REVIEW	MAP	JCF/ICA
A	12/14/09	REVIEW	BY	CHK/APP'D

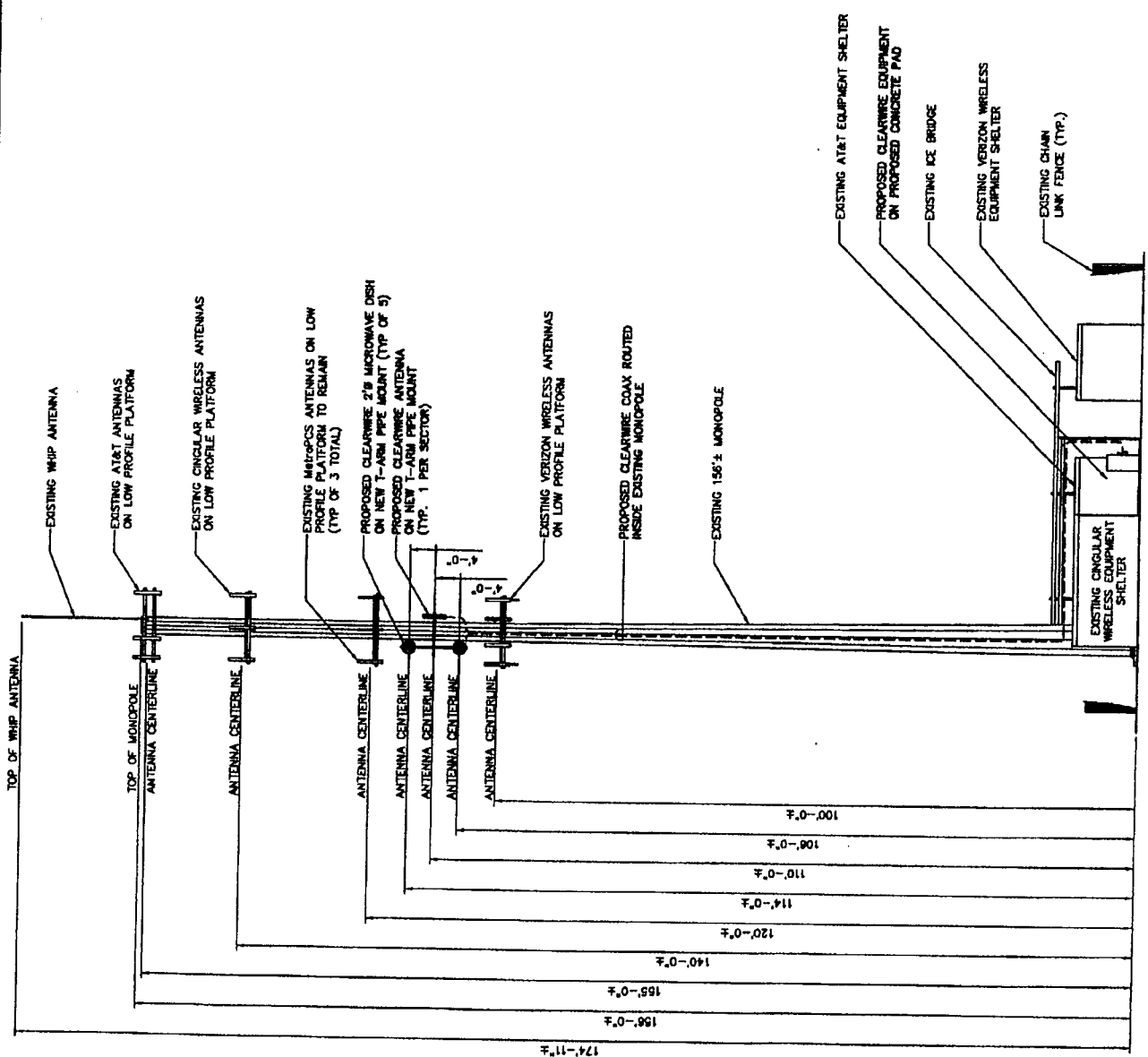
AAE SEAL

LATITUDE: 41°-13'-24.06"  
LONGITUDE: 73°-13'-00.37"

**KAECHELE PLACE  
BRIDGEPORT  
CT-BDR0047**

**38 KAECHELE PLACE  
BRIDGEPORT, CT 06606**

PROJECT NO.	DRAWING NAME	DATE	SHEET NO.
TW-042	SC-2	12/14/09	2 OF 2
38824371			C



**1 TOWER ELEVATION**  
SCALE: 1" = 25'-0"

**EXHIBIT 4**

**Existing Underlying Lease, Liens, Rights of Way, Easements and Mortgages**

N/A

# clearwire®

## KAECHELE PLACE

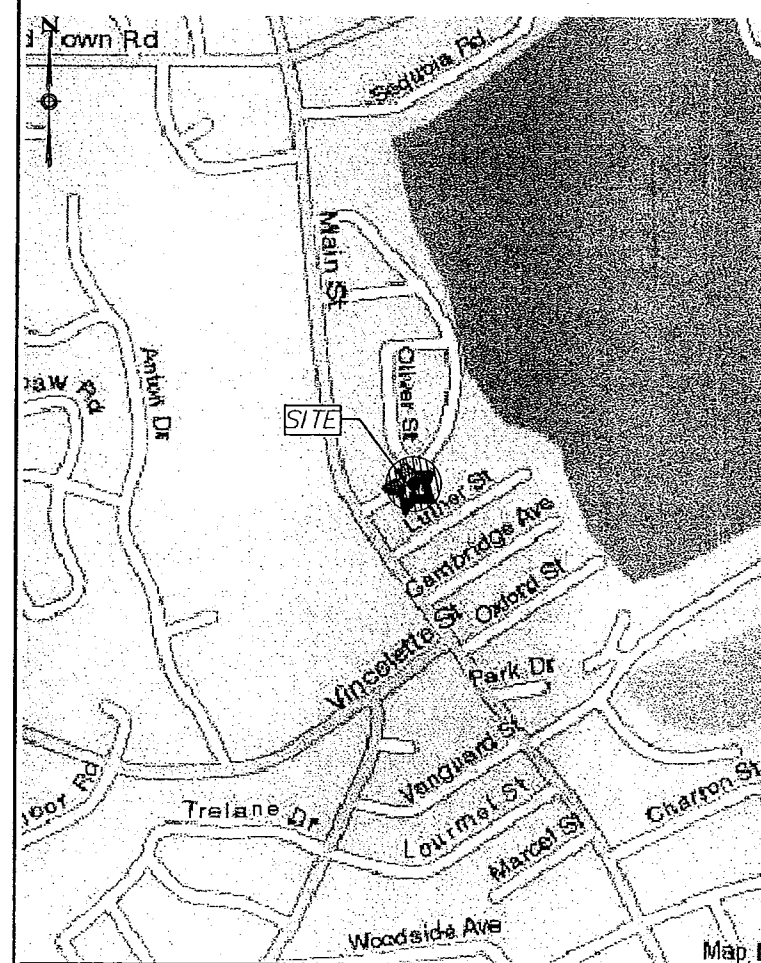
CT-BDR0047

2 KAECHELE PLACE  
BRIDGEPORT, CONNECTICUT 06606

### GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE PROJECT OWNER'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS / CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE PROJECT OWNER'S REPRESENTATIVE.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK. CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY: CALL BEFORE YOU DIG (CT): 1-800-922-4455

### VICINITY MAP NO SCALE



### SHEET INDEX

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET -- GENERAL NOTES AND LEGENDS
C-1	COMPOUND PLAN
C-2	MONOPOLE ELEVATION, ANTENNA SECTOR PLAN AND EQUIPMENT LAYOUT PLAN
C-3	ANTENNA AND SITE DETAILS
C-4	SPECIFICATIONS
C-5	CABLE INSTALLATION DIAGRAM, GROUNDING & BILL OF MATERIALS
E-1	ELECTRICAL NOTES AND DETAILS
E-2	EQUIPMENT UTILITY PLAN AND NOTES
E-3	ELECTRICAL DETAILS
E-4	ELECTRICAL SPECIFICATIONS

### DRIVING DIRECTIONS

FROM 10 INDUSTRIAL AVENUE, MAHWAH, NJ:  
 TAKE NJ-17 NORTH.  
 NJ-17 NORTH BECOMES I-287 NORTH/NJ-17 NORTH (CROSSING INTO NEW YORK).  
 MERGE ONTO I-287 EAST/I-87 SOUTH/NEW YORK STATE THRUWAY SOUTH TOWARD TAPPAN ZEE BRIDGE/NEW YORK CITY (PORTIONS TOLL).  
 KEEP LEFT TO TAKE I-287 EAST/CROSS WESTCHESTER EXPY VIA EXIT B TOWARD WHITE PLAINS/RYE.  
 TAKE EXIT 9S-N TOWARD HUTCHINSON PKWY/WHITESTONE BR/MERRITT PKWY. TURN SLIGHT LEFT ONTO WESTCHESTER AVE/CR-62E.  
 TAKE THE HUTCHINSON PKWY EXIT # 9N TOWARD MERRITT PKWY (CROSSING INTO CONNECTICUT).  
 HUTCHINSON RIVER PKWY N BECOMES CT-15N/MERRITT PKWY.  
 MERGE ONTO MAIN STREET VIA EXIT #4B.  
 TURN LEFT ONTO KAECHELE PLACE.  
 SITE IS ON THE RIGHT.

### PROJECT INDEX

SITE NUMBER: CT-BDR0047  
 SITE NAME: KAECHELE PLACE  
 SITE ADDRESS: 2 KAECHELE PLACE  
 BRIDGEPORT, CT 06606  
 APPLICANT: CLEARWIRE  
 200 FIFTH AVENUE, 3RD FLOOR  
 WALTHAM, MA 02154  
 PROPERTY OWNER: SOUTHERN NEW ENGLAND TELEPHONE  
 SBC COMMUNICATIONS, INC.  
 ONE SBC CENTER 36-M-01  
 ST. LOUIS, MO 63010  
 JURISDICTION: CITY OF BRIDGEPORT  
 LATITUDE: 41° 13' 23"  
 LONGITUDE: -73° 13' 01"

A&E FIRM  
**URS CORPORATION AES**  
 500 ENTERPRISE DRIVE  
 ROCKY HILL, CONNECTICUT  
 1-(860)-529-8882

TRANSCEND WIRELESS, LLC  
 10 INDUSTRIAL AVENUE  
 MAHWAH, NJ 07430

clearwire®  
 200 FIFTH AVENUE, 3RD FLOOR  
 WALTHAM, MA 02154

Sprint Nextel  
 Corp.  
 1 INTERNATIONAL BLVD.  
 SUITE 800  
 MAHWAH, NJ 07495



NO.	DATE	ISSUED FOR
A	01/22/10	REVIEW
B	02/18/10	REVIEW
C	02/25/10	REVIEW
D	03/09/10	CONSTRUCTION

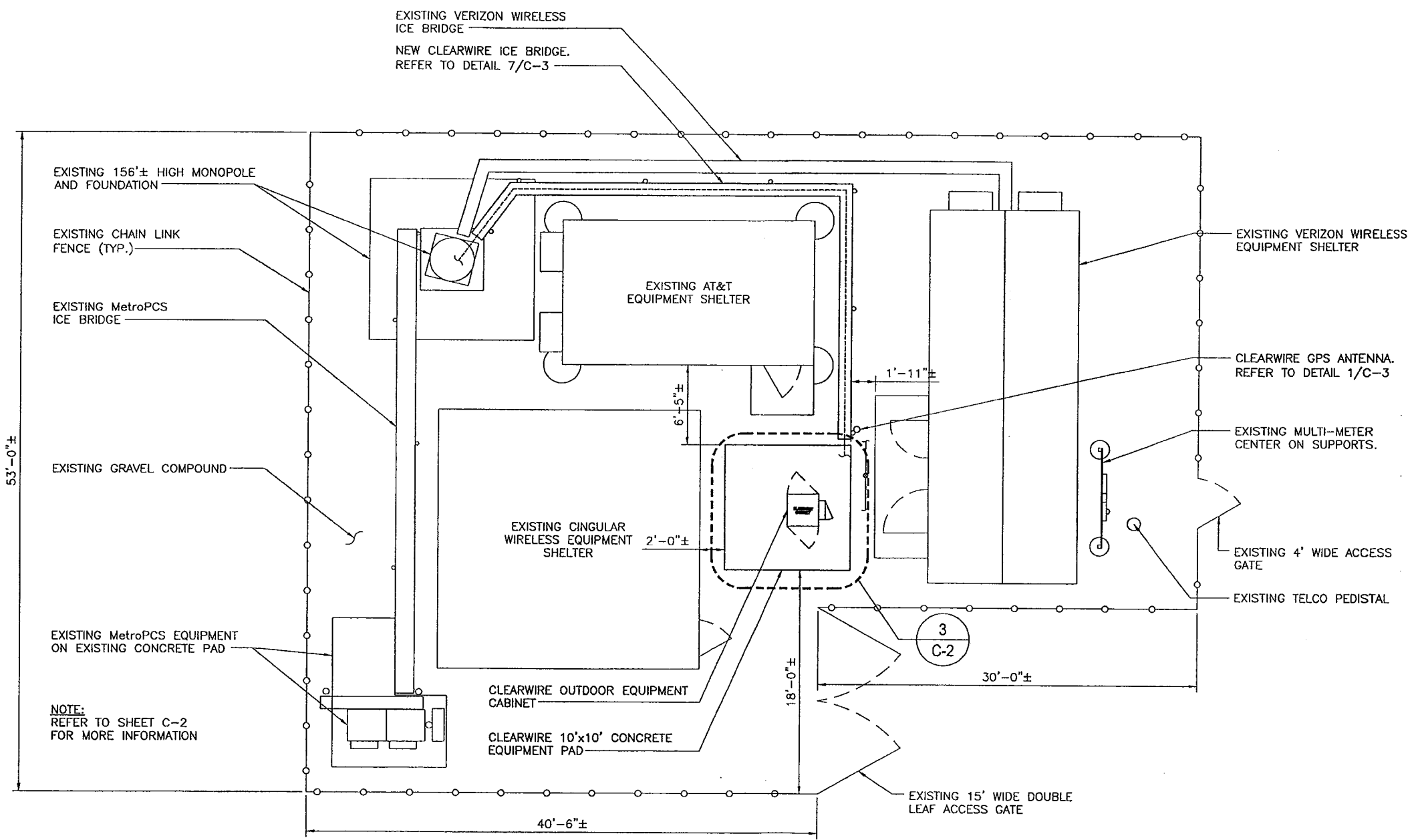
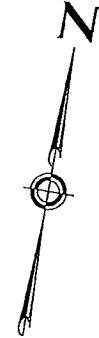
RELEASE BY: JCF DATE: 01/22/10

KAECHELE PLACE  
 CT-BDR0047  
 2 KAECHELE PLACE  
 BRIDGEPORT, CT  
 06606

SHEET TITLE  
**TITLE SHEET-  
 GENERAL NOTES  
 AND LEGENDS**

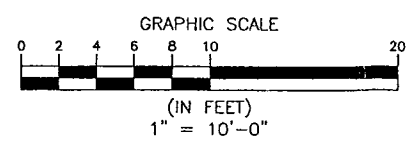
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**T-1**

COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE AND AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR RED INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.



NOTE:  
REFER TO SHEET C-2  
FOR MORE INFORMATION

**1** COMPOUND PLAN  
C-1 SCALE: 1" = 10'-0"



ANTENNA AZIMUTHS:  
ALPHA SECTOR = 30°  
BETA SECTOR = 160°  
GAMMA SECTOR = 260°

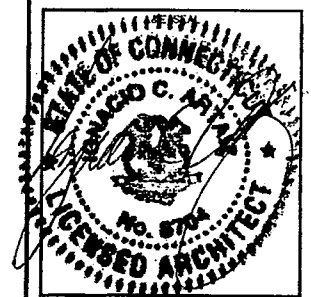
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A&E FIRM  
**URS CORPORATION AES**  
500 ENTERPRISE DRIVE  
ROCKY HILL, CONNECTICUT  
1-(860)-529-8882

TRANSCEND WIRELESS, LLC  
10 INDUSTRIAL AVENUE  
MAHWAH, NJ 07430

**clearw're**  
200 FIFTH AVENUE, 3RD FLOOR  
WALTHAM, MA 02154

**Sprint Nextel Corp.**  
1 INTERNATIONAL BLVD., SUITE 800  
MAHWAH, NJ 07495



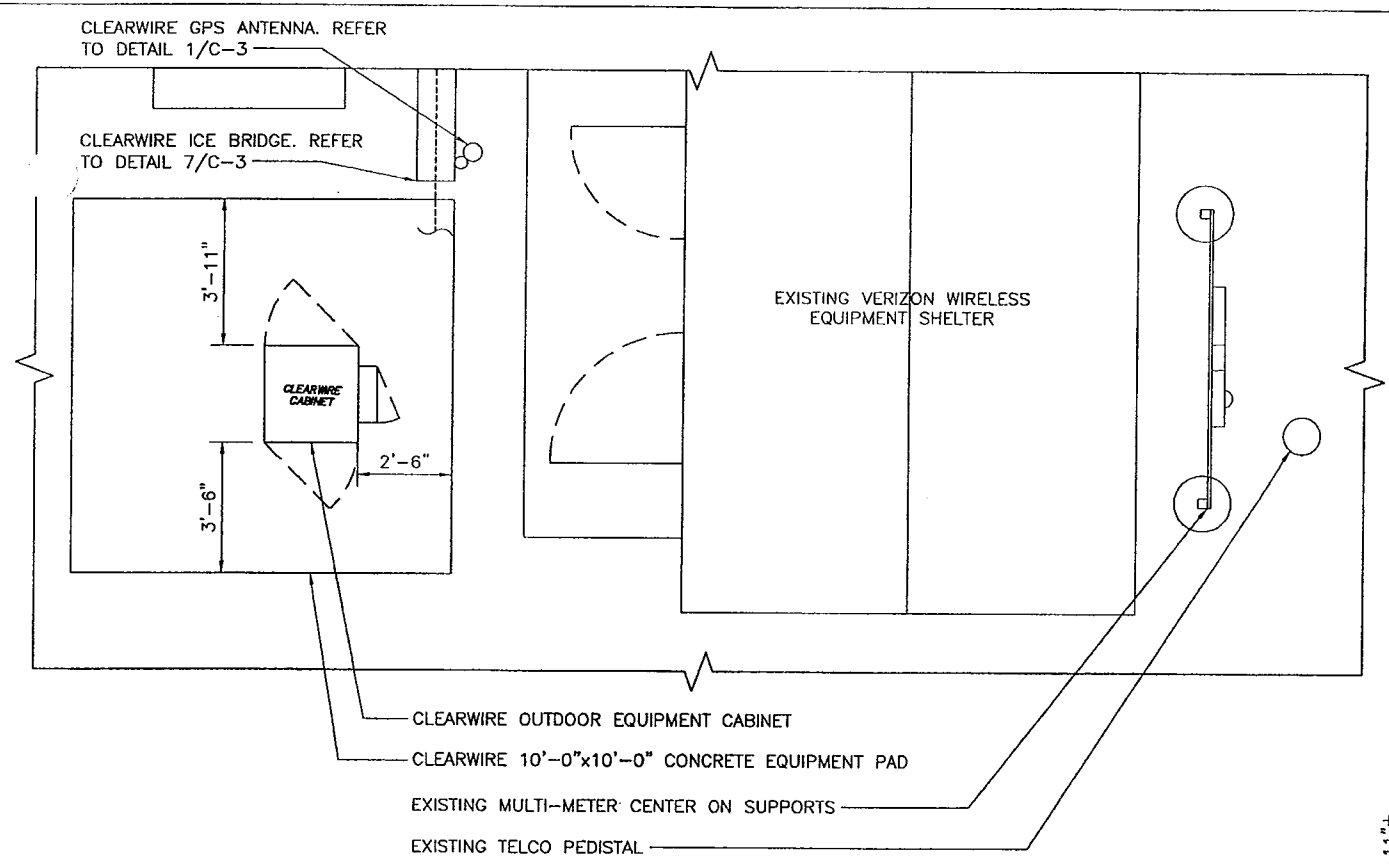
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NO.	DATE	ISSUED FOR	
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B	02/18/10	REVIEW	
C	02/25/10	REVIEW	
D	03/09/10	CONSTRUCTION	
RELEASE BY		DATE	
JCF		01/22/10	

KAECHELE PLACE  
CT-BDR0047  
2 KAECHELE PLACE  
BRIDGEPORT, CT  
06606

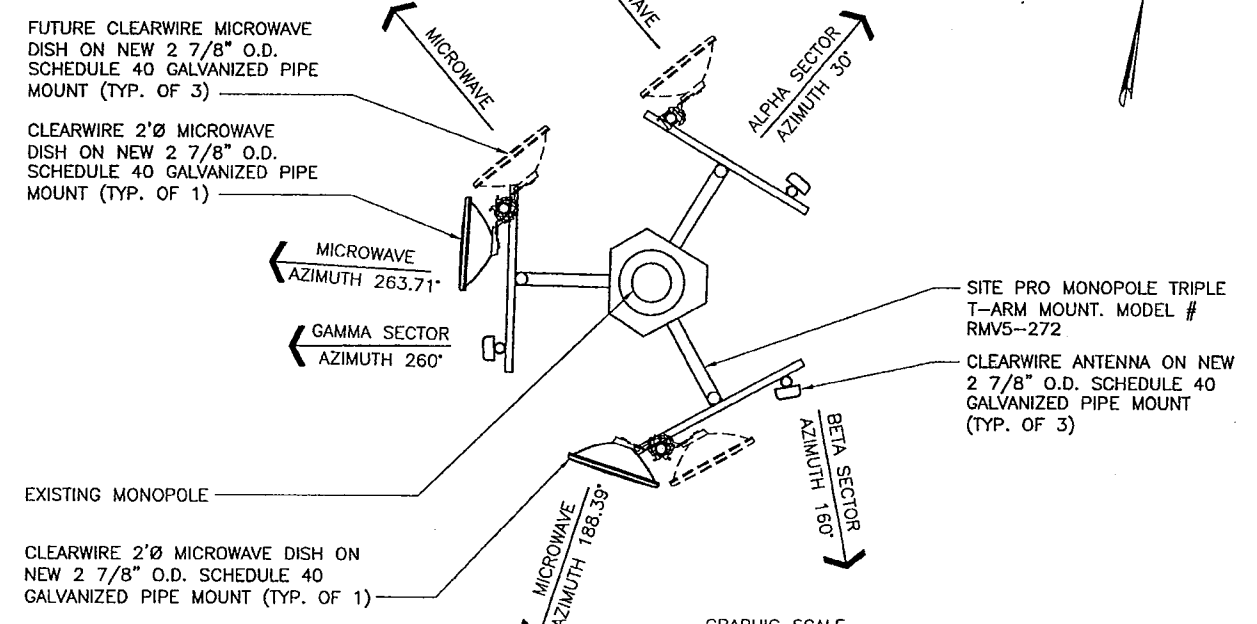
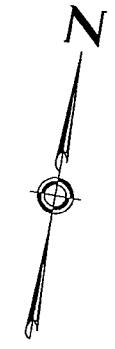
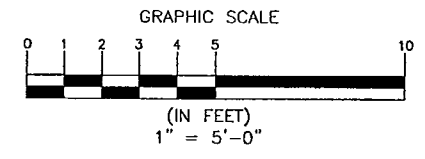
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COMPOUND PLAN

SHEET NUMBER

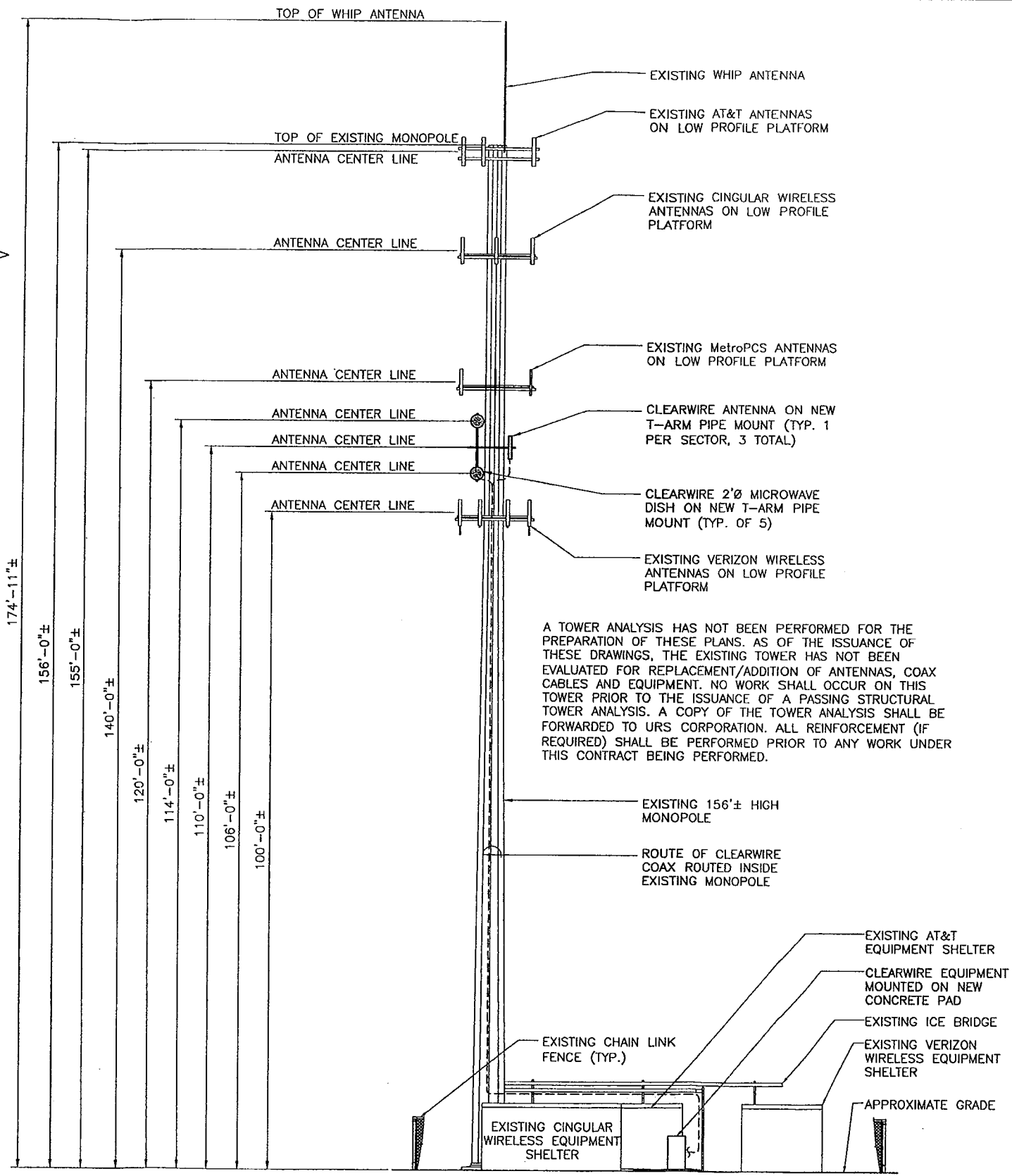
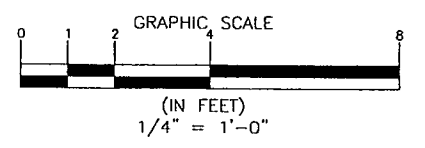
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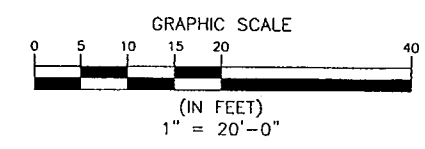
**3 EQUIPMENT LAYOUT PLAN**  
C-2 SCALE: 1" = 5'-0"



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



**1 MONOPOLE ELEVATION**  
C-2 SCALE: 1" = 20'-0"



A TOWER ANALYSIS HAS NOT BEEN PERFORMED FOR THE PREPARATION OF THESE PLANS. AS OF THE ISSUANCE OF THESE DRAWINGS, THE EXISTING TOWER HAS NOT BEEN EVALUATED FOR REPLACEMENT/ADDITION OF ANTENNAS, COAX CABLES AND EQUIPMENT. NO WORK SHALL OCCUR ON THIS TOWER PRIOR TO THE ISSUANCE OF A PASSING STRUCTURAL TOWER ANALYSIS. A COPY OF THE TOWER ANALYSIS SHALL BE FORWARDED TO URS CORPORATION. ALL REINFORCEMENT (IF REQUIRED) SHALL BE PERFORMED PRIOR TO ANY WORK UNDER THIS CONTRACT BEING PERFORMED.

ANTENNA AZIMUTHS:  
ALPHA SECTOR = 30°  
BETA SECTOR = 160°  
GAMMA SECTOR = 260°

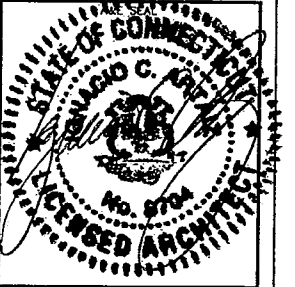
COPIES OF THIS DOCUMENT WITHOUT A FACSIMILE OF THE SIGNATURE AND AN ORIGINAL EMBOSSED SEAL OR ORIGINAL STAMP IN BLUE OR RED INK OF THE PROFESSIONAL ENGINEER OR LAND SURVEYOR SHALL NOT BE CONSIDERED VALID COPIES.

A&E FIRM  
**URS CORPORATION AES**  
500 ENTERPRISE DRIVE  
ROCKY HILL, CONNECTICUT  
1-(860)-529-8882

TRANSCEND WIRELESS, LLC  
10 INDUSTRIAL AVENUE  
MAHWAH, NJ 07430

**clearw're**  
200 FIFTH AVENUE, 3RD FLOOR  
WALTHAM, MA 02154

**Sprint Nextel Corp.**  
1 INTERNATIONAL BLVD., SUITE 800  
MAHWAH, NJ 07495



URS PROJECT NUMBER 36924371 (TW3-042) DRAWN BY PD

NO.	DATE	ISSUED FOR
A	01/22/10	REVIEW
B	02/18/10	REVIEW
C	02/25/10	REVIEW
D	03/09/10	CONSTRUCTION

RELEASE BY JCF DATE 01/22/10

KAECHELE PLACE  
CT-BDR0047

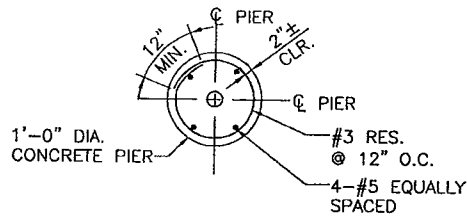
2 KAECHELE PLACE  
BRIDGEPORT, CT  
06606

SHEET TITLE  
**MONOPOLE ELEVATION  
ANTENNA SECTOR  
PLAN AND EQUIPMENT  
LAYOUT PLAN**

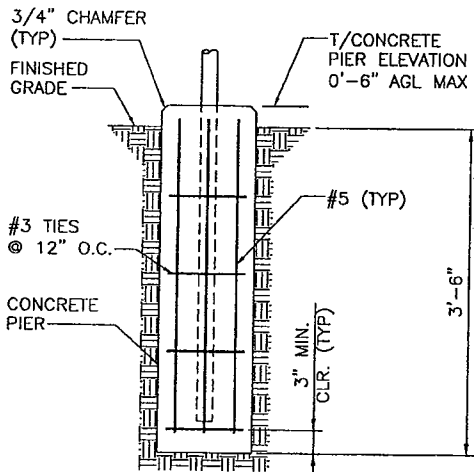
SHEET NUMBER

**C-2**



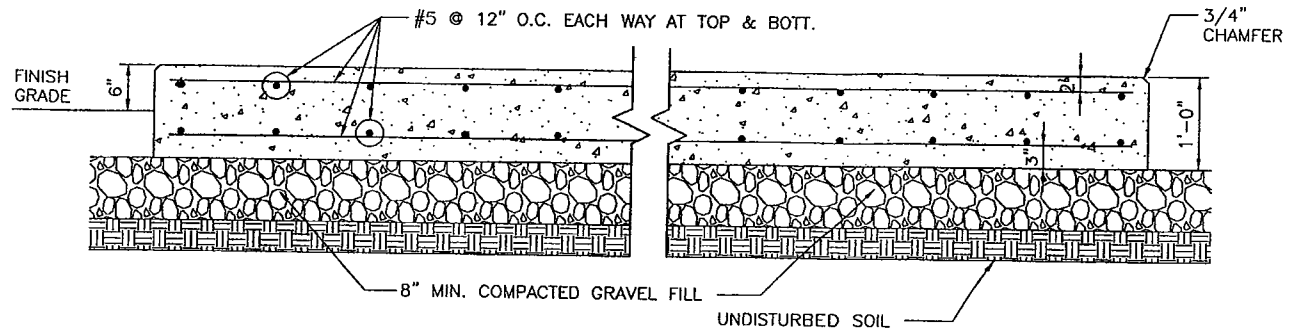
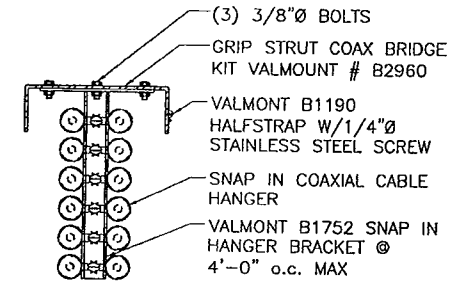


**9 ICE BRIDGE PIER DETAIL**  
C-3 SCALE: N.T.S.



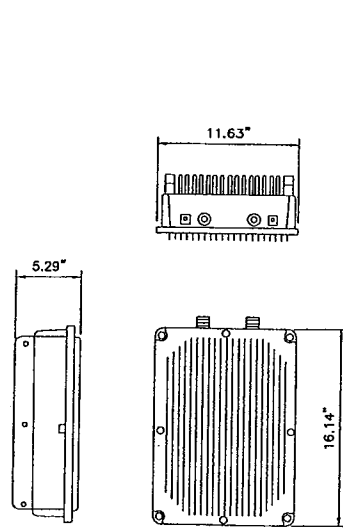
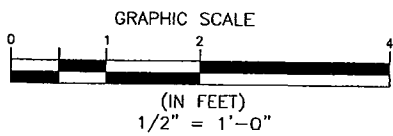
**8 ICE BRIDGE POST DETAIL**  
C-3 SCALE: N.T.S.

**8 ICE BRIDGE DETAIL**  
C-3 SCALE: N.T.S.

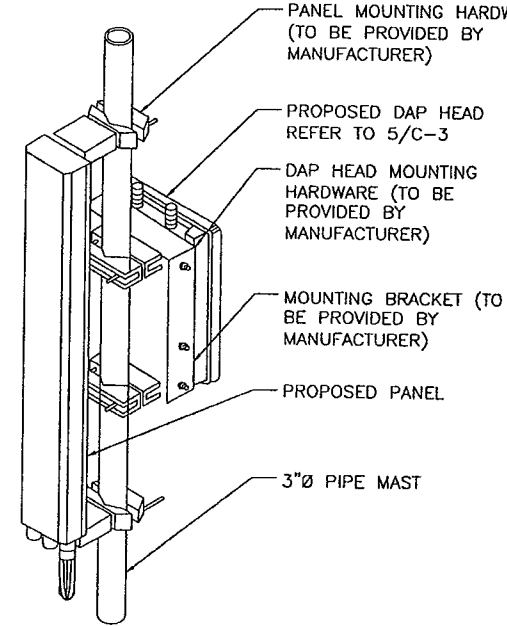


**NOTE:**  
1. GRAVEL SHALL BE NATURAL OR CRUSHED GRAVEL WITH 100 PERCENT PASSING 1 INCH SIEVE.  
2. REFER TO DETAIL 1/E-2 AND DRAWING NOTE 19 ON E-2 FOR RE-BAR GROUNDING REQUIREMENTS.

**6 SLAB DETAIL**  
C-3 SCALE: 1/2" = 1'-0"



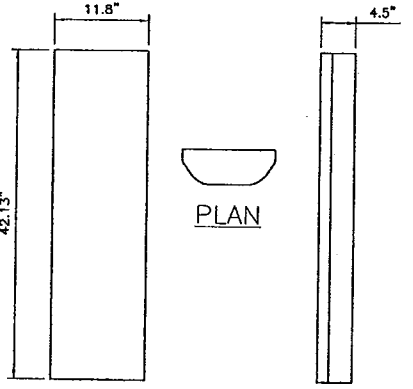
**4 CW DAP HEAD**  
C-3 SCALE: N.T.S.



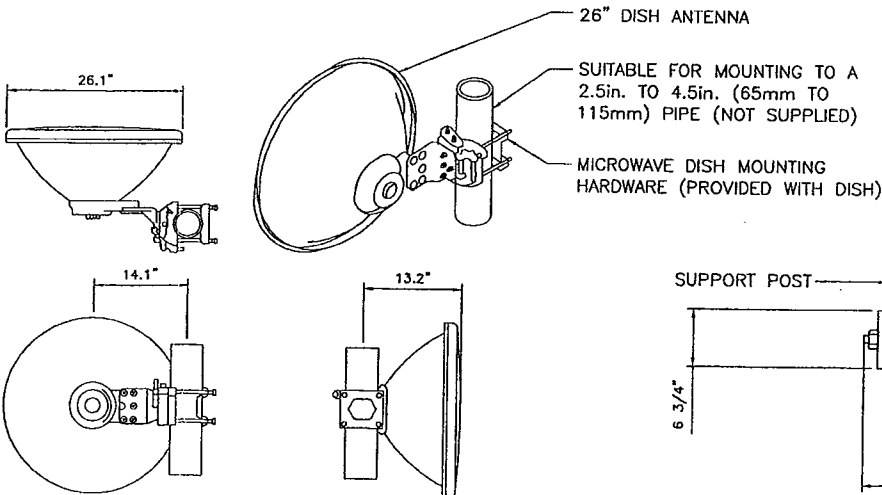
**3 CW ANTENNA MOUNTING DETAIL**  
C-3 SCALE: N.T.S.

**MECHANICAL SPECIFICATIONS**

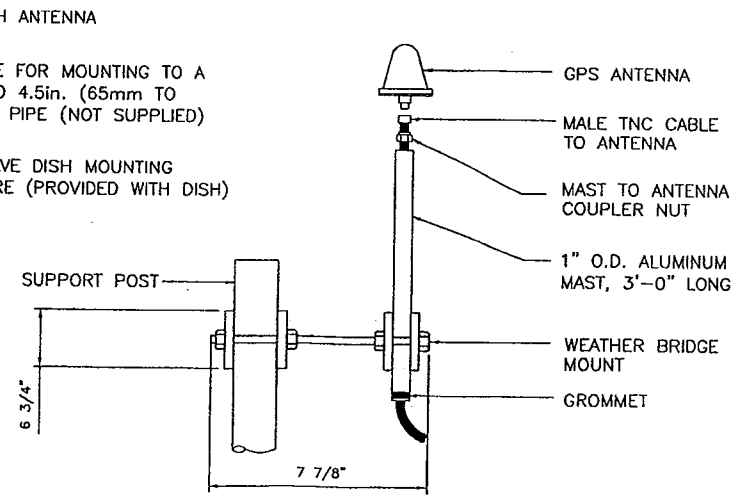
OVERALL HEIGHT: 42.13 IN. (1070 mm)  
WIDTH: 11.8 IN. (300 mm)  
DEPTH: 4.5 IN. (115 mm)  
WEIGHT: 28.66 LBS



**2 CW PANEL ANTENNA DETAIL**  
C-3 SCALE: N.T.S.



**1 CW DISH DETAIL**  
C-3 SCALE: N.T.S.



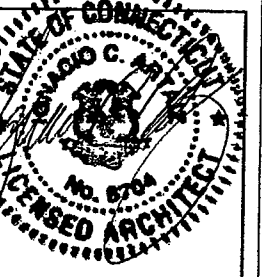
**1 GPS UNIT DETAIL**  
C-3 SCALE: N.T.S.

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URS PROJECT NUMBER		DRAWN BY	
36924371 (TW3-042)		PD	
NO.	DATE	ISSUED FOR	
A	01/22/10	REVIEW	
B	02/18/10	REVIEW	
C	02/25/10	REVIEW	
D	03/09/10	CONSTRUCTION	
RELEASE BY		DATE	
JCF		01/22/10	

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CT-BDR0047  
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BRIDGEPORT, CT  
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SHEET TITLE  
**ANTENNA AND SITE DETAILS**

SHEET NUMBER

**C-3**

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Product Data Sheet

LLPX310R

2300-2700MHz Remote Tilt Panel Antenna

Electrical Specifications

Frequency Range	2300 - 2700 MHz / 2300 - 2700 MHz
Gain	17.3 dBi 2.4 GHz/18 dBi 2.6 GHz
Return Loss	> 15 dB
Polarization	Dual Slant ± 45°
Horizontal Beamwidth	65°
Vertical Beamwidth	6.5° with nullfill
Electrical Down tilt	0° - 10° Independently continuously adjustable
Upper Sidelobe Level	< -18 dB
Front to Back Ratio	> 30 dB
Isolation Between Ports	> 30 dB
Power Rating	250W
Impedance	50 ohm
Lightning Protection	DC grounded
Connector Type	N-Type female or 4.1-9.5 DIN
RET Type	Internal motor & manual override
RET Interface	AISG 2 Remotely upgradeable
RET Connector	Single AISG 8 pin male



Mechanical Specifications

Antenna Dimensions	1070x300x115 mm
Packed Dimensions	1200x330x200 mm
Antenna Weight	13 kg
Radome Material	Polyester Fibreglass pultrusion

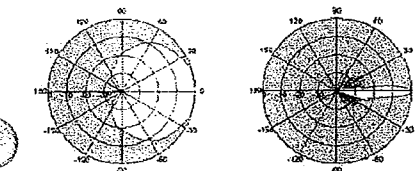
Maximum Environmental Ratings

Humidity	95% RH @ +30°C
Lateral Loading (Front)	0.45 kN @ 160 km/h
Lateral Loading (Rear)	0.48 kN @ 160 km/h
Rain	140mm per hour
Rated Wind Velocity	200 km/h
Temperature	-40°C to +70°C

Mounting Options

Product Options

F-042-GL-E	Fixed Clamps	LLPX310R	N-Type female
T-045-GL-E	Adjustable Clamps	LLPX310R-D	4.1-9.5 DIN

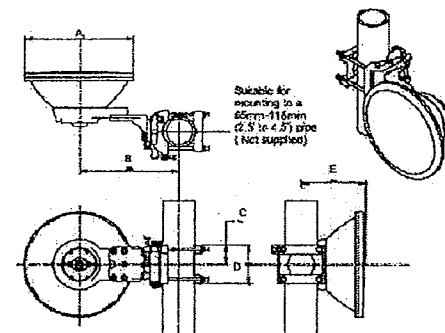


ARGUS MODEL #LLPX310R

CW PANEL ANTENNA DETAIL OR EQUIVALENT

1  
C-4 SCALE: N.T.S.

OUTLINE DIMENSIONS



Antenna Dimensions, mm (in)	
A	603 (23.70)
B	358 (14.10)
C	73 (2.80)
D	143 (5.60)
E	333 (13.10)

Substrate for mounting is a 65mm-116mm (2.5 to 4.5) pipe (Not supplied)

Antenna Fine Adjustment	
Fine Azimuth	± 10°
Fine Elevation	± 25°

Actual antenna appearance may differ from shown.

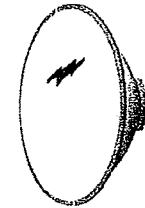
DRAGONWAVE MODEL #A-ANT-28G-2-C

CW MICROWAVE DISH DETAIL

2  
C-4 SCALE: N.T.S.

VHLP2-23-1WH/B

0.6 m | 2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 21.200-23.600 GHz, UG-599/U modified, white antenna, polymer white radome without flash, standard pack-one-piece reflector



General Specifications

Antenna Input	US-599/U Modified
Packing	Compact pack
Radome Color	White
Radome Material	Polymer
Reflector Construction	One-piece reflector
Antenna Color	White
Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m   2 ft
Flash Included	No
Polarization	Single

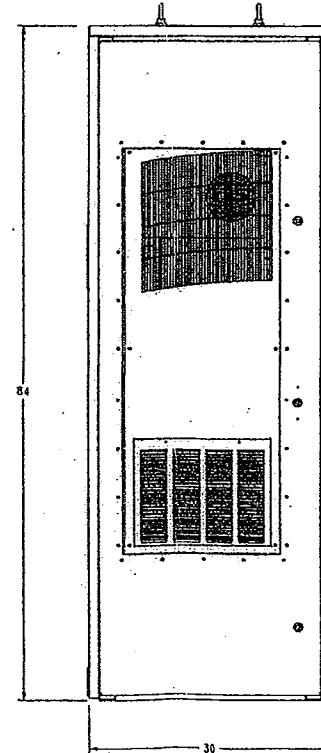
Electrical Specifications

Beamwidth, Horizontal	1.7°
Beamwidth, Vertical	1.7°
Cross Polarization Discrimination (XPD)	30 dB
Electrical Compliance	Brazil Anatel Class 2   Canada SRSP 321.8 Part A   ETSI 302 217 Class 3   US FCC Part 101A
Front-to-Back Ratio	65 dB
Gain, Low Band	40.0 dBi
Gain, Mid Band	40.5 dBi
Gain, Top Band	41.0 dBi
Operating Frequency Band	21.200 - 23.600 GHz
Radiation Pattern Envelope Reference (RPE)	7205B
Return Loss	17.7 dB
VSWR	1.30

ANDREW MODEL #VHLP2-23-1WH/B

CW MICROWAVE DISH DETAIL OR EQUIVALENT

3  
C-4 SCALE: N.T.S.

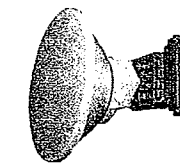


ELECTRICAL SPECIFICATIONS

A-ANT-110-2-C	
Frequency Band, GHz	10.7-11.7
Bottom Band Gain, dBi	34.2
Mid Band Gain, dBi	34.5
Top Band Gain, dBi	34.8
Beamwidth, degrees	3.4
Front/Back, dB	55.0
XPD, dB	30.0
Return Loss, dB	16.1
Notes	
ETSI EN302217 Class	R1C2
FCC Part 101	-
Andrew Part No.	89624-00118-02.01

VHLP2-18-1GR

2 ft ValuLine® High Performance Low Profile Antenna, single-polarized, 17.7-19.7 GHz, UG (range), gray antenna, gray radome



General Specifications

Antenna Type	VHLP - ValuLine® High Performance Low Profile Antenna, single-polarized
Diameter, nominal	0.6 m   2 ft
Antenna Input	UG-595/U
Polarization	Single
Reflector Construction	One-piece reflector
Antenna Color	Gray
Radome Color	Gray
Radome Material	Polymer
Flash Included	No
Packing	Standard pack

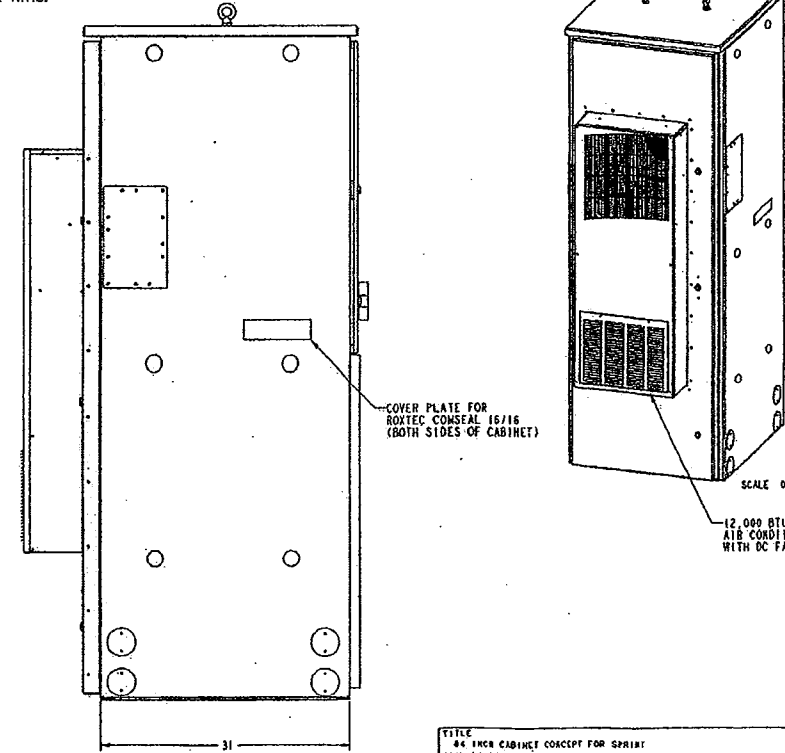
Electrical Specifications

Operating Frequency Band	17.700 - 19.700 GHz
Gain, Top Band	39.1 dBi
Gain, Mid Band	38.7 dBi
Gain, Low Band	38.3 dBi
Front-to-Back Ratio	67 dB
Cross Polarization Discrimination (XPD)	30 dB
Beamwidth, Vertical	2.1°
VSWR	1.30
Return Loss	17.7 dB
Radiation Pattern Envelope Reference (RPE)	7012
Electrical Compliance	US FCC Part 101A   Brazil Anatel Class 2   Canada SRSP 317.8 Part A   ETSI 302 217 Class 3

ANDREW MODEL #VHLP2-18-1GR

CW MICROWAVE DISH DETAIL OR EQUIVALENT

4  
C-4 SCALE: N.T.S.



CS OUTDOOR CABINET DETAIL

4  
C-4 SCALE: N.T.S.

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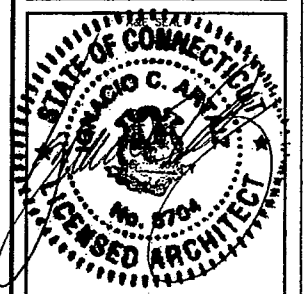
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URS PROJECT NUMBER

36924371 (TW3--042) PD

NO. DATE ISSUED FOR

A	01/22/10	REVIEW
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C	02/25/10	REVIEW
D	03/09/10	CONSTRUCTION

RELEASE BY DATE

JCF 01/22/10

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CT-BDR0047

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BRIDGEPORT, CT  
06606

SHEET TITLE

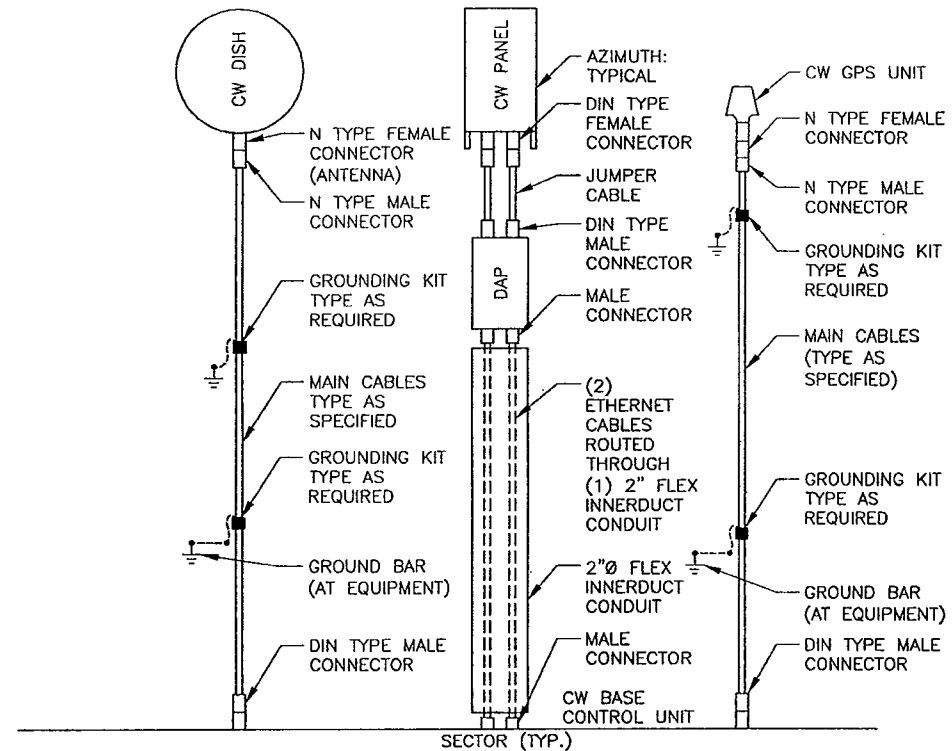
SPECIFICATIONS

SHEET NUMBER

C-4

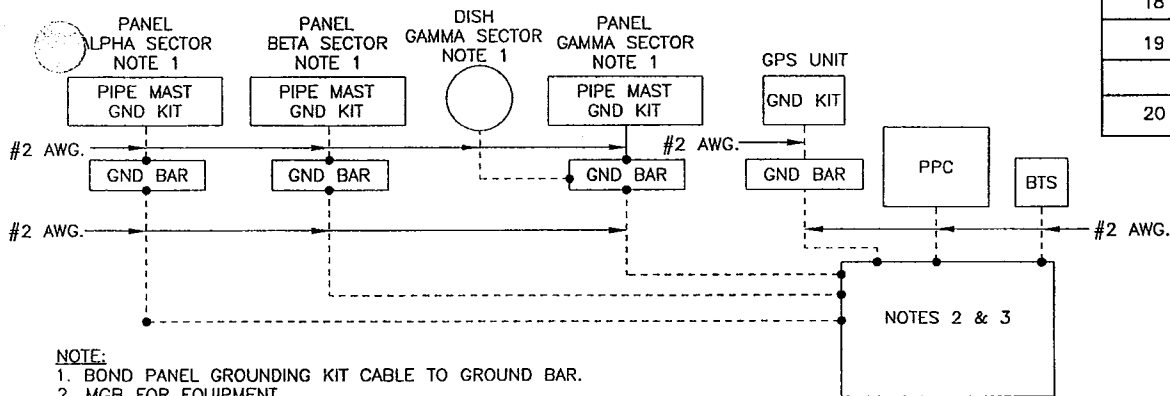
TITLE: 64" INCH CABINET CONCEPT FOR SPRINT			
DRAWING DESCRIPTION:			
LINEAGE POWER	DWG	84" CABINET CONCEPT FOR SPRINT	SHEET 1 OF 2
THIS DATE	ISSUED	BY	CHKD
01/22/10	01/22/10	JCF	CZ/AR

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- NOTES:  
 1. SEE LAYOUT DRAWINGS FOR PANEL LOCATION.  
 2. DO NOT INSTALL PANEL GROUND KIT ON CABLE BEND.  
 3. CW PANEL PIPE MAST TO BE GROUNDED.

**2 CABLE INSTALLATION DIAGRAM**  
 C-5 SCALE: N.T.S.



- NOTE:  
 1. BOND PANEL GROUNDING KIT CABLE TO GROUND BAR.  
 2. MGB FOR EQUIPMENT.  
 3. FOR GROUNDING CONNECTION & DETAILS, SEE LAYOUT DRAWINGS.

**1 GROUNDING SCHEMATIC**  
 C-5 SCALE: N.T.S.

**EXISTING AND PROPOSED ANTENNA AND COAXIAL CABLE SCHEDULE**

SECTOR	ANTENNA	AZIMUTHS	RAD CENTER	MAKE/MODEL	CABLE TYPE	CABLE MANUF.	CABLE LENGTH
ALPHA	CW	30°	±110'-0"	ARGUS LLPX310R	CAT 5	BELDEN 7919A	±200'
	SPARE	-	-	-	-	-	-
	SPARE	-	-	-	-	-	-
BETA	CW	160°	±110'-0"	ARGUS LLPX310R	CAT 5	BELDEN 7919A	±200'
	SPARE	-	-	-	-	-	-
	SPARE	-	-	-	-	-	-
GAMMA	CW	260°	±110'-0"	ARGUS LLPX310R	CAT 5	BELDEN 7919A	±200'
	SPARE	-	-	-	-	-	-
	SPARE	-	-	-	-	-	-
CW DISH	ALPHA	FUTURE	±114'-0"	-	1/2" COAX	ANDREWS	±200'
	BETA	188.49°	±114'-0"	ANDREW VHLP2-23	1/2" COAX	ANDREWS	±200'
	BETA	FUTURE	±106'-0"	-	1/2" COAX	ANDREWS	±200'
	GAMMA	FUTURE	±114'-0"	-	1/2" COAX	ANDREWS	±200'
	GAMMA	263.71°	±114'-0"	ANDREW VHLP2-18	1/2" COAX	ANDREWS	±200'

**BILL OF MATERIALS**

ITEM	DESCRIPTION	QUANTITY (EACH)	DIMENSIONS	WEIGHT (LBS)	PART / MODEL#
1	CW PANEL ANTENNA - ALPHA SECTOR	1	42.13"x11.8"x4.5"	28.66 LBS + MOUNTING HW	ARGUS LLPX310R, (OR EQUIV.)
2	CW DAP - ALPHA SECTOR	1	16.14"x11.63"x5.29"	33 LBS + MOUNTING HW	SAMSUNG, (OR EQUIV.)
3	CW DISH ANTENNA - ALPHA SECTOR (FUTURE)	-	-	-	-
4	CW PANEL ANTENNA - BETA SECTOR	1	42.13"x11.8"x4.5"	28.66 LBS + MOUNTING HW	ARGUS LLPX310R, (OR EQUIV.)
5	CW DAP - BETA SECTOR	1	16.14"x11.63"x5.29"	33 LBS + MOUNTING HW	SAMSUNG, (OR EQUIV.)
6	CW DISH ANTENNA - BETA SECTOR	1	24" DIA.	25 LBS INCL. MOUNTING HW	ANDREW VHLP2-23, (OR EQUIV.)
7	CW DISH ANTENNA - BETA SECTOR (FUTURE)	-	-	-	-
8	CW PANEL ANTENNA - GAMMA SECTOR	1	42.13"x11.8"x4.5"	28.66 LBS + MOUNTING HW	ARGUS LLPX310R, (OR EQUIV.)
9	CW DAP - GAMMA SECTOR	1	16.14"x11.63"x5.29"	33 LBS + MOUNTING HW	SAMSUNG, (OR EQUIV.)
10	CW DISH ANTENNA - GAMMA SECTOR	1	24" DIA.	31 LBS INCL. MOUNTING HW	ANDREW VHLP2-18, (OR EQUIV.)
11	CW DISH ANTENNA - GAMMA SECTOR (FUTURE)	-	-	-	-
12	GPS UNIT	1	82mm x 102mm	312 GRAMS	MOTOROLA TIMING 2000, HP58532A, (OR EQUIV.)
13	MAIN CABLE RUN: BTS TO DAP - ALPHA SECTOR	2	±200'	N/A	BELDEN 7919A OR SM FIBER
14	MAIN CABLE RUN: BTS TO DAP - BETA SECTOR	2	±200'	N/A	BELDEN 7919A OR SM FIBER
15	MAIN CABLE RUN: BTS TO DAP - GAMMA SECTOR	2	±200'	N/A	BELDEN 7919A OR SM FIBER
16	MAIN CABLE RUN: BTS TO DISH	2	±200'	N/A	LDF4-50A (TYP.). FOR RUNS > 250', TBD BY CW RF ENGINEER
17	MAIN CABLE RUN: BTS TO GPS	1	±20'	N/A	LDF4-50A (TYP.). FOR RUNS > 250', TBD BY CW RF ENGINEER
18	COAX CABLE JUMPERS (ALL SECTORS)	18	6'	N/A	LDF4-50A (OR EQUIV.)
19	CONNECTORS, GROUND KITS, WEATHERPROOFING (ALL SECTORS)	TBD	N/A	N/A	AS NEEDED (DIN, N, RG45 TYP.)
20	BTS EQUIPMENT CABINET (OUTDOOR SITES)	1	30"x31"x84"	(T.B.D.)	(T.B.D.)

**COLOR CODING TABLE**

LINE	BAND 1	BAND 2	BAND 3	BAND 4	COMMENTS
1	GREY				CLOSEST TO 0 DEG TN
2	GREY	GREY			2ND CLOCKWISE DISH
3	GREY	GREY	GREY		3RD CLOCKWISE DISH ETC
4	GREY	GREY	GREY	GREY	
5	GREY	GREY	GREY	GREY	ETC
DPRM	GREY'S (AS ABOVE)		RED		SECOND LINE/DPRM WILL HAVE ADDED RED BAND
1+1	GREY'S (AS ABOVE)		RED	1+1	SECOND LINE STANDBY WILL HAVE ADDED RED BAND

**SUMSUNG WIMAX**

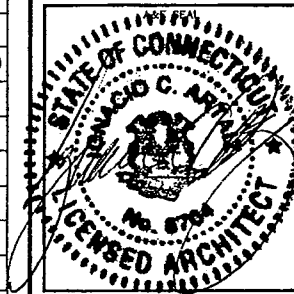
SECTORS	1ST DAP	2ND DAP			COMMENTS
ALPHA	RED	VIOLET			FIBER/POWER - CLOSEST TO 0 DEG TN
BETA	BLUE	WHITE			FIBER/POWER
GAMMA	YELLOW	ORANGE			FIBER/POWER
RF JUMPERS	DAP TO ANTENNA (COLORS DEFINED ABOVE)				
1ST JUMPER	SECTOR COLOR	SECTOR COLOR			
2ND JUMPER	SECTOR COLOR	SECTOR COLOR			
3RD JUMPER	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR		
4TH JUMPER	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR	SECTOR COLOR	

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URS PROJECT NUMBER 36924371 (TW3-042) DRAWN BY PD

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A	01/22/10	REVIEW
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C	02/25/10	REVIEW
D	03/09/10	CONSTRUCTION

RELEASE BY JCF DATE 01/22/10

KAECHLE PLACE CT-BDR0047

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SHEET TITLE  
**CABLE INSTALLATION DIAGRAM, GROUNDING & BILL OF MATERIALS**

SHEET NUMBER

**C-5**

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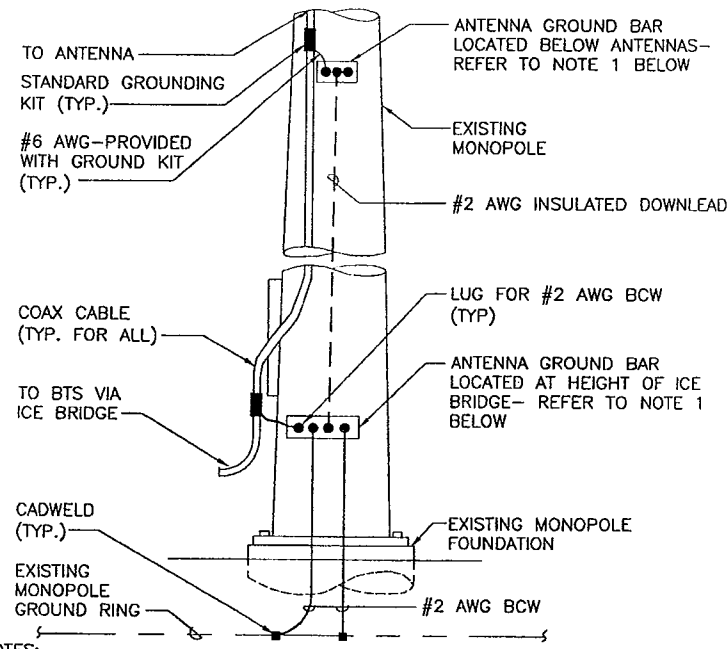
**GROUNDING NOTES:**

- ALL GROUNDING DEVICES SHALL BE UL APPROVED OR LISTED FOR THEIR INTENDED USE.
- ALL WIRES SHALL BE AWG THHN/THWN COPPER UNLESS NOTED OTHERWISE.
- GROUNDING CONNECTIONS TO GROUND RODS, GROUND RING WIRE, TOWER BADE AND FENCE POSTS SHALL BE EXOTHERMIC ("CADWELDS") UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL WHERE GROUND WIRE ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
- GROUNDING CONNECTIONS TO GROUND BARS ARE TO BE TWO-HOLE BRASS MECHANICAL CONNECTORS WITH STAINLESS STEEL HARDWARE (INCLUDING SCREW SET.) CLEAN GROUND BAR TO SHINY METAL. AFTER MECHANICAL CONNECTION, TREAT WITH PROTECTIVE ANTIOXIDANT COATING.
- GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH MANUFACTURER'S GROUNDING KITS.
- ROUTE GROUNDING CONDUCTORS THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 12' RADIUS.
- INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 BARE TINNED COPPER WIRED FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
- REFER TO GROUNDING PLAN FOR GROUND BAR LOCATIONS. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE ("CADWELDS") TO ANTENNA MOUNTS AND GROUND RING. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO-HOLE LUGS.
- EXOTHERMIC WELDS SHALL BE MADE IN ACCORDANCE WITH ERICO PRODUCTS BULLETIN A-AT.
- CONSTRUCTION OF GROUND RING AND CONNECTIONS TO EXISTING GROUND RING SYSTEM SHALL BE DOCUMENTED WITH PHOTOGRAPHS PRIOR TO BACK FILLING SITE. PROVIDE PHOTOS TO CLEARWIRE'S CONSTRUCTION MANAGER.
- ALL GROUND LEADS EXCEPT THOSE TO THE EQUIPMENT ARE TO BE #2/0 TINNED. ALL EXTERIOR GROUND BARS TINNED COPPER.
- PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETTS KOPR-SHIELD (TM OF JET LUBE INC.) PRIOR TO BOLTING GROUND WIRED LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
- ENGAGE AND INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT IMPEDANCE DOES NOT EXCEED FIVE OHMS TO GROUND BY MEANS OF 'FALL OF POTENTIAL TEST'. TEST SHALL BE WITNESSED BY CLEARWIRE REPRESENTATIVE, AND RECORDED ON CLEARWIRE'S "GROUND RESISTANCE TEST" FORM.
- WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1' BELOW GRADE AND SEAL TOP WITH SILICONE MATERIAL.
- BOLT 2-HOLE GROUNDING LUGS TO A/C UNITS' ENCLOSURES AND BOND TO GROUND RING WITH #2 TINNED COPPER WIRE.
- PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
- ALL GROUNDING AND BONDING SHALL BE PER NEC 2005, ARTICLE 250.

EXISTING ELECTRICAL LOAD INFORMATION	
TOTAL AVAILABLE POWER	I.B.D. AMPS
EXISTING PEAK ELECTRIC LOAD DEMAND =	I.B.D. AMPS
(SOURCE: SPRINT'S SITERRA)	
PROPOSED PEAK DEMAND FOR CW EQUIPMENT =	50 AMPS

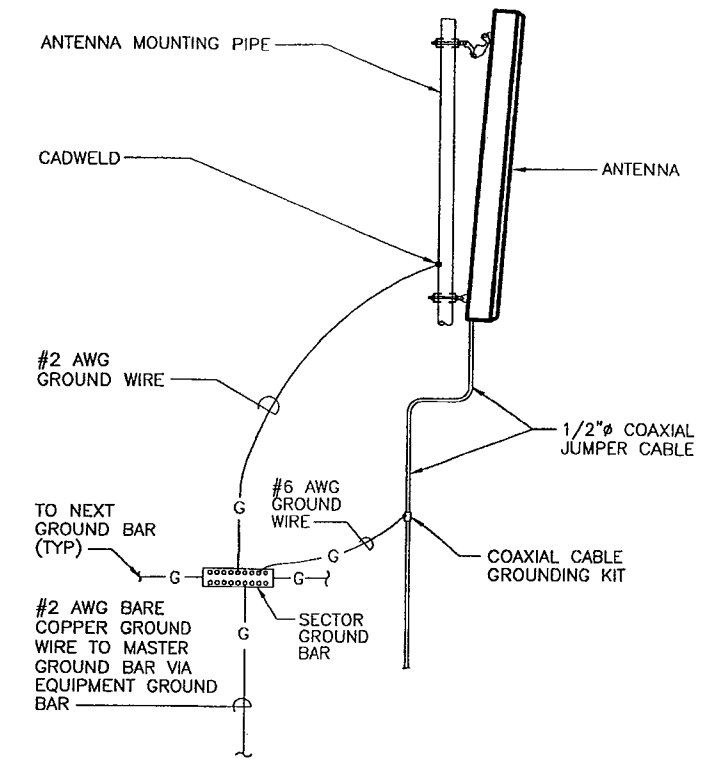
**GENERAL ELECTRICAL NOTES:**

- ACCEPTANCE OF BID INDICATES THAT THE CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL PERFORM ALL VERIFICATIONS, OBSERVATIONS TESTS, AND EXAMINATION WORK PRIOR TO ORDERING OF ANY EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
- VERIFY HEIGHTS WITH PROJECT MANAGER PRIOR TO INSTALLATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
- COORDINATE ALL WORK BETWEEN TRADES AND ALL OTHER SCHEDULING AND PROVISIONARY CIRCUMSTANCES SURROUNDING THE PROJECT.
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT INSTALLATION CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR COMPLETE AND FUNCTIONALLY OPERATING SYSTEMS ENERGIZED AND READY FOR USE THROUGHOUT AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. ELECTRICAL MATERIALS SHALL BE LISTED AND APPROVED BY UNDERWRITER'S LABORATORIES AND SHALL BEAR THE INSPECTION LABEL "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF ALL GOVERNING BODIES HAVING JURISDICTION OVER THE CONSTRUCTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH ALL CURRENT APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND UL. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED FOR THEIR INTENDED USE AND LOCATION.
- ALL WORK SHALL COMPLY WITH ALL APPLICABLE GOVERNING STATE, COUNTY AND CITY CODES AND OSHA, NFPA, NEC AND ASHRAE REQUIREMENTS.
- ENTIRE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE. ALL WORK, MATERIAL AND EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- PROPERLY SEAL ALL PENETRATIONS, PROVIDE UL LISTED FIRE-STOPS WHERE PENETRATIONS ARE MADE THROUGH FIRE-RATED ASSEMBLIES. WATER-TIGHT USING SILICONE SEALANT.
- ALL CONDUCTORS SHALL BE COPPER. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG., UNLESS OTHERWISE NOTED.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM INTERRUPTING CURRENT TO WHICH THEY MAY BE SUBJECTED.
- CONDUIT:
  - ELECTRICAL METALLIC TUBING SHALL HAVE UL LABEL, FITTINGS SHALL BE GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
  - LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED AND SHALL BE USED AT FINAL CONNECTIONS TO MECHANICAL EQUIPMENT AND RECTIFIERS AND WHERE PERMITTED BY CODE. ALL CONDUIT IN EXCESS OF SIX FEET IN LENGTH SHALL CONTAIN A FULL-SIZE GROUND CONDUCTOR.
  - PVC CONDUIT MAY BE PROVIDED ONLY WHERE SHOWN, OR IN UNDERGROUND INSTALLATIONS. PROVIDE UV-RESISTANT CONDUIT WHERE EXPOSED TO THE ATMOSPHERE. PROVIDE GROUND CONDUCTOR IN ALL PVC RUNS; EXCEPT WHERE PERMITTED BY CODE TO OMIT.
- ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS. BACKGROUND SHALL BE BLACK WITH WHITE LETTERS; EXCEPT AS REQUIRED BY CODE TO FOLLOW A DIFFERENT SCHEME.
- CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION. LEGALLY DISPOSE OF ALL REMOVED, UNUSED AND EXCESS MATERIAL GENERATED BY THE WORK OF THIS CONTRACT. DELIVER ITEMS INDICATED ON THE DRAWINGS TO THE OWNER IN GOOD CONDITION. OBTAIN SIGNED RECEIPT UPON DELIVERY.
- RED LINED AS-BUILT PLANS SHALL BE PROVIDED TO CLEARWIRE CONSTRUCTION MANAGER.
- IF A POWER OUTAGE IS REQUIRED SCS MUST BE NOTIFIED AT LEAST (48) HOURS IN ADVANCE.

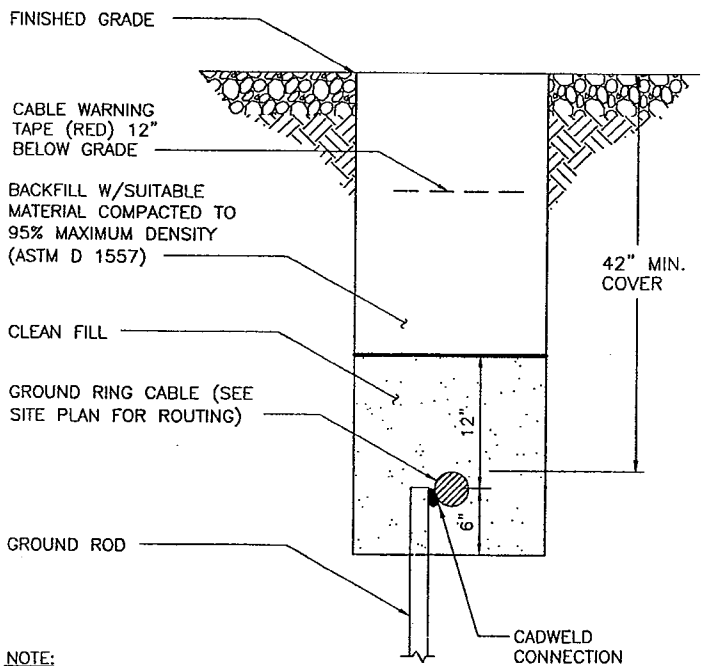


- NOTES:**
- NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION & CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
  - NO WELDING OR DRILLING SHALL BE ALLOWED ON THE MONOPOLE.
  - DO NOT INSTALL ANTENNA GROUND KIT ON CABLE BEND (TYP.)

**3 MONOPOLE - ANTENNA CABLE GROUNDING**  
E-1 SCALE: N.T.S.

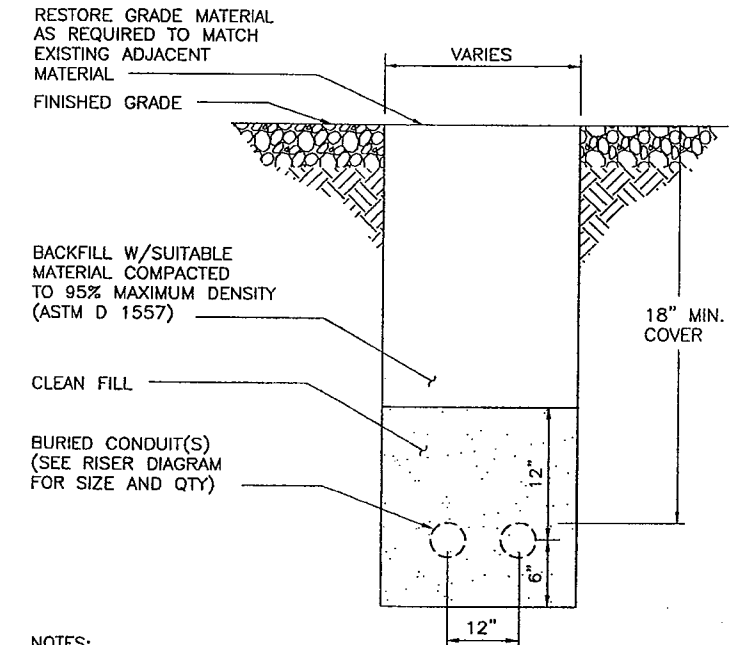


**4 ANTENNA GROUNDING DETAIL (TYP.)**  
E-1 SCALE: N.T.S.



- NOTE:**
- WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.
  - GRADE MATERIAL VARIES. RESTORE GRADE MATERIAL AS REQUIRED TO MATCH EXISTING.

**1 EGR DETAIL**  
E-1 SCALE: N.T.S.



- NOTES:**
- THE CLEAN FILL SHALL PASS THROUGH A 3/8" MESH SCREEN AND SHALL NOT CONTAIN SHARP STONES. OTHER BACKFILL SHALL NOT CONTAIN ASHES, CINDERS, SHELLS, FROZEN MATERIAL, LOOSE DEBRIS OR STONES LARGER THAN 2" IN MAXIMUM DIMENSION. THE TRENCH SHALL BE BACKFILLED IMMEDIATELY FOLLOWING PLACEMENT OF THE CONDUITS.
  - WHERE EXISTING UTILITIES ARE LIKELY TO BE ENCOUNTERED, CONTRACTOR SHALL HAND DIG AND PROTECT EXISTING UTILITIES.

**2 ELECTRIC/TELCO TRENCH DETAIL**  
E-1 SCALE: N.T.S.

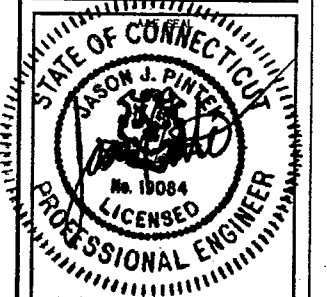
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JCF	01/22/10	

KAECHHELE PLACE  
CT-BDR0047  
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BRIDGEPORT, CT  
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SHEET TITLE  
**ELECTRIC NOTES AND DETAILS**  
SHEET NUMBER

# ELECTRICAL SPECIFICATIONS

## SECTION 16010 "ELECTRICAL REQUIREMENTS"

### 1.01 SCOPE OF WORK

- A. WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (MAKE READY FOR OPERATION) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
1. PROVIDE A 100A, 120/208/240V, 1 PHASE, 3 WIRE NORMAL POWER SERVICE TO SPRINT CLEARWIRE POWER CABINET.
  2. SECONDARY CABLE TERMINATIONS AND EQUIPMENT PER CONTRACT DRAWINGS.

### 1.02 GENERAL REQUIREMENTS

- A. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH APPLY.
- B. THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH CONSTRUCTION REPRESENTATIVE, AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH LOCAL TELEPHONE COMPANY AS MAY BE REQUIRED FOR THE INSTALLATION OF TELEPHONE SERVICE TO THE CELLULAR SITE.
- E. NO MATERIAL OTHER THAN THAT CONTAINED IN THE "LATEST LIST OF ELECTRICAL FITTINGS" APPROVED BY THE UNDERWRITERS' LABORATORIES, SHALL BE USED IN ANY PART OF THE WORK. ALL MATERIAL FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE U.L. LABEL.
- F. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO CONSTRUCTION REPRESENTATIVE.
- G. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE CONSTRUCTION REPRESENTATIVE.
- H. ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED.
- I. BEFORE FINAL PAYMENT, THE CONTRACTOR SHALL PROVIDE CONSTRUCTION REPRESENTATIVE A COMPLETE SET OF PRINTS, LEGIBLY MARKED IN RED PENCIL TO SHOW ALL CHANGES FROM THE ORIGINAL PLANS.
- J. SHOP DRAWINGS
1. CONTRACTOR SHALL SUBMIT TO THE CONSTRUCTION REPRESENTATIVE THREE (3) COPIES OF SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE ON THIS PROJECT, GIVING ALL DETAILS, WHICH INCLUDE DIMENSIONS, CAPACITIES, ETC.
  2. CONTRACTOR SHALL SUBMIT THREE (3) COPIES OF ALL TEST REPORTS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS. TO CONSTRUCTION REPRESENTATIVE.

## SECTION 16060 "GROUNDING"

- 1.01 ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- 1.02 GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL INSPECTOR HAVING JURISDICTION.
- 1.03 ELECTRICAL AC SERVICE GROUNDED SYSTEM - GROUNDING AT MAIN SERVICE OVERCURRENT PROTECTION DEVICE:
- A. THE GROUNDED CONDUCTOR (NEUTRAL) OF THE INCOMING SERVICE FEEDERS (LINE SIDE OF METER SOCKET) SHALL TERMINATE INTO THE MAIN OVERCURRENT DEVICE ENCLOSURE SOLID NEUTRAL BAR WHICH IS INSULATED FROM THE ENCLOSURE.
  - B. THE GROUNDING ELECTRODE CONDUCTOR SHALL EXTEND CONTINUOUSLY WITHOUT SPLICES OR JOINTS FROM THE MAIN OVERCURRENT DEVICES SOLID NEUTRAL BAR TO THE MAIN SWITCHBOARD GROUND TERMINAL.
  - C. THE MAIN SERVICE OVERCURRENT PROTECTION DEVICE ENCLOSURE'S EQUIPMENT GROUND BAR KIT SHALL BE LUGGED TO THE ENCLOSURE WITH THE SURFACES BETWEEN THEM BARE METAL TO BARE METAL. PROVIDE BONDING JUMPER BETWEEN EQUIPMENT GROUND BAR AND SOLID NEUTRAL. BONDING JUMPER CONDUCTOR SIZE SHALL BE THE SAME AS THE GROUNDING ELECTRODE CONDUCTOR. CONDUITS TERMINATING INTO THE MAIN OVERCURRENT DEVICE ENCLOSURE SHALL HAVE GROUNDING TYPE BUSHINGS. THE BUSHINGS SHALL BE BONDED TOGETHER WITH #10 A.W.G. BARE COPPER WHICH IN TURN IS TERMINATED INTO THE EQUIPMENT GROUND BAR KIT.
- 1.04 CELLULAR GROUNDING SYSTEM:  
PROVIDE THE CELLULAR GROUNDING SYSTEM AS SPECIFIED ON DRAWINGS, INCLUDING, BUT NOT LIMITED TO:
- GROUND BARS
  - ANTENNA GROUND CONNECTIONS AND PLATES.
- 1.05 CONTRACTOR, AFTER COMPLETION OF THE COMPLETE GROUNDING SYSTEM BUT PRIOR TO CONCEALMENT/BURIAL OF SAME, SHALL NOTIFY THE CONSTRUCTION REPRESENTATIVE AND LOCAL AUTHORITY HAVING JURISDICTION WHO WILL MAKE A VISUAL INSPECTION OF THE GROUNDING CONNECTIONS TO THE EXISTING EXTERIOR GROUNDING SYSTEMS.

## SECTION 16120 "CONDUCTORS"

- 1.01 ALL CONDUCTORS SHALL BE TYPE THWN (INTERIOR) AND XHHW (EXTERIOR), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING SOLDERLESS PRESSURE CONNECTORS, ACCEPTABLE. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:

120/240VAC - 1 PHASE, 3 WIRE SYSTEM

PHASE	COLOR
A	BLACK
B	RED
N	CONTINUOUS WHITE
G	CONTINUOUS GREEN

- 1.02 MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.

## SECTION 16130 "RACEWAY"

- 1.01 CONDUIT MATERIAL SHALL BE AS FOLLOWS:
- (1) GALVANIZED RIGID CONDUIT (GRC) - FEEDERS EXPOSED TO EXTERIOR & UNDERGROUND CONDUIT SWEEPS.
  - (2) PVC CONDUIT - SERVICE CONDUITS AND WHERE SHOWN ON GROUNDING DETAILS.

## SECTION 16960 "TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM"

- 1.01 CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) TO PERFORM:
- TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM AS MEASURED BY THE 3-POINT FALL OF POTENTIAL GROUNDING TEST. THE TEST SHALL BE DONE PRIOR TO THE CONNECTION OF EXISTING EGR TO THE NEW EQUIPMENT CABINETS.
- 1.02 THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
- A. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
  - B. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
  - C. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- 1.03 THESE TESTS SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF THE CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION REPRESENTATIVE AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- 1.04 THE CONTRACTOR SHALL FORWARD THREE (3) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO CONSTRUCTION REPRESENTATIVE A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- 1.05 CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO CONSTRUCTION REPRESENTATIVE FOR ALL TESTS REQUIRING WITNESSING.

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